



# City of Franklin

109 3rd Ave S  
Franklin, TN 37064  
(615)791-3217

## Meeting Agenda

### Franklin Municipal Planning Commission

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Thursday, January 26, 2017

7:00 PM

Board Room

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*Notice is hereby given that the Franklin Municipal Planning Commission will hold a regular meeting on Thursday, January 26, 2017, at 7:00 p.m. in the City Hall Board Room. Additional information can be found at [www.franklintn.gov/planning](http://www.franklintn.gov/planning).*

*The purpose of the meeting will be to consider matters brought to the attention of the Planning Commission and will include the following.*

*The typical process for discussing an item is as follows:*

1. *Staff presentation,*
2. *Public comments,*
3. *Applicant presentation, and*
4. *Motion/discussion/vote.*

*Applicants are encouraged to come to the meeting, even if they agree with the staff recommendation. The Planning Commission may defer or disapprove an application/request unless someone is present to represent it.*

*For accommodations due to disabilities or other special arrangements, please contact the Human Resources Department at (615) 791-3216, at least 24 hours prior to the meeting.*

#### CALL TO ORDER

#### MINUTES

1. [17-0094](#) December 15, 2016 FMPC minutes

Attachments: [DRAFT MeetingMinutes 12-15-16](#)

#### CITIZEN COMMENTS ON ITEMS NOT ON THE AGENDA

*Open for Franklin citizens to be heard on items not included on this Agenda. As provided by law, the Planning Commission shall make no decisions or consideration of action of citizen comments, except to refer the matter to the Planning Director for administrative consideration, or to schedule the matter for Planning Commission consideration at a later date. Those citizens addressing the Planning Commission are required to complete a Public Comment Card in order for their name and address to be included within the official record.*



## ANNOUNCEMENTS

### VOTE TO PLACE NON-AGENDA ITEMS ON THE AGENDA

*The non-agenda process, by design, is reserved for rare instances, and only minor requests shall be considered. Non-agenda items shall be considered only upon the unanimous approval of all of the Planning Commission members.*

### CONSENT AGENDA

*The items under the consent agenda are deemed by the Planning Commission to be non-controversial and routine in nature and will be approved by one motion. The items on the consent agenda will not be individually discussed. Any member of the Planning Commission, City Staff, or the public desiring to discuss an item on the consent agenda may request that it be removed and placed on the regular agenda. It will then be considered in its printed order.*

- Initial Consent Agenda
- Secondary Consent Agenda- to include any items in which Commissioners recuse themselves

### SITE PLAN SURETIES

2. [17-0073](#) Aspen Grove Subdivision, site plan, section O, revision 3, lot 122 (Medical Office Building); extend the performance agreement for traffic signal and driveway/median modification improvements. (CONSENT AGENDA)
3. [17-0074](#) Cool Springs West Subdivision, site plan, section 2, revision 3, lots 16 and 27 (Thoroughbred Village Wild Wing Café); extend the performance agreement for landscaping improvements. (CONSENT AGENDA)
4. [17-0075](#) Downs Boulevard Properties Subdivision, site plan, lots 16 and 17; extend the performance agreement for landscaping improvements for six months. (CONSENT AGENDA)
5. [17-0076](#) Generals Retreat PUD Subdivision, site plan, revision 1; release the maintenance agreement for landscaping and traffic signal modifications improvements. (CONSENT AGENDA)
6. [17-0077](#) Harpeth Village Subdivision, site plan, revision 2 (Harpeth Village Unified Development); extend the performance agreement for landscaping (Building C) improvements. (CONSENT AGENDA)
7. [17-0078](#) Highlands at Ladd Park PUD Subdivision, site plan, section 5 (Neighborhoods H and F); accept the landscaping Phase 2 improvements, release the performance agreement and establish a maintenance agreement for one year. (CONSENT AGENDA)

8. [17-0079](#) Hurstbourne Park PUD Subdivision, site plan, section 2, revision 1; release the maintenance agreement for landscaping street trees and landscaping open space improvements. (CONSENT AGENDA)
9. [17-0080](#) Lincoln Square Subdivision, site plan, revision 1, lots 6-8 (Aspen Grove Plaza Office Park Phase III Building 4); release the maintenance agreement for landscaping improvements. (CONSENT AGENDA)
10. [17-0081](#) McKays Mill PUD Subdivision, site plan, section 23, lot 2001 (Bank and Office); extend the performance agreement for landscaping (Building B) improvements. (CONSENT AGENDA)
11. [17-0082](#) Seward Hall Subdivision, site plan, lot 1 (Bethel Community Church); extend the performance agreement for landscaping Phase 3 and stormwater drainage/detention improvements for one year. (CONSENT AGENDA)
12. [17-0083](#) South Park Subdivision, site plan, section 1, revision 2, lot 7 (Keystone Center); extend the performance agreement for landscaping Building B improvements. (CONSENT AGENDA)
13. [17-0084](#) Westhaven PUD Subdivision, site plan, section 15 (resubdivision of lot 4001) and section 25 (resubdivision of lot 4021) Condo Building and Live-Work Units; extend the performance agreement for landscaping improvements. (CONSENT AGENDA)
14. [17-0085](#) Westhaven PUD Subdivision, site plan, section 25; extend the performance agreement for drainage improvements for six months. (CONSENT AGENDA)

#### LONG RANGE PLANS

15. [17-0035](#) PUBLIC HEARING: Consideration of Franklin Municipal Planning Commission Resolution 2016-91, A Resolution to Adopt Envision Franklin.

**Attachments:** [RESOLUTION 2016-91 FMPC Adopt Envision Franklin](#)  
[Final Draft Envision Franklin](#)  
[Staff PPT for Public Hearing](#)  
[Revisions List for 12 2016 Final Draft](#)  
[Citizen Comment Cards Categorized](#)  
[Envision Franklin Facebook Comments](#)  
[Franklin Tomorrow Letter January 6 2017](#)

#### REZONINGS AND DEVELOPMENT PLANS

16. [17-0048](#) Consideration of Ordinance 2016-51, To Be Entitled: "An Ordinance To Rezone 23.61 Acres From General Commercial (GC) District To Specific Development Variety (SD-X 14.61/350,000/200) District For The Property Located North Of East McEwen Drive And East Of Carothers Parkway, (Apex Village PUD Subdivision)." (01/27/17 FMPC; 02/14/17 1ST BOMA Reading 6-0; 03/14/17 2nd BOMA Reading 7-0) THIRD AND FINAL READING

**Sponsors:** Ald. Ann Petersen, Emily Hunter, Amy Diaz-Barriga and Josh King

**Attachments:** [Ordinance 2016-51 Apex Village PUD with map.Law Approved 2.pdf](#)  
[Apex Village Rezoning 01.05.17.pdf](#)

17. [17-0049](#) PUBLIC HEARING: Consideration of Resolution 2016-88 To Be Entitled: "A Resolution Approving A Development Plan For Apex Village PUD Subdivision With 2 Modifications Of Development Standards (MOS 1-Attached Residential Length; MOS2- Parkland Dedication), For The Property Located North Of East McEwen Drive And East Of Carothers Parkway." (01/26/17 FMPC 9-0, 02/14/17 WS)

**Sponsors:** Ald. Ann Petersen, Emily Hunter, Amy Diaz-Barriga and Josh King

**Attachments:** [MAP\\_ApexVillage\\_DP.pdf](#)  
[RESOLUTION 2016-88 APEXVillage PUD Subdivision with MapLaw Approved](#)  
[APEXVillage\\_DevPlan\\_Conditions of Approval\\_03](#)  
[OVERVIEW\\_Apex Village Dev Plan 01.05.17.pdf](#)  
[ARCH\\_Apex Village Dev Plan 01.05.17-3.pdf](#)  
[APEXVILLAGE\\_Impact Study \(11.18.16\) - 10765.pdf](#)  
[FULLSET\\_Apex Village Dev Plan 01.05.17.pdf](#)  
[APEXMOS\\_Parkland.pdf](#)  
[Connectivity\\_Apex Village Dev Plan 01.05.17-2.pdf](#)

#### SITE PLANS, PRELIMINARY PLATS, AND FINAL PLATS

18. [16-1081](#) 508 Duke Drive Subdivision, Final Plat, Four Commercial Lots on 7.29 Acres, Located At The Southeast Intersection Of Duke Drive And Mallory Station Road (CONSENT AGENDA).

**Sponsors:** Franklin Municipal Planning Commission, Josh King and Amy Diaz-Barriga

**Attachments:** [MAP\\_6297\\_508DukeDriveFP.pdf](#)  
[fullplat\\_2016-0167\\_FINAL\\_PLAT\\_REV\\_010407.pdf](#)  
[508DukeDrive\\_FP\\_Conditions of Approval\\_02.pdf](#)

19.     [17-0050](#)     Medcore Medical Subdivision, Final Plat, Lot 3, Revision 3, Two Commercial Lots on 11.62 acres, Located On Carothers Parkway, Adjacent To 1001 Physicians Way. (CONSENT AGENDA)
- Sponsors:     Franklin Municipal Planning Commission, Emily Hunter, Amy Diaz-Barriga and Josh King
- Attachments:     [6319 Medcore Medical FP.pdf](#)  
                                  [6319\\_Medcore.pdf](#)  
                                  [MedcoreMedical FP Conditions of Approval 01.pdf](#)
20.     [17-0051](#)     Ranco Farms Subdivision, Final Plat, Revision 4, Lot 4, Two Commercial Lots on 3.94 Acres, Located At The Southeast Corner Of The Intersection Of Spring Creek Drive And Mallory Lane (CONSENT AGENDA).
- Sponsors:     Franklin Municipal Planning Commission, Emily Hunter, Amy Diaz-Barriga and Josh King
- Attachments:     [6320 RANCO Farms FP.pdf](#)  
                                  [RANCOFarms\\_Final Plat.pdf](#)  
                                  [RANCOfarms\\_Conditions of Approval 01.pdf](#)

#### ZONING ORDINANCE TEXT AMENDMENTS

21.     [17-0015](#)     Consideration of Ordinance 2016-52, To Be Entitled: "An Ordinance To Amend Chapter 3 Of The Zoning Ordinance Of The City Of Franklin, Tennessee, To Amend The Use Table And Regulations Pertaining To Self-Storage Facilities Uses."; (01/26/17 FMPC 9-0; 02/14/17 1ST BOMA Reading 6-0, 03/14/17 2nd BOMA Reading 7-0) THIRD AND FINAL READING
- Sponsors:     Ald. Ann Petersen, Emily Hunter, Amy Diaz-Barriga and Josh King
- Attachments:     [Ordinance 2016-52 Self Storage.Law Approved.pdf](#)
22.     [17-0053](#)     Consideration of Ordinance 2016-53, To Be Entitled: "An Ordinance To Amend Chapter 3 Of The Zoning Ordinance Of The City Of Franklin, Tennessee, To Amend The Regulations For Commercial Uses For Bed And Breakfast Establishments In Order To The Increase The Maximum Number Of Permitted Guests From Six To Eight, And Increase The Maximum Number Of Sleeping Rooms Available For Transient Occupancy From Three To Four."; (01/26/17 FMPC 9-0; 02/14/17 1ST BOMA Reading 6-0; 03/14/17 2nd BOMA Reading 7-0) THIRD AND FINAL READING
- Sponsors:     Ald. Ann Petersen, Emily Hunter, Amy Diaz-Barriga and James Svoboda
- Attachments:     [Ord 2016-53 Amend Bed and Breakfast Regulations\\_Law Approved](#)

#### NON-AGENDA ITEMS

ANY OTHER BUSINESS

ADJOURN



# City of Franklin

109 3rd Ave S  
Franklin, TN 37064  
(615)791-3217

## Meeting Minutes - Draft

### Franklin Municipal Planning Commission

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Thursday, December 15, 2016

7:00 PM

Board Room

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#### CALL TO ORDER

**Present** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

#### MINUTES

##### 1. November 17, 2016 FMPC Minutes

**Attachments:** [11-17-16 FMPC Minutes](#)

A motion was made by Commissioner Petersen, seconded by Commissioner Lindsey, that the Minutes from the November 17, 2016 FMPC meeting be approved as presented . The motion carried by a unanimous vote.

**Aye:** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

**Chairing:** 0

#### CITIZEN COMMENTS ON ITEMS NOT ON THE AGENDA

*Chairman Hathaway asked for citizen comments. There were none.*

#### ANNOUNCEMENTS

*Ms. Emily Hunter, Director of Planning and Sustainability, wished everyone Happy Holidays and thanked the Commissioners for their service. She also introduced, Elaine Ellis, the new Administrative Assistant for the Planning Department.*

#### VOTE TO PLACE NON-AGENDA ITEMS ON THE AGENDA

#### CONSENT AGENDA

##### Approval of the Consent Agenda

A motion was made by Commissioner Harrison, seconded by Commissioner McLemore, to approve items 2 through 6, 11, and 15 on the Initial Consent Agenda. The motion carried unanimously by the following vote:

**Aye:** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

**Chairing:** 0

#### **Approval of the Consent Agenda**

**A motion was made by Commissioner Harrison, seconded by Commissioner McLemore, to approve Item 12 on the Secondary Consent Agenda. The motion carried by the following vote:**

**Aye:** 7 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Allen, Commissioner Orr, and Commissioner Lindsey

**Recused:** 2 - Commissioner Gregory, and Commissioner Hathaway

**Chairing:** 0

#### **SITE PLAN SURETIES**

2. Alexander Plaza PUD Subdivision, site plan, (Kroger Site Renovations); extend the performance agreement for drainage improvements. (CONSENT AGENDA)

**This Planning Item was approved**

3. Generals Retreat PUD Subdivision, site plan; accept the drainage/detention improvements, release the performance agreement and establish a maintenance agreement for one year. (CONSENT AGENDA)

**This Planning Item was approved**

4. Hearth at Franklin Subdivision, site plan, (Assisted Living); release the maintenance agreement for drainage improvements. (CONSENT AGENDA)

**This Planning Item was approved**

5. Through the Green PUD Subdivision, site plan, lot 5; extend the performance agreement for sidewalks and drainage improvements. (CONSENT AGENDA)

**This Planning Item was approved**

6. Tywater Crossing PUD Subdivision, site plan, section 1; extend the performance agreement for drainage improvements for one year. (CONSENT AGENDA)

**This Planning Item was approved.**

## REZONINGS AND DEVELOPMENT PLANS

7. PUBLIC HEARING: Consideration Of Ordinance 2016-48, To Be Entitled, "An Ordinance To Rezone 1.30 Acres From Detached Residential 2 (R-2) District To General Office (GO) District, Located West Of Royal Oaks Boulevard And North Of Murfreesboro Road, 203 North Royal Oaks Boulevard." (12/15/16 FMPC 9-0; 1/10/17 1ST BOMA Reading 8-0)  
SECOND OF THREE READINGS

**Attachments:** [Dodson and Herbert,Rezoning Map](#)

[Ord 2016-48 Dodson and Herbert Subd with Map Law Approved](#)

[203 NRB Zoning Map-24x36](#)

*Mr. Baumgartner stated that the existing Land Use Plan and Envision Franklin supports the rezoning request. This property is one of the four lots mentioned in the existing Land Use Plan that would be appropriate for an office use.*

*Staff recommended a Favorable Recommendation To The Board Of Mayor And Aldermen.*

*Chairman Hathaway asked for citizen comments. There were none.*

*Mr. Adam Crunk, of Crunk Engineering, was present to represent the item and answer any questions.*

**Commissioner McLemore moved, seconded by Commissioner Harrison , that Ordinance 2016-48 be recommended to the Board of Mayor and Alderman for approval. The motion carried unanimously by the following vote:**

**Aye:** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

**Chairing:** 0



8. PUBLIC HEARING: Consideration Of Resolution 2016-45 To Be Entitled, "A Resolution Adopting A Plan Of Services For The Annexation Of 459, 463 And 467 Franklin Road, By The City Of Franklin, Tennessee."  
(12/10/16 FMPC 9-0, 01/10/17 WS)

**Attachments:** [459 463 467 Franklin Rd Annexation Map](#)  
[2016-45 RES Revised Draft POS\\_with map\\_459 463 467 Franklin Rd.Law Approved 2](#)

*Mr. Baumgartner stated Resolution 2016-45 is a City of Franklin drafted Plan of Services for the properties being considered for annexation located at 459, 463, and 467 Franklin Road. The Plan of Services outlines how infrastructure will be extended to serve the proposed annexed properties and how the City will provide for the safety of residents of the newly annexed properties. This Plan of Services includes 3 single-family dwelling units.*

*Staff recommended a favorable recommendation to The Board Of Mayor And Aldermen.*

*Chairman Hathaway asked for citizen comments.*

*Daniel Hollingsworth addressed the Commission about his questions about the number of properties being added and whether sewer was being extended down Franklin Road and whether only the three properties being annexed would be able to connect to the sewer.*

*Mr. Baumgartner confirmed that only 3 properties were to be annexed.*

*Commissioner Petersen commented that landowners must request to be annexed .*

*Mr. Jimmy Wiseman, Assistant Director of Engineering for the City of Franklin, confirmed that only 3 parcels were to be annexed and that the sanitary sewer infrastructure was currently in place. The property owners requesting the annexation will be required to bore underneath the roadway to tie into the sanitary sewer.*

*Mr. Hollingsworth was satisfied that he would not be required to be annexed and had no other comments or objections.*

*Adam Crunk, of Crunk Engineering, was present to represent the item and answer questions.*

**Commissioner Harrison moved, seconded by Commissioner Lindsey, that Resolution 2016-45 be recommended to the Board of Mayor and Alderman for approval. The motion carried unanimously by the following vote:**

**Aye:** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

**Chairing:** 0

9. PUBLIC HEARING: Consideration Of Resolution 2016-87/Ordinance 2016-49 To Be Entitled, "A Resolution And Ordinance To Annex 459, 463, 467 Franklin Road, Consisting Of 5.4 Acres, Located West Of Franklin Road And North Of Mack Hatcher Parkway And Adjoining The City Limits Within The Western Part Of The Franklin Urban Growth Boundary (UGB)." (12/15/16 FMPC 9-0; 1/10/17 1ST BOMA Reading 8-0) SECOND OF THREE READINGS

**Attachments:** [Res 2016-87 Ord 2016-49 459 463 467 Franklin Road with Map.Law Approved](#)  
[459 463 467 Franklin Rd Annexation Map](#)  
[Letter of Request - SIGNED](#)  
[Annexation Application - SIGNED](#)  
[Owner Affidavit - SIGNED](#)  
[Phyllis Anexation documents \(Additional Property Owner\)](#)

*Mr Baumgartner stated that Resolution 2016-85/Ordinance 2016-49 is the document required to annex the 5.4 acres of property into the Franklin City Limits. The property is adjacent to the current City Limits and within the City's established Urban Growth Boundary (UGB). A Plan of Services and Zoning ordinance will accompany this Resolution/Ordinance.*

*Staff recommended a Favorable Recommendation To The Board Of Mayor And Aldermen.*

*Chairman Hathaway asked for citizen comments. There were none.*

*Adam Crunk, of Crunk Engineering, was present to represent the item and answer any questions about the item.*

**Commissioner Harrison moved, seconded by Commissioner Allen , that Resolution 2016-85/Ordinance 2016-49 be recommended to the Board of Mayor and Alderman for approval. The motion carried unanimously by the following vote:**

**Aye:** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

**Chairing:** 0

10. PUBLIC HEARING: Consideration Of Ordinance 2016-50, To Be Entitled, "An Ordinance To Zone 5.4 Acres Detached Residential 1 (R-1) District, Hillside/Hillcrest Overlay (HHO) District, Berry's Chapel Character Area Overlay (BCCO- 7) District, And Designate The Development Standards As Being Appropriate For Either Traditional Or Conventional Area Development Standards, For The Property Located West Of Franklin Road And North Of Mack Hatcher Parkway, 459, 463, 467 Franklin Road."(12/15/16 FMPC 9-0; 01/10/17 WS, 1ST BOMA Reading 8-0)  
SECOND OF THREE READINGS

**Attachments:** [Ord 2016-50 Zone 459 463 467 Franklin Road with Map.Law Approved](#)  
[459.463.467 Franklin Road Rezoning Map](#)

*Mr. Baumgartner stated the existing Land Use Plan and Envision Franklin support the zoning request to remain detached residential. The base zoning of Detached Residential 1 (R1) District is consistent with the zoning along this stretch of Franklin Road.*

*Staff recommended a Favorable Recommendation To The Board Of Mayor And Aldermen.*

*Chairman Hathaway asked for citizen comments. There were none.*

*Adam Crunk, of Crunk Engineering, was present to represent the item and answer any questions about the item.*

**Commissioner McLemore moved, seconded by Commissioner Harrison, that Ordinance 2016-50 be recommended favorably to the Board of Alderman. The motion carried unanimously by the following vote:**

**Aye:** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

**Chairing:** 0

#### **SITE PLANS, PRELIMINARY PLATS, AND FINAL PLATS**

11. Eddy Lane Industrial Office, Site Plan, Revision 1, a 73,022 Square-Foot Data Center On 14.61 Acres, Located At 309 Eddy Lane. (CONSENT AGENDA)

**Attachments:** [6287 MAP Eddy Lane Industiral Office, SP, Rev 1, Ph 2](#)  
[Eddy Lane Industrial Office SP COA](#)  
[Eddy Lane Industrial Office, site plan, revision 1 \(Phase 2&3\) - submittal 004](#)

**This Planning Item was approved**

12. McEwen Place PUD Subdivision, Final Plat, Section 3, Revision 2 (Northside At McEwen), Six Lots On 44.9 Acres, Located Near The Intersection Of Rush Street And East McEwen Drive. (CONSENT AGENDA)

**Attachments:** [MAP\\_6306McEwenPlacePUDSubdivisionFP.pdf](#)

[McEwenPlace\\_FP.pdf](#)

[PLAT\\_McEwenPlace.pdf](#)

*Chairman Hathaway and Commissioner Gregory recused themselves from Item 12.*

*Chairman Hathaway passed the Chair to Vice-Chairman, Roger Lindsey.*

**This Planning Item was approved**

13. McEwen Place PUD Subdivision, Site Plan, Section 3, Lot 302 (Block B), 207,600 Square Feet Of Commercial Space And 76 Attached Residential Units On 4.99 Acres, With One Design Modification (Building Length), Located Near The Intersection Of Rush Street And East McEwen Drive.

**Attachments:** [MAP\\_6307McEwenPlacePUDSubdivisionSP\(BlockB\)](#)

[McEwenPlaceSP\\_BlockB.pdf](#)

[Site Layout Sheet\\_McEwenPlaceB&C.pdf](#)

[ELEVATIONS\\_BlockB.pdf](#)

[BLOCK B Northside at McEwen - Block B Lot 302 - Site Plan  
Resubmittal - 2016-12-01.pdf](#)

*Chairman Hathaway and Commissioner Gregory recused themselves from items 13 and 14.*

*Chairman Hathaway passed the Chair to Vice-Chairman, Roger Lindsey.*

*Mr. King stated that the site plan for this part of the McEwen PUD Subdivision includes an office building, a one-story retail building, and a parking garage wrapped with attached residential units. The development plan revision for this section was approved by the Franklin Municipal Planning Commission at the special FMPC meeting held November 7, 2016.*

*The applicant requests a Design Modification from Section 5.3.5 (b) (ii) to allow for an attached residential building to be longer than 200 feet. The longest elevation is 400 feet in length. Staff finds that this design modification is appropriate because the applicant has suitable architectural detailing and articulation along the long facades.*

*Staff recommends approval of the Design Modification and approval of the site plan with conditions.*

*Vice-Chairman Lindsey asked if there were any citizen comments. There were none.*

*Ryan McMaster, of Kimley-Horn and Associates, was present to represent the item and answer any questions.*

*Vice Chairman Lindsey stated that the main motion for the site plan would be handled first, followed by consideration of the motion for the Design Modification.*

*Commissioner Harrison moved for approval of the site plan, with conditions, seconded by Commissioner McLemore.*

*Vice-Chairman Lindsey then asked for a motion for approval of the Design Modification.*

*A Discussion ensued and Commissioner Petersen and Mr. King confirmed that the request for the Design Modification was for the Rush Street and Spring Creek Drive location. Mr. King provided specific details about the requested design modification.*

*Commissioner Harrison moved, seconded by Commissioner McLemore, that the Design Modification be approved.*

*Vice Chairman Lindsey asked if there was any discussion.*

*The motion to approve the Design Modification passed unanimously.*

*The Vice Chair then called for the vote on the main motion with the Design Modification.  
The motion was approved unanimously.*

**Commissioner Harrison moved, seconded by Commissioner McLemore that the site plan for Item 13 be approved, with conditions. Commissioner Harrison moved, seconded by Commissioner McLemore that the Design Modification for Item 13 be approved. Both motions were approved unanimously by a vote of (7-0).**

**Aye:** 7 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Allen, Commissioner Orr, and Commissioner Lindsey

**Recused:** 2 - Commissioner Gregory, and Commissioner Hathaway

**Chairing:** 0

14. McEwen Place PUD Subdivision, Site Plan, Section 3, Lot 303 & 304 (Block C), 274 Attached Residential Units On 4.41 Acres And One Open Space Lot On 2.82 Acres, With One Design Modification (Building Length), Located Near The Intersection Of Rush Street And East McEwen Drive.

**Attachments:** [MAP\\_6308McEwenPlacePUDSubdivisionSP\(BlockC\).pdf](#)  
[McEwenPlaceLot302\\_COA.pdf](#)  
[ELEVATIONS\\_BlockC.pdf](#)  
[Site Layout Sheet\\_McEwenPlaceB&C.pdf](#)  
[BlockC\\_NORTHSIDE AT MCEWEN BLOCK C LOT 303 SITE PLAN RESUBMITTAL 2016-12-01.pdf](#)

*Chairman Hathaway and Commissioner Gregory recused themselves from Item 14.*

*Chairman Hathaway passed the Chair to Vice-Chairman Lindsey.*

*Mr. King stated the site plan for this part of the McEwen PUD Subdivision includes one attached residential building with 274 dwelling units. The development plan revision for this section was approved by the Franklin Municipal Planning Commission at the special FMPC meeting held November 7, 2016.*

*The applicant requests a Design Modification from Section 5.3.5 (b) (ii) to allow for an attached residential building to be longer than 200 feet. The longest elevation is 465 feet in length. Staff finds that this design modification is appropriate because the applicant has suitable architectural detailing and articulation along their long facades.*

*Staff recommends approval of this Design Modification and recommends approval of the site plan, with conditions.*

*Vice-Chairman Lindsey asked if there were any citizen comments. There were none.*

*Ryan McMaster, of Kimley-Horn and Associates, was present to represent the item and answer any questions.*

*Vice-Chairman Lindsey asked for a motion for the approval on the main motion, the site plan. Commissioner Allen moved, seconded by Commissioner Franks for approval on the main motion.*

*Vice-Chairman Lindsey asked for a motion on the approval of the Design Modification. Commissioner Petersen moved, seconded by Commissioner McLemore. The motion was approved unanimously.*

*Vice-Chairman Lindsey asked if there was any discussion concerning the Main Motion, the site plan.*

*Commissioner Harrison moved to amend the original motion to include approval of the Site Plan with staff conditions, seconded by Commissioner Allen. The motion to amend the main motion was approved unanimously.*

*Kristen Corn, Attorney for the City of Franklin, advised that there was now a Main Motion*

*with 2 amendments to be voted on by the Planning Commission.*

*The motion, as amended, to approve the site plan with staff conditions, and approve the Design Modification, was approved unanimously.*

**Commissioner Allen moved, seconded by Commissioner Franks that the site plan for Item 14 be approved. Commissioner Petersen moved, seconded by Commissioner McLemore that the Design Modification for Item 14 be approved. Commissioner Harrison moved, seconded by Commissioner Allen that the site plan be amended to include staff conditions. All motions were approved unanimously by a vote of (7-0).**

**Aye:** 7 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Allen, Commissioner Orr, and Commissioner Lindsey

**Recused:** 2 - Commissioner Gregory, and Commissioner Hathaway

**Chairing:** 0

- 15.** Ranco Farms Subdivision, Final Plat, Revision 3, (Resubdivision of Lot 2), Two Commercial Lots On 17.89 Acres, Located At 770 Jordan Road. (CONSENT AGENDA)

**Attachments:** [6299 MAP Ranco Farms Subd, Rev 3, \(Resub Lot 2\)](#)

[Ranco Farms\\_FP\\_Rev3\\_COA](#)

[RANCO FARMS REV 3 6299- FINAL PLAT](#)

**This Planning Item was approved**

## **ZONING ORDINANCE TEXT AMENDMENTS**



16. PUBLIC HEARING: Consideration Of Ordinance 2016-45, To Be Entitled, To Be Entitled: "An Ordinance To Amend Chapter 3 Of The Zoning Ordinance Of The City Of Franklin, Tennessee, In Order To Add Parking Structures To The List Of Permitted New Uses/Encroachments In The FFO - Floodway Fringe Overlay District And Revise The Requirements For Parking Lots located in the FFO." (12/15/16 FMPC 9-0; 1/10/17 1ST BOMA Reading 8-0) SECOND OF THREE READINGS

**Attachments:** [ORD 2016-45 Amend FFO Parking Structures Law Approved \(3\)](#)

*Mr. Svoboda stated that this item has been discussed at several different Joint Conceptual Workshops and referred to the detailed information contained in the staff report.*

*Mr. Svoboda stated that proposed amendment removes the requirement that parking lots be completely constructed of pervious pavers, pervious asphalt, or pervious concrete, and adds Parking Structures to the list of permitted uses/encroachments that may be constructed and encroach into the 100-year floodplain/FFO boundary. The purpose of the parking lot change is to bring that Section of the Ordinance into compliance with the Stormwater Management Ordinance.*

*Mr. Svoboda described the proposed amendment for the addition of parking structures as a permitted encroachment and the two options for how parking structures could be constructed within the FFO. Parking structures must meet the requirements of the Stormwater Ordinance, Building Code and Floodplain Development Standards. Ground level parking would have to be required to be screened as required by the Zoning Ordinance. No basement or below ground level (grade) parking would be permitted, and no other uses would be permitted to be constructed above, or included as part of the Parking Structure located within the FFO. If a portion of the Parking Structure is located outside of the FFO, additional uses would be permitted to be constructed in the portion of the Parking Structure or building that is located outside of the FFO.*

*Mr. Svoboda stated that the proposed Amendment is in keeping with the policies outlined in the Franklin Land Use Plan for development within conservation areas and for the preservation of floodplains. The proposed amendment establishes strict standards for the development of Parking Structures and parking lots that minimize the amount of development permitted to encroach into the floodplain and have a minimal impact on the integrity of conservation areas.*

*For those reasons, Staff recommends that the Planning Commission recommend approval of Ordinance 2016-45 to the Board of Mayor and Alderman.*

*Chairman Hathaway asked for citizen comments. There were none.*

**Commissioner Lindsey moved, seconded by Commissioner Orr, that Ordinance 2016-45 be recommended to the Board of Mayor and Alderman for approval. The motion carried unanimously by the following vote:**

**Aye:** 9 - Commissioner Harrison, Commissioner Petersen, Commissioner McLemore, Commissioner Franks, Commissioner Gregory, Commissioner Allen, Commissioner Orr, Commissioner Lindsey, and Commissioner Hathaway

**Chairing:** 0

**NON-AGENDA ITEMS**

**ANY OTHER BUSINESS**

*Chairman Hathaway thanked each person for their contribution and wished everyone a Happy Holiday.*

**ADJOURN**

*There being no further business, the meeting adjourned at 7:25 p.m.*

---

*Chair, Mike Hathaway*

## RESOLUTION 2016-91

### **A RESOLUTION BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION TO ADOPT THE LAND USE PLAN MAJOR UPDATE, ENTITLED *ENVISION FRANKLIN*.**

**WHEREAS**, the City of Franklin is one of the fastest growing communities in the State of Tennessee and has experienced continual growth and development since the 1980s; and

**WHEREAS**, pursuant to *Tennessee Code Annotated* (T.C.A.) § 13-4-201, it is the function and duty of the Franklin Municipal Planning Commission (FMPC) to adopt an official general plan for the physical development of the City of Franklin; and

**WHEREAS**, the FMPC may from time to time amend, extend or add to the plan or carry any part of subject matter into greater detail; and

**WHEREAS**, the Franklin Land Use Plan has served as the long range plan for growth and physical development since 2004; and

**WHEREAS**, the City has completed a major update to the Land Use Plan, entitled *Envision Franklin*, that provides a framework for making land-use decisions, managing the quality of development, determining the timing and location of future growth, and directing investment and development activity; and

**WHEREAS**, the update process occurred over almost two years, with numerous public meetings, stakeholder interviews, and various forms of community outreach, including a formal public hearing held by the FMPC on January 26, 2017 in accordance with T.C.A. § 13-4-202; and

**WHEREAS**, *Envision Franklin* should work in partnership with Connect Franklin, Parks Master Plan, Capital Improvements Plan, Integrated Water Resources Plan, and other City planning documents as an interconnected, comprehensive approach to guiding the future of our fast growing City; and

**WHEREAS**, the FMPC finds that it is in the best interest of the City of Franklin and its Urban Growth Boundary to adopt *Envision Franklin*; and

**NOW THEREFORE, BE IT RESOLVED**, by the FMPC that *Envision Franklin* is hereby adopted on this 26<sup>TH</sup> day of January 2017

**BE IT FURTHER RESOLVED**, a copy of the adopted *Envision Franklin* shall be certified to the Board of Mayor and Aldermen, as required by T.C.A. § 13-4-202.

**ATTEST:**

**CITY OF FRANKLIN, TENNESSEE:**

**By:** \_\_\_\_\_

**Mike Hathaway**  
**Chair**

**By:** \_\_\_\_\_

**Emily Hunter**  
**Secretary**

**Approved as to Form:**

**By:** \_\_\_\_\_

**Shauna R. Billingsley**  
**City Attorney**

# ENVISION



# FRANKLIN

PRESERVING THE PAST, PLANNING THE FUTURE



# RECORD OF AMENDMENTS

**THIS PAGE IS RESERVED FOR DATES OF AMENDMENTS.**

PLAN ADOPTION DATE

AMENDMENTS AND DATES OF AMENDMENTS

# ACKNOWLEDGMENTS

Envision Franklin, The City of Franklin's Land Use Plan, would not have been possible without the contributions, feedback, and expertise of the City of Franklin leadership and staff. A special thank you also goes to the many residents who generously devoted their time and thoughts to the planning process in the hopes of building a stronger and more vibrant Franklin.

## BOARD OF MAYOR AND ALDERMEN

Dr. Ken Moore, Mayor

Beverly Burger, Ward 1

Dana McLendon, Ward 2

Michael Skinner, Ward 3

Margaret Martin, Ward 4

Clyde Barnhill, At-Large

Brandy Blanton, At-Large

Pearl Bransford, At-Large

Ann Petersen, At-Large

## FRANKLIN MUNICIPAL PLANNING COMMISSION

Mike Hathaway, Chair

Roger Lindsey, Vice Chair

Marcia Allen

Jimmy Franks

Lisa Gregory

Scott Harrison

Alma McLemore

Michael Orr

Ann Petersen, Alderman

## DEPARTMENT OF PLANNING AND SUSTAINABILITY

Bob Martin, Interim Planning Director, Retired July 2016

Emily Hunter, Planning Director

Kelly Dannenfelser

Andrew Orr

Annette Whitehurst

Amy Diaz-Barriga

Brad Baumgartner

Joey Bryan

Susan Coleman

Joshua King

Paula Kortas

Larry Mizell

Amanda Rose

James Svoboda

Brenda Woods

PREPARED BY



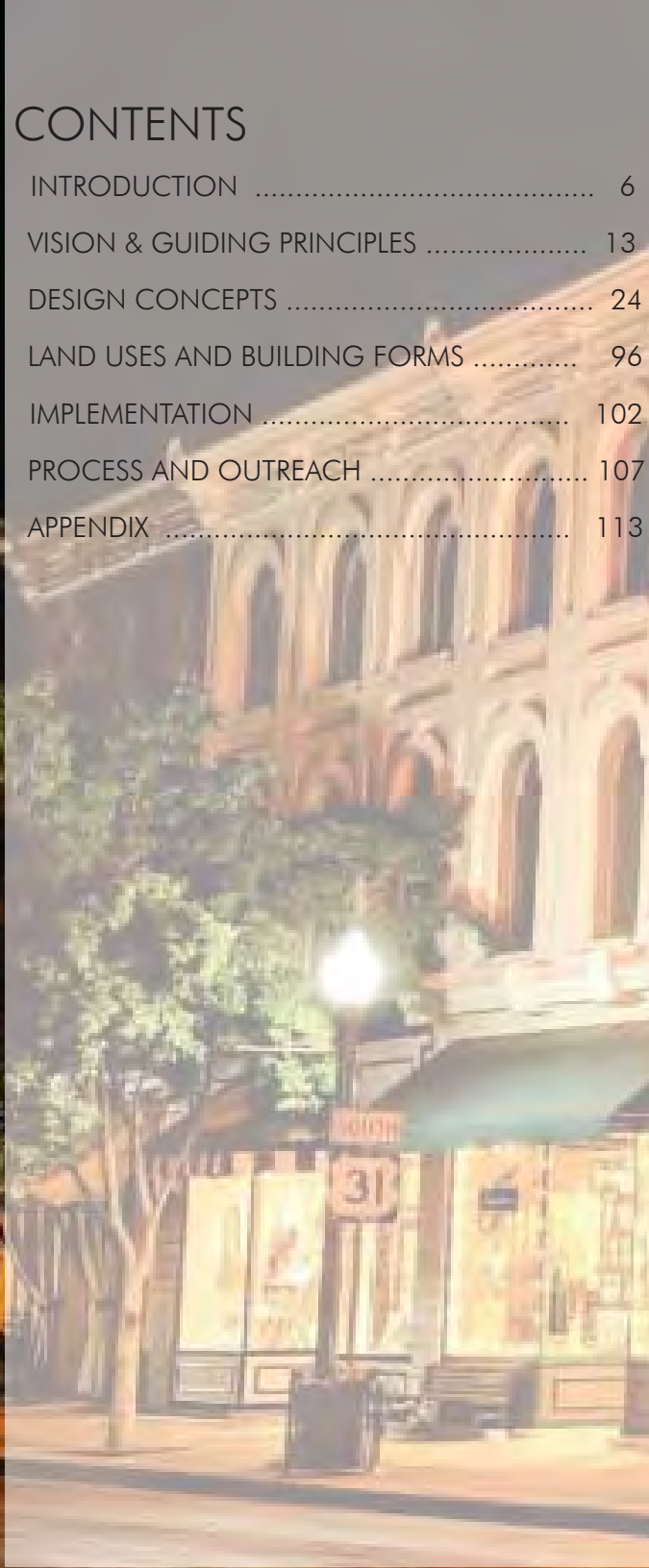
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ERNSTBERGER  
ASSOCIATES**

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# INTRODUCTION

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*“THE PLAN PROVIDES POLICIES THAT REINFORCE THIS COLLECTIVE VISION BY DIRECTING FUTURE DEVELOPMENT IN A WAY THAT STRENGTHENS THE CITY AND CREATES EXCEPTIONAL PLACES FOR PEOPLE.”*

## ROLE OF THE PLAN

Envision Franklin articulates the long-term vision of the kind of places that Franklin’s residents, businesses, and institutions want for their future. The Plan provides policies that reinforce this collective vision by directing future development in a way that strengthens the City and creates exceptional places for people.

The Plan sets forth a framework that provides support in making land-use decisions, managing the quality of development, determining the timing and location of future growth, and directing investment and development activity. It is meant to be a dynamic tool that responds to changes and is updated periodically.

The Tennessee Code Annotated Section 13-4-201 allows the City to create a general plan for physical development. According to law, the general plan must contain the following elements: (1) recommendations for the physical development of the area of the municipal planning jurisdictions; and (2) Identification of areas where there are inadequate or nonexistent publicly or privately owned and maintained services and facilities when the Planning Commission has determined the services are necessary in order for development to occur.

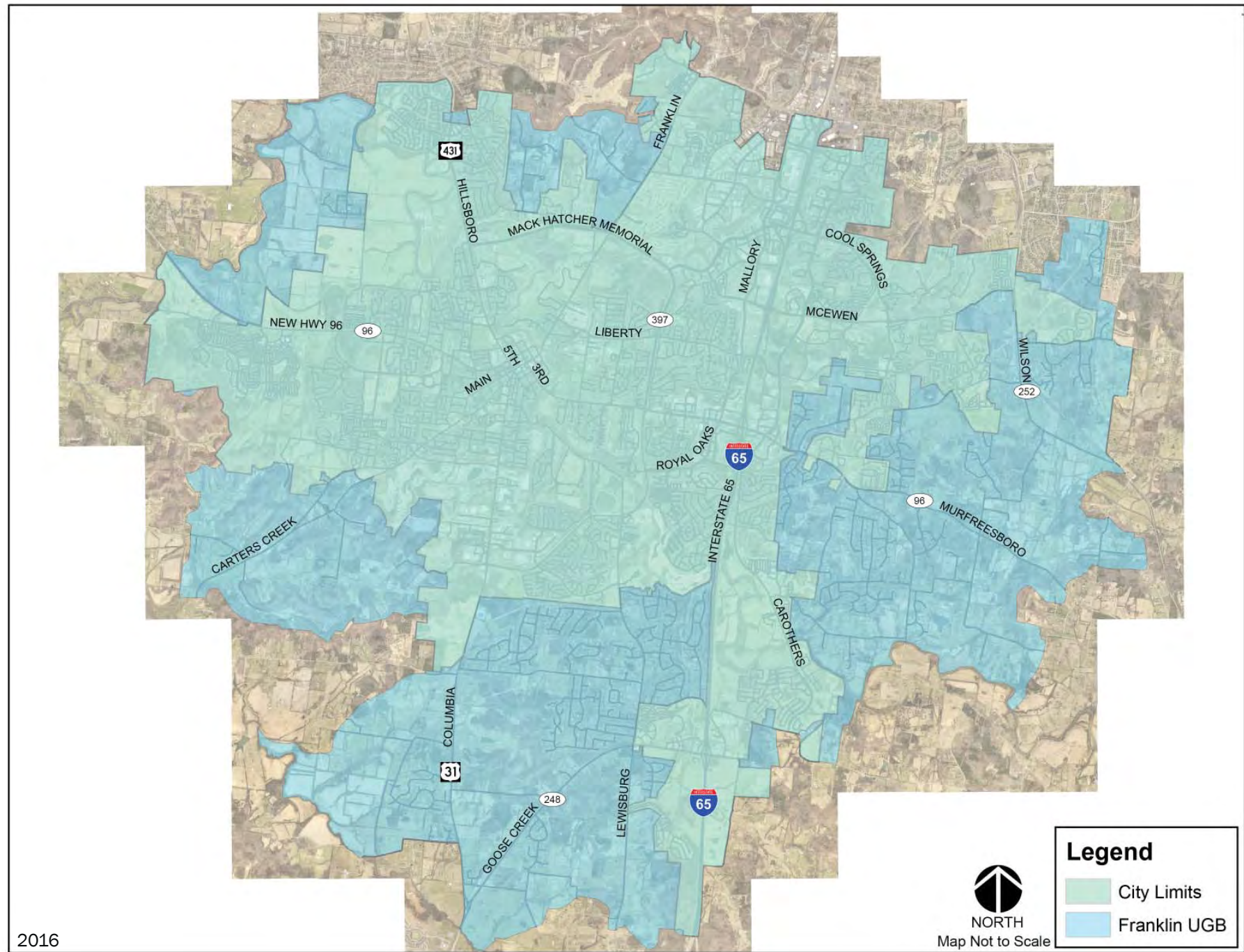
The Plan should work in partnership with the Connect Franklin, the Parks Master Plan, the Capital Improvements Plan, the Integrated Water Resources Plan, and other City planning documents. Each are components of an interconnected, comprehensive approach to guiding the future of the City.

## MAJOR OBJECTIVES

- Create exceptional places for people through design of new development, building form, uses, setbacks, activated streets, and pedestrian focus.
- Direct higher intensity and taller buildings toward I-65 where infrastructure can support a thriving regional economy comprised of a balanced mix of regional office, commercial, and multifamily residential uses.
- While intensity is promoted in areas with supportive infrastructure, the emphasis in historic areas is to preserve the established character and ensure contextually compatible infill development.
- Strategically locate neighborhood commercial and mixed use nodes to serve surrounding residential neighborhoods and help reduce traffic and trip length.
- Emphasize active transportation for both destinations and recreation by connecting land uses through multi-use paths, sidewalks, and trails.
- Protect Franklin’s natural beauty along its edges by preserving scenic corridors and viewsheds.



FIGURE 1.1: CITY AND URBAN GROWTH BOUNDARY



2016

*“BETWEEN 1980  
AND 2010, THE  
POPULATION  
OF FRANKLIN  
MORE THAN  
QUADRUPLED, TO  
62,487.”*

## PLANNING AREA

The City of Franklin municipal limits encompass an area of approximately 41 square miles, with an estimated population in 2015 of 73,000 (City of Franklin Planning & Sustainability Department). The planning area for this Plan includes the State-mandated Urban Growth Boundary (UGB), which includes an additional 34 square miles of land area surrounding the City. See Figure 1.1. Franklin is part of the Nashville-Davidson-Murfreesboro-Franklin, TN Metropolitan Statistical Area.

## HISTORIC TRENDS

Founded in 1799 as the seat of Williamson County, the City of Franklin existed as a distinct community connected to, but separate from, the rest of Tennessee. It was a small city surrounded by agricultural land and rolling hills, connected to surrounding regions by a transportation and communication network.

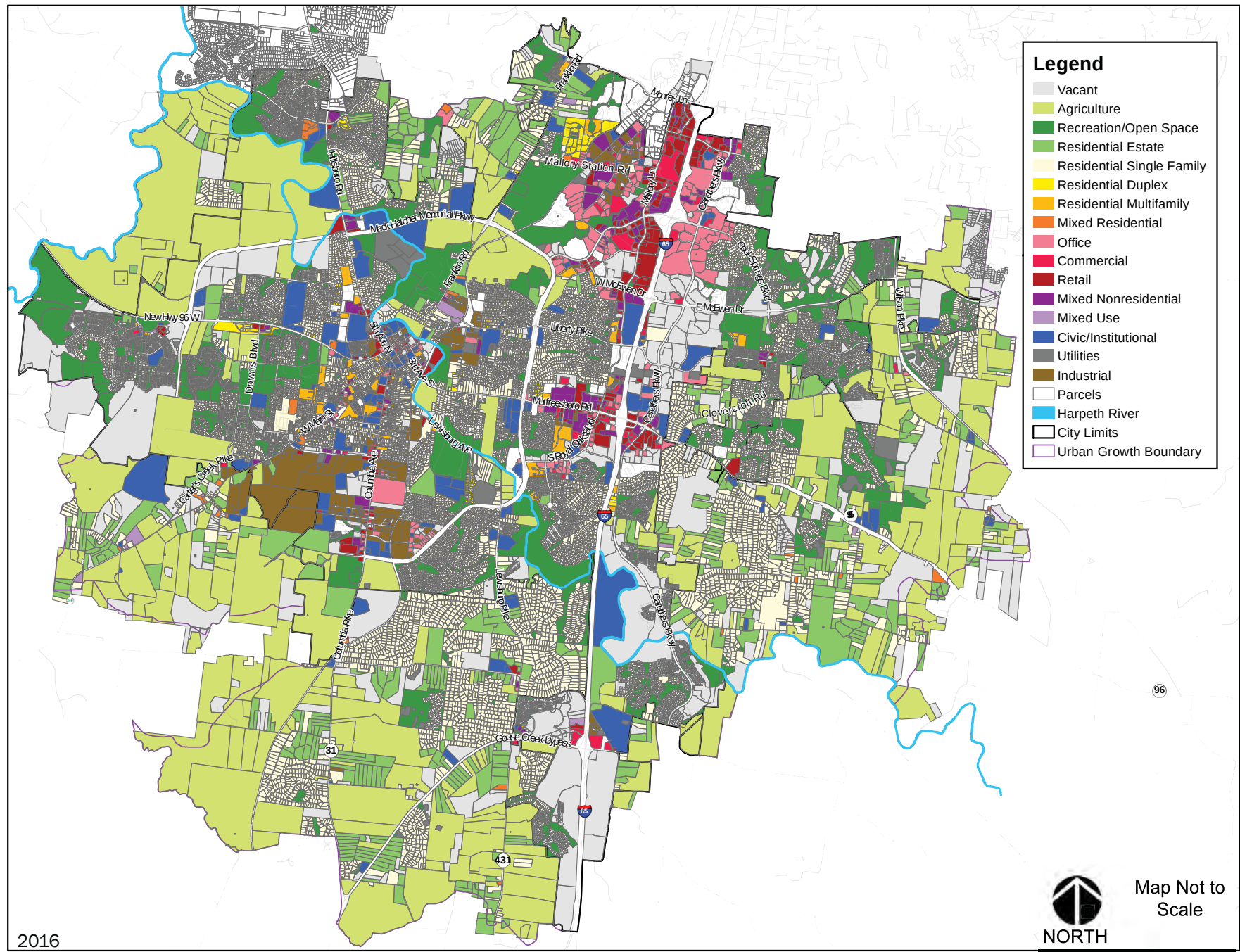
Franklin has a long and proud history with deeply rooted cultural, educational, governmental, and social institutions that have evolved over time. The City understands the critical importance of a strong community and its dedicated people, which have helped Franklin survive and prosper through many challenges and opportunities during its history.

The City was a stable community that prospered but did not grow much for the first 150 years. Then, as national trends toward suburbanization began in the mid-20th Century, Franklin began to experience change in both population and land area. See Figure 1.3. In 1950, the population was 5,475 and by 1980 the population had grown to 12,407 (U.S. Census). While the growth more than doubled over those 30 years, it was only a preview to the explosive change that would occur in the next 30 years. Between 1980 and 2010, the population of Franklin more than quadrupled, to 62,487 (U.S. Census). Similarly, Franklin grew from two square miles in the early 1960s to 41 square miles by 2010.





FIGURE 1.2: EXISTING LAND USE MAP



*“FRANKLIN  
CONTINUES TO  
BE AN AUTHENTIC,  
THRIVING  
CITY WITH A  
COMBINATION OF  
NEIGHBORHOODS,  
COMMERCE AND  
EMPLOYMENT  
CENTERS, AND  
NATURAL AMENITIES  
AND OPEN  
SPACES.”*

Franklin has become the seventh largest city in Tennessee and a key residential and economic generator for the Nashville region. This rapid growth has had significant impacts on land uses and the transportation system. See Figure 1.2. Growth brings positive impacts such as economic opportunity and prosperity; it can also impact quality of life due to increased traffic and loss of natural amenities and open spaces. While opinions are mixed on the rate of growth, major change is expected to continue. Projections indicate, that by 2040, approximately 133,650 people will live in the Franklin UGB, with employment at 126,700 jobs, which would be about a 50-percent increase from 2015. See Figure 1.4 and Appendix A.

It is a central community value that Franklin continues to be an authentic, thriving city with a combination of neighborhoods, commerce and employment centers, and natural amenities and open spaces. Franklin values its cherished historic resources and its flourishing economic growth. Both support each other and are vital to the overall health of the city. The Plan illustrates the vision for the community as it makes a myriad of decisions to guide the future of the City.

FIGURE 1.3: CITY OF FRANKLIN HISTORIC POPULATION CHART

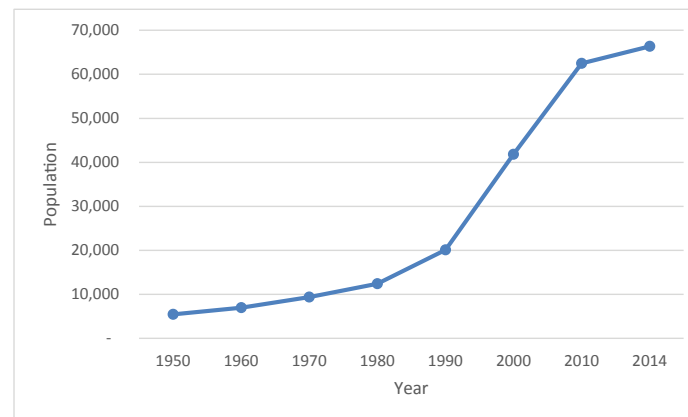


FIGURE 1.4: POPULATION AND EMPLOYMENT PROJECTION SUMMARY

| Year                                                   | Population | Employment |
|--------------------------------------------------------|------------|------------|
| 2013                                                   | 84,263     | 81,661     |
| 2015                                                   | 87,921     | 84,995     |
| 2020                                                   | 97,066     | 93,329     |
| 2030                                                   | 115,357    | 109,998    |
| 2040                                                   | 133,647    | 126,667    |
| Note: Figures represent City of Franklin and UGB area. |            |            |

*“THE VISION  
DEFINES THE  
INSPIRATIONAL  
LONG-TERM  
GOALS THAT  
WILL SERVE AS A  
CLEAR GUIDE FOR  
FUTURE DECISION  
MAKING.”*

## PLAN ELEMENTS

Each part of this Plan has a role to play. Some parts are broad and visionary, while others are specific and detailed. Each part of the plan can only be understood when working together with the rest of the Plan.

### Vision and Guiding Principles

The guiding principles define the inspirational long-term goals for creating exceptional places for citizens while preserving the City’s unique identity and character. The principles will serve as a clear guide for future decision making and they are organized around eight topics: Managed Growth, Economic Vitality, Vibrant Neighborhoods, Historic Preservation, Natural Beauty, Exceptional Design, Connected Community, and Context-Responsive Infill.

### Design Concepts

The design concepts are the keystones to this Plan and promote high-quality design while allowing land-use flexibility. Each design concept is mapped with desired land uses, building form, site design, transportation, and special considerations (related to a particular location). Along with the Guiding Principles, the design concepts provide general guidelines to be followed in the development design and review process.

### Land Uses and Building Forms

Ranges of land uses and building forms are identified within each design concept.

### Implementation

This section provides direction on turning the vision into reality through development decisions, policy-based decisions, land regulation tools, and coordination and partnerships. The process and considerations for Plan updates and amendments are outlined.

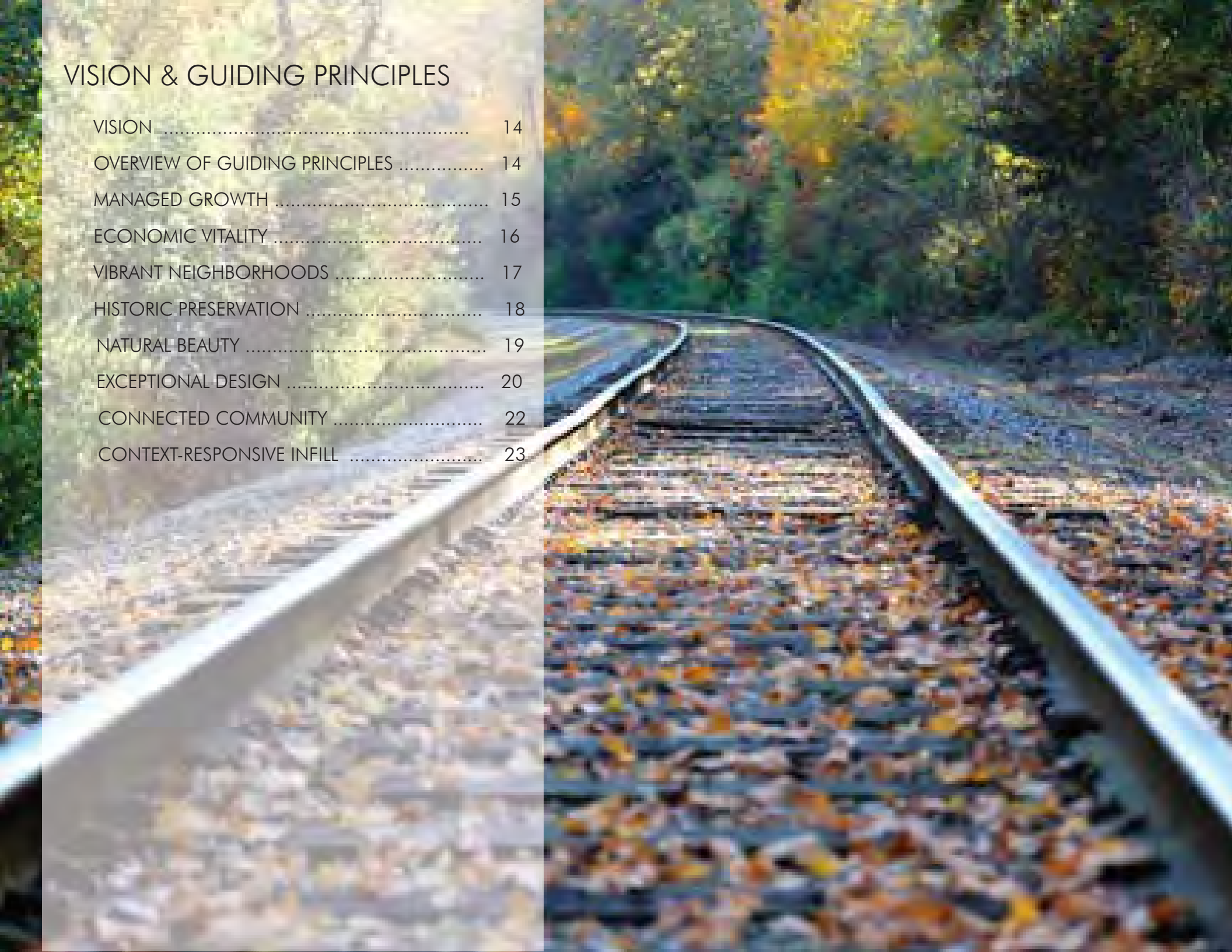
### Process and Outreach

This section summarizes the overall planning process, including the development suitability analysis, infill study, and identification of key issues facing the City. A significant component of the process was community engagement, which was undertaken through stakeholder interviews, a public workshop series, an infill working group, and social media.



## VISION & GUIDING PRINCIPLES

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*“THESE PRINCIPLES  
FURTHER DEFINE  
THE VISION AND  
REFLECT THE DESIRED  
PLANNING PRACTICES  
AND RESPECTFUL  
USE OF LAND AND  
RESOURCES.”*

## VISION

*Franklin will be a connected community of vibrant neighborhoods anchored by its historic downtown. The City seeks to strategically manage growth while preserving historic resources and natural beauty. Exceptionally designed places will enhance Franklin’s distinctive character and foster continued economic vitality.*

## OVERVIEW OF GUIDING PRINCIPLES

The guiding principles are long-term statements of direction for the City to advance the quality of development. The principles further define the vision and reflect the desired planning practices and respectful use of land and resources. The guiding principles are organized around eight themes:

1. Managed Growth
2. Economic Vitality
3. Vibrant Neighborhoods
4. Historic Preservation
5. Natural Beauty
6. Exceptional Design
7. Connected Community
8. Context-Responsive Infill

# MANAGED GROWTH

*THE CITY SEEKS RESPONSIBLE AND PURPOSEFUL GROWTH THAT ENHANCES QUALITY OF LIFE, PROVIDES A DYNAMIC MIX OF LAND USES, AND PRESERVES ITS SCENIC BEAUTY.*

- A.** Strategic growth is encouraged in locations supported by existing City infrastructure and services or where they are planned to be provided in an efficient and orderly manner. The extension of infrastructure and public services should be used as a tool that strategically directs where growth should take place, not as a reactive response to development.
- B.** Regional commercial and employment centers should be focused along regional transportation facilities and at intersections of arterial streets. These areas should have a more compact land-use pattern to support the efficient use of resources and alternative transportation.
- C.** Land-use policies, infrastructure improvements, and community facility investments should be coordinated to maximize efficiency and public benefit while minimizing negative impacts of growth.
- D.** Annexation within the UGB should be approached in a comprehensive manner that promotes contiguity and orderly growth, efficient delivery of municipal services, and proactive planning for future development.
- E.** Franklin should coordinate with Brentwood, Thompson's Station, Spring Hill, Williamson County, and the Nashville Area MPO to manage the quality and density of growth along the City/UGB boundaries.



## ECONOMIC VITALITY

*FRANKLIN AIMS TO RETAIN AND SUPPORT THE GROWTH OF EXISTING BUSINESSES, TO ATTRACT NEW BUSINESSES, AND TO STIMULATE A CLIMATE FOR ENTREPRENEURIAL VENTURES AND INVESTMENT.*

- A.** The City will foster technology-related businesses, corporate offices, and other businesses with low environmental impacts. Small businesses and incubator spaces are also encouraged to strengthen overall economic health.
- B.** Franklin should advance its diverse employment base through exceptional public-school and higher education opportunities for continued success as a healthy, prosperous city.
- C.** Tourism is a growing part of the economy, and the City's historic identity should be promoted as an economic asset for businesses, residents, and visitors.
- D.** Workforce housing fosters a diverse employment base necessary for continued economic vitality. A range of housing options and price points are encouraged to support both employees and the local economy.





# VIBRANT NEIGHBORHOODS

*THE CITY STRIVES TO CREATE INVITING NEIGHBORHOODS WITH MEMORABLE CHARACTER THROUGH A BALANCED MIX OF DWELLINGS, PARKS AND OPEN SPACES, CIVIC BUILDINGS, SHOPS, AND WORKPLACES.*

- A.** Neighborhoods should have a strong identity with intentional design and architectural features that are visually interesting. They will be beautiful places for multiple generations to enjoy, fostering community involvement and social activities, while maintaining a secure environment.
- B.** Vibrant neighborhoods are essential to the overall health of the community and should include a range of housing options and price points (both for rent and for sale) interspersed within neighborhoods across the City. A variety of lot sizes is encouraged. While larger lots provide individual back yard open space, smaller lots should be within walking distance to neighborhood pocket parks and tot lots.
- C.** Neighborhoods should have a pedestrian-friendly design that makes walking and biking pleasurable along streets and open spaces. Sidewalks, multi-use paths, and street trees will continue to be a cornerstone of neighborhoods and should be increased at every opportunity.
- D.** Neighborhoods should be connected to convenient amenities and services, including neighborhood gathering places with commercial services, restaurants, outdoor dining, coffee shops, and corner stores. Integrating and mixing land uses with pedestrian-oriented, traditional building form is encouraged, while conventional strip centers are discouraged.
- E.** Intensification and retrofitting of existing commercial areas and their surface parking lots with pedestrian-oriented retail and residential infill is encouraged. This will create more vibrant and inviting mixed-use centers, reduce auto dependence, and boost long-term economic health.
- F.** Infill development should be used to re-establish the pedestrian scale and activity along automobile-oriented corridors. This includes moving parking areas to the side or rear of buildings, shallow setbacks, incorporating pedestrian-scale signage and lighting, orienting the main building entrances to the street-side sidewalk, and designing buildings with windows that allow for views into the business.
- G.** The redevelopment of properties is encouraged on vacant lots that create “gaps” in the urban fabric and detract from the character of the street. Adaptive reuse of older, interesting buildings is encouraged to maintain the authenticity of Franklin and to tell its story over time.
- H.** Civic, institutional, and community facilities should be located in prominent locations that are well designed, compatible with the surroundings, accessible to all citizens, and meet the needs of each neighborhood.



# HISTORIC PRESERVATION

*HISTORIC FRANKLIN IS THE CHERISHED CENTER OF THE CITY AND WILL CONTINUE TO BE PROTECTED USING HISTORIC PRESERVATION TOOLS AND ENHANCED THROUGH TRADITIONAL DEVELOPMENT AND CONTEXTUAL ARCHITECTURE.*

- A.** The preservation of historic resources is of paramount importance to protecting Franklin's heritage and cultural identity. Historic resources and cultural amenities, including structures, neighborhoods, districts, landmarks, landscapes, cemeteries, streetscapes, and archaeological sites, should be identified, preserved, and protected. Preservation of these buildings and resources is environmentally responsible, further develops an economy for heritage tourism, creates jobs, and boosts property values.
- B.** The scale and character of historic neighborhoods must be protected through context-sensitive infill development. New buildings should relate to and strengthen the core characteristics of the neighborhood while mitigating adverse impacts on adjacent properties through thoughtful site design.
- C.** The preservation and rehabilitation of structures is generally encouraged, favoring building additions or adaptive re-use over demolition and replacement in historic areas.
- D.** Historic estates contribute greatly to Franklin's community character. The integrity of these historic properties, with their distinctive homes, outbuildings, and general aspects of their settings, should be preserved. Large front yards reinforce the prominence of these estates and should be preserved to respect their viewsheds.





## NATURAL BEAUTY

*FRANKLIN'S NATURAL FEATURES ARE IRREPLACEABLE ASSETS OF GREAT VALUE, AND THEY WILL BE PROTECTED WITH PLANNING AND CONSERVATION TOOLS AND CELEBRATED THROUGH CAREFUL SITE DESIGN.*

- A.** Scenic viewsheds and vistas should be preserved as amenities. These scenic resources include rolling hills, rural landscapes, Century Farms, rural corridors, floodplain, and forested areas.
- B.** Every opportunity should be taken to expand the public space along the Harpeth River, tributaries and streams through community open spaces, trails, viewing points, and canoe accesses.
- C.** The Harpeth River and its tributaries should be protected through significant riparian buffers. Streambank restoration is encouraged to provide wildlife habitat, slow stormwater runoff, improve air quality, reduce soil erosion, and reduce flooding.
- D.** Development should be restricted on hilltops, hillsides, and steep slopes. Mass grading is discouraged, and site disturbance should be minimized so that natural topography and landforms are incorporated into site design.
- E.** Established forested areas, existing tree canopies, specimen trees, and riparian buffers help to absorb air pollution, reduce glare, heat, and noise, and enhance the quality of life through health and recreational benefits. These resources should be preserved through careful site design. Clear cutting is discouraged.



# EXCEPTIONAL DESIGN

*HIGH-QUALITY DESIGN OF BUILDINGS, PUBLIC SPACES, STREETS, PEDESTRIAN FACILITIES, AND LANDSCAPING WILL WORK TOGETHER TO ENHANCE THE PUBLIC REALM AND CREATE EXCEPTIONAL PLACES FOR PEOPLE.*

## BUILDINGS

- A.** Buildings contribute to the fabric of the City, and they should reflect distinctive architectural style and high-quality materials that are unique to Franklin. Anywhere-architecture is not acceptable.
- B.** The front building facade of principal buildings should be oriented toward the street. Buildings should activate the street by creating an inviting pedestrian experience. Architectural elements should add visual interest at a human scale. Long, blank walls are discouraged.
- C.** Buildings at intersections should have a similar level of architectural detail for the side elevation as the front elevation. Distinctive architectural features that define the corner are encouraged. Buildings at the end of a street should be a visual terminus; architectural features should reflect the prominence of their location.
- D.** Parking should be secondary to the building and its relationship to the street. Generally, parking should be located behind the building, under the building, or in parking structures behind active ground-floor uses that activate the street. On-street parking should be encouraged. Views from the street should not be of parking lots.

- E.** Sustainable building practices and site design should be encouraged in new development and redevelopment by building up and not out. Energy-efficiency strategies, on-site renewable-energy generation, green infrastructure, and low-impact development techniques should be encouraged.

## PUBLIC REALM

- F.** Franklin should have great streets that create a vibrant public realm by using pedestrian-friendly design, street furnishings, lighting, street trees, and other plantings. Street-facing retail, outdoor dining areas, public art, and other elements are encouraged to further enhance the attractiveness and energy of the street.
- G.** Squares, plazas, and formal open spaces should be prominent and engaging public gathering spaces. These spaces should be well-defined focal points, visible from streets, and framed by buildings, not parking lots, to create points of interest that are compelling places for citizens. Public art, water features, or other points of interest are encouraged.
- H.** Passive open spaces should be thoughtfully designed around natural features, to highlight these amenities, while providing convenient public access for use and enjoyment, as well as connectivity to other open spaces.





# EXCEPTIONAL DESIGN

## SITE DESIGN

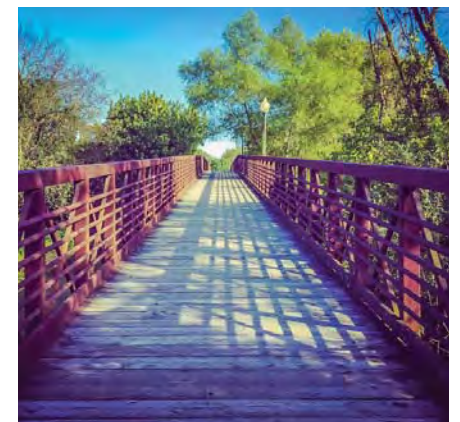
- I.** Development and redevelopment should be master planned, meaning the site should be planned for the long-range development of larger areas surrounding the individual site as a coordinated unit. Compatibility with surrounding areas, design, infrastructure and service delivery, access and circulation for vehicles and pedestrians, buildable areas and buildings, and transitions between incompatible uses should all be considered in the design process.
- J.** Site design should be centered on solid design principles, the creative articulation of space, and close attention to detail. Coordinated connectivity, building design and orientation, architecture, parking placement, and landscaping should all contribute to the creation of exceptional places.
- K.** Integrating and mixing land uses with pedestrian-scale building forms and community gathering spaces are encouraged. Wide, tree-lined sidewalks and well-designed street network should provide the foundation for connectivity between these uses.
- L.** Context-sensitive design and architecture are important elements that vary throughout the city. Size, scale, setbacks, materials, the rhythm of the street, and context should be considered as part of the design process.
- M.** Project design should carefully address the potential undesirable impacts on existing uses, including traffic, parking, circulation, safety issues, light and glare, noise, and other environmental concerns.



## CONNECTED COMMUNITY

*FRANKLIN VALUES A WELL-DESIGNED, EFFECTIVE, CONVENIENT, AND ACTIVE TRANSPORTATION NETWORK THAT CONNECTS RESIDENTIAL NEIGHBORHOODS, PARKS, SCHOOLS, EMPLOYMENT CENTERS, SHOPPING AREA, AND DOWNTOWN. THIS WILL BE ACHIEVED THROUGH A COMPLETE SYSTEM OF STREETS, BICYCLE AND PEDESTRIAN ROUTES, AND TRANSIT, NOT ONLY WITHIN THE CITY, BUT ALSO TO THE GREATER METROPOLITAN REGION.*

- A.** New development and redevelopment should contribute to a convenient and functional multi-modal transportation system by providing accessible street and pedestrian connections on all sides, integrating bicycle or multi-use paths, and incorporating transit provisions.
- B.** When a new development is proposed adjacent to an existing street stub, the new development must connect to it to improve the overall street network connectivity.
- C.** Key destinations, such as shopping areas, employment centers, and schools, should be located and planned in such a way that walking, bicycling, and riding public transit to these destinations are viable options.
- D.** Greenway corridors and interconnected open-space networks, especially along the Harpeth River, should be expanded and enhanced as vital community amenities. Sidewalks and multi-use paths connecting neighborhoods, open spaces, parks, and greenways are encouraged to provide access to passive and active recreation and to support healthy and active lifestyles.
- E.** Key routes into Franklin should use public improvements, such as signage, lighting, and decorative structures and landscapes, to create gateway entrances into the City to showcase community character and quality design.
- F.** The character of new streets and their associated elements should reflect the desired character and design of the development and contribute to its sense of place.





## CONTEXT-RESPONSIVE INFILL

*INFILL DEVELOPMENT SHOULD COMPLEMENT ITS SURROUNDINGS, BE SUSTAINABLE AND RESPECTFUL OF THE ENVIRONMENT, AND ENHANCE THE QUALITY OF LIFE AND THE ECONOMIC HEALTH OF THE COMMUNITY.*

- A.** Infill development in established areas should be compatible with the surrounding context and respect the City's unique historic character. This will be achieved by design that complements the fundamental neighborhood patterns and does not overwhelm or detract from existing buildings. See Appendix E.
- B.** Infill design should respect the block's existing lot widths, building forms and orientation, height and scale, siting, the rhythm of development along the street, front setbacks, and backyard patterns. The edges of an infill development should blend into adjacent neighborhoods or downtown without buffers.
- C.** Residential teardowns, especially when combining two or more lots, for the purpose of infill development of a different scale is discouraged because it can erode the character of established neighborhoods.
- D.** The trend is rising for tearing down smaller single-family dwellings within established neighborhoods and rebuilding larger, modern-scale dwellings on the same lot. These new structures should relate to and strengthen the core characteristics of the neighborhood, while mitigating adverse impacts on adjacent dwellings. Retaining the existing front facade and adding onto the dwelling in the rear are encouraged over complete tear-downs.
- E.** In certain areas, infill should foster transition in neighborhood form where change is expected or where enhancement of community character is desired. See Appendix E.





# DESIGN CONCEPTS

|                                 |    |
|---------------------------------|----|
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*“THE DESIGN CONCEPTS ARE FOUNDED ON THE PRINCIPLE THAT WELL-DESIGNED PLACES ARE ESSENTIAL TO PROTECTING AND ENHANCING COMMUNITY CHARACTER AND IMPROVING THE OVERALL LIVABILITY OF THE CITY OF FRANKLIN.”*

## OVERVIEW

The vision and guiding principles establish the overall direction and principal themes of this Plan. The framework established to implement the vision and guiding principles are the design concepts. The design concepts are founded on the principle that well-designed places are essential to protecting and enhancing community character and improving overall livability.

The design concepts establish a series of design templates based on location that set forth the way different land uses can be developed and mixed relative to each other. Each concept lists primary land uses or building forms, and, in many cases, these are encouraged to be mixed. Secondary uses or building forms are also identified, but these should be in a supporting or limited capacity. The design concepts include recommendations on building form (height, placement, and character), site design (landscape, amenities, access, and parking), and transportation (vehicular, bicycle and pedestrian, and transit). Finally, each design concept includes a set of precedent images that graphically describe the intent of the concept.

Many of the design concepts include an additional set of recommendations under the heading “Special Considerations.” These recommendations relate to specific neighborhoods, segments of key corridors, design at prominent intersections, or certain uses within the context of the design concept. In some instances, these special considerations are supported with additional character imagery and sub-area plans that depict preservation and infill development.

The design concept recommendations reference the Connect Franklin and Parks Master Plan and are intended to work in partnership with these plans. Together, they provide guidance for the development design and review process. A Corridor Character Matrix that identifies appropriate elements of street design based on a design concept’s character or context has been included in Appendix F and is intended to link the policies of Connect Franklin, the Franklin Transportation and Street Technical Standards, and this Plan.

FIGURE 4.1: DESIGN CONCEPTS MAP

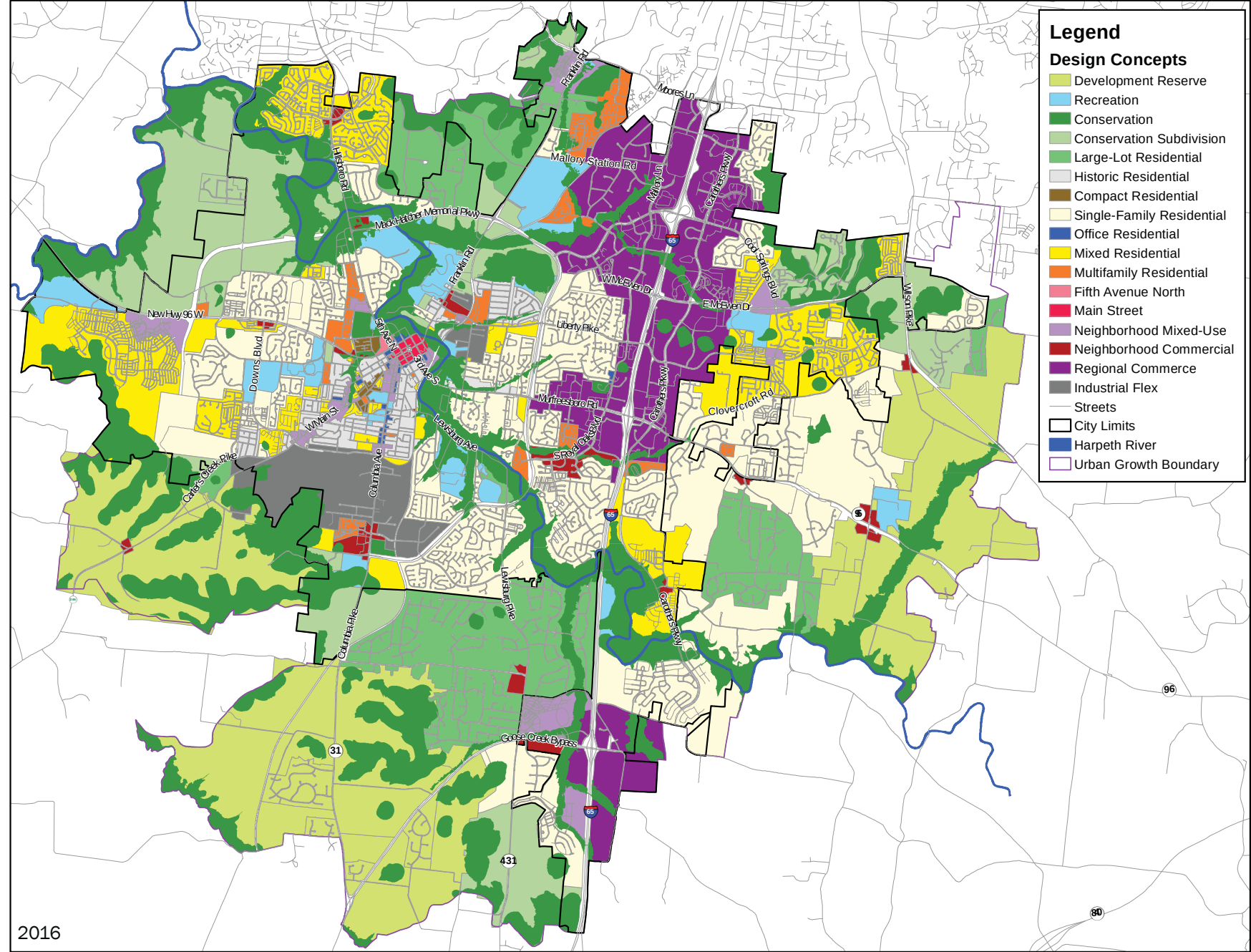
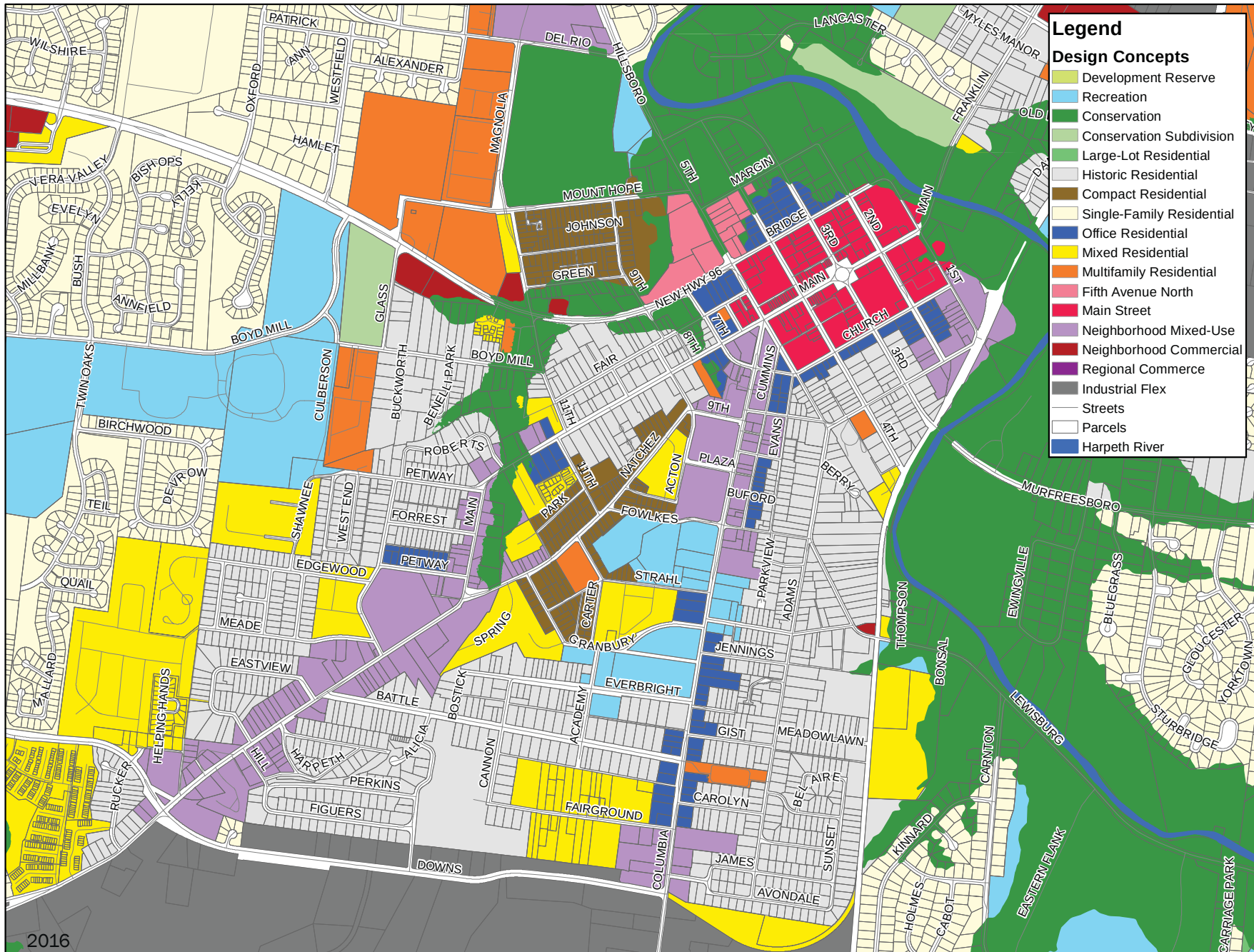




FIGURE 4.2: DESIGN CONCEPTS MAP - DOWNTOWN DETAIL





## COMPACT RESIDENTIAL

The Compact Residential design concept contains only the Hard Bargain and Natchez Street historic neighborhoods. These walkable neighborhoods typically consist of low-scale cottages, small building footprints, small lots, and shallow setbacks. These established characteristics of the historically significant neighborhoods should be preserved.

Infill and redevelopment should be contextually compatible and composed of primarily single-family cottages, with limited new duplexes, live-work units, and accessory dwellings. Local commercial may be appropriate at some intersections to serve the residents in the area. Adaptive reuse of historic structures is recommended over tear-downs for new construction.

*“INFILL AND  
REDEVELOPMENT SHOULD  
BE CONTEXTUALLY  
COMPATIBLE AND  
COMPOSED OF  
PRIMARILY SINGLE-FAMILY  
COTTAGES.”*



# COMPACT RESIDENTIAL

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES        | Primary            | Single-Family Residential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|             | Secondary          | Accessory Dwellings, Duplexes, Institutional, Live-Work Units, Local Commercial at intersections and where historically accurate, and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FORM        | Building Placement | Buildings and their main entrances should be oriented toward the street, and buildings should have shallow front, side, and rear-yard setbacks. Double frontage, reverse frontage, and flag lots are discouraged.<br><br>Bungalow-court designs, where several cottages front a common open space, are also appropriate.                                                                                                                                                                                                                                                                                                                                          |
|             | Building Character | The historic identity of the area should be preserved through special attention to massing and scale of new development.<br><br>New buildings should have a cottage building form designed to be compatible with the predominant character along the street and should be sensitive to nearby buildings. Accessory dwellings should fit in contextually to the principal dwelling.                                                                                                                                                                                                                                                                                |
|             | Building Height    | New buildings should appear to be within one-half story of the average building height of existing structures along the same block face. In no case should the building height exceed two stories.<br><br>New two-story dwellings should not detract or overwhelm the existing historic structures.                                                                                                                                                                                                                                                                                                                                                               |
|             | Lot Size           | Lot depths, sizes, and widths vary between streets, as well as along individual streets, and should be designed to ensure that new lots are appropriately sized for each street and to promote contextual compatibility.<br><br>Minimum of 4,000 square feet                                                                                                                                                                                                                                                                                                                                                                                                      |
| SITE DESIGN | Landscape          | Infill developments should have landscaping and street trees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|             | Amenities          | Institutional uses and public parks serve as active and passive recreation and meet the open-space needs in this area. Bicycle and pedestrian connections to these locations should be enhanced and improved.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|             | Access             | Lots should be accessed from alleys or by driveways from the street.<br><br>Streets should have multiple connections that allow for opportunities to walk to local destinations by a variety of routes.<br><br>Streets should be designed for slower speeds to allow for mixing pedestrian and vehicular traffic.<br><br>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments. |
|             | Parking            | On-street and off-street                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

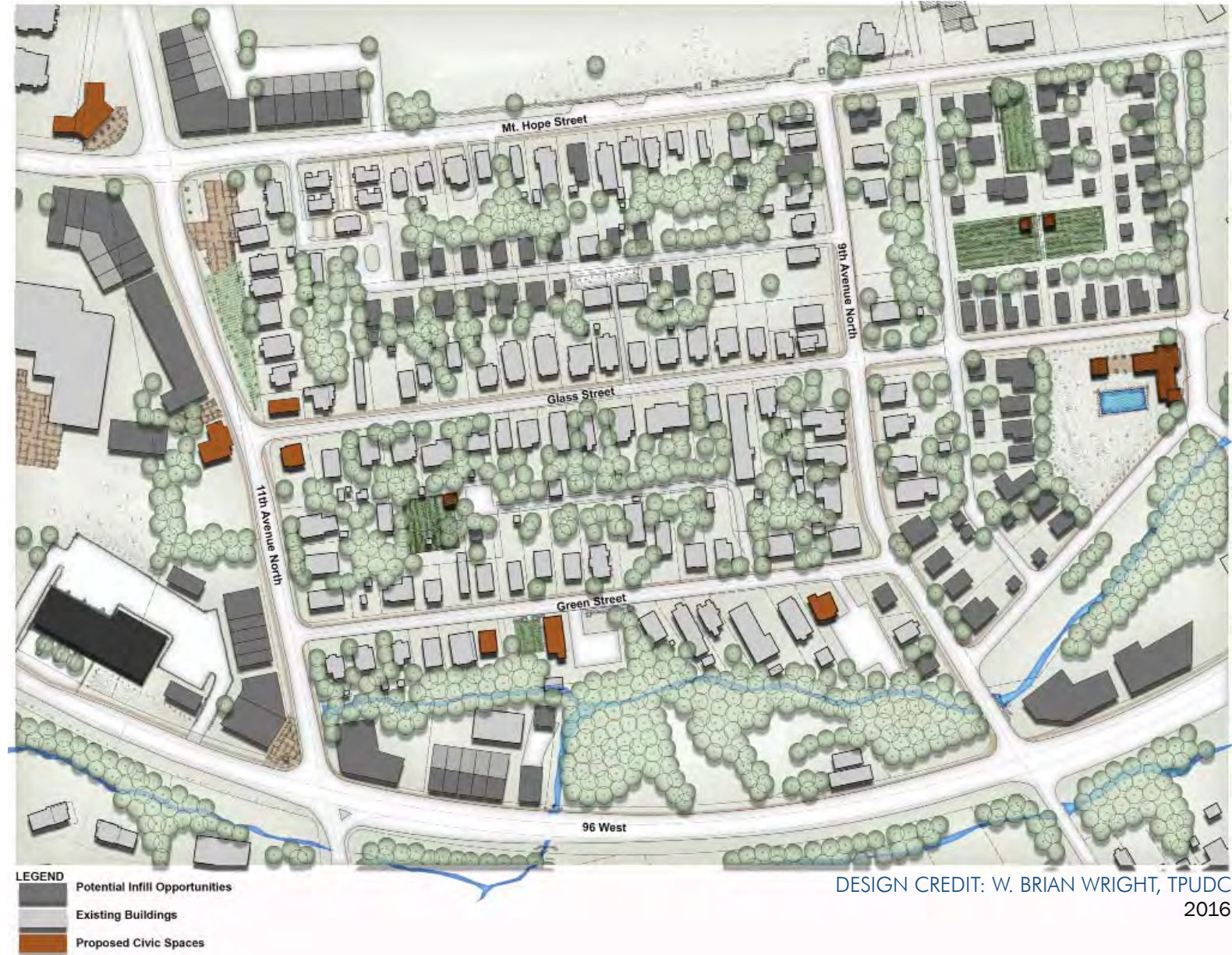
## COMPACT RESIDENTIAL

|                        |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION         | Vehicular                    | <p>Vehicular connections should be provided through adjacent developments and connect to the existing street network. Infill development should provide an interconnected street and sidewalk network in a grid or modified grid pattern.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Bicycle and Pedestrian       | <p>New development should provide sidewalks, multi-use paths, and trails throughout its open spaces. They should connect to other conservation areas, paths, adjacent uses, and streets. These bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                        | Transit                      | <p>Transit stops and/or stations should be provided along existing or planned routes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SPECIAL CONSIDERATIONS | Hard Bargain Neighborhood    | <p>The building footprints shown in Figure 4.3, in light gray, are existing dwellings that are expected to remain, some possibly benefiting from rehabilitation. The building footprints shown in dark gray are proposed new buildings, some being townhouses, others being mixed-use or live-work units, but most being single-family dwellings. The orange building footprints depict civic uses, such as churches, community centers, and museums; some are existing, and some are proposed.</p> <p>The extension of Johnson Alley continues the existing, organic pattern by which some dwellings already face the alley.</p> <p>Homeowners along Glass and Mt. Hope Streets will have the opportunity to build accessory dwellings with access from the extended alley (which would become a front lane), or perhaps some lots could be subdivided so that new dwellings could front on the alley-turned front lane. Lots smaller than 4,000 square feet may be appropriate. The basketball court, community gardens, opportunities for residents to operate neighborhood businesses, and the overall compatibility with existing dwellings contribute to the small-town character of the City.</p> <p>The plan improves efficiency of land use, reinforces the grid street network already established in the neighborhood, and adds a mix of uses within and adjacent to the original development of Hard Bargain. The plan foresees the future elimination of existing incompatible uses adjacent to Hard Bargain and establishes neighborhood retail and other compatible uses that will make it a more walkable community.</p> |
|                        | 11th Avenue & Natchez Street | <p>A potential infill parcel is east of 11th Avenue, north of Natchez Street (see Appendix E). A single-family residential use is appropriate, such as with a bungalow-court design. Duplexes designed as single-family dwellings may also be appropriate.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                        | Institutional Uses           | <p>Institutional uses may be appropriate if their locations do not negatively impact access, scale, and traffic of the surrounding area. These uses are encouraged to be located at major intersections of arterial and collector streets. The conversion of dwellings in existing residential areas for institutional uses is not appropriate.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



# COMPACT RESIDENTIAL

FIGURE 4.3: CONCEPTUAL PLAN - HARD BARGAIN MASTER PLAN





# CONSERVATION

The Conservation design concept contemplates as little development as possible in order to protect sensitive land and environmental features. These Conservation areas include cemeteries, floodplains, hillsides with steep slopes, hilltops, and some existing public-park properties. Conservation of floodplains, hillsides, and hilltops has an inherent long-term value. The preservation of floodplains has a direct public-safety purpose and helps to minimize property damage during periods of flooding. Disruption in any Conservation area should be limited to preserve the function, form, and character of the area.

Because the Conservation design concept follows environmental features, the boundaries do not always align with parcel lines. Therefore, some properties may have the Conservation design concept and another design concept. It is intended that the majority of new development occur in the area where the second design concept applies.

New development should be designed around conservation areas to highlight them as community amenities with pedestrian and bike systems that will connect the entire conservation design concept throughout the city. Pedestrian connections and trails are highly encouraged along the river, along stream corridors, and through scenic areas. Expanded connections to downtown and historic parks from surrounding residential areas are desired.

*“CONSERVATION  
OF FLOODPLAINS,  
HILLSIDES, AND  
HILLTOPS HAS AN  
INHERENT LONG-  
TERM VALUE.”*



# CONSERVATION

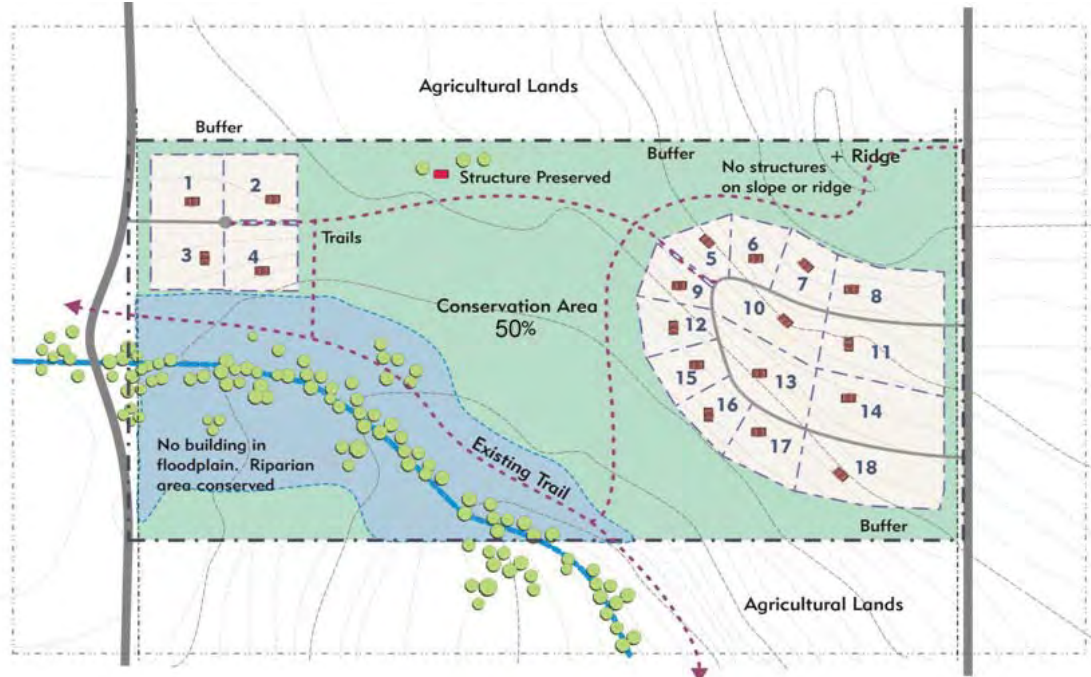
|                |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES           | Primary                | Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                | Secondary              | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| FORM           | Building Placement     | Development is limited to non-intrusive enhancements designed to provide public access. These are limited to access drives, parking areas, parks, shelters, trails or related uses upon a determination that the environmental integrity of the area can be protected.                                                                                                                                                                                                                                                                            |
|                | Building Character     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | Building Height        | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SITE DESIGN    | Landscape              | Preservation of existing features, including hilltops, hillsides, steep slopes, stream banks, riparian corridors, tree rows, forested areas, and specimen trees.                                                                                                                                                                                                                                                                                                                                                                                  |
|                | Amenities              | Canoe launches, trails, shelters, etc.<br><br>The Harpeth River is intended to have a public edge that is physically and visually accessible to the public through a greenway network that extends north to south along the river. The purpose is to provide environmental educational opportunities, points for passive recreation, small informal gatherings and scenic vistas. Selective clearing may be allowed to provide for these amenities.                                                                                               |
|                | Access                 | Internal streets should be designed and limited to minimize the impact on existing environmental features.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                | Parking                | Parking may be provided, with limited impact to the conservation areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                | Vehicular              | New streets should be limited to essential connections and should be designed per the Corridor Character Matrix and Connect Franklin.                                                                                                                                                                                                                                                                                                                                                                                                             |
| TRANSPORTATION | Bicycle and Pedestrian | A coordinated pedestrian system should be provided that will connect the entire conservation design concept throughout the city. New development should provide pedestrian connections and trails throughout its conservation areas. These trails should provide connections to other conservation areas and trails, adjacent uses/properties, and streets.<br><br>Bicycle, multi-use path, and pedestrian connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, the Parks Master Plan, and this Plan. |
|                | Transit                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

# CONSERVATION SUBDIVISION

The Conservation Subdivision design concept supports primarily single-family residential development that clusters lots and infrastructure and sets aside a substantial amount of property as permanently protected open space in its natural state. New development should preserve a minimum of 50 percent open space, strategically targeted toward scenic vistas, greenways, pastures, trails, woodlands, or other uses that maintain scenic character, protect habitat value, and contribute to the quality of life for residents.

These areas generally have higher quantities of environmental resources in rural areas or along the periphery of the City that are desired to be preserved. Less dense development, planned with large, contiguous tracts of open space to be retained in perpetuity, is expected in these locations.

*"...OPEN SPACE  
SHOULD BE MASTER  
PLANNED IN LARGE,  
CONTIGUOUS TRACTS  
AND RETAINED IN  
PERPETUITY AS SCENIC  
VISTAS, GREENWAYS,  
PASTURES, TRAILS,  
WOODLANDS...."*



# CONSERVATION SUBDIVISION

|      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES | Primary            | Single-Family Residential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|      | Secondary          | Big Houses, Duplexes, Farmstead Compound, Institutional, and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| FORM | Building Placement | <p>Residential lots and infrastructure should be located to respect natural features and to maximize the proximity of lots to open space. Residential lots should be clustered to preserve a minimum of 50 percent of natural open space.</p> <p>Grading techniques that dramatically alter site vegetation and topography should be prohibited. Developments should use the natural, existing topography and minimize grading to the maximum extent practicable.</p> <p>Buildings and their main entrances should be oriented toward the street. Double frontage, reverse frontage, and flag lots are discouraged.</p> <p>Front-yard setbacks should be consistent along each block, but may vary between neighborhoods or between sections of neighborhoods. Side- and rear-yard setbacks of new buildings should be designed to maintain privacy for both new and existing neighboring properties.</p> |
|      | Building Character | <p>Architectural sensitivity for new developments should be observed. The style and architecture should draw from the character of the surrounding area and historically significant buildings.</p> <p>Detached garages and attached garages that face the side or rear are encouraged over attached, front-facing garages for single-family residential development. If attached, front-facing garages are proposed, the garage should be recessed from the front facade of the dwelling. Other dwelling types, such as big houses and duplexes, should have rear-entry garages.</p>                                                                                                                                                                                                                                                                                                                     |
|      | Building Height    | Maximum of two and one-half stories                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|      | Lot Size           | <p>Lots on the periphery of developments should be sized to be consistent with the existing lots of adjacent neighborhoods.</p> <p>Single-family lots with dwellings having attached garages that face the front, side, or rear should have a minimum width of 65 feet and a minimum lot size of 7,150 square feet.</p> <p>Single-family lots with dwellings having front-facing detached garages should have a minimum width of 50 feet and a minimum lot size of 5,500 square feet.</p> <p>Single-family lots with dwellings accessed by an alley should have a minimum lot width of 45 feet and a minimum lot size of 4,950 square feet.</p>                                                                                                                                                                                                                                                           |



## CONSERVATION SUBDIVISION

|                 |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN     | Landscape                                        | <p>Fifty percent or more of developments should be preserved as permanent open space designed around existing natural features, such as hillsides and hilltops, riparian corridors, and tree rows. If the farmstead compound is used, a higher percentage of open space should be dedicated to offset the intensity of this use. Generally, 70% open space should be preserved.</p> <p>Common design elements, such as fieldstone walls and wood plank fencing, should be preserved and used along major thoroughfares to reflect Franklin's community identity.</p> <p>Historic site features such as cemeteries, barns, accessory structures, and agriculturally related features should be preserved in their locations and context with careful site design around them to preserve the character of Franklin.</p> |
|                 | Amenities                                        | Amenities, including multi-use paths, should be provided within the open space.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                 | Access                                           | <p>Lots should be accessed from alleys or by driveways from the street. Streets should have multiple connections in order to provide a variety of routes.</p> <p>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments.</p>                                                                                                                                                                                                                                                                                                          |
|                 | Parking                                          | Parking should be to the side and rear of buildings or on-street.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| TRANSPORTATION  | Vehicular                                        | <p>Vehicular connections should be provided through adjacent developments and connect to the existing street network.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                 | Bicycle and Pedestrian                           | New development should provide sidewalks, multi-use paths, and trails throughout its open spaces. They should connect to other conservation areas, paths, adjacent uses, and streets. These bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                 | Transit                                          | Transit stops should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SPECIAL CONSID. | Boyd Mill Avenue, Magnolia Hall Historic Estate  | The historic home and its setting and viewsheds should be preserved. Limited clustered single-family infill, not exceeding five new dwellings, in order to preserve the historic estate and its setting, may be appropriate on the perimeter of the historic site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                 | New Hwy 96 West, Centennial Hall Historic Estate | The historic home and its prominent front yard should be preserved. Limited clustered infill may be appropriate if designed to minimize obstruction of its viewshed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                 | Columbia Pike, South of Mack Hatcher Parkway     | This scenic corridor should have deep setbacks of at least 250 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## CONSERVATION SUBDIVISION

|                        |                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Franklin Road, Jasmine Grove Historic Estate in Myles Manor | Limited clustered single-family infill, not exceeding four new dwellings, to preserve the historic estate and its setting, may be appropriate on the south side of Jasmine Grove, adjacent to Lancaster Drive. Infill development should reflect the form and character within Myles Manor Subdivision.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                        | Franklin Road and Mack Hatcher Parkway                      | <p>Franklin Road is the last rural gateway into Downtown Franklin. Setbacks should be at least 150 feet along Franklin Road and Mack Hatcher Parkway in order to preserve the scenic viewshed, and parallel drives should not be located within the setback. The orientation of structures should address Mack Hatcher Parkway and Franklin Road.</p> <p>Commercial uses are not appropriate within this rural corridor.</p> <p>The Big House and Farmstead Compound concepts may be appropriate in addition to single-family residential. Under these concepts, three-story primary structures may be appropriate outside of Mack Hatcher Parkway with Development Plan approval by BOMA.</p> <p>The form, architecture and style of new buildings should draw from the surrounding area and from historically significant buildings. Some of the historic dwellings in the area were built in the early nineteenth century and have Federal and/or Greek Revival architecture. The height of new buildings should be no taller than those nearby historic resources.</p> <p>Street infrastructure improvements to Franklin Road should be context sensitive in coordination with TDOT and City Streetscape Plans. Alternative options should be taken to avoid widening Franklin Road. Streetscape improvements to Franklin Road should be rural in nature, including informal, natural landscaping and traditional rural elements.</p> <p>New local streets should be rural in character, with swales instead of curbs, informal street-tree plantings, and traditional rural elements, such as stone walls and wood-plank fencing.</p> <p>Daniel McMahon Lane should be the closest access on Franklin Road from Mack Hatcher Parkway in the southwest quadrant. Future development in the northwest quadrant of Franklin Road and Mack Hatcher Parkway Intersection should have a street network that connects to Ernest Rice Lane. Legends Club Lane should be the primary vehicular access on Franklin Road for future development in the northeast quadrant of the intersection and improvements should include a left turn lane. If the northwest quadrant develops, then access shall be coordinated to create a four way intersection with signalization, subject to TDOT approval. Access in the southeast quadrant is limited and should be further studied.</p> <p>Trail interconnectivity should be promoted by using current and future planned trails, together with trails along Spencer Creek and the Harpeth River.</p> <p>Grading that dramatically alters site vegetation and topography should be prohibited. Development should use the existing, natural topography and minimize grading to the maximum extent practicable.</p> |

## CONSERVATION SUBDIVISION

|                        |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Franklin Road, Riverview Historic Estate                                                                           | The rural viewshed along Franklin Road should be preserved, with infill to be located behind the historic home and its accessory structures. Infill could be either all single-family residential or a mixture of dwelling types. Some townhomes may be appropriate. Building heights should transition from one to two stories along Lancaster Drive to three stories along the Harpeth River, as long as the perceived height from Franklin Road is less than the historic home.                                                                                                                                                                                                                                                                                                             |
|                        | Lewisburg Pike                                                                                                     | New development should have deep setbacks to respect the existing character and should be sensitively designed around historic structures. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        | Lynwood Way                                                                                                        | New development should be set back from Lynwood Way in order to preserve the scenic beauty of the area. A viewshed study should be provided during the review process to ensure the preservation of natural view corridors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                        | Mack Hatcher Parkway/Cool Springs Boulevard Intersection                                                           | Small-scale institutional uses and public recreational uses are the only appropriate nonresidential uses in this location. The floodplain, hillsides and hilltops, scenic viewshed, and steep slopes are to be preserved, and a 150-foot corridor setback from Mack Hatcher Parkway should be provided. Parking should be provided for the Roper's Knob public park.                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                        | Morningside Drive                                                                                                  | Infill or redevelopment along Morningside Drive or on the adjacent parcel to the north (hill across from Harlinsdale Park) should respect the rural character of Franklin Road and Harlinsdale Park. Infill must be nestled behind the hill (across from Harlinsdale Park) to maintain the rural viewshed. See Appendix E.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                        | New Highway 96 West                                                                                                | This scenic corridor should have deep setbacks of at least 300 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area. Commercial and office uses should not front along New Highway 96 West.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                        | Northwest Quadrant of Mack Hatcher Parkway, between Hillsboro Road and New Highway 96 West to the edges of the UGB | Duplexes and townhouses, in addition to the residential land uses supported in this design concept, are appropriate in this area as a continuation of the traditional residential development pattern found at Westhaven on the south side of New Highway 96 West. Future uses at the intersection of Del Rio Pike and Mack Hatcher Parkway may include limited local commercial and transitional office uses to support the surrounding residential neighborhoods. Development should be master planned and integrated into the design of the entire area. Transportation infrastructure is limited in this area. New development shall enhance and improve the street network. Large residential developments may not be appropriate until Mack Hatcher Parkway is constructed in this area. |
|                        | Institutional Uses                                                                                                 | Institutional uses may be appropriate if their locations do not negatively impact access, scale, and traffic of the surrounding area. These uses should be located at major intersections of arterial and collector streets or designed within master-planned developments so that increased traffic is handled internally. Additional stories may be appropriate for institutional uses. The conversion of dwellings in existing residential areas for institutional uses is not appropriate.                                                                                                                                                                                                                                                                                                 |

## DEVELOPMENT RESERVE

The Development Reserve includes areas along the fringes of the Franklin UGB and is characterized by agricultural uses and single-family residential uses on significant acreage. Public sewer access is unavailable in these areas. Rural road widths are not capable of handling high traffic volumes. New growth should only be encouraged in areas where adequate public water, sewer, and streets are available or are planned.

A suitability analysis was performed to help determine where development reserve areas are located. These areas should be subject to further planning in coordination with planned infrastructure improvements and public-service delivery. Until adequate infrastructure is available, the land-use recommendation is single-family residential on lots of two acres or more. New buildings should be designed around natural features to protect forested areas, hillsides and hilltops, streams, and tree rows.

Historic site features such as cemeteries, barns, accessory structures, and agriculturally related features should be preserved in their locations and context with careful site design around them to preserve the character of Franklin.

*“NEW BUILDINGS  
SHOULD BE DESIGNED  
AROUND NATURAL  
FEATURES TO  
PROTECT FORESTED  
AREA, HILLSIDES AND  
HILLTOPS, STREAMS,  
AND TREE ROWS.”*





## FIFTH AVENUE NORTH

The Fifth Avenue North design concept represents an important commercial corridor leading into the historic downtown, through the Harpeth River and Sharps Branch floodplain. The intent is to improve upon the area and to transform the character of the built environment in order to extend the vibrant downtown core.

While the City generally requires locating new development outside of floodplain limits, redevelopment of this portion of the corridor (developed prior to Federal or local floodplain regulations) is appropriate to support the historic resources and viability of the downtown area. Land aggregation and redevelopment of properties of a half-block size or greater is highly encouraged in order to achieve cohesive design and land-use efficiency.

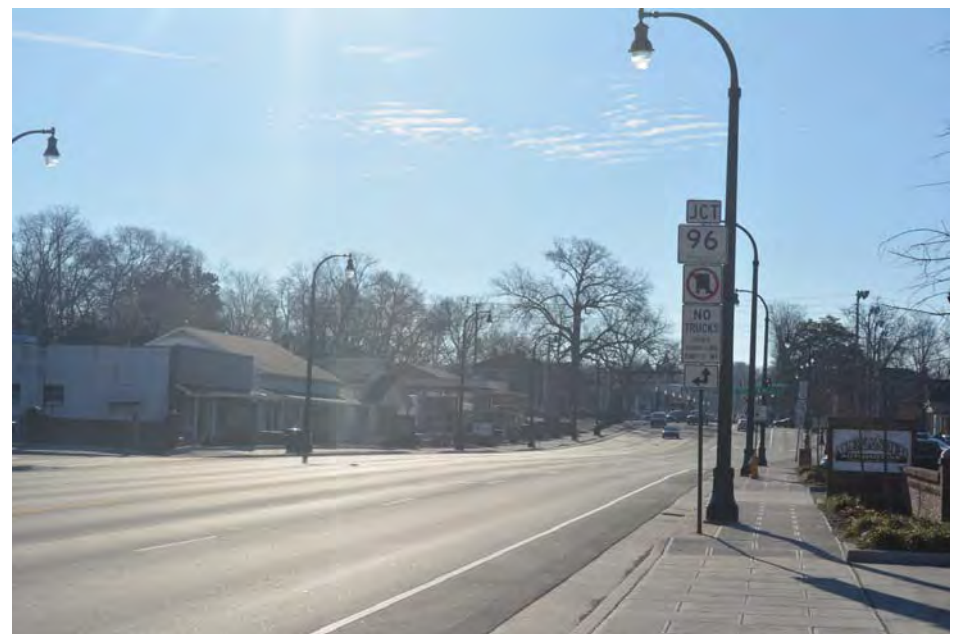
*"THE INTENT IS TO  
IMPROVE UPON  
THE AREA AND TO  
TRANSFORM THE  
CHARACTER OF THE  
BUILT ENVIRONMENT  
IN ORDER TO  
PROMOTE A VIBRANT  
DOWNTOWN CORE."*

FIFTH AVENUE NORTH - CONCEPTUAL EXAMPLE



DESIGN CREDIT: BEN JOHNSON

FIFTH AVENUE NORTH - EXISTING PHOTO



## FIFTH AVENUE NORTH

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES        | Primary            | Institutional, Local Commercial, and Professional and Transitional Office                                                                                                                                                                                                                                                                                                                                                                                   |
|             | Secondary          | Parking and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FORM        | Building Placement | Along Fifth Avenue North, buildings should have shallow front-yard setbacks and may have zero side-yard setbacks.                                                                                                                                                                                                                                                                                                                                           |
|             |                    | Along Fourth Avenue North, building setbacks should be consistent with adjacent residential buildings so as to maintain the residential character of the block.                                                                                                                                                                                                                                                                                             |
|             | Building Character | Along Fifth Avenue North, flat roofs with parapet walls are appropriate with the intent to deemphasize the overall building height. A corner architectural treatment should be designed for buildings at the intersection of Bridge Street and New Highway 96 West. Architectural features, such as an arcade, are appropriate to span mid-block driveway entrances.                                                                                        |
|             |                    | Along Fourth Avenue North, redevelopment should consist of a series of smaller buildings with traditional residential character so as to continue the established rhythm and scale of the street.<br><br>The design of buildings adjacent to the National Register historic cemeteries should be contextually sensitive.                                                                                                                                    |
| SITE DESIGN | Building Height    | The maximum building height should be two stories above the Base Flood Elevation (BFE.) The first usable floor must be located above the BFE in accordance with floodplain protection standards.                                                                                                                                                                                                                                                            |
|             |                    | Along the northern half of the Fifth Avenue North block, the second floor should be stepped back 20 feet from the front facade so as to reduce the overall appearance of height in relation to the National Register cemeteries.                                                                                                                                                                                                                            |
|             | Landscape          | Passive open space should be provided along Sharps Branch, associated with stream restoration and enhancement, while maintaining 100-year floodplain storage capacity. Additional capacity can be provided through stream restoration as a series of meanders and wetland overflow areas, which may help to reduce the horizontal distance of the BFE. Sites nearby may provide additional opportunities to pick up capacity if integrated into the design. |
|             | Amenities          | Due to the proximity of Bicentennial Park, formal open spaces will be limited to small greens or outdoor plaza spaces, highly accessible and visible and in a prominent location that encourages continued active use.                                                                                                                                                                                                                                      |
|             | Access             | The number of driveway cuts onto Fifth Avenue North should be limited to one mid-block driveway with shared internal access across the block.                                                                                                                                                                                                                                                                                                               |
|             | Parking            | Parking should be located to the rear of buildings and screened from view. Shared-parking site design and shared-parking agreements are encouraged. On-street parking is encouraged along Fourth Avenue North.                                                                                                                                                                                                                                              |
|             |                    | Along the northern half of Fifth Avenue North, structured parking may be located under the buildings, and below the BFE, due to the depth of the floodplain. Structured parking should appear to be part of the building facade by using architectural features and landscaping. An internal vestibule is appropriate for the staircase/elevator to connect the parking with the functional stories above the BFE.                                          |

## FIFTH AVENUE NORTH

|                |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION | Vehicular              | New streets should be limited to essential connections and should be designed per the Corridor Character Matrix and Connect Franklin.                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                | Bicycle and Pedestrian | Additional internal pedestrian connectivity is needed to better integrate the site with the existing network. Connections between uses on the site and between the site and adjacent properties and rights-of-way should be provided. Improved crosswalks and sidewalk connections are desired in order to provide pedestrian linkages from Main Street to Bicentennial Park.<br><br>Bicycle, multi-use path, and pedestrian connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, and the Parks Master Plan. |
|                | Transit                | Transit stops and/or stations should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

### FIFTH AVENUE NORTH - CONCEPTUAL EXAMPLE OF REDEVELOPMENT



DESIGN CREDIT:  
 DWIGHT KISER  
 ROGER LINDSEY  
 KATE REYNOLDS  
 GARY VOGRIN  
 BEN JOHNSON



## HISTORIC RESIDENTIAL

The Historic Residential design concept includes established, single-family neighborhoods in and around Downtown Franklin. Many of these are historically significant, including the Adams Street, Boyd Mill, Everbright, Franklin Road, Hincheyville, and Lewisburg Avenue Local Historic Districts. Neighborhoods in this design concept are generally over 50 years old and include properties both inside and outside of the Historic Preservation Overlay (HPO). Their development patterns are important to the downtown character and should be protected from commercial and office-use encroachment. Secondary institutional and recreational uses may be appropriate in limited locations.

Infill developments should maintain the established, traditional residential character and reflect the scale of the surrounding neighborhood. Context sensitivity is a key component, including compatible building form, lot widths, and setbacks. A gridded street network, sidewalks, and street trees should be used to support connectivity and the pedestrian-scale environment.

In some neighborhoods, teardowns are occurring. Historic buildings that contribute to the street are encouraged to be rehabilitated. When teardowns do occur, new buildings should relate to and strengthen the core characteristics of the neighborhood while mitigating adverse impacts on adjacent properties through thoughtful site design.

*“...DEVELOPMENT  
PATTERNS ARE  
IMPORTANT TO  
THE DOWNTOWN  
CHARACTER  
AND SHOULD BE  
PROTECTED...”*





# HISTORIC RESIDENTIAL

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES        | Primary            | Single-Family Residential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|             | Secondary          | Accessory Dwellings, Institutional, and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FORM        | Building Placement | <p>Buildings and their main entrances should be oriented toward the street. Double frontage, reverse frontage, and flag lots are discouraged.</p> <p>The front setback for infill buildings should be within a range determined by the existing historic structures on the same block face. New buildings should not be closer to the street than any historic structure nor further from the street than any historic structure. As long as it is within this range, the new building will not be out of character with the rest of the block. If the same block face does not have any historic structures, then the established setback range should be maintained.</p> <p>Side-yard setbacks of new buildings should be consistent with existing buildings along the block so that the established contextual rhythm and spacing is not disrupted. Rear-yard setbacks of new buildings should be designed to maintain privacy for both new and existing neighboring properties.</p> |
|             | Building Character | <p>The small-town identity of downtown should be preserved through special attention to massing and scale of new development. Historic buildings should be protected and enhanced. Compatible infill development is encouraged when it is designed with context sensitivity, particularly with respect to existing residential uses and structures.</p> <p>Downtown neighborhoods should be protected through consistent appearance and quality within and outside of the Historic Preservation Overlay.</p> <p>New buildings should be designed to be compatible with the established character along the street and should be sensitive to nearby buildings. Some of these established characteristics include detached, deeply recessed garages, and front porches. Accessory dwellings should fit in contextually to the principal dwelling.</p>                                                                                                                                    |
|             | Building Height    | New buildings should appear to be within one-half story of the average building height of existing structures along the same block face. In no case should the building height exceed two and one-half stories.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|             | Lot Size           | Lot depths, sizes, and widths vary between blocks and on individual blocks and should be designed so that new lots are appropriately sized for each block to ensure contextual compatibility. In no case should lots be less than 6,500 square feet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| SITE DESIGN | Landscape          | Infill developments should have landscaping and street trees consistent with surrounding established lots.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|             | Amenities          | Institutional uses and public parks serve as active and passive recreation and meet the open-space needs in this area. Bicycle and pedestrian connections to these locations should be enhanced and improved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

# HISTORIC RESIDENTIAL

|                        |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN            | Access                              | <p>Lots should be accessed from alleys or by driveways from the street.</p> <p>Streets should have multiple connections that allow for opportunities to walk to local destinations by a variety of routes.</p> <p>Streets should be designed for slower speeds to allow for mixing pedestrian and vehicular traffic.</p> <p>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments.</p>                                                          |
|                        | Parking                             | <p>Off- and on-street.</p> <p>Off-street parking should be provided to the rear of buildings.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| TRANSPORTATION         | Vehicular                           | <p>Vehicular connections should be provided to adjacent developments and connect to the existing street network. New developments should provide an interconnected sidewalk and street network in a grid or modified grid pattern.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Bicycle and Pedestrian              | <p>A coordinated pedestrian system should be provided throughout the area and in infill developments. Infill developments should provide connections between uses on the site and between the site and adjacent properties and rights-of-way.</p> <p>Bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p>                                                                                                                                                                                                                                                                                               |
|                        | Transit                             | <p>Transit stops should be provided along existing or planned routes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| SPECIAL CONSIDERATIONS | Hooper Lane                         | <p>New developments or redevelopments should respect the rural character of Franklin Road and Harlinsdale Park. New or resubdivided lots should be a minimum of 4,000 square feet, and new dwellings should be single-family. Low-scale cottage redevelopment is encouraged, and new dwellings should not exceed one and one-half stories.</p>                                                                                                                                                                                                                                                                                                                                                                                    |
|                        | Murfreesboro Road and Rebecca Court | <p>The rear of the properties along Murfreesboro Road, with frontage on Rebecca Court, may develop with a row of single-family dwellings with lot sizes reflecting those on the north side of Rebecca Court in order to complete the street.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                        | Institutional Uses                  | <p>Institutional uses may be appropriate if their locations do not negatively impact access, scale, and traffic of the surrounding area. These uses should be located at major intersections of arterial and collector streets. The conversion of dwellings in existing residential areas for institutional uses is not appropriate. Institutional uses should maintain the residential scale of its surroundings.</p> <p>O'More College of Design contains a stately historic home as its campus' focal point. Any expansion of the campus or further development within the campus should be sensitively designed to preserve the historic structure and its setting. Further infill or expansion should be master planned.</p> |

## INDUSTRIAL FLEX

The Industrial Flex design concept provides locations for institutional, light industry, office, and research and development uses, with supporting local commercial uses. Industrial Flex development is characterized by low-scale buildings, some of which may have large footprints. Some of these areas generate less vehicular traffic than regional commerce areas and may be found along more minor thoroughfares. Conversely, some of these uses involve extensive exterior movement of goods and trucks that require measures to control adverse environmental and visual impacts.

The areas and uses within this design concept should be protected to support a diversified economy. However, heavy industrial uses are not encouraged.

*"...PROVIDES  
LOCATIONS FOR  
INSTITUTIONAL, LIGHT  
INDUSTRY, OFFICE,  
AND RESEARCH AND  
DEVELOPMENT USES,  
WITH SUPPORTING  
LOCAL COMMERCIAL  
USES."*



# INDUSTRIAL FLEX

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES        | Primary            | Institutional, Light Industry, Professional Office, and Research and Development                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|             | Secondary          | Local Commercial and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| FORM        | Building Placement | Buildings and their main entrances should be oriented toward the street.<br>Buildings should have moderate front-, side-, and rear-yard setbacks.                                                                                                                                                                                                                                                                                                                                                                                           |
|             | Building Character | New buildings should have a clearly defined top, middle, and base and avoid monotonous facades. All sides of a building open to view by the public should display a similar level of architectural quality.                                                                                                                                                                                                                                                                                                                                 |
|             | Building Height    | Maximum of three stories.<br>Where a new building will be adjacent to existing residential dwellings, the building height should step down near the residential area in order to ensure contextual compatibility.                                                                                                                                                                                                                                                                                                                           |
| SITE DESIGN | Landscape          | Landscaped yards between the building and the street and between incompatible uses; parking and service-area screening.                                                                                                                                                                                                                                                                                                                                                                                                                     |
|             | Amenities          | Open space will be minimal, given the character of this area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|             | Access             | Primary access should be from the street. Common or shared access points are encouraged so as to limit curb cuts along the street.                                                                                                                                                                                                                                                                                                                                                                                                          |
|             | Parking            | Surface parking should be located to the sides or rear of buildings that address the street. Surface parking areas should be lined with buildings so as to diminish the appearance of parking from public view. Limited parking between the building and the street may be appropriate.<br><br>Structured parking should be screened from view and should not have a presence along the street, unless it has active ground-floor uses. Landscape and/or architectural features should diminish the appearance of parking from public view. |



## INDUSTRIAL FLEX

|                        |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION         | Vehicular                | New streets should be designed per the Corridor Character Matrix and Connect Franklin.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                        | Bicycle and Pedestrian   | Bicycle, multi-use path, and pedestrian connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.                                                                                                                                                                                                                                                                                                                                                                             |
|                        | Transit                  | Transit stops should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SPECIAL CONSIDERATIONS | Liberty Pike/Eddy Lane   | <p>The area east of Franklin Road along Liberty Pike and Eddy Lane has an established industrial character. Architectural design should retain or provide elements of the established industrial character.</p> <p>Multifamily residential uses may be appropriate for properties adjacent to existing residential uses. This provision allows the area to gradually transition to multifamily residential uses, starting from the edges.</p> <p>Connectivity should be improved by providing sidewalks, trails, and a connection to Fort Granger.</p> |
|                        | Harpeth Industrial Court | Future redevelopment should reflect the traditional low-scale character along Franklin Road.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## LARGE-LOT RESIDENTIAL

The Large-Lot Residential design concept reflects the established character of existing neighborhoods and often provides a transition between City and County subdivisions. New development should have a minimum lot size of one acre or more to fit contextually with surrounding neighborhoods. Neighborhoods should be designed around natural features to highlight forested areas, hillsides and hilltops, streams, and tree rows.

*“NEIGHBORHOODS  
SHOULD BE DESIGNED  
AROUND NATURAL  
FEATURES TO  
HIGHLIGHT FORESTED  
AREAS, HILLSIDES AND  
HILLTOPS, STREAMS,  
AND TREE ROWS.”*



## LARGE-LOT RESIDENTIAL

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES        | Primary            | Single-Family Residential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|             | Secondary          | Institutional and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FORM        | Building Placement | <p>The Development Suitability Map (See Appendix C) should be reviewed to ensure that developments in these areas are appropriate.</p> <p>Buildings and their main entrances should be oriented toward the street and should generally have deep front-, side-, and rear-yard setbacks. Double frontage, reverse frontage, and flag lots are discouraged.</p>                                                                                                                                                                                       |
|             | Building Character | <p>New buildings along established streets should be designed to be compatible with the established character along the street and should be sensitive to nearby buildings.</p> <p>Front-loaded garages should be detached or recessed.</p>                                                                                                                                                                                                                                                                                                         |
|             | Building Height    | Maximum of two and one-half stories                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|             | Lot Size           | Minimum of one acre                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SITE DESIGN | Landscape          | <p>Existing natural features, such as hillsides, hilltops, and tree rows, enhance the area and should be preserved. Historic site features such as cemeteries, barns, accessory structures, and agriculturally related features should be preserved in their locations and context with careful site design around them to preserve the character of Franklin.</p> <p>Common design elements, such as fieldstone walls and wood plank fencing, should be preserved and used along major thoroughfares to reflect Franklin's community identity.</p> |
|             | Amenities          | Amenities should include subdivision entrance features and signage. Outside of floodplain and hill open space requirements, additional open space should not be required with new development due to large lot sizes that provide private open space.                                                                                                                                                                                                                                                                                               |
|             | Access             | <p>Individual lots should be accessed by driveways from the street.</p> <p>Streets should have multiple connections in order to provide for a variety of routes.</p> <p>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments.</p>                                |
|             | Parking            | Off-street                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## LARGE-LOT RESIDENTIAL

|                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION         | Vehicular                                    | Streets should be designed per the Corridor Character Matrix and Connect Franklin.                                                                                                                                                                                                                                                                                                                         |
|                        | Bicycle and Pedestrian                       | New development should provide sidewalks, multi-use paths, and trails throughout its open spaces. They should connect to other conservation areas, paths, adjacent uses, and streets. These bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.                                     |
|                        | Transit                                      | N/A                                                                                                                                                                                                                                                                                                                                                                                                        |
| SPECIAL CONSIDERATIONS | Berrys Chapel Road                           | Development fronting on Berrys Chapel Road should be on lot sizes comparable to those that currently exist along the road.                                                                                                                                                                                                                                                                                 |
|                        | Franklin Road, North of Mack Hatcher Parkway | This scenic corridor should have deep setbacks of at least 150 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area. Development fronting on Franklin Road should be on lot sizes comparable to those that currently exist along the road. |
|                        | Goose Creek Bypass                           | This scenic corridor should have deep setbacks of at least 250 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area.                                                                                                                       |



# LARGE-LOT RESIDENTIAL

|                        |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Lewisburg Pike,<br>between Mack<br>Hatcher Parkway<br>and Carriage Park | Development fronting on Lewisburg Pike should be on lot sizes comparable to those that currently exist along the pike. This scenic corridor should have informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, to sustain the scenic and rural quality of the area.                                                                                                                                                               |
|                        | Inside Mack<br>Hatcher Parkway                                          | <p>Front-yard setbacks of new buildings should be consistent with the established front-yard setbacks of existing buildings along the street.</p> <p>Side-yard setbacks of new buildings should be consistent with other buildings along the street such that the established rhythm is not disrupted.</p> <p>Rear-yard setbacks of new buildings should be designed to maintain privacy for both new and existing neighboring properties.</p>                                                 |
|                        | Institutional Uses                                                      | Institutional uses may be appropriate if their locations do not negatively impact access, scale, and traffic of the surrounding area. These uses should be located at major intersections of arterial and collector streets or designed within master-planned developments so that increased traffic is handled internally. Additional stories may be appropriate for institutional uses. The conversion of dwellings in existing residential areas for institutional uses is not appropriate. |

## MAIN STREET

The Main Street design concept encompasses the historic heart of Downtown Franklin, which has unique qualities that capitalize on the history of the area and the diversity of land uses. It encompasses the blocks surrounding the historic square on Main Street, extending from the Harpeth River to beyond Five Points.

The small-town identity of the area should be preserved by a combination of continual historic preservation efforts and context-responsive infill development. Commercial and mixed uses should be concentrated in this area in order to promote a vibrant downtown core, while protecting the residential character of the surrounding area. Significant civic institutions, such as City Hall, should continue to be located here. Main Street is characterized by its pedestrian scale with human-scaled architecture, active ground-floor uses, continuous sidewalks, and pedestrian amenities.



*“MAIN STREET IS CHARACTERIZED BY ITS PEDESTRIAN SCALE WITH HUMAN-SCALED ARCHITECTURE, ACTIVE GROUND-FLOOR USES, CONTINUOUS SIDEWALKS, AND PEDESTRIAN AMENITIES.”*

## MAIN STREET

|      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES | Primary            | Hotel, Institutional, Live-Work Units, Local Commercial, Multifamily Residential, and Professional and Transitional Office<br><br>Existing institutional uses are encouraged to remain, and future institutional uses are encouraged. Significant civic institutions, such as City Hall, should be located in the area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|      | Secondary          | Assisted Living, Big Houses, Duplexes, Recreation, Single-Family Residential, and Townhouses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FORM | Building Placement | Buildings have a strong relationship to the street frontage. The predominant setback along Main Street should be maintained.<br><br>The front setback for infill buildings should be within a range determined by the existing historic structures on the same block face. New buildings should not be closer to the street than any historic structure nor further from the street than any historic structure. As long as it is within this range, the new building will not be out of character with the rest of the block. If the same block face does not have any historic structures, then historic structures on the opposite block face should set the setback range.                                                                                                                                                                                    |
|      | Building Character | The area has a historic commercial storefront character with office or residential on the upper floors of multi-story buildings. Commercial, institutional, and residential structures, at a scale of two to three stories, are appropriate in order to maintain the pedestrian scale of the area.<br><br>Buildings fronting a street should have active uses on the ground floor for the length of the frontage they occupy. Examples of active uses are microbreweries, coffee shops, cultural facilities, entrance lobbies, institutions, restaurants, and retail shops.<br><br>Historic buildings should be protected and enhanced. Compatible infill development is encouraged when it is designed with contextual sensitivity, particularly with respect to existing residential uses and structures. A mix of land uses in larger buildings is encouraged. |
|      | Building Height    | New buildings should be pedestrian-scale and contextually compatible. The height should meet the Historic District Design Guidelines, where applicable. No building or portion of a building should exceed three stories at the street. In instances where a fourth story is appropriate internal to the block, building step-backs and transitional features should be used to minimize massing and scale.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## MAIN STREET

|             |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN | Landscape | New landscaping will be minimal, with the exception of planters. Urban open space should continue to consist of existing and future publicly accessible parks and open spaces, such as Bicentennial Park and the Harpeth River.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|             | Amenities | <p>Courtyards, outdoor dining areas, outdoor plazas, etc.</p> <p>The Harpeth River is intended to have a public edge that is physically and visually accessible to the public through a greenway network that extends north to south along the river. The purpose is to provide environmental educational opportunities, points for passive recreation, small informal gatherings and scenic vistas. Buildings should not turn their backs on the river, and sites should be designed to incorporate the river and access to it as an amenity.</p>                                                                                                                                                                     |
|             | Access    | <p>The existing interconnected sidewalk and street network will remain and should be enhanced.</p> <p>Pedestrian access is provided along the street. Vehicular access should be provided from secondary streets.</p> <p>Common or shared vehicular-access points are encouraged to limit curb cuts along the street.</p>                                                                                                                                                                                                                                                                                                                                                                                              |
|             | Parking   | <p>On-street parking is encouraged.</p> <p>Off street and structured parking should be located to the rear of buildings. Large expanses of pavement should be avoided. Structured parking along the streets may be considered if it maintains active ground-floor uses along the entire street frontage. Landscape and/or architectural features should be used to diminish the appearance of parking from public view.</p> <p>Adequate parking for infill and adaptive reuse should be provided so as to support existing and future development and to minimize impacts to established neighborhoods. Shared parking is encouraged for synergistic uses that capitalize on varying peak times of parking demand.</p> |



# MAIN STREET

|                 |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION  | Vehicular                               | <p>Additional street interconnectivity is needed so as to provide a linkage extending First Avenue North to connect with North Margin Street.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                 | Bicycle and Pedestrian                  | <p>Additional pedestrian interconnectivity is needed to provide a trail along the Harpeth River. Improved crosswalks and sidewalk connections are desired so as to provide pedestrian linkages from Main Street to Bicentennial Park.</p> <p>The pedestrian system should continue to be enhanced. Wider sidewalks that allow for outdoor seating and comfortable pedestrian movement are encouraged for infill development.</p> <p>Connections between uses on and between the site and adjacent properties and rights-of-way should be provided.</p> <p>Bicycle, multi-use path, and pedestrian connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p> |
|                 | Transit                                 | Transit stops and/or stations should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SPECIAL CONSID. | First Avenue South and East Main Street | See Special Consideration in Neighborhood Mixed-Use and Figure 4.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                 | Public Parking                          | Supporting and enhancing the established business district along Main Street is a priority. Continuity of active storefront businesses is necessary in order to keep downtown vibrant. Extending commercial and mixed uses down side streets with well-connected pedestrian loops and strategically placed parking structures is encouraged. Two supported locations for structured parking are on the east side of Fifth Avenue North and along the west side of Fourth Avenue South/Church Street.                                                                                                                                                                                                                                     |



## MIXED RESIDENTIAL

The Mixed Residential design concept contains residential neighborhoods with a combination of single-family dwellings, big houses, duplexes, and townhouses. The defined character across this design concept may vary by neighborhood, but new development should transition from existing development patterns in adjacent neighborhoods.

New neighborhoods should have walkable, well-connected street systems that connect to surrounding neighborhoods and nearby destinations. They should be designed around natural features to highlight forested areas, hillsides and hilltops, streams, and tree rows as accessible amenities.

Infill and redevelopment near Downtown Franklin should maintain the traditional residential character and reflect the scale of the area. Architecture, building setbacks, housing choices, scale, and walkability are important components of this design concept.

*“NEW  
NEIGHBORHOODS  
SHOULD HAVE  
WALKABLE, WELL-  
CONNECTED  
STREET SYSTEMS  
THAT CONNECT  
TO SURROUNDING  
NEIGHBORHOODS  
AND NEARBY  
DESTINATIONS.”*





# MIXED RESIDENTIAL

| USES | Primary            | Big Houses, Duplexes, Single-Family Residential, and Townhouses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | Secondary          | Accessory Dwellings, Institutional, and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| FORM | Building Placement | <p>Buildings and their main entrances should be oriented toward the street. Double frontage, reverse frontage, and flag lots are discouraged.</p> <p>Front-yard setbacks should be consistent along each block, but may vary between neighborhoods or between sections of neighborhoods. Side- and rear-yard setbacks of new buildings should be designed to maintain privacy for both new and existing neighboring properties.</p> <p>Building setbacks internal to a development may differ from the established setbacks in the area.</p>                                                                                                                                                                                                                                          |
|      | Building Character | <p>New buildings along established streets should be designed to be compatible with the existing character along the street.</p> <p>A diverse mix of housing types and sizes are encouraged for new and infill developments.</p> <p>Dwellings within new developments should provide a mix of architectural styles and building materials that enhance the City's character. Architecture should contain a rich blending of designs that complement each other yet not be overly repetitive. Accessory dwellings should fit in contextually to the principal dwelling.</p> <p>Townhouses should be designed so that each dwelling has a different appearance through varying architectural elements, building materials, or front-facade setbacks to break up long, flat facades.</p> |



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## MIXED RESIDENTIAL

|      |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FORM | Building Character<br>(continued) | <p>If designed with garages, big houses, duplexes, and townhouses should have rear-loaded garages accessed by alleys.</p> <p>Detached garages and attached garages that face the side or rear are encouraged over attached, front-facing garages for single-family residential development. If attached, front-facing garages are proposed, the garage should be recessed from the front facade of the dwelling.</p> <p>Development inside Mack Hatcher Parkway:</p> <p>The small-town identity of the area should be preserved through special attention to massing and scale of new developments.</p> <p>Infill developments should be designed so that duplexes resembling single-family dwellings are located on the periphery in order to transition to existing single-family neighborhoods.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|      | Building Height                   | <p>Maximum of three stories.</p> <p>New buildings on the periphery of developments should appear to be within one-half story of surrounding building heights in order to ensure compatibility.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | Lot Size                          | <p>Development should be designed so that single-family dwellings, or, in some cases, duplexes, are located on the periphery in order to transition to existing single-family neighborhoods. The lot and yard sizes along the periphery of the development should be consistent with those of existing adjacent lots. Smaller, single-family lots, big houses, duplexes, and townhouses may be located internally within new developments and should be served by active park amenities within walking distance.</p> <p>For new development outside of Mack Hatcher Parkway, single-family lots should include a range of lot sizes. The following are recommended minimums, but lot sizes should vary to provide more diverse housing options. Larger developments are expected to have a wide range of sizes:</p> <p>Lots with dwellings having attached garages that face the front, side, or rear should have a minimum width of 65 feet and a minimum lot size of 7,150 square feet.</p> <p>Lots with dwellings having front-facing detached garages should have a minimum width of 50 feet and a minimum lot size of 5,500 square feet.</p> <p>Lots with dwellings accessed by an alley should have a minimum lot width of 45 feet and a minimum lot size of 4,950 square feet.</p> <p>For redevelopment and infill development inside of Mack Hatcher Parkway, duplex or single-family lots located on the exterior of a development should be a minimum of 6,500 square feet.</p> |



## MIXED RESIDENTIAL

|             |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN | Landscape | <p>Existing features, such as hillsides and hilltops, stone walls, tree rows, and wood-plank fencing are enhancing features and should be preserved.</p> <p>New landscaping should be provided at neighborhood entrances and in common open spaces. Historic site features such as cemeteries, barns, accessory structures, and agriculturally related features should be preserved in their locations and context with careful site design around them to preserve the character of Franklin.</p> <p>Development inside Mack Hatcher Parkway:<br/>New development should have landscaping and street trees consistent with surrounding established lots.</p>                                                                                                                                                            |
|             | Amenities | <p>New developments should provide high-quality, shared, usable, and formal open space areas. Neighborhood amenities include common, usable open spaces, such as clubhouses, multi-use paths, playgrounds, and pools.</p> <p>Emphasis should be placed on quality open space as part of new developments. Residential developments should be designed around open spaces, which, in turn, should connect to adjacent open spaces or regional systems. Open space should not be designed as an afterthought based simply on land that is left over.</p> <p>Development inside Mack Hatcher Parkway:<br/>Institutional uses and public parks serve as active and passive recreation and meet the open-space needs in this area. Bicycle and pedestrian connections to these locations should be enhanced and improved.</p> |
|             | Access    | <p>Lots should be accessed from alleys or by driveways from the street.</p> <p>Streets should have multiple connections in order to provide for a variety of routes.</p> <p>Streets should be designed for slower speeds to allow for mixing pedestrian and vehicular traffic.</p> <p>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments.</p>                                                                                                                                                                                       |
|             | Parking   | <p>Off- and on-street.</p> <p>Off-street parking should be limited between the buildings and the street.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## MIXED RESIDENTIAL

|                        |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION         | Vehicular                                                  | <p>Vehicular connections should be provided through adjacent developments and connect to the existing street network. New development should provide an interconnected street and sidewalk network in a grid or modified grid pattern, where appropriate.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                     |
|                        | Bicycle and Pedestrian                                     | New development should provide sidewalks, multi-use paths, and trails throughout its open spaces. They should connect to other conservation areas, paths, adjacent uses, and streets. These bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.                                                                                                                          |
|                        | Transit                                                    | Transit stops and/or stations should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Franklin Housing Authority                                 | Franklin Housing Authority properties may include a limited number of multifamily residential in accordance with their master plans.                                                                                                                                                                                                                                                                                                                                                            |
| SPECIAL CONSIDERATIONS | Murfreesboro Road, Inside of Mack Hatcher Parkway          | The historic dwelling at the southwest corner of the intersection should be preserved and restored. The front yard should remain open space, continuing the deep setback along Murfreesboro Road. Infill development should be located behind the dwelling and its associated accessory structures.                                                                                                                                                                                             |
|                        | New Highway 96 West                                        | This scenic corridor should have deep setbacks of at least 300 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area. Commercial and office uses should not front along New Highway 96 West.                                                                                                                                     |
|                        | Seward Hall                                                | This historic home and its setting should be preserved. Infill should be single-family residential, which should be sensitively sited to preserve the viewshed.                                                                                                                                                                                                                                                                                                                                 |
|                        | Columbia Pike and Mack Hatcher Parkway, Southeast Quadrant | New development should be designed to preserve the viewshed of Winstead Hill and should be set back 250' along Columbia Pike. Assisted Living facilities may be appropriate at this location with the appearance of a Farmstead Compound. Building height should not exceed two stories to protect the viewshed of the historic Winstead Hill.                                                                                                                                                  |
|                        | Institutional Uses                                         | Institutional uses may be appropriate if their locations do not negatively impact access, scale, and traffic of the surrounding area. These uses should be located at major intersections of arterial and collector streets or designed within master-planned developments so that increased traffic is handled internally. An additional story may be appropriate for institutional uses. The conversion of dwellings in existing residential areas for institutional uses is not appropriate. |

## MULTIFAMILY RESIDENTIAL

The Multifamily Residential design concept provides for a range of housing types that offer both for sale and for rent options across a range of price points. Multifamily residential includes apartments, condominiums, stacked flats, assisted living facilities, and is encouraged to be mixed with big houses, duplexes, townhouses, and other housing types. This allows for greater flexibility in form and scale to achieve active, cohesive, and vibrant neighborhoods.

*"IT ALLOWS FOR  
GREATER FLEXIBILITY  
IN FORM AND  
SCALE TO ACHIEVE  
ACTIVE, COHESIVE,  
AND VIBRANT  
NEIGHBORHOODS."*



# MULTIFAMILY RESIDENTIAL

| USES | Primary            | Assisted Living and Multifamily Residential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | Secondary          | Accessory Dwellings, Big Houses, Duplexes, Institutional, Recreation, Single-Family Residential, and Townhouses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FORM | Building Placement | <p>New development is encouraged to be master planned to achieve a cohesive design for the entire site.</p> <p>New and infill development is encouraged to provide a variety of housing types and should be designed so that duplexes, single-family dwellings, and townhouses are located on the periphery in order to transition to existing single-family neighborhoods.</p> <p>Building setbacks adjacent to streets should be minimal to create an active street environment that encourages pedestrian activity. Where internal drives are used to organize buildings and pedestrian movement, setbacks to internal drives should be minimized wherever possible.</p> <p>Buildings, where feasible, should be sited or designed to create public spaces, such as a formal open space, pedestrian plaza, courtyard, outdoor seating area, etc., that are easily accessible from adjacent streets or sidewalks.</p> <p>Within Mack Hatcher Parkway, building setbacks should be consistent with those of the established neighborhood; however, building setbacks internal to a development may differ from the established setbacks in the area.</p>                                                                                                                                                                      |
|      | Building Character | <p>Buildings should engage and define the street edge with landscaping, pedestrian walkways, and street furnishings to allow for safe and comfortable movement of pedestrians.</p> <p>Buildings should have a primary entry identity that defines the visual character of the building, and it should be oriented toward the primary street. Buildings may have additional primary entrances, which should be oriented to a secondary street, internal drive that resembles a street, or prominent public space.</p> <p>First floors should have active community spaces, including leasing offices, workout facilities, and other amenities, that are individually accessible from the street. When sited near nonresidential uses within walking distance, multifamily units should provide individual ground floor entrances, stoops or front porches, and pedestrian connections to the street or to a drive resembling a street.</p> <p>Dwellings within new developments should provide an appropriate mix of cohesive architectural styles and building materials that enhance the City's character. Architecture should contain a rich blending of designs that complement each other yet not be overly repetitive.</p> <p>If designed with garages, dwellings should have rear-loaded garages accessed by alleys.</p> |



## MULTIFAMILY RESIDENTIAL

|             |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FORM        | Building Character<br>(continued) | <p>Development inside Mack Hatcher Parkway:</p> <p>The small-town identity of the area should be preserved through special attention to massing and scale of new development.</p> <p>New buildings should be designed to be compatible with the predominant character along the street and should be sensitive to nearby buildings.</p>                                                                                                                                                                                                                                                                                                                                           |
|             | Building Height                   | <p>Maximum of three stories inside and four stories outside of Mack Hatcher Parkway.</p> <p>Within Mack Hatcher Parkway, buildings on the periphery of a development should appear to be within one-half story of the predominant building height of adjacent buildings in order to ensure a compatible transition.</p>                                                                                                                                                                                                                                                                                                                                                           |
|             | Lot Size                          | <p>Where single-family residential or duplex lots are located on the periphery of a development, lot sizes should be designed to be appropriately sized for each street and to promote contextual compatibility.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SITE DESIGN | Landscape                         | <p>New development should have landscaping and street trees.</p> <p>Landscaping should be provided at neighborhood entrances and in common open spaces.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|             | Amenities                         | <p>Common amenities include clubhouses, fitness centers, multi-use paths, playgrounds, and pools.</p> <p>Emphasis should be placed on quality open space as part of new development. Multifamily developments should be designed around open spaces, which, in turn, should connect to adjacent open spaces or regional systems. Open space should not be designated as an afterthought based simply on land that is left over.</p>                                                                                                                                                                                                                                               |
|             | Access                            | <p>Internal drives should resemble streets rather than parking lot drive aisles.</p> <p>Streets should have multiple connections that allow for opportunities to walk to local destinations by a variety of routes.</p> <p>Streets should be designed for slower speeds to allow for mixing pedestrian and vehicular traffic.</p> <p>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments.</p> |
|             | Parking                           | <p>Off- and on-street.</p> <p>Off-street parking should be provided to the rear or side of buildings. Structured parking is encouraged.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## MULTIFAMILY RESIDENTIAL

|                        |                                       |                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION         | Vehicular                             | <p>Vehicular connections should be provided through adjacent developments, connect to the existing street network, and provide an interconnected sidewalk and street network in a grid or modified grid pattern.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                            |
|                        | Bicycle and Pedestrian                | <p>New development should provide sidewalks, multi-use paths, and trails throughout its open spaces. They should connect to other conservation areas, paths, adjacent uses, and streets. These bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p> |
|                        | Transit                               | <p>Transit stops and/or stations should be provided along existing or planned routes.</p>                                                                                                                                                                                                                                                                                     |
| SPECIAL CONSIDERATIONS | Fourth Avenue South, West Main Street | <p>The maximum building height should be two stories.</p>                                                                                                                                                                                                                                                                                                                     |
|                        | Inside Mack Hatcher Parkway           | <p>Assisted living facilities should have traditional multifamily building form with shallow setbacks and parking located behind the building.</p>                                                                                                                                                                                                                            |
|                        | Institutional Uses                    | <p>Institutional uses may be appropriate if the location does not negatively impact access, scale, and traffic of the surrounding area and should be located at major intersections of arterial and collector streets. The conversion of dwellings in existing residential areas for institutional uses is not appropriate.</p>                                               |

## NEIGHBORHOOD COMMERCIAL

The Neighborhood Commercial design concept contains a mix of active uses at key intersections that serve surrounding residential concentrations. These centers must be compatible with and contribute to neighborhood character and livability. These centers should be defined by building frontages and an activated street, and not by parking lots. They should be pedestrian-friendly places with high-quality architecture, plazas, outdoor dining, sidewalks, and other pedestrian and bicycle amenities that create active, connected gathering places.

*“THESE CENTERS MUST  
BE COMPATIBLE WITH  
AND CONTRIBUTE  
TO NEIGHBORHOOD  
CHARACTER AND  
LIVABILITY.”*



# NEIGHBORHOOD COMMERCIAL

| USES | Primary            | Institutional, Local Commercial, and Professional and Transitional Office                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | Secondary          | Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| FORM | Building Placement | <p>Building setbacks adjacent to streets should be minimal to create an active street environment that encourages pedestrian activity. Where internal drives are used to organize buildings and pedestrian movement, setbacks to internal drives should be minimized wherever possible.</p> <p>Buildings, where feasible, should be sited or designed to create public spaces, such as a formal open space, pedestrian plaza, courtyard, outdoor seating area, etc., that are easily accessible from adjacent streets or sidewalks.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|      | Building Character | <p>Buildings should engage and define the street edge with landscaping, pedestrian walkways, and street furnishings to allow for safe and comfortable movement of pedestrians. Street furnishings may include a combination of pedestrian seating, movable tables, planters, pedestrian-scaled light fixtures, artwork or decorative paving, waste receptacles, bike racks, and other street furnishings.</p> <p>Buildings should have a primary entry identity that defines the visual character of the building, and it should be oriented toward the primary street. Buildings may have additional primary entrances, which should be oriented to a secondary street, internal drive that resembles a street, or prominent public space.</p> <p>Building design should have pedestrian-scaled architectural details that enhance the appearance of the building at the street level. Architectural styles may vary, but features should include storefront windows, awnings, distinctive roof forms, and outdoor lighting.</p> <p>All building walls should employ massing variation, modulation, horizontal and vertical articulation, and architectural detailing to break down the overall scale of a building. Each wall should include materials and design characteristics consistent with those on the front. The effect of a single, long, or massive wall with no relation to human scale is not acceptable.</p> <p>The choice of materials and texture has great visual significance and can affect the long-term appearance and maintenance of the built environment. High-quality and long-lasting materials that offer texture and avoid monotonous surfaces are encouraged, and the look and dimension of these material elements should relate to human scale.</p> <p>Delivery and service areas should be to the side or rear of the building. Conventional drive-through window uses are discouraged. Drive-through window uses may be appropriate if integrated into the side or rear of multi-tenant buildings without the need for a front drive aisle between the primary structure and the street it faces.</p> |

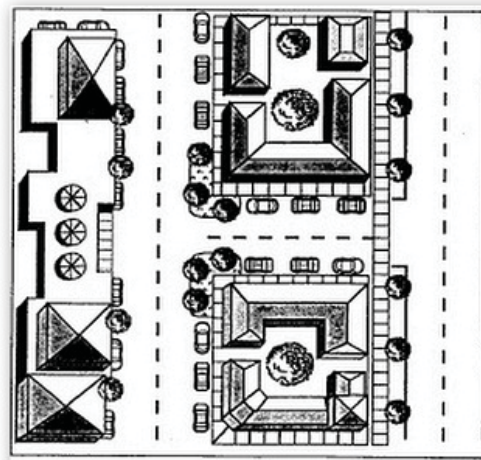
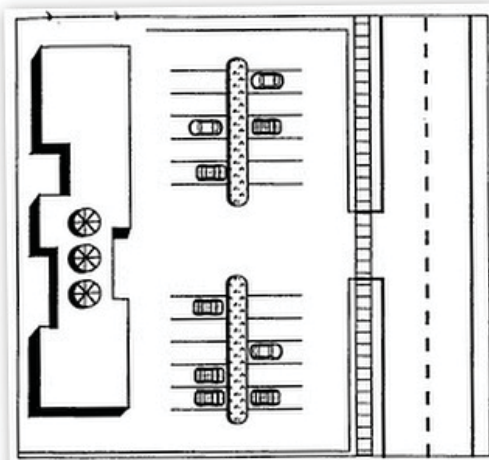


## NEIGHBORHOOD COMMERCIAL

|                |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FORM           | Building Height        | <p>Building height is encouraged to be two stories at the street and may include a recessed third story.</p> <p>Buildings on the periphery should transition in height to nearby dwellings so as to ensure compatibility.</p>                                                                                                                                                                                                                                                                                                                                                |
|                | Landscape              | Ornamental plantings, parking-lot islands, street trees, and landscape buffers, where adjacent to residential development.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| SITE DESIGN    | Amenities              | Formal, usable open spaces, such as plazas, courtyards, and outdoor seating areas, that serve as gathering areas. These open spaces should be highly accessible and in a prominent location that encourages continued active use.                                                                                                                                                                                                                                                                                                                                            |
|                | Access                 | <p>Primary access should be from the street; however, common or shared access points are encouraged to limit curb cuts along the street.</p> <p>Internal drives should resemble streets rather than parking lot drive aisles.</p> <p>Parking and services should be accessed through internal and secondary streets.</p> <p>Streets should be designed for slower speeds in order to allow for mixing pedestrian and vehicular traffic.</p> <p>Strong pedestrian connections should be provided externally and internally in order to connect to adjacent neighborhoods.</p> |
|                | Parking                | <p>On-street parking is encouraged along internal and low-volume streets.</p> <p>Off-street and structured parking should be located to the side or rear of buildings, away from streets. Structured parking along the streets may be considered if it maintains active ground-floor uses along the entire street frontage. Landscape and/or architectural features should be used to diminish the appearance of parking from public view.</p>                                                                                                                               |
|                | Vehicular              | New streets should be designed per the Corridor Character Matrix and Connect Franklin.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| TRANSPORTATION | Bicycle and Pedestrian | <p>A coordinated pedestrian system should be provided throughout the area and in new developments. New development should provide connections between uses on and between the site and adjacent properties and rights-of-way. Wider sidewalks that allow for outdoor seating, comfortable pedestrian movement, and active storefronts are encouraged.</p> <p>Bicycle, multi-use path, and pedestrian connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p>                                  |
|                | Transit                | Transit stops and/or stations should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

# NEIGHBORHOOD COMMERCIAL

|                        |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Hillview Lane and Columbia Pike, Southwest Quadrant | Building height should not exceed one story to protect the viewshed of the historic Winstead Hill.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        | Murfreesboro Road at North Chapel Road              | The commercial node recommended for this intersection is currently constrained by sewer availability. This site should be considered for development only when adequate infrastructure is available.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                        | Residential Uses                                    | Live-Work Units and Multifamily Residential may be appropriate as part of a master plan if located on upper stories of nonresidential buildings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                        | South Royal Oaks Blvd                               | In addition to the primary and secondary uses, assisted living is an appropriate land use along this corridor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                        | Future Neighborhood Commercial Nodes                | <p>As the city grows, there may be a need for additional neighborhood commercial nodes that are not yet mapped. These potential nodes should be evaluated on a case-by-case basis using the following criteria:</p> <ul style="list-style-type: none"> <li>• Located at intersections of two arterial streets or of a collector and arterial street;</li> <li>• Located at least one mile from an existing or planned node since these centers generally serve neighborhoods within a one and one-half mile radius;</li> <li>• Generally characterized by gross leasable areas of less than 100,000 square feet on sites of three to twenty acres; and</li> <li>• Commercial nodes should not encroach down neighborhood or scenic corridors, rather, they should be strategically located at nodes meeting the above criteria.</li> </ul> |



## NEIGHBORHOOD MIXED-USE

The Neighborhood Mixed-Use design concept provides a diverse mix of high-activity uses with a connected and walkable block layout. These centers and corridors should have coordinated development patterns at a pedestrian scale, with high-quality architecture, plazas, sidewalks, and pedestrian and bicycle amenities to activate the street and connect these gathering places to the residential neighborhoods they support.

*"...A DIVERSE MIX OF  
HIGH-ACTIVITY USES  
WITH A CONNECTED  
AND WALKABLE BLOCK  
LAYOUT."*



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# NEIGHBORHOOD MIXED-USE

|      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES | Primary            | Institutional, Local Commercial, Multifamily Residential, Professional Office, Townhouses, and Transitional Office                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|      | Secondary          | Big Houses, Duplexes, Live-Work, Assisted Living, Single-Family Residential, and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FORM | Building Placement | <p>Large developments should be master planned in order to achieve a cohesive design for the entire site.</p> <p>Building setbacks adjacent to streets should be minimal to create an active street environment with wide tree-lined sidewalks that encourages pedestrian activity. Where internal drives are used to organize buildings and pedestrian movement, setbacks to internal drives should be minimized wherever possible.</p> <p>Buildings and their main entrances should be oriented toward the street. Double frontage, reverse frontage, and flag lots are discouraged. Buildings, where feasible, should be sited or designed to create public spaces, such as a formal open space, pedestrian plaza, courtyard, outdoor seating area, etc., that are easily accessible from adjacent streets or sidewalks.</p> <p>New and infill development is encouraged to provide a variety of housing types and should be designed so that duplexes, single-family dwellings, and townhouses are located on the periphery in order to transition to existing single-family neighborhoods.</p> |
|      | Building Height    | Maximum of two stories inside Mack Hatcher Parkway; Max of three stories outside of Mack Hatcher Parkway. More specific, location-based height recommendations are within the special considerations. Larger scale, master planned developments may be considered for additional height with appropriate transitions. Buildings on the periphery should transition in height to nearby dwellings so as to ensure compatibility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |





# NEIGHBORHOOD MIXED-USE

|      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| FORM | Building Character | <p>Buildings generally should have a primary entry identity that defines the visual character of the building, and it should be oriented toward the primary street. Buildings may have additional primary entrances, which should be oriented to a secondary street, internal drive that resembles a street, or prominent public space.</p> <p>Building design should have pedestrian-scaled architectural details that enhance the appearance of the building at the street level. Architectural styles may vary, but features should include storefront windows, awnings, distinctive roof forms, and outdoor lighting. Buildings should engage and define the street edge with landscaping, pedestrian walkways, and street furnishings to allow for safe and comfortable movement of pedestrians. Street furnishings may include a combination of pedestrian seating, movable tables, planters, pedestrian-scaled light fixtures, artwork or decorative paving, waste receptacles, bike racks, and other street furnishings.</p> <p>All building walls should employ massing variation, modulation, horizontal and vertical articulation, and architectural detailing to break down the overall scale of a building. Each wall should include materials and design characteristics consistent with those on the front. The effect of a single, long, or massive wall with no relation to human scale is not acceptable. The choice of materials and texture has great visual significance and can affect the long-term appearance and maintenance of the built environment. High-quality and long-lasting materials that offer texture and avoid monotonous surfaces are encouraged, and the look and dimension of these material elements should relate to human scale.</p> <p>Delivery and service areas should be to the side or rear of the building. Conventional drive-through window uses are discouraged. Drive-through window uses may be appropriate if integrated into the side or rear of buildings without the need for a front drive aisle between the primary structure and the street it faces.</p> <p>If designed with garages, dwellings should have rear-loaded garages accessed by alleys.</p> <p>New multifamily residential is encouraged to create lively, walkable neighborhoods near restaurants, shops, grocery stores, and workplaces. First floors are encouraged to have active commercial spaces, including retail, restaurants, leasing offices, and other amenities, which should be individually accessible from the street. In locations where commercial use on the first floor is not viable, multifamily units should provide individual ground floor entrances, stoops or front porches, and pedestrian connections to the street or to a drive resembling a street. Multifamily and mixed use site design should integrate seamless pedestrian connectivity across the site and to other uses.</p> <p>For properties inside Mack Hatcher Parkway:</p> <p>The small-town identity of the area should be preserved through special attention to massing and scale of new development. Historic structures are important community resources and should be preserved and protected. New buildings should be designed to be compatible with the predominant character along the street and should be sensitive to nearby buildings.</p> |
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## NEIGHBORHOOD MIXED-USE

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|----------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN    | Landscape                     | <p>Landscape buffers where nonresidential uses abut existing residential development; ornamental plantings; parking-lot islands; street trees.</p> <p>Historic site features such as cemeteries, barns, accessory structures, and agriculturally related features should be preserved in their locations and context with careful site design around them to preserve the character of Franklin.</p>                                                                                                                                                                          |
|                | Amenities                     | Formal, usable open spaces, such as plazas, courtyards, and outdoor seating areas, that serve as gathering areas. These open spaces should be highly accessible and in a prominent location that encourages continued active use.                                                                                                                                                                                                                                                                                                                                             |
|                | Access                        | Primary vehicular access should be from the street. Common or shared access points are encouraged to limit curb cuts along the street. Internal drives should resemble streets rather than parking lot drive aisles. Parking and services should be accessed through internal and secondary streets. Streets should be designed for slower speeds to allow for mixing pedestrian and vehicular traffic. Strong pedestrian connections should be provided externally and internally so as to connect to adjacent neighborhoods.                                                |
|                | Parking                       | <p>On-street parking is encouraged along internal and low-volume streets.</p> <p>Off-street and structured parking should be located to the side or rear of buildings, away from streets. Structured parking along the streets may be considered if it maintains active ground-floor uses along the street frontage. Landscape and/or architectural features should be used to diminish the appearance of parking from public view.</p>                                                                                                                                       |
| TRANSPORTATION | Vehicular                     | New streets should be designed per the Corridor Character Matrix and Connect Franklin.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                | Bicycle and Pedestrian        | <p>A coordinated pedestrian system should be provided throughout the area and in new developments. New developments shall provide connections between uses on the site and between the site and adjacent properties and rights-of-way. Wider sidewalks that allow for outdoor seating, comfortable pedestrian movement, and active storefronts are encouraged.</p> <p>Bicycle, multi-use path, and pedestrian connections should be designed and provided per the Corridor Character Matrix, Comprehensive Network Transportation Plan, Parks Master Plan, and this Plan.</p> |
|                | Transit                       | Transit stops and/or stations should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SPECIAL CON.   | Future Neighborhood Mixed-Use | <p>As the city grows, there may be a need for additional neighborhood mixed-use nodes that are not yet mapped. These potential nodes should be evaluated on a case-by-case basis.</p> <p>A wider range of compatible uses may be considered for larger, master-planned developments.</p>                                                                                                                                                                                                                                                                                      |

## NEIGHBORHOOD MIXED-USE

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|------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Columbia Avenue<br>between Five Points<br>to Fowlkes Street | <p>The potential redevelopment site at the northwest corner of Columbia Avenue and Fowlkes Street, known as the HG Hill property, should orient future buildings toward a street/internal driveway designed to include elements of, and resemble, a street. New development on this site should be two stories in height along Columbia Avenue, but three stories in height is appropriate internal to the site and may be achieved through step-backs in height.</p> <p>This corridor should include an overall mix of uses, but each parcel is not expected to have a mix of uses. Commercial nodes within these corridors are encouraged at intersections.</p> <p>Transition should be addressed between commercial buildings and their parking areas and adjacent residential uses.</p> <p>A consideration for future infill along the corridor is preserving existing buildings, shown in light gray, because many are historically significant buildings that contribute to the overall character of the corridor. The existing, established grid network of streets in the area along Columbia Avenue should be preserved to support infill and redevelopment.</p> <p>See Figure 4.3.</p> |
|------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





# NEIGHBORHOOD MIXED-USE

FIGURE 4.3: CONCEPTUAL PLAN - COLUMBIA AVENUE BETWEEN FIVE POINTS TO FOWLKES STREET





## NEIGHBORHOOD MIXED-USE

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| SPECIAL CONSIDERATIONS | First Avenue South<br>between East Main<br>and South Margin<br>Streets | <p>This corridor has infill potential that can complete the block face on the east side of First Avenue South. The proposed buildings are shown in dark grey and existing buildings are shown in light grey. This conceptual plan is based upon the assumption that the floodplain line is modified through compensatory cut and fill.</p> <ul style="list-style-type: none"> <li>• The historic buildings on the west side of First Avenue South should be preserved.</li> <li>• New buildings fronting the east side of First Avenue South, between Church Street and South Margin Street, should maintain the established single-family building character and rhythm of the opposing historic block face. Height should be sensitive to these historic buildings; therefore, a mix of predominantly one and one-half story and scattered two-story buildings is appropriate with approximately 15-foot front-yard setbacks. New buildings internal to the site may be up to three stories with transitional features.</li> <li>• New buildings up to three stories are appropriate north of Church Street.</li> <li>• A distinctive and unique feature of the skyline in this area is the grain silos of the historic Lillie Belle Flour Company. Efforts should be made to repurpose this structure instead of removing it. These structures offer potential for truly scenic views of Central Franklin from what could become multifamily residential, offices, or even a specialty hotel, such as Quaker Square in Akron, Ohio. New-building architecture between Church and East Main Streets should pay homage to the industrial/agricultural history of the area.</li> </ul> <p>Church Street should extend east into the site, connecting to an internal street/driveway network providing a system of north-south access parallel to First Avenue South.</p> <p>On-site open space will be limited to small greens or outdoor plaza spaces, highly accessible and visible and in a prominent location that encourages continued active use. The site provides a unique opportunity to enhance the role of the Harpeth River in Central Franklin. The Plan promotes open space along the Harpeth River that is integrated into the downtown core, while also defining an on-site edge of the downtown core. The area within the 100-year floodplain between First Avenue South and the Harpeth River should be preserved as open space and should be enhanced with a system of greenways and public trails that provide connections to Bicentennial and Pinkerton Parks.</p> <p>See Figure 4.4.</p> |
|------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# NEIGHBORHOOD MIXED-USE

FIGURE 4.4: CONCEPTUAL PLAN - FIRST AVENUE SOUTH BETWEEN EAST MAIN AND SOUTH MARGIN STREETS



## NEIGHBORHOOD MIXED-USE

|                        |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Goose Creek Bypass between I-65 and Lewisburg Pike (Berry Farms Town Center) | Building heights may be up to six stories (see Appendix G), particularly in the area closest to I-65. Land uses and building heights should decrease in intensity near existing residential neighborhoods.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                        | New Highway 96 West                                                          | This scenic corridor should have deep setbacks of at least 300 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area. Commercial and office uses should not front along New Highway 96 West.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                        | Northwest corner of Hillsboro Road and Del Rio Pike (Independence Square)    | <p>Infill and redevelopment within this shopping center are encouraged. The proposed buildings, shown in dark grey, should maintain a continuous edge along the block face. The buildings should be oriented toward Hillsboro Road and toward streets and internal driveways designed to include elements of, and resemble, streets. The buildings should have a storefront character at a scale of two to three stories with vertical mixed uses. Multifamily residential buildings are appropriate along the periphery to transition to existing multifamily residential.</p> <p>A system of blocks should be the organizing element. Blocks ensure a walkable and connected street network and will facilitate orderly phasing of redevelopment and infill due to multiple ownership. A north-south internal street/driveway should bisect the site and provide important connectivity to the existing street network. Connections to Alexander Drive and Brink Place will provide additional connectivity. See Figure 4.5.</p>                                                                                                                                                                                                                                                                          |
|                        | West Main Street Area                                                        | <p>West Main Street consists of a unique mix of land uses that provides important services to surrounding neighborhoods. The area has institutional uses, such as the Williamson County Administration offices. Future development should respect the surrounding historic neighborhoods. West Main Street will remain an important gateway into Downtown Franklin.</p> <p>This corridor should include an overall mix of uses, but each parcel is not expected to have a mix of uses. Commercial nodes within these corridors are encouraged at intersections. The eclectic mix of land uses, such as neighborhood retail and restaurants, should remain, since they make this area unique.</p> <p>New infill buildings should maintain the established block face. Building height is encouraged to be two stories at the street and may include a recessed 3rd story. Commercial and mixed-use buildings south of Petway Street should have a storefront character along West Main Street.</p> <p>An extension of Forrest Street, across West Main Street, should be provided as redevelopment occurs. Improvements to the intersection of Petway and West Main Streets are desired to resolve the existing layout for traffic movements. Improvements should include enhanced pedestrian crossings.</p> |



# NEIGHBORHOOD MIXED-USE

FIGURE 4.5: CONCEPTUAL PLAN - NORTHWEST CORNER OF HILLSBORO ROAD AND DEL RIO PIKE (INDEPENDENCE SQUARE AREA)





## OFFICE RESIDENTIAL

The Office Residential design concept primarily consists of established, historic, single-family residential structures with a traditional development pattern. Over time, many of these residential structures have been converted to office and personal-service uses.

This design concept designates the transition area between more intensive commercial areas and the surrounding residential areas. Buildings, regardless of use, should maintain a single-family residential character.

*“BUILDINGS,  
REGARDLESS OF  
USE, SHOULD  
MAINTAIN A SINGLE-  
FAMILY RESIDENTIAL  
CHARACTER.”*



# OFFICE RESIDENTIAL

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES        | Primary            | Live-Work Units, Single-Family Residential, and Transitional Office.<br><br>Individual buildings may include a mix of residential and transitional-office components.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|             | Secondary          | Accessory Dwellings and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FORM        | Building Placement | Buildings and their main entrances should be oriented toward the street. Double frontage, reverse frontage, and flag lots are discouraged.<br><br>The front setback for infill buildings should be within a range determined by the existing historic structures on the same block face. New buildings should not be closer to the street than any historic structure nor further from the street than any historic structure. As long as it is within this range, the new building will not be out of character with the rest of the block. If the same block face does not have any historic structures, then the established setback should be maintained.<br><br>Side-yard setbacks of new buildings should be consistent with other buildings along the street so that the established rhythm is not disrupted. Rear-yard setbacks of new buildings should be designed to maintain privacy for both new and existing neighboring properties. |
|             | Building Character | New building forms should have single-family-style architecture, pitched roof lines, and similar facade and scale widths in order to be compatible with the predominant character along the street.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|             | Building Height    | New buildings should have a maximum of two stories and should appear to be within one-half story of the established building height along the street in order to ensure compatibility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|             | Lot Size           | Lot depths, sizes, and widths vary along and between individual streets, and new developments should be designed to ensure that lots are appropriately sized for each street and to promote contextual compatibility.<br><br>Minimum of 6,500 square feet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SITE DESIGN | Landscape          | Infill developments should have landscaping and street trees consistent with surrounding established lots.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|             | Amenities          | Institutional uses and public parks serve as active and passive recreation and meet the open-space needs in this area. Bicycle and pedestrian connections to these locations should be improved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## OFFICE RESIDENTIAL

|                        |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN            | Access                                  | <p>Lots should be accessed from alleys or by driveways from the street.</p> <p>Streets should have multiple connections that allow for opportunities to walk to local destinations by a variety of routes.</p> <p>Streets should be designed for slower speeds to allow for mixing pedestrian and vehicular traffic.</p> <p>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments.</p>                                                                                                                                                                         |
|                        | Parking                                 | <p>Off- and on-street.</p> <p>Off-street parking should be provided to the rear of buildings. Minimal parking to the side of buildings may be appropriate.</p> <p>Parking structures are discouraged due to the single-family residential character.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| TRANSPORTATION         | Vehicular                               | <p>Vehicular connections should be provided through adjacent developments and connect to the existing street network. Infill developments should provide an interconnected sidewalk and street network in a grid or modified grid pattern.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                        | Bicycle and Pedestrian                  | <p>A coordinated pedestrian system should be provided throughout the area and in infill developments. Infill developments should provide connections between uses on the site and between the site and adjacent properties and rights-of-way.</p> <p>Bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Transit                                 | <p>Transit stops and/or stations should be provided along existing or planned routes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SPECIAL CONSIDERATIONS | Between North Margin and Bridge Streets | <p>Floodplain regulations represent a constraint to be considered for future developments in this area. Due to the depth of the floodplain, parking lots are appropriate uses for the existing vacant parcels fronting the south side of North Margin Street. These lots could be used by businesses, by activities at Bicentennial Park, by the cemeteries, and for special-event overflow for downtown.</p> <p>Historic structures within the floodplain should be maintained and protected in order to enhance the existing neighborhood pattern and character.</p> <p>A street connection should be provided by extending First Avenue North to connect with North Margin Street. Improvements to the sidewalk system and pedestrian crossings need to be made, including along Bridge and North Margin Streets and their cross streets.</p> |

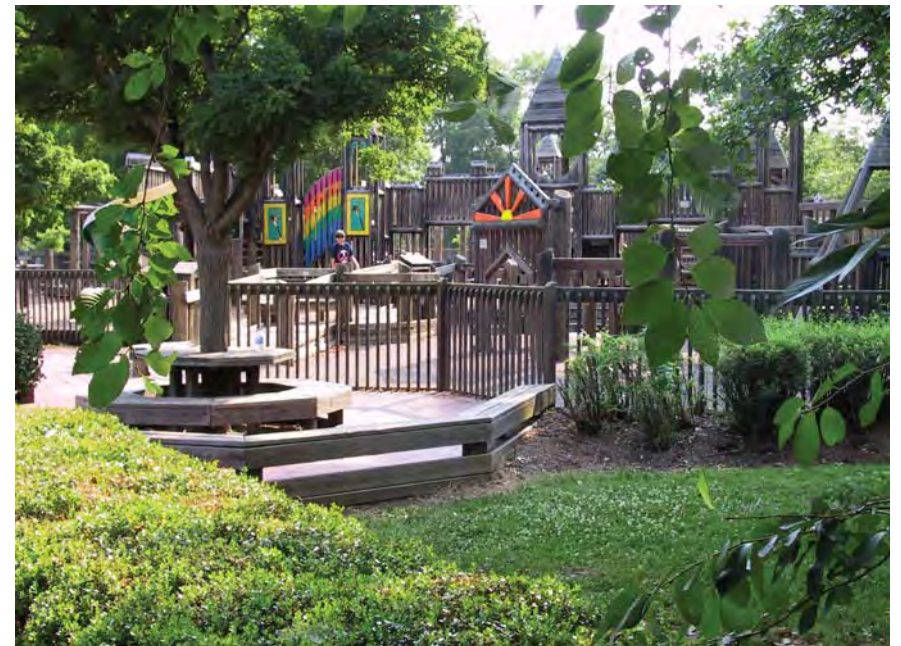


# RECREATION

The Recreation design concept comprises areas of public and private recreational opportunities. These areas include active and passive open spaces, as well as City parks, and should be interconnected through bike lanes, multi-use paths, and sidewalks.

Institutional facilities, such as the water treatment and wastewater treatment plants, are also assigned to this design concept and fulfill significant municipal functions.

*“...INTERCONNECTED  
THROUGH BIKE LANES,  
MULTI-USE PATHS, AND  
SIDEWALKS.”*



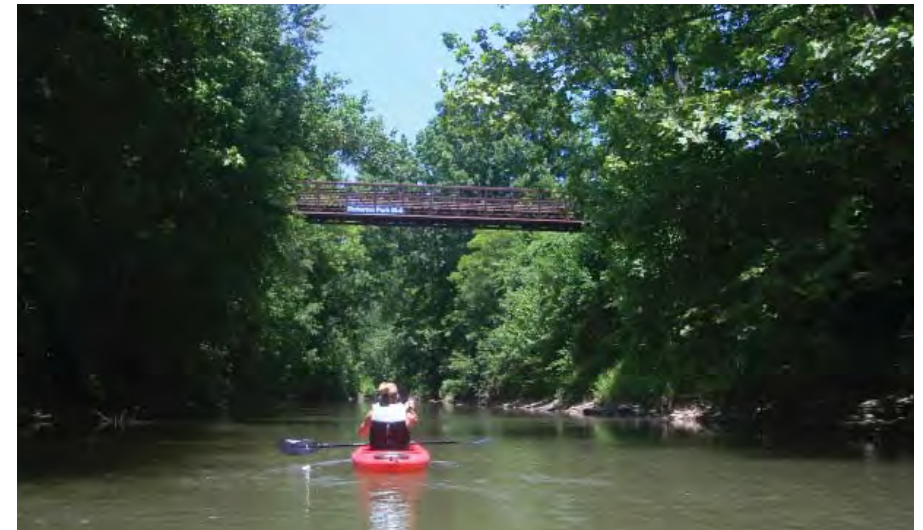


# RECREATION

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES        | Primary            | Institutional and Recreation                                                                                                                                                                                                                                                                                                                                                                                               |
|             | Secondary          | N/A                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FORM        | Building Placement | Varied, based on location                                                                                                                                                                                                                                                                                                                                                                                                  |
|             | Building Character | Varied, based on location                                                                                                                                                                                                                                                                                                                                                                                                  |
|             | Building Height    | Maximum of two stories                                                                                                                                                                                                                                                                                                                                                                                                     |
| SITE DESIGN | Landscape          | Preservation of existing natural features                                                                                                                                                                                                                                                                                                                                                                                  |
|             | Amenities          | <p>Significant open space and active and passive recreational opportunities</p> <p>The Harpeth River is intended to have a public edge that is physically and visually accessible to the public through a greenway network that extends north to south along the river. The purpose is to provide environmental educational opportunities, points for passive recreation, small informal gatherings and scenic vistas.</p> |
|             | Access             | <p>Primary access should be from the street.</p> <p>Parking and services should be accessed through internal and secondary streets.</p> <p>Streets should be designed for slower speeds to allow for a mix of pedestrian and vehicular traffic.</p> <p>Strong pedestrian connections should be provided externally and internally so as to connect to adjacent neighborhoods.</p>                                          |
|             | Parking            | <p>Generally off-street.</p> <p>On-street parking may be provided along internal or low-volume streets.</p>                                                                                                                                                                                                                                                                                                                |

# RECREATION

|                        |                                     |                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSPORTATION         | Vehicular                           | New streets should be designed per the Corridor Character Matrix and Connect Franklin.                                                                                                                                                                                                                                                                                                   |
|                        | Bicycle and Pedestrian              | <p>A coordinated pedestrian system should be provided throughout the area. Connections between uses on the site and between the site and adjacent properties and rights-of-way should be provided.</p> <p>Bicycle, multi-use path, and pedestrian connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p> |
|                        | Transit                             | Transit stops and/or stations should be provided along existing or planned routes.                                                                                                                                                                                                                                                                                                       |
| SPECIAL CONSIDERATIONS | Fifth Avenue North, "Hill Property" | New development should be low-scale, low-impact, public uses that respect and complement the adjacent historic cemeteries. If this property is declared surplus, then low-scale commercial and institutional uses would be appropriate.                                                                                                                                                  |
|                        | New Highway 96 West                 | This scenic corridor should have deep setbacks of at least 300 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area. Commercial and office uses should not front along New Highway 96 West.                              |



## REGIONAL COMMERCE

The Regional Commerce design concept contains high-intensity activity centers that attract large numbers of people and employers from both within and outside the City. These areas include major employment and revenue generators that are valuable community resources.

Interchange locations are limited in number and should be efficiently planned to capitalize on economic development and revenue-producing potential. Infill buildings and parking structures are encouraged to replace existing surface parking lots. Sufficient transportation and transit infrastructure is needed to accommodate the increasing travel demands created by these land uses.

Regional Commerce should transition in intensity and scale across this design concept. Higher-intensity uses should be located closer to the I-65 interchanges and major thoroughfares, with less-intensive uses transitioning to established residential areas.

Regional Commerce areas have a high level of visibility along I-65 and primary arterial streets and are important gateways into Franklin. New developments should have integrated designs with coordinated access, amenities, and cohesive architecture that fits within the context of the corridor.

*“NEW DEVELOPMENTS SHOULD HAVE INTEGRATED DESIGNS WITH COORDINATED ACCESS, AMENITIES, AND COHESIVE ARCHITECTURE THAT FITS WITHIN THE CONTEXT OF THE CORRIDOR.”*





## REGIONAL COMMERCE

|      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES | Primary            | Regional Commercial, Regional Office, and Research and Development                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|      | Secondary          | Assisted Living, Hotels, Institutional, Local Commercial, Multifamily Residential, Professional Office, and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FORM | Building Placement | <p>Higher-intensity uses should be located closer to major thoroughfares, with less-intensive uses transitioning to established residential areas.</p> <p>Buildings should be arranged on sites so that they help to frame and define the streets, giving deliberate form to streets and sidewalk areas. Building setbacks should be minimal to create an active street environment that encourages pedestrian activity. Where internal drives are used to organize buildings and pedestrian movement, setbacks to internal drives should be minimized wherever possible. Along high-volume streets, buildings may be set back from the street, provided they are sited to be consistent with the predominant line of building massing (setback) along the street in order to create a defined streetscape and sense of place. When larger setbacks are used, plazas and formal open spaces that serve as pedestrian-friendly gathering places should be located between the building and the street, rather than parking, to activate the street frontage.</p> <p>Building design should provide contextual references to its surrounding built and natural environment. Design context could include natural features, such as a river, lake, park, open space, or hillside; historic and cultural contexts; and existing architecture. Examples of contextual references could include maximizing visual access to scenic views, streets, pedestrian corridors, plazas, public art, and prominent buildings; incorporating distinctive architectural details, materials, and styles from nearby buildings where an established character exists; and siting buildings in a manner that uses the natural topography and minimizes grading.</p> <p>Large expanses of surface-parking areas should be avoided. Infill buildings and associated parking structures are expected and encouraged to replace large, surface-parking lots.</p> <p>Buildings, where feasible, should be sited or designed to create public spaces, such as a formal open space, pedestrian plaza, courtyard, outdoor seating area, etc., that are easily accessible from adjacent streets or sidewalks.</p> <p>Drive-through windows and delivery or service areas should be to the side or rear of building.</p> |



## REGIONAL COMMERCE

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| Building Character | <p>High-activity uses, such as retail, are encouraged on the first floor, with uses such as offices and residential encouraged on second floors. Site design should integrate seamless pedestrian connectivity across the site and to other uses.</p> <p>New multifamily residential is encouraged within Regional Commerce to create lively, walkable neighborhoods near restaurants, shops, grocery stores, and workplaces. First floors are encouraged to have active commercial spaces, including retail, restaurants, leasing offices, and other amenities, which should be individually accessible from the street. In locations where commercial use on the first floor is not viable, multifamily units should provide individual ground floor entrances, stoops or front porches, and pedestrian connections to the street or to a drive resembling a street. Multifamily buildings are encouraged to have urban form and be part of a connected and master-planned site. Conventional garden-style apartments are not supported in this location.</p> <p>Buildings should engage and define the street edge with landscaping, wide sidewalks, and street furnishings to allow for safe and comfortable movement of pedestrians. Street furnishings may include a combination of pedestrian seating, movable tables, planters, pedestrian-scaled light fixtures, artwork or decorative paving, waste receptacles, bike racks, and other street furnishings.</p> <p>Generally, buildings should have a primary entry identity that defines the visual character of the building, and it should be oriented toward the primary street. Buildings may have additional primary entrances, which should be oriented to a secondary street, internal drive that resembles a street, or prominent public space.</p> <p>Buildings should possess a tangible and distinct design quality not only at a distance but also up close. All building walls should employ massing variation, modulation, horizontal and vertical articulation, and architectural detailing to break down the overall scale of a building. Each wall should include materials and design characteristics consistent with those on the front. The effect of a single, long, or massive wall with no relation to human scale is not acceptable.</p> <p>The choice of materials and texture has great visual significance and can affect the long-term appearance and maintenance of the built environment. High-quality and long-lasting materials that offer texture and avoid monotonous surfaces are encouraged, and the look and dimension of these material elements should relate to human scale.</p> |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# REGIONAL COMMERCE

|      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FORM | Building Height | <p>Taller structures are encouraged around the I-65 interchanges and along Carothers Parkway, north of Liberty Pike, where higher travel demands can be supported, to create an attractive urban viewshed and promote economic development.</p> <p>Where transportation infrastructure is sufficient and where contextually-appropriate, new building heights should maximize the efficient use of land. New one-story structures are not generally encouraged in this area. Building height should not exceed three stories on properties adjacent to single-family neighborhoods.</p> <p>Appearance and functionality of development at intersections is important for creating a strong sense of place. Development should be coordinated across the four corners of an intersection so that building height, massing, and form is balanced on each corner to create a cohesive sense of place.</p> <p>Maximum building heights near the I-65 corridor are based on proximity to the interstate, ground elevations, and distance from residential neighborhoods. See Appendix G for maximum building heights within this design concept.</p> <p>New development should be designed to maintain scenic views of the surrounding hills, and buildings should be subordinate to nearby hillsides and hillcrests.</p> |
|------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## REGIONAL COMMERCE

|                |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN    | Landscape              | Landscape buffers adjacent to single-family residential areas; street trees; parking-area screening; service-area screening.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                | Amenities              | Formal, usable open spaces, such as plazas, courtyards, and outdoor seating areas, that serve as gathering areas. These open spaces should be highly accessible and in a prominent location that encourages continued active use.                                                                                                                                                                                                                                                                                                                                                                                                       |
|                | Access                 | <p>Primary access should be from the street. However, common or shared access points are encouraged in order to limit curb cuts along the street.</p> <p>Access should be designed to maximize efficiency and to minimize the negative impacts on levels of service on adjacent streets.</p> <p>Internal drives should resemble streets rather than parking lot drive aisles.</p> <p>Parking and services should be accessed through internal and secondary streets.</p>                                                                                                                                                                |
|                | Parking                | <p>Off-street parking should be provided, and parking structures are encouraged. Streets internal to a development may have on-street parking.</p> <p>The majority of off-street and structured parking should be located to the side or rear of buildings. Large expanses of pavement, particularly between a building and a street, should be avoided. Architectural and/or landscape features should be used so as to diminish the appearance of parking from public view.</p> <p>New developments should be encouraged to capitalize on shared parking efficiency with synergistic uses that have varying peak parking demands.</p> |
| TRANSPORTATION | Vehicular              | <p>Vehicular connections should be provided through adjacent developments and should connect to the existing street network.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                                                                                                                                                                                                                                                                                          |
|                | Bicycle and Pedestrian | New development should provide sidewalks, multi-use paths, and trails throughout its open spaces. New development should provide connections between uses on the site and between the site and adjacent properties and rights-of-way. Internal pedestrian systems should provide direct access from sheltered transit stops to buildings. These bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.                                                                                                              |
|                | Transit                | <p>Transit should be enhanced in this area to serve and support existing and future businesses, residents, and visitors. Sheltered transit stations should be provided along existing or planned routes.</p> <p>Employer-transportation programs are encouraged in order to reduce the percentage of trips made by single-occupant vehicles and to encourage transportation by alternate modes.</p> <p>Large developments should consider using internal shuttle systems to provide for efficient vehicular transportation patterns.</p>                                                                                                |

|                        |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Big Box Retail                                                                                                                         | Big-box retail, where a single business encompasses more than 50,000 square feet in a single story, is limited to the west side of I-65 between Moores Lane and Oak Meadow Drive.                                                                                                                                                                                                                                                                                                                                                                     |
|                        | Carothers Parkway between Liberty Pike and Murfreesboro Road                                                                           | Medical uses and supporting businesses are encouraged to remain and expand in this area.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Murfreesboro Road between Mack Hatcher Parkway and Quail Hollow Circle/Rosa Helm Way                                                   | This corridor includes an I-65 interchange and is an important gateway into the City. Redevelopment is anticipated and encouraged to create economically productive development while establishing a more people-friendly environment. This corridor should be further studied for future redevelopment, with an emphasis on cohesive design and access management.                                                                                                                                                                                   |
|                        | Seaboard Lane, Duke Drive, Mallory Station Drive, General George Patton, Nichol Mill Lane, Crossroads Blvd and connecting side streets | This Plan acknowledges that the Seaboard Lane area is evolving from light industrial to a broader mix of commercial uses. While some light industrial uses are appropriate, this location has the capacity to serve the Regional Commercial, Regional Office, and surrounding residential uses. Additional multifamily housing, a mix of businesses and showrooms, and other commercial uses are encouraged. Parking may be limited on former warehouse sites and standards should be flexible to allow for adaptive reuse of buildings and new uses. |



## SINGLE FAMILY RESIDENTIAL

The Single-Family Residential design concept consists of single-family residential neighborhoods, which provide a range of single-family dwelling and lot sizes. The defined character may vary by neighborhood, but new developments should transition from the existing development patterns in adjacent neighborhoods. New neighborhoods should have walkable, well-connected street systems that connect to surrounding neighborhoods and nearby destinations. They should be designed around natural features to highlight forested areas, hillsides and hilltops, streams, and tree rows as accessible community amenities.

*"NEW  
NEIGHBORHOODS  
SHOULD HAVE  
WALKABLE, WELL-  
CONNECTED  
STREET SYSTEMS  
THAT CONNECT  
TO SURROUNDING  
NEIGHBORHOODS AND  
NEARBY DESTINATIONS."*



# SINGLE FAMILY RESIDENTIAL

|      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USES | Primary            | Single-Family Residential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | Secondary          | Institutional and Recreation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| FORM | Building Placement | <p>Buildings and their main entrances should address the street. Double frontage, reverse frontage, and flag lots are discouraged.</p> <p>Front-yard setbacks should be consistent along each block, but may vary between neighborhoods or between sections of neighborhoods. Side- and rear-yard setbacks of new buildings should be designed so as to maintain privacy for both new and existing neighboring properties.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | Building Character | <p>New buildings along established streets should be designed to be compatible with the predominant character along the street. The integrity of existing neighborhoods and subdivisions should be preserved.</p> <p>Dwellings within new developments should provide a mix of architectural styles and building materials that enhance the City's character. Architecture should contain a rich blending of designs that complement each other yet not be overly repetitive.</p> <p>Proportion, design, and facade width of dwelling should not be dominated by garages. Rear and side facing garages are encouraged, as well as front-facing garages that are substantially recessed from the front facade of the dwelling.</p>                                                                                                                                                                                                                                                                                     |
|      | Building Height    | Maximum of two and one-half stories                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | Lot Size           | <p>New development should include a range of lot sizes, the following are recommended minimums, but lot sizes should vary to provide more diverse housing options. Larger developments are expected to have a wide range of sizes.</p> <ul style="list-style-type: none"> <li>• Lots with dwellings having attached garages that are front, side, or rear facing should have minimum widths of 65 feet and minimum sizes of 7,150 square feet.</li> <li>• Lots with dwellings having front-facing detached garages should have minimum widths of 50 feet and minimum sizes of 5,500 square feet.</li> <li>• Lots with dwellings accessed by alleys should have minimum widths of 45 feet and minimum sizes of 4,950 square feet.</li> </ul> <p>Lots on the periphery of new developments should be sized to be consistent with the existing lots of adjacent neighborhoods. Smaller lots may be located internally within new developments and should be served by active park amenities within walking distance.</p> |

# SINGLE FAMILY RESIDENTIAL

|                |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SITE DESIGN    | Landscape              | <p>Existing features, such as hillsides and hilltops, stone walls, tree rows, and wood-plank fencing, enhance the area and should be preserved.</p> <p>New landscaping should be provided at neighborhood entrances and in common open spaces. Common design elements, such as fieldstone walls and wood plank fencing, should be used along major thoroughfares to reflect Franklin's community identity.</p>                                                                                                                                                                                                                 |
|                | Amenities              | <p>Neighborhood amenities include common, usable open spaces, such as clubhouses, multi-use paths, playgrounds, and pools.</p> <p>Emphasis should be placed on quality open space as part of new developments. Residential developments should be designed around open spaces, which, in turn, should connect to adjacent open spaces and regional systems. Open space should not be designated as an afterthought based simply on land that is left over.</p>                                                                                                                                                                 |
|                | Access                 | <p>Lots should be accessed from alleys or by driveways from the street.</p> <p>Streets should have multiple connections in order to provide a variety of routes.</p> <p>Streets should be designed for slower speeds to allow for mixing pedestrian and vehicular traffic.</p> <p>If there are existing street connections or stubouts adjacent to proposed developments, then those in the proposed developments should connect to the existing street network. If there are no existing street or stubout connections, then other locations should be identified in order to increase connectivity between developments.</p> |
|                | Parking                | <p>Off- and on-street for residential uses.</p> <p>Parking for institutional uses should be to the side and rear of buildings.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| TRANSPORTATION | Vehicular              | <p>Vehicular connections should be provided through adjacent developments, connect to the existing street network, and provide an interconnected sidewalk and street network in a grid or modified grid pattern, where appropriate.</p> <p>New streets should be designed per the Corridor Character Matrix and Connect Franklin.</p>                                                                                                                                                                                                                                                                                          |
|                | Bicycle and Pedestrian | <p>New development should provide sidewalks, multi-use paths, and trails throughout its open spaces. They should connect to other conservation areas, paths, adjacent uses, and streets. These bicycle, pedestrian, and multi-use path connections should be designed and provided per the Corridor Character Matrix, Connect Franklin, Parks Master Plan, and this Plan.</p>                                                                                                                                                                                                                                                  |
|                | Transit                | <p>Transit stops should be provided along existing or planned routes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



# SINGLE FAMILY RESIDENTIAL

|                        |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL CONSIDERATIONS | Columbia Pike,<br>South of Mack<br>Hatcher Parkway     | This scenic corridor should have deep setbacks of at least 250 feet for new development. Informal landscape design and rural features, such as stone walls, wood plank fencing, and informal tree plantings, should be utilized to sustain the scenic and rural quality of the area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Murfreesboro Road<br>Inside of Mack<br>Hatcher Parkway | <p>This corridor is an important gateway into Downtown Franklin. The presence of open space, in the form of larger lots and building setbacks, contributes to its character. Infill development that occurs along the corridor should reflect the existing character and setbacks.</p> <p>If development occurs on the Green Farm on the south side of Murfreesboro Road, then Ralston and Welsh Lanes should be extended. Welsh Lane should be a single-loaded street with dwellings facing Murfreesboro Road with primary access to the extension of Ralston Lane. Murfreesboro Road should have 150-foot open-space setbacks to maintain the viewshed into Downtown Franklin. Charlton Green should be used as an example for desirable site design and usable open space.</p> |
|                        | Hillsboro Road,<br>Inside of Mack<br>Hatcher Parkway   | This area is an important gateway and corridor into Downtown Franklin. The presence of open space, in the form of larger lots and building setbacks, contributes to the character of this area. Any infill that occurs along the corridor should reflect the existing character and setbacks. Established single-family residential uses should be preserved, and commercial intrusion is discouraged.                                                                                                                                                                                                                                                                                                                                                                            |
|                        | Institutional Uses                                     | Institutional uses may be appropriate if the location does not negatively impact access, scale, and traffic of the surrounding area. These uses are encouraged to be located at major intersections of arterial and collector streets. Additional stories may be appropriate for institutional uses. The conversion of dwellings in existing residential areas for institutional uses is not appropriate.                                                                                                                                                                                                                                                                                                                                                                         |





# LAND USES AND BUILDING FORMS

LAND USES ..... 97





# LAND USES AND BUILDING FORMS

Each design concept identifies appropriate primary and secondary land uses. The primary land uses should widely shape the area, with secondary uses mixed in to complement the primary uses and to provide variety. In many cases, building form and the design of the development are equally as important as the uses in creating well-designed places and enhancing community character. The following are descriptions of the land uses and building forms that are referenced in the design concepts.

|              |                           |                                                                                                                                                                                                                                                                                                |                                                                                       |
|--------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| AGRICULTURAL | Agriculture               | An agricultural or farming use, including facilities for processing and selling agricultural products grown on the premises, and nurseries.                                                                                                                                                    |    |
|              | Hobby Farm                | A small farm for recreational use generally maintained without expectation of being a primary source of income.                                                                                                                                                                                |    |
| RESIDENTIAL  | Single-Family Residential | A type of dwelling that is a stand-alone structure on its own lot and intended for occupancy by a single family.                                                                                                                                                                               |   |
|              | Cottage                   | A single-family dwelling that is typically one story or one-and-one-half stories, with simple architectural features, often with a hipped or low-pitched gabled roof and window dormers. Architectural styles commonly associated with cottages include the bungalow, Craftsman, and Cape Cod. |  |

|             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                              |
|-------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| RESIDENTIAL | Accessory Dwelling | A detached, self-contained, small dwelling located on the same lot as a larger, single-family dwelling that may be a stand-alone structure or located above a detached garage.                                                                                                                                                                                                                                                                                                                                               |                           |
|             | Duplex             | A single building that contains two dwelling units, each of which has direct access to the outside or a common hallway leading outside.                                                                                                                                                                                                                                                                                                                                                                                      | <br>© OPTICOS DESIGN, INC |
|             | Big House          | A two-story residential building, with four or less dwelling units, that has the appearance of a single-family dwelling from the street.                                                                                                                                                                                                                                                                                                                                                                                     | <br>© OPTICOS DESIGN, INC |
|             | Farmstead Compound | A type of residential development with one main structure that resembles a large, detached single family dwelling, a barn, and associated outbuildings, designed around significant open spaces and viewsheds. While maintaining the architecture, form, and scale of a farmstead, each building may contain multiple dwelling units. This type of housing arrangement is best suited for areas where rural character is desired to remain and may either be new construction or an adaptive reuse of an existing farmstead. |                          |
|             | Townhouse          | An individual dwelling where one or two walls are shared between adjacent dwellings and is generally narrower than traditional, single-family dwellings. They are located on separate lots with independent access to the exterior and generally have small yards.                                                                                                                                                                                                                                                           |                         |

|               |                         |                                                                                                                                                                                                                                                                                              |                                                                                       |
|---------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| RESIDENTIAL   | Multifamily Residential | A residential building containing five or more individual dwelling units, with the units often stacked one above the other, sharing common walls and/or horizontal floors and ceilings, often called apartments, lofts, condominiums, or stacked flats, and includes both for sale and rent. |    |
|               | Assisted Living         | A combination of housing, healthcare, personalized assistance, and supportive services designed to respond to the individual needs of those who need help with activities of daily living.                                                                                                   |    |
| INSTITUTIONAL | Institutional           | Land used for civic purposes, such as a cemetery, church, community center, fire station, government office, hospital, library, police station, post office, school, or other institution of public and semi-public gathering and to support the common good.                                |    |
|               | Recreation              | Land used for public or private parks and recreational uses, or that are to be preserved in a natural state, and includes both active and passive open space.                                                                                                                                |   |
| COMMERCIAL    | Live-Work Unit          | A single unit consisting of both an office and a residential component.                                                                                                                                                                                                                      |  |



|            |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COMMERCIAL | Transitional Office | A low-intensity office or personal service use that transitions between a higher-intensity commercial area and surrounding residential neighborhoods and is typically located in a single-family structure that has been converted to an office use or is located in a stand-alone building that has residential architectural features. Uses may include personal service or an office for an attorney, doctor, family dentist, real estate agent, or insurance company and typically have limited building size, parking-lot size, and hours of operation. |
|            | Professional Office | An office use primarily to conduct business or to provide services. No goods or merchandise are sold or exchanged, and uses such as an attorneys' office, daycare center, medical group practice, office suite for individual businesses, real estate office, sales office, and telemarketing center may be included.                                                                                                                                                                                                                                        |
|            | Regional Office     | An office that accommodates corporate employers with broad regional influence, corporate headquarters, and professional or service office suites, and whose buildings are generally large in height and scale and accommodate large numbers of employees.                                                                                                                                                                                                                                                                                                    |
|            | Hotel               | A commercial establishment providing temporary sleeping accommodations, meals, and other guest services, but not bed-and-breakfast establishments or rooming houses.                                                                                                                                                                                                                                                                                                                                                                                         |
|            | Local Commercial    | A commercial retail or personal service use that is generally located in a stand-alone building or in a small commercial center that serves surrounding neighborhoods. Examples include a beauty salon, drug store, restaurant, micro-brewery, small clothing store, small grocery store, day care center, gas station, or other specialty shop.                                                                                                                                                                                                             |
|            | Regional Commercial | Large commercial retail uses that serve a larger regional market and may include department stores, grocery superstores, large discount stores, large specialty retailers, general retail, automotive uses, and restaurants.                                                                                                                                                                                                                                                                                                                                 |

|            |                          |                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INDUSTRIAL | Research and Development | Investigative business activity directed toward the improvement, innovation, and introduction of products and processes aimed at discovering solutions to problems or creating new goods and knowledge.                                                                                                                                                                                            |
|            | Light Industry           | Assembly, fabrication, processing, research and development, or warehousing of goods and materials using processes that ordinarily do not create fumes, glare, noise, odors, smoke, or health or safety hazards outside of the structure in which the process takes place. Light Industry includes auto-oriented uses, self-storage facilities, breweries, and veterinarians with outdoor kennels. |
|            | Heavy Industry           | A use characterized by a manufacturing or compounding process of raw materials that often involves outdoor operations as part of the process.                                                                                                                                                                                                                                                      |



IMPLEMENTATION

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*“MOVING THE PLAN  
FROM ITS LONG-TERM  
VISION TO REALITY IS  
CRITICAL.”*

## IMPLEMENTATION

The adoption of this Plan is the first step in the implementation process. It is the product of considerable effort on the part of City elected and appointed officials, the Planning Commission, the Planning and Sustainability Department, community leaders, and involved citizens.

Moving the Plan from its long-term vision to reality is critical. It is a deliberate process accomplished through sound development decisions, policy-based decisions, land-regulation tools, coordination and partnerships, and special projects and studies.

### DEVELOPMENT DECISIONS

Effective implementation involves a public-private partnership between developers and the City. It is the responsibility of developers to design development proposals around the tenets of the Plan, while it is the City’s responsibility to consider the Plan in each decision and find ways to give life to the vision and maintain its integrity.

As authorized by the Tennessee Code Annotated, the Planning Commission will use the Plan to make decisions and recommendations about the physical development of the City. The Planning and Sustainability Department will provide support by evaluating proposed development and the degree to which it conforms to the Plan. Conformance with the Plan should be determined as follows:

1. Review the Guiding Principles to see if the proposed development or redevelopment actively supports the principles and the vision;
2. Determine the Design Concept that applies to the property using the Design Concepts map;
3. Review the applicable Design Concept section for appropriate land uses, building form (placement, character, height, and lot size), site design (landscape, amenities, access, and parking), and transportation recommendations (vehicular, bicycle and pedestrian, and transit);
4. Check to see if any special considerations apply to the property (located at the end of each Design Concept). If there is a conflict between the special considerations and the general Design Concept, the special considerations should apply; and
5. Determine whether the proposed building forms and uses conform to the Land Uses and Building Forms section.



*“ALL OF THESE  
GUIDING  
DOCUMENTS ARE  
INTERCONNECTED  
AND SHOULD BE  
USED TO MAKE  
DECISIONS...”*

#### POLICY-BASED DECISIONS

The Plan should work in coordination with the Connect Franklin, the Parks Master Plan, the Capital Improvements Plan, the Integrated Water Resources Plan, and other City planning documents. All of these guiding documents are interconnected and should be used to make decisions about managing growth, infrastructure investment, planning community amenities, preserving historic and natural resources, and designing development that enhances Franklin’s unique identity and character.

#### LAND REGULATION TOOLS

Effective implementation requires consistency between the Plan and the City’s regulatory documents. The Zoning Ordinance, Subdivision Regulations, Street Specifications, and Stormwater Ordinance should be reviewed and updated, as needed, to minimize conflicts and to ensure consistent implementation of the Plan. The Zoning Ordinance is the regulatory tool most associated with land use planning, and its requirements should make it easy for developers to do what the community wants for its future.

#### COORDINATION AND PARTNERSHIPS

Various planning elements are interconnected between many City initiatives, non-profit-based community projects, private development, and regional plans. The City should assume a leadership role in promoting strong partnerships between city, regional, and state public agencies; community groups and non-profit organizations; the local business community; neighborhoods; and the private sector. The City should conduct outreach and continuing education on the Plan’s vision and principles by encouraging developers, builders, and the business community to help implement the Plan.

*“MAJOR PLAN  
UPDATES SHOULD  
OCCUR EVERY  
FIVE YEARS TO  
GIVE THE CITY AN  
OPPORTUNITY TO  
REAFFIRM THE VALIDITY  
OF THE VISION...”*

## UPDATES AND AMENDMENTS

### STATE LAW REQUIREMENTS

State law defines the manner in which the Plan may be adopted or amended. Prior to the adoption of the Plan or any parts of the Plan, the Planning Commission shall hold a public hearing thereon, published in a newspaper at least 30 days prior to the meeting. The adoption of the Plan or any part, amendment, or addition shall be by resolution carried by the affirmative votes of not less than a majority of all the members of the Commission. The resolution shall refer expressly to the maps, descriptive matter and other matters intended by the Planning Commission to form the whole or part of the Plan, and the action taken shall be recorded on the adopted Plan or part thereof and descriptive matter by the identifying signature of the secretary of the Planning Commission (the Planning & Sustainability Department Director), and a copy of the Plan or part thereof shall be certified to the Board of Mayor and Aldermen.

### MAJOR UPDATES

Planning is an ongoing process that responds to new information and changing conditions, challenges, and opportunities that may arise. Major Plan updates should occur every five years to give the City an opportunity to reaffirm the validity of the vision, revise the Plan to be relevant to today’s world, and draft new strategies for consideration. These updates will be a significant undertaking involving public officials, City staff, citizens, and consultant services as needed. Updates should include an evaluation of areas where the Plan has been successful and where there may be a need for refinement, based on the following:

1. Identification of changing conditions, trends, or new approaches;
2. Evaluation of policies to determine their effectiveness and relevance to current conditions and trends;
3. Necessary adjustments due to changes in State law; and
4. Assessment of Plan amendments and/or any other deviations from the Plan to determine if there is a pattern of emerging changes.

## PLAN AMENDMENTS

Amendments to the Plan may be reviewed by the Planning Commission on a quarterly basis. Since the Plan is the City's collective vision, ample opportunity will be provided for citizen input when amendments are proposed.

City-sponsored Plan amendments may include revisions to one or more sections of the Plan. These amendments will generally result from special projects or studies or as a result of changes within the market, infrastructure, a specific issue/policy change, changes in State law, or a substantial change in situation or public sentiment. These amendments may include changes to any portion of the Plan, including the text, maps, or other corrections.

Applicant-requested Plan amendments to accommodate specific developments may be considered only for the design concept map and/or special considerations. The Guiding Principles and Design Concepts are the long-term vision for the future and are not appropriate to be considered for amendment as part of a development request. An applicant requesting a Plan amendment must demonstrate its need and justification, as follows:

1. Significant changes have occurred since the adoption of the Plan and necessitate the proposed amendment;
2. The proposal is consistent with the overall intent of the Plan, its guiding principles, desired land-use patterns, the development suitability analysis, and infill maps as applicable;
3. The design is compatible with the design concept of the surrounding area and does not cause an abrupt change in massing, form, or architecture;
4. The proposal does not adversely affect the health and safety of residents, or damage the natural environment or scenic quality in contradiction to the Plan; and
5. Substantial improvements in the quality of life for City residents will be achieved.

An applicant requesting a Plan amendment must complete the following steps prior to the Planning Commission meeting where the request is to be considered:

1. Meet with Planning and Sustainability Department regarding the intent of the amendment request and demonstrate its need and justification.
2. Conduct a site visit with members of the Departmental Review Team (DRT).
3. Submit a conceptual sketch of the proposed development and hold a preliminary design meeting with the DRT.
4. Conduct a neighborhood meeting where information should be presented regarding the nature of the Plan amendment request and the proposed site design. Notice of the neighborhood meeting should be provided, at a minimum, to property owners within 500 feet of the property by first class mail at least one week prior to the meeting date. A report of comments from the neighbors should be included with the Plan amendment request submittal.
5. Submit a formal Plan amendment request for review by the Planning Commission, as outlined in the FMPC Bylaws.

# PROCESS AND OUTREACH

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*"THIS PLAN GUIDES PUBLIC POLICY IN A MANNER THAT ENSURES THE CITY OF FRANKLIN CONTINUES TO BE THE COMMUNITY THAT ITS CITIZENS DESIRE IT TO BE."*

## OVERVIEW OF PROCESS

The vision, elements, and policies of the Plan are rooted in the information that was initially gathered through the following practices:

- Review, analyze, and understand the history of growth, existing conditions, and recent trends in land-use and development decisions.
- Conduct a development suitability analysis to highlight optimal locations for new and infill development and to identify areas with considerable constraints.
- Engage the public in an effort to produce a collective vision and identify key issues with new and future development.

## EVALUATION OF EXISTING CONDITIONS AND TRENDS

The first phase of the Plan involved reviewing and understanding the existing land-use conditions and how they have changed over time. The growth history and trends were assessed by reviewing the Franklin Development Reports from 2005 to 2013. Recent development approvals were also reviewed, and maps were created to track the number of developments and their build out. Other existing conditions, including wetlands, steep slopes, utility expansion, and transportation improvements, were reviewed to determine the impact on physical growth and potential changes in land use. In reviewing this information, several meetings between the Planning and Sustainability Department staff and the consultant were held to identify, document, and understand the changes in the land-use patterns in each area of the City. Existing policies were evaluated to determine their effectiveness and relevance to current trends, and past plan amendments were assessed to determine patterns of change. The information from this evaluation of existing conditions and trends can be found in Appendices A and B.

## DEVELOPMENT SUITABILITY ANALYSIS

The second phase of the Plan involved conducting a development suitability analysis to aid the Board of Mayor and Aldermen, Planning Commission, and the City staff in making decisions regarding future growth. This analysis tool demonstrates how suitable land is for development based on a number of factor and development constraints including hilltops, hillsides, rivers, streams, floodplain, and stream buffers and proximity to City sewer, primary and secondary thoroughfares, employment and commercial centers, and fire stations. The higher the number of constraints, the less appropriate the land is to handle development. The suitability maps directly influenced the Design Concept Map and may be found in Appendix C.

## COMMUNITY ENGAGEMENT

The most critical part of the process was engaging the community to participate by identifying current land-use and development issues and by providing guidance on how they would like to see Franklin evolve in the coming years. The best planning efforts are those that have life long after the plan has been adopted, and that cannot happen without strong community endorsement. To ensure that the Plan considers and addresses issues important to City residents, businesses, and institutions, various public-involvement opportunities and methods were employed.

### STAKEHOLDER INTERVIEWS

One-on-one interviews were conducted with the Mayor, Aldermen, and Planning Commissioners to gather information on land use, growth, development preferences, infrastructure expansion, and transportation, including streets, transit, and bicycle and pedestrian amenities. Interviews were held May 4-6, 2015, and were conducted in a conversational format to identify the key planning issues that should be addressed in the Plan.

### PUBLIC WORKSHOP SERIES

A three-night series of public workshops was held May 4-6, 2015, to discuss current land-use, development, and design issues and to identify objectives for future growth and development. The findings from the workshop series influenced the direction and shape of the Plan's vision, guiding principles, and design concepts. The workshops began with a brief presentation of the existing vision, planning principles, and growth trends. Participants were then divided into small groups to discuss concerns regarding growth and land use, to identify a vision for future growth, and to suggest preferences on types and design of new development. Over 100 participants attended the meetings over three nights. Maps summarizing the comments and ideas from the workshop series are located in Appendix D.



## ONLINE FORUM AND SOCIAL MEDIA

Citizens who do not typically attend or voice opinions at traditional public meetings were able to provide input on planning issues at various times during the development of the Plan. This ongoing dialogue helped guide specific recommendations found in the plan.

In conjunction with the community engagement component of Connect Franklin, the City hosted an online discussion forum using the MindMixer platform to identify transportation issues, as well as growth and development concerns.

As the draft Plan was developed, Facebook was used to solicit input regarding specific development and design recommendations. Using Facebook as a public participation outlet, approximately 45,000 people and businesses were reached.

Facebook Post: Hey Franklin, Do you like this place? Why or Why Not? #EnvisionFranklin



### FACEBOOK RESPONSE:

*"BEAUTIFUL! LOOKS LIKE A COMMUNITY-ORIENTED, FAMILY-FRIENDLY DESIGN. WOULD LOVE TO SEE A NEIGHBORHOOD LIKE THIS WALKING DISTANCE TO DOWNTOWN FRANKLIN."*



## INFILL WORKING GROUP

In September 2014, the Planning and Sustainability Department invited individuals from the Planning Commission, the Board of Mayor and Aldermen, the Historic Zoning Commission, the Sustainability Commission, and the design community to participate on an Infill Working Group. Since its formation, the group has reviewed current City policies, explored peer cities' infill policies and developments, and offered recommendations for fostering desirable infill development. The Infill Working Group consisted of Brant Bousquet, Pearl Bransford, Mike Hathaway, Ben Johnson, Dwight Kiser, Dan Klatt, Roger Lindsey, Margaret Martin, Alma McLemore, Mary Pearce, Ann Petersen, Kate Reynolds, Doug Sharp, Cyril Stewart, Gary Vogrin, and Karina Young.

The City's Infill Working Group was consulted to provide specific feedback on key issues in Downtown Franklin and surrounding neighborhoods. The group completed a character mapping exercise for locations with established character and areas expected to transition in character. These maps and the group's recommendations for land use and site design directly influenced the Design Concept Map and some special considerations regarding infill development. The Infill Study maps are located in Appendix E.

## DRAFT ENVISION FRANKLIN COMMUNITY OUTREACH

In September 2016, the City held two public open houses to present the initial draft Plan. More than 200 attendees walked through the stations and interacted with city staff and the consultant. Over 80 comment cards were received, covering a range of input and feedback. In addition to the open houses, city staff gave presentations at FrankTalks, Downtown Franklin Association, Franklin Tomorrow Board of Directors, Chamber Real Estate Round Table, Design Professionals Meeting, Franklin Rotary Breakfast Meeting, and held booths at the October 2016 Franklin Tomorrow Breakfast with the Mayors and the Williamson Inc. Chamber Luncheon.





## KEY PLANNING ISSUES

Through the various community engagement opportunities, citizens noted many of the positive attributes of Franklin but also voiced several concerns regarding the current conditions of growth and development. A compilation of the key planning issues identified by the various stakeholders, public, and City staff during the process are as follows:

- Protection of Franklin's distinctive identity and character, with central attributes identified as family-friendly, historically distinctive, economically thriving, and education-focused
- Preservation of historic structures, neighborhoods, and established character
- Conservation of natural resources, open space, hills, and scenic vistas
- Management of growth and the need to proactively plan for and direct it, rather than reacting to it
- Improvement or extension of infrastructure to direct growth to appropriate areas instead of extending services in multiple directions based on development applications
- Desire for mixed-use, infill, and walkable development, districts, and neighborhoods
- Diversity in housing stock to provide options for a variety of ages, incomes, family sizes, and preferences
- Congested major thoroughfares due to over-reliance on arterials from lack of neighborhood connectivity
- Evolving transportation needs and desires, including frequent and convenient regional and local transit and on-demand travel options
- Demand for more sidewalks and bicycle facilities
- Underuse of the Harpeth River as an asset, public amenity, and recreational resource
- High land costs driving pressure for higher density and intensity in new developments
- Consistent high demand and low vacancy rates for Class A office space.

# APPENDIX

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| APPENDIX B..... | EXISTING CONDITIONS - CHARACTER AREA PATTERNS |
| APPENDIX C..... | DEVELOPMENT SUITABILITY ANALYSIS              |
| APPENDIX D..... | PUBLIC WORKSHOP SERIES MAPS                   |
| APPENDIX E..... | INFILL CHARACTER MAPPING                      |
| APPENDIX F..... | CORRIDOR CHARACTER MATRIX AND MAP             |
| APPENDIX G..... | INTERSTATE CORRIDOR BUILDING HEIGHTS          |
| APPENDIX H..... | PHOTOGRAPH INDEX AND CREDITS                  |
| APPENDIX I..... | ADOPTION RESOLUTION                           |



## APPENDIX A

### EXISTING CONDITIONS AND TRENDS

Existing conditions and trends were assessed in the first phase of writing this Plan. Information contained within this Appendix was gathered in 2015. Figures A.1 and A.2 show the 2015 estimated population and employment density, respectively. These figures represent the number of persons per acre for population and the number of jobs per acre for employment.

In order to assess the demand for land to accommodate future development, both population and employment figures for the UGB were projected to the year 2040. These projections were done in coordination with Connect Franklin and are depicted on the following maps according to Traffic Analysis Zone, a geographic unit used for inventorying demographic and employment data within the study area. TAZs are defined by the Nashville Area MPO and are based on census block information. The facts and figures cited in this document are based on 2010 U.S. Census data that has been projected using historic and anticipated growth rates.

The population and employment projections take into account existing development patterns, approved development agreements, and potential land use changes. Development agreements are planned or on-going projects that have received approval from the City of Franklin.

The process used to project population and employment growth in the UGB is as follows:

1. Reviewed and mapped development agreements by census block for residential density (units per acre) and non-residential intensity (gross square feet of development).
2. Mapped potential future land use changes and proposed densities by census block based on discussions with City of Franklin planning and engineering staff.
3. Identified parcels currently classified as vacant and reviewed for existing structures and/or development feasibility.
4. Population projections:
  - Development agreements: Total number of units approved minus existing units (Source: 2013 Development Report).
  - Future land use changes: Acreage multiplied by gross density to calculate potential units, minus existing units on site, multiplied by 2.45 persons per household (2010 U.S. Census for City of Franklin).
  - Vacant Parcels: Number of vacant parcels, assuming one dwelling unit (DU) per parcel.
5. Employment projections:
  - Development agreements: Total approved square footage divided by square footage per worker (see assumptions in Figure A.5).
  - Future land use changes / Development based on zoning: Acreage multiplied by floor area ratio (FAR) (see assumptions Figures A.5 and A.6) to

## APPENDIX A

### EXISTING CONDITIONS AND TRENDS

determine building gross square footage, divided by square footage per employee.

6. All projections were aggregated by TAZ by employment category. If any part of a TAZ was included in the City of Franklin urban growth boundary, all of the census blocks in the TAZ were included even if the block was outside the UGB. However, only blocks within the UGB were projected to 2040, no change in build out is assumed for blocks outside of the UGB (i.e. Existing population and employment numbers were used as future numbers for census blocks inside the TAZ but outside the UGB).
7. The results of the Nashville Area MPO: Regional Land Use Model, Business-as-usual Scenario census block data was aggregated by TAZ.
8. 2013 Base Data:
  - Population: 2010 MPO/Census data was projected to 2013 using the 2010-2013 growth rate as reported in the 2013 Development Report.
  - Employment: 2010 MPO/Census data was projected to 2013 using the 2010-2013 MPO Business-as-usual model growth rate. (Employment growth trends were not available as part of annual development reports).
9. The population and employment projections estimated from development agreements and current zoning as aggregated in Step 6 were added to 2013 base year levels to calculate 2040 projections.
10. A straight line projection was applied from 2013 to 2040 to calculate interval years (2015, 2020, 2030, and 2040).

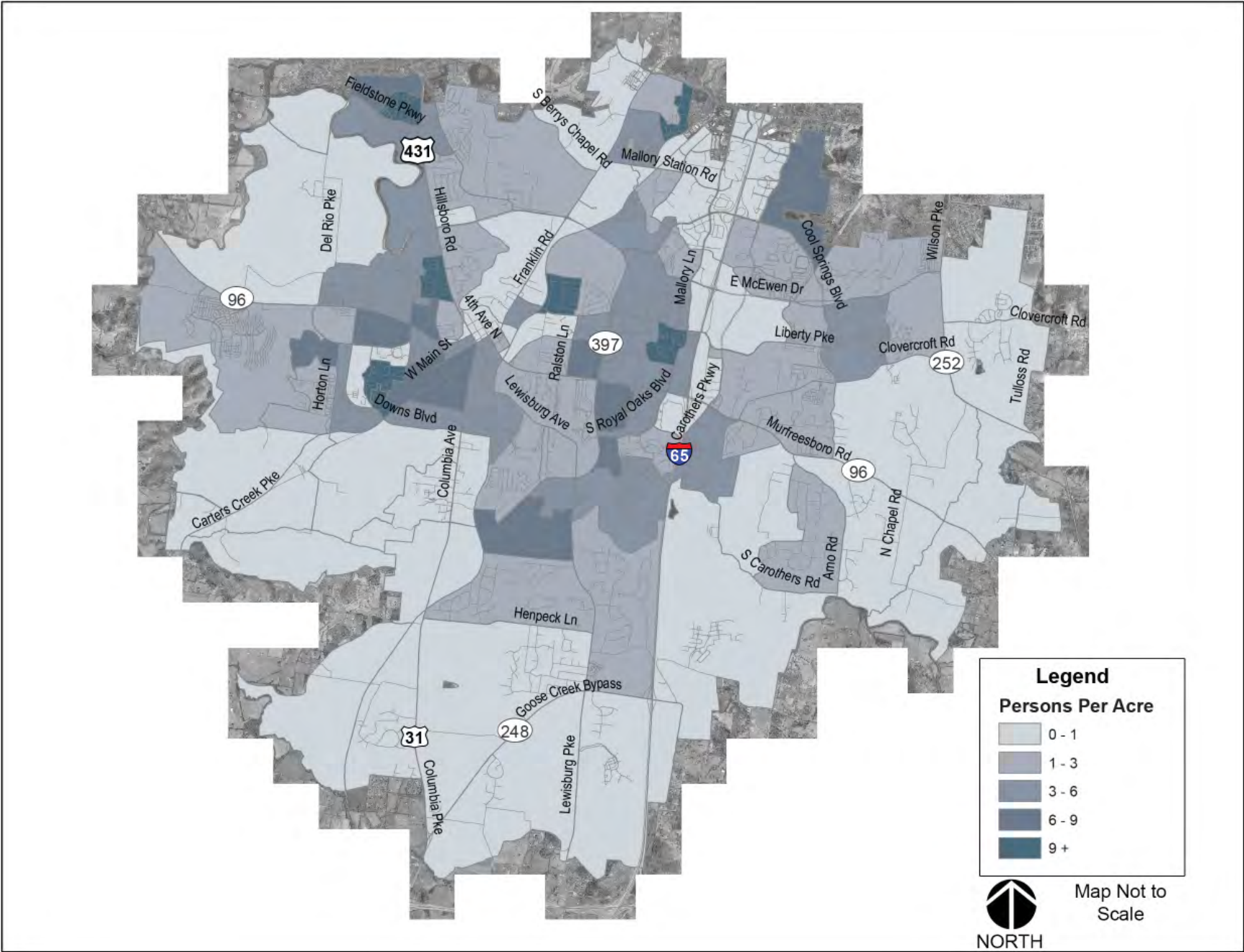
By 2040, it is projected that 133,647 will live in the City of Franklin / Franklin UGB area. This is a 52% increase in population from the 2015 estimate of 87,921. Projected employment within the study area for 2040 is 126,667, a 49% increase from the 2015 estimate of 84,995 jobs. Figure 1.9 summarizes the population and employment projections from 2013 to 2040, including the interval years.

In addition to the existing population concentrations, residential development is anticipated to the northwest, between Hillsboro Road and State Route 96, south around the Goose Creek interchange in the Berry Farms developments, and east of Interstate 65 in the Seward Hall character area. Figure A.3 shows the 2040 projected population density.

Employment growth is primarily expected to occur in established commercial areas, specifically the Cool Springs area, along Carothers Parkway. A new employment concentration will be developed around the Goose Creek interchange in the Berry Farms projects. Additionally, Central Franklin and the Columbia Avenue corridor will continue as employment centers. The 2040 projected employment density is shown in Figure A.4.



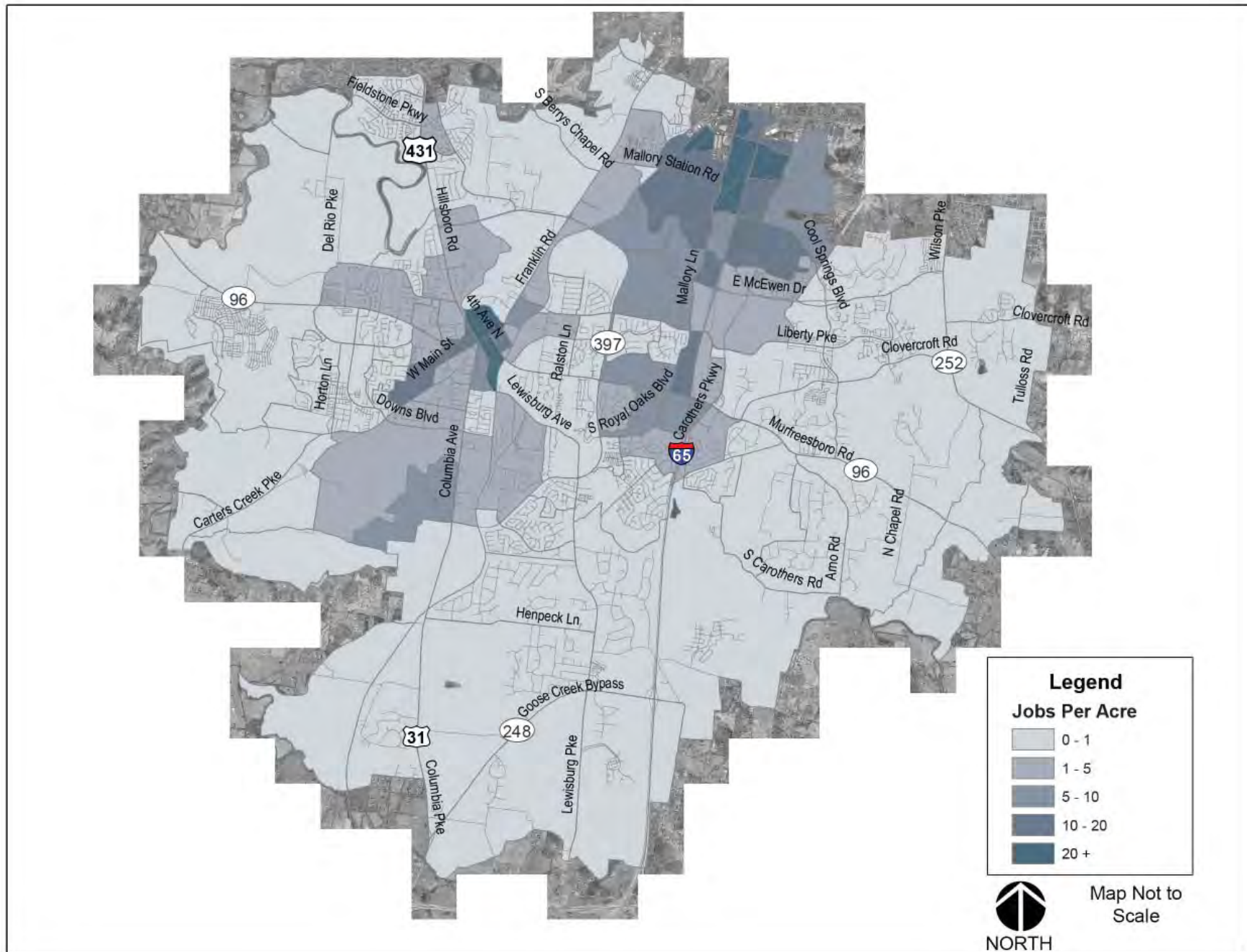
APPENDIX A  
FIGURE A.1: 2015 POPULATION DENSITY



Source: U.S. Census and City of Franklin 2014 Special Census

# APPENDIX A

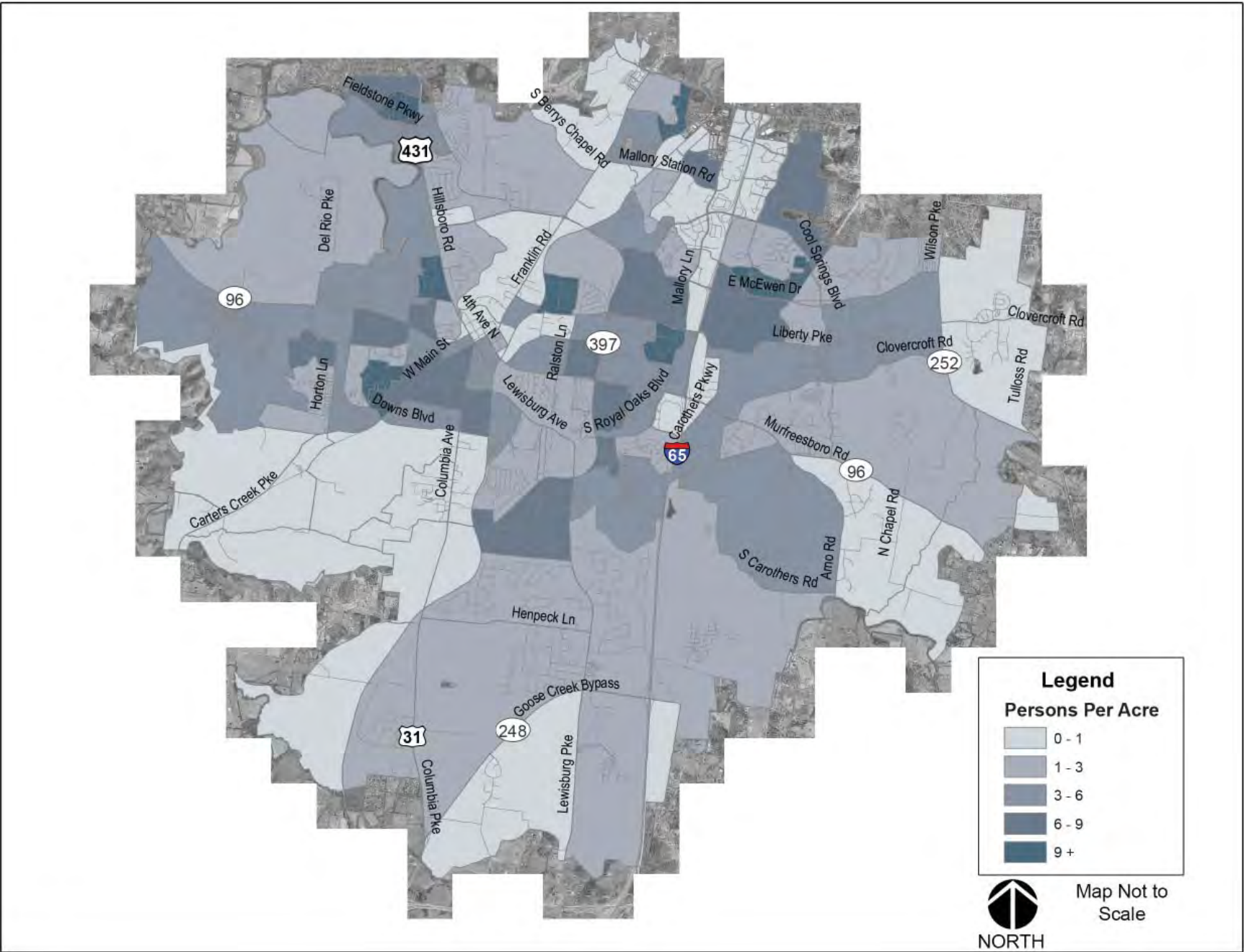
FIGURE A.2: 2015 EMPLOYMENT DENSITY





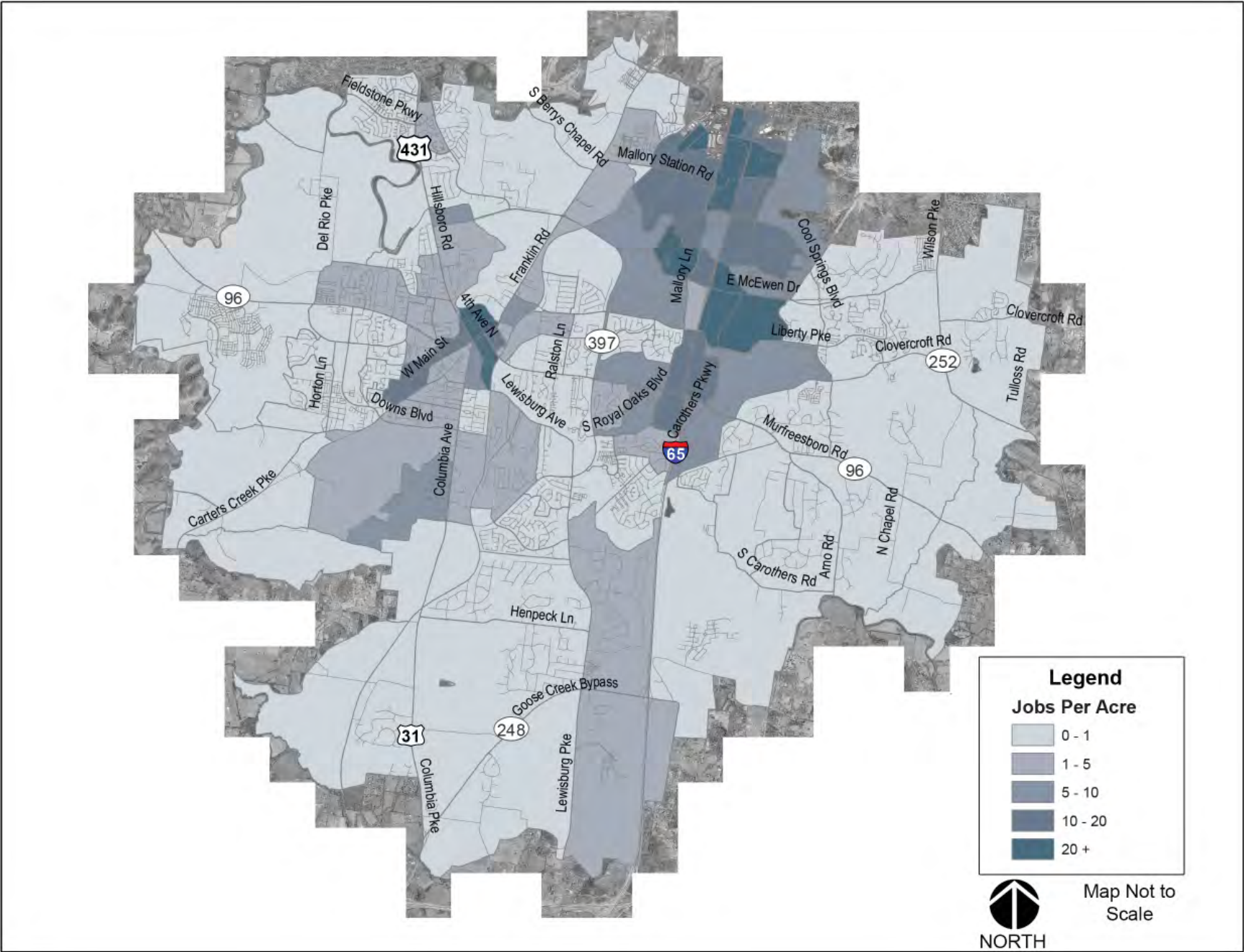
APPENDIX A

FIGURE A.3: 2040 POPULATION DENSITY



Source: U.S. Census and City of Franklin 2014 Special Census

APPENDIX A  
FIGURE A.4: 2040 EMPLOYMENT DENSITY





## APPENDIX A

FIGURE A.5: FAR AND SQUARE FOOTAGE PER EMPLOYEE BY LAND USE

| Land Use                | FAR* | SQ FT Per Employee* |
|-------------------------|------|---------------------|
| Industrial              | 0.22 | 498                 |
| Office                  | 0.35 | 350                 |
| Retail                  | 0.26 | 671                 |
| Mixed Non Residential   | 0.21 | 481                 |
| Restaurant              | n/a  | 459                 |
| Healthcare              | n/a  | 469                 |
| Public Order and Safety | 0.10 | 686                 |
| Religious Worship       | n/a  | 2,059               |
| Community College***    | n/a  | 969                 |
| Hotel                   | n/a  | 0.9**               |

\*Based on the Planner's Estimating Guide: Projecting Land-Use and Facility Needs by Arthur Nelson (APA Planners Press, 2004)

\*\* Employees per room, ITE Trip Generation Manual, 9th Ed.

\*\*\*Community College projection is based on reported 6,000 student enrollment at full build-out, 100 GSF per student (Society for College and University Planning), and 969 GSF per employee

FIGURE A.6: FUTURE LAND USE BY ZONING

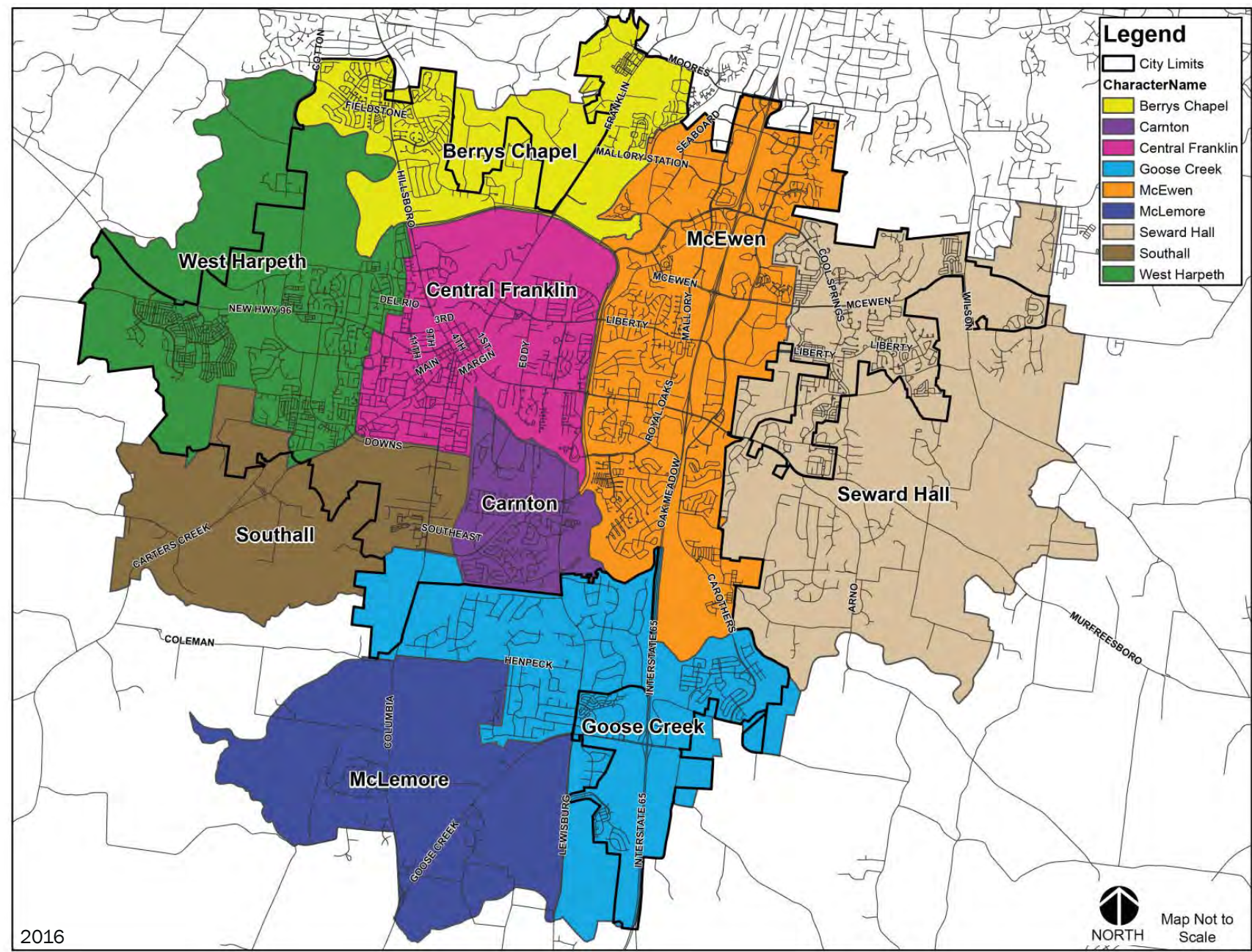
| Zoning District         | Land Use              |
|-------------------------|-----------------------|
| General Office          | Office                |
| Central Commercial      | Office or Retail*     |
| Neighborhood Commercial | Office or Retail*     |
| General Commercial      | Office or Retail*     |
| Light Industrial        | Mixed Non Residential |

\* Based on surrounding use, context, development feasibility, access and visibility

APPENDIX B

EXISTING CONDITIONS - CHARACTER AREA PATTERNS

FIGURE B.1: CHARACTER AREAS



## APPENDIX B

Existing conditions and character area patterns were compiled in the first phase of writing this Plan. The following information describes the 2015 conditions.

### BERRYS CHAPEL

#### DEMOGRAPHICS/ GENERAL INFORMATION

The Berrys Chapel Character Area comprises approximately 3,534 acres in the north-central portion of the Urban Growth Boundary (UGB). The northern boundary of the area is the UGB, Moores Lane, and Lynnwood Way. Mack Hatcher Parkway is the southern boundary, and the Harpeth River is the primary west edge of the area. It is bound to the east by the McEwen Character Area.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

Much of the northern portion of the Berry's Chapel Character Area contains hillsides, and several large established stands of trees. The hillsides and tree stands are protected by the Hillside/Hillcrest Overlay District. The existing hillsides substantially limit the development in the northern portion of Berry's Chapel. Additionally, the Harpeth River corridor runs along the western edge of the character area creating a green buffer along this edge.

#### TRANSPORTATION/ACCESS

Berry's Chapel contains three primary corridors: Hillsboro Road, Franklin Road, and Mack Hatcher Parkway. Hillsboro Road bisects the western portion of Berry's Chapel and is currently a four lane divided cross section. Hillsboro Road does provide an on-street bicycle lane, as well as a sidewalk or multi-use path, which provides residents with multi-

modal access to commercial and institutional uses along the corridor including the Williamson County Recreation Center. Franklin Road is a rural, two lane cross section that bisects the area's eastern portion. To accommodate an increase in vehicular traffic, Franklin Road was recommended in the 2010 City of Franklin Major Thoroughfare Plan to be widened to three lanes. Hillsboro and Franklin Roads both provide access to Nashville and serve as transportation gateways into the City. The scenic views and aesthetic design treatments that include wood plank fencing and fieldstone walls provide a unique visual character along these arterial corridors. Mack Hatcher Parkway, a four lane divided roadway, forms the southern boundary of Berry's Chapel.

While the area does have access to three primary corridors, the transportation network suffers from a lack of connectivity. The existing road network in the western residential portion is not integrated which results in increased traffic volumes entering and exiting the subdivisions. The roadways in the eastern portion of Berry's Chapel are disconnected due to steep slopes and existing development. When roadways do connect with primary corridors, many times the intersections are misaligned, causing safety concerns.

#### LAND USE AND GROWTH

The primary existing land use in the area is single-family residential. Much of the existing single-family

residential is located in the western portion of the character area. The Fieldstone Farms subdivision showcases a more compact footprint and lot size, pedestrian sidewalks, and community green space. The subdivisions in the Berry's Chapel area are not well connected to one another, with some portions of the area having only one direct ingress and egress point.

Additional residential development is limited in the remaining Berry's Chapel area. The steep hillsides and existing tree stands limit the development possibilities. Much of this area exists as large lot homesteads, farmsteads and estate residential. These lots, along with the rural residential uses along Berry's Chapel Road, which are outside of the city, establish an authentic and desirable rural character.

Along Franklin Road and Hillsboro Road are pockets of commercial and institutional uses. Gateway Village, at the intersection of Franklin Road and Lynnwood Way, provides a variety of housing options, retail, office spaces, and restaurants. There is an opportunity for additional development of residential or institutional uses at the intersection of Franklin Road and Mack Hatcher Parkway. Future development at Franklin Road and Mack Hatcher will need to be carefully developed to respect the rural character of the area.

## APPENDIX B CARNTON

### DEMOGRAPHICS/ GENERAL INFORMATION

The Carnton Character Area is the smallest of the character areas with less than 1,590 acres. The area is centrally located just south of the Central Franklin Character Area, west of the McEwen Character Area, north of the Goose Creek Character Area, and east of the Southall Character Area.

### TRANSPORTATION/ACCESS

Lewisburg Avenue provides access to the northern and eastern properties within the Carnton Character Area. The corridor, currently a two lane cross section with no pedestrian or bicycle amenities, is recommended to be widened to three lanes from the railroad tracks to Mack Hatcher Parkway. Mack Hatcher Parkway bisects the character area and provides east-west access to adjacent areas. Mack Hatcher Parkway is currently a two lane cross section but is identified as a future four lane divided cross section in the 2010 City of Franklin Major Thoroughfare Plan. The widening of Mack Hatcher Parkway in this area is recommended to accommodate the increase in population throughout the City.

### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

A significant portion of the northern boundary is constrained by the Harpeth River floodplain. The floodplain and the adjacent wetland areas are currently maintained as open space and are valuable as such. The green buffers that are created along Lewisburg Pike and within the Sullivan Farms subdivision could serve as area for future pedestrian or bicycle connections to parks and to Central Franklin.

### LAND USE AND GROWTH

The area is approximately fifty percent residential by land area, with a remaining mix of industrial, office, and public and private recreation areas. The residential development has mostly a suburban pattern, with a range of densities from under one unit per acre to over twelve units per acre. Most of the subdivisions in the area are not connected to surrounding areas, and some of the subdivisions do not have sidewalks.

Within the character area, there are opportunities for additional light industrial, warehouse, or office uses. The existing development near Mack Hatcher Parkway and Southeast parkway has vacant and undeveloped parcels. At one time, the parcels along the railroad line appeared to be optimal for redevelopment as a transit-oriented node, but, it has become apparent over time that future transit options for the City will not likely include a commuter rail line in this location.

### TOURISM/CULTURAL/HISTORIC ELEMENTS

Along Lewisburg Pike are two particular sites of cultural and historic interest. The Carnton Plantation, a historic Civil War battle site, is a National Historic Landmark and is open to the public. The property is protected under the City's Historic Preservation Overlay District and should continue to be protected in the future.

Immediately adjacent to the plantation, is the recently acquired Eastern Flank Battlefield Park. Dedicated in 2014, the park now offers public access by a loop road, which allows visitors to experience the history of the site by utilizing a series of interpretive signs and digital kiosks.



## APPENDIX B

### CENTRAL FRANKLIN

#### DEMOGRAPHICS/ GENERAL INFORMATION

The Central Franklin Character Area is approximately 4,000 acres and is centrally located in Franklin. Mack Hatcher Parkway represents the northern and eastern boundaries. The southern boundary includes Lewisburg Avenue and Downs Boulevard. The western boundary runs in a north-south direction and adjoins the eastern edge of the West Harpeth Character Area.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

The Harpeth River corridor flows through Central Franklin beginning near the northwest corner and extending to the southeast corner. The river corridor surrounds the downtown core on both the north and east sides. In addition to the river corridor itself, there are smaller fingers and drainage areas that extend through both the west and east sides of Central Franklin. These areas are all impacted by floodplain constraints, as well. Many of these areas near the downtown core and within the floodplain are existing open spaces including Harlinsdale Farm, Bicentennial Park, and Pinkerton Park.

#### TRANSPORTATION/ACCESS

Six roadway corridors extend outward from the downtown core area into surrounding areas of Franklin. These include Columbia Avenue, West

Main Street, New Highway 96 West, Hillsboro Road, Murfreesboro Road, and Lewisburg Avenue. It is important to note that the local street network in Central Franklin is impacted by the surrounding character areas. Character areas to the west and south have numerous local roadways, but there are few streets that access the eastern and northern portions of the City. Traffic from the West Harpeth and Southall character areas must pass through the downtown core in order to access several of the City's primary routes, including Mack Hatcher Parkway, Liberty Pike, Cool Springs Boulevard, and Interstate 65. The lack of transportation routes surrounding the downtown core puts additional vehicles on the smaller Central Franklin streets, which causes congestion and inefficiencies in the transportation network.

#### LAND USE AND GROWTH

Central Franklin contains a wide mix of land uses. The predominant use is residential; however, commercial retail, institutional, office, and limited industrial areas are mixed in the area. The most diverse area is the historic downtown core, a 16-block National Register District, which contains uses of all categories.

Period-style residential dwellings following a traditional development pattern are located south and west of the downtown core. These neighborhoods are well-established and face a character shift if

unregulated teardowns and incompatible infill development continue. New and infill development in these neighborhoods should better align with the established character. Massing, scale, height, setbacks, and architectural attributes should be a primary focus for new construction in the area so that the historic character of the area is not compromised.

Neighborhoods following a more conventional pattern are located west, north, and east of the downtown core. Development pressure for denser single-family and multifamily residential uses exist in these areas. In selected locations that are evolving in character, these denser residential uses may be appropriate.

Adequate infrastructure to serve existing and future development within Central Franklin is to be provided. This includes improvements to the transportation system and utility infrastructure in the area. Utility infrastructure is aging and is in need of significant upgrades to meet current standards for fire protection and stormwater management. For future nonresidential development, adequate parking will need to be provided. This is needed to support existing and future development and minimize any impacts to established neighborhoods.

## APPENDIX B

### GOOSE CREEK

#### DEMOGRAPHICS/ GENERAL INFORMATION

The Goose Creek Character Area includes 5,820 acres and is located in the south-central portion of the UGB, much of it within close proximity to Interstate 65. It is bounded on the west by the Mc-Lemore and Southall Character Areas; to the north by the Harpeth River and the Carnton and Southall Character Areas; and to the south and east by the limits of the UGB.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

Features such as the Harpeth River, Goose Creek, hills, and established stands of trees are important assets to the area and should be preserved to the greatest extent possible.

#### TRANSPORTATION/ACCESS

The Goose Creek Character Area contains four primary corridors: Interstate 65, Goose Creek Bypass, Lewisburg Pike, and Columbia Pike. The Goose Creek Area has been the subject of substantial transportation planning, both as part of overall city transportation planning, and as part of specific site planning and design. Providing adequate transportation infrastructure to keep up with growth is one of the most important public service issues facing this area. While the Goose Creek Character Area contains multiple primary corridors, there are several major capital facility

needs that impact the area, including the extension of Peytonsville Road to the future extension of South Carothers Parkway, the realignment of Long Lane, and the proposed Interstate 65 crossings that will connect the eastern and western portions of the Goose Creek Character Area. All of the proposed projects will provide for additional vehicular efficiency and capacity throughout the area. A major element of the success of this area is ensuring the timing of these improvements relative to the anticipated growth.

#### LAND USE AND GROWTH

Much of the existing development is located northwest of the Interstate 65 and Goose Creek Bypass interchange. The area includes a mix of uses, some with a suburban character and some with a more traditional development pattern, and includes over 1,200 residences. There is still substantial land available for development in the area, primarily south of the Goose Creek Bypass and east of the Interstate 65 corridor. This Goose Creek Bypass interchange offers a major regional economic development opportunity for the city. Approved development plans include 3 million square feet of office and 1.8 million s.f. of retail uses. More than 1,100 new dwelling units are planned.

There is additional land outside the UGB, particularly to the south and east of the current UGB lim-

its, that is appropriate for additional commercial and office uses, given its proximity to Interstate 65. It would benefit the City to study the areas adjacent to the existing UGB to see whether expanding the boundary would be advantageous.

The key southern location of the Goose Creek Area along Interstate 65 positions it as one of the principal regional gateways into the community. This location generates a significant amount of traffic that makes the area near the interchange a vital commercial location. The quality and types of business currently in this area are not viewed as the best uses for the land. Currently, the northwest and northeast corners of the interchange provide a mix of uses that include gas stations, a local hotel, and an auto body shop. A standard for higher-quality development is appropriate for this significant gateway location. Additionally, the Williamson County Agricultural Center, which hosts many events including the county fair, is located in the northwest quadrant of the interchange. Due to needs for additional land and building space, it is possible that the County may look to move the use to another site, leaving the current site available for redevelopment.

The northwest, southwest, and southeast corners of the interchange include large tracts of land that are planned as part of the Berry Farms mixed-use

## APPENDIX B

### GOOSE CREEK

development. The development, which is divided into three areas, includes a variety of housing types, retail, office, and hotel uses. All of the Berry Farms tracts have been conceptually approved and include a site master plan and pattern book that identifies permitted uses, site design guidelines, architectural standards, and signage standards, all of which are intended to respect the City of Franklin's character and historic past while creating a memorable gateway into the City itself. The northwest tract, Rural Plains, features a town center and is currently under construction.

Additional residential subdivisions planned for the area include Highlands at Ladd Park and Stream Valley. Together, they will include nearly 2,000 residential units upon completion. There are significant areas of land in the Goose Creek area with future development potential once infrastructure and services are made available. The vacant land on Columbia Pike, south of Mack Hatcher Parkway, and the land along Lewisburg Pike, south of Goose Creek Bypass, provide opportunities for future development. The existing character and vast open space in the area are important to Franklin's identity. Future development, if not carefully designed, could negatively impact the character and scenic corridors.

In order to meet the needs of the growing community, a future waste water treatment facility will likely be necessary. Past discussions have included the siting of the proposed facility within the Goose Creek Character Area. The vacant land east of Interstate 65, which is bounded by the Harpeth River corridor, has been identified as a potential location for the facility. In addition to the needs of City utilities, the preservation of land for future parks and open space is important in this growing area. Currently, the Goose Creek area has no municipal park land, and a future multi-purpose park could be needed in this portion of the City. As the Goose Creek area grows and develops, the need for additional schools and police and fire facilities could also be necessary.

## APPENDIX B

### McEWEN

#### DEMOGRAPHICS/ GENERAL INFORMATION

This area encompasses 6,680 acres and is considered to be the premier corporate area in Middle Tennessee. The McEwen Character Area is bounded on the north by the City of Brentwood, to the west by the Berry's Chapel and Central Franklin Character Areas, to the south by the Harpeth River, and to the east by the Seward Hall Character Area.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

When compared to other areas within the City of Franklin, the McEwen Character Area has little topographical change. In the few areas where hillsides are present, development has incorporated the topography into the layout of the site.

Existing tree stands follow the Harpeth River corridor along the southern edge of the character area, as well as the smaller riparian corridors to the north. These tributaries and the associated floodplain and environmental features create some constraints to further development in the area.

#### TRANSPORTATION/ACCESS

The Interstate 65 corridor runs directly through the McEwen Character Area. Three major interchanges serve as a gateway to the City of Franklin and

to the area itself: Cool Springs Boulevard, McEwen Drive, and Murfreesboro Road. A portion of the Moores Road interchange occurs at the northern boundary of the character area, as well.

There are few north-south roads within the character area. To the west of the Interstate, Mallory Lane/ Royal Oaks Boulevard and Mack Hatcher provide the only north-south connections through the area. While both roadways are primarily four lane divided corridors, there are numerous curb cuts and driveways which limit the efficiency of the corridor. Coupled with the regional traffic patterns, the corridor and intersections do experience congestion at peak hours.

To the east of the interstate, Carothers Parkway creates a north-south corridor from Moores Lane to Long Lane, and there are plans to extend the corridor to Peytonsville Road in the future. When complete, the four lane divided roadway will provide controlled access to the multiple office and commercial developments along Carothers Parkway. Additionally, pedestrian amenities will extend along the corridor, providing access to adjacent residential areas.

To combat the roadway and intersection congestion issues in the area, multiple transportation projects are identified in the 2010 City of Franklin Major Thoroughfare Plan. Improvements to

Murfreesboro Road, Liberty Pike, Cool Springs Boulevard, Mallory Lane, and the northern portion of Carothers Parkway are all intended to provide increased and more efficient access throughout the McEwen Character Area.

#### LAND USE AND GROWTH

The McEwen Area is the principal regional commercial area in the UGB. It includes over 4,000 acres and nearly 12 million square feet of commercial, office and industrial space. It is also the principal location for attached residential dwellings. There are about 1,100 vacant acres, primarily to the east of Interstate 65, that have development potential. Most of this land is in large parcels under limited ownership. This area is clearly the major economic engine for the City.

West of Interstate 65 is a mix of land uses include single and multi-family residential, with commercial, office, and retail uses flanking the Interstate corridor. Cool Springs Galleria Mall, located between the Moores Lane and Cool Springs Boulevard interchanges is a regional destination for the community. Surrounding the mall are numerous out lots, which include restaurants, smaller retail developments, and hotels. This part of the McEwen Character Area has been impacted by infill development of typically one-story restaurants or retail buildings in areas that once served as parking for larger, existing commercial build



## APPENDIX B

### McEWEN

ings. Immediately west of the mall is a pocket of non-residential development that includes a mix of office, showroom, and institutional uses that occur in larger, warehouse type buildings.

East of the Interstate 65 corridor is a mix of office development, typically ranging from six to eleven stories. The Carothers Parkway area is the backbone of the McEwen character area and is a major employment corridor for the City. As property values continue to rise in the corridor, infill development of office buildings and hotels with structured parking is replacing large parking areas that once served existing office buildings. At the time of this plan, multiple developments are underway at the intersection of Carothers Parkway and McEwen Drive. Ovation, the largest of the new approved developments, is planned to include 1.4 million square feet of office space, retail, commercial and entertainment uses as well as two hotels and nearly 1,000 new residential units.

A mix of commercial uses is also found along the Murfreesboro Road corridor. The developments, which are older than buildings found to the north, are a mix of local destinations, including automotive repair and sales, banks, grocery stores, restaurants, and pharmacies. Additionally, the Williamson County Medical Center and similar healthcare

uses are located near the corridor on the east side of the Interstate. Investments have been made along the Murfreesboro Road corridor as redevelopments have taken place, but additional incentives and planning could be used to encourage significant redevelopment along the corridor.

## APPENDIX B

### McLEMORE

#### DEMOGRAPHICS/ GENERAL INFORMATION

The McMomore Character Area has 5,090 acres in the southwestern portion of the UGB. It is bound on the south and west by the UGB and to the north and east by the Goose Creek Character Area. The area as a whole, while not currently within the city, acts as the rural gateway into the community.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

Much of the McMomore Character Area is impacted by environmental constraints including steep slopes, some of which are greater than 20%, and the West Harpeth River corridor and floodplain. The hillsides and the floodplain are both considered to be natural resources that should be preserved.

#### TRANSPORTATION/ACCESS

The McMomore Character Area includes two primary corridors: Columbia Pike and the Goose Creek Bypass. These two-lane, rural roadways provide a connection to State Route 840 to the south, and Interstate 65 to the east. The connection to these regional transportation corridors has increased the development interest and traffic through the McMomore area. In addition to Columbia Pike and Goose Creek Bypass, the McMomore area is traversed by a series of smaller rural

roadways that are not integrated into the larger transportation network. This lack of connectivity and the current cross sections of the major roadways do not allow for the high traffic volumes that are anticipated for the area. In the long term, both Columbia Pike and Goose Creek Bypass are recommended for widening in the 2010 City of Franklin Major Thoroughfare Plan in order to accommodate the anticipated increase in traffic.

While traffic planning will be important to help guide development, the design and character of the roadways will need to be considered, as well. Columbia Pike and Goose Creek Bypass serve as the southern gateway into the City of Franklin. The scenic quality of these corridors are of tremendous value to the City's population. While wider roadway corridors will be necessary, the design of the corridor will need to respect that natural features, environment, and overall design aesthetic.

There is a rail line that bisects the McMomore Character area. The CSX line parallels Hunter Road and intersects at grade with Harpeth Road, Kittrell Road, and Coleman Road.

#### LAND USE AND GROWTH

This area has a rural character, with large lots and significant vacant land, comprising nearly eighty percent of the acreage. Estate residential is the dominant use. The vast amount of vacant land

with direct access to Goose Creek Bypass creates a prime location for future development pressures. However, sewer is unavailable throughout most of the area and is not expected to be extended within the next fifteen years.

The CSX rail road corridor has been mentioned as a possible location for a light rail system in the past. However, this transit connection is unlikely for the foreseeable future. If a passenger rail line is planned, there are large parcels of land adjacent to the rail corridor that would have the potential for a mix of uses, including residential, commercial, and office. Due to the existing rural character of the area, the benefits and impacts of placing a mixed use development in the area would need to be thoroughly analyzed.

## APPENDIX B

### SEWARD HALL

#### DEMOGRAPHICS/ GENERAL INFORMATION

The Seward Hall Character Area lies east of Interstate 65 on the easternmost edge of the City of Franklin and the UGB. It is comprised of approximately 10,614 acres. The north and east boundaries of Seward Hall are the City of Brentwood and the limits of the UGB. The southern boundary is the Harpeth River. The McEwen Character Area lies immediately to the west.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

The majority of the Seward Hall Character Area is not impacted by environmental or topographical constraints because the topography is fairly moderate. The northern portion of the area does contain a concentration of hillsides north of McEwen Drive. There are also some isolated hills along the Liberty Pike corridor. While the hillsides pose a challenge to the area, existing development has been able to occur around these features. The development has been executed in a way that preserves the character of the area. The existing topography should not pose any additional constraints since much of the area surrounding the hillsides is currently developed.

The Harpeth River Corridor runs along the southern edge of the character area and does create environmental constraints along the boundary. Additionally, the river corridor's tributaries and drainage area extends northward just east of

North Chapel Road. Because of the floodplain boundary, this area would need to be protected and mitigated if adjacent development occurs.

#### TRANSPORTATION/ACCESS

Several roadway corridors extend through the Seward Hall area. Murfreesboro Road, a two lane corridor, bisects the character area and serves as a primary east-west route through the City. McEwen Drive and Liberty Pike, both serve as primary corridors to areas west of Interstate 65, but these corridors do not extend to the eastern boundary of the character area. McEwen Drive, transitions from a four lane divided corridor to a two lane rural cross section east of Cool Springs Boulevard. McEwen Drive provides quick access to Interstate 65 and to regional commerce and employment centers. The segment east of Cool Springs Boulevard has a scenic, rural character which contrasts the urban aesthetic found west of Cool Springs Boulevard. Liberty Pike connects Franklin Road, just north of the downtown core, to the eastern extent of the McKays Mill subdivision.

Clovercroft Road also serves as a primary route for residents in Seward Hall. The two-lane roadway connects Murfreesboro Road, just east of Carothers Parkway to Wilson Pike. This corridor, while providing access to many residents, is in need of repairs and enhancements. In order to accommodate the ongoing development in the area, planned extensions of Liberty Pike and McEwen Drive, as well as improvements

to Murfreesboro Road, are identified in the current transportation plan. Pedestrian and cycling facilities in the form of sidewalks, bike lanes, and multi-use paths are necessary to meet the needs of the increasing population.

#### LAND USE AND GROWTH

The character of this area is a combination of rural and suburban development. Over half of the area is developed with detached residential units. While many units are located within conventional subdivisions, there are numerous individual tracts of land throughout the area, particularly in the eastern portion of the area.

Development pressure is increasing in this area, but lack of infrastructure is limiting the development. City sewer does not currently extend to all of Seward Hall. Development in areas east of the Watkins Creek Subdivision and south of Murfreesboro Road would require lengthy extensions of sewer and upgrades to county roads.

In addition to residential development, a small commercial node currently exists in the McKay's Mill subdivision at the intersection of Liberty Pike and Oxford Glen Drive. An additional area of mixed-use and commercial development is currently planned at the intersection of Cool Springs Boulevard and McEwen Drive. Numerous civic and institutional uses, including a municipal park, are also scattered throughout the area.

## APPENDIX B

### SOUTHALL

#### DEMOGRAPHICS/ GENERAL INFORMATION

The Southall Character Area straddles Car- ters Creek Pike to the southwest and Columbia Avenue south of downtown Franklin. The area is bound by the West Harpeth and Central Franklin Character Areas on the north, the Carnton Char- acter Area on the east, the Goose Creek Char- acter Area on the south, and western limits of the UGB on the west.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

The Southall Character Area has rich natural resources including rolling terrain with significant areas constrained by steep slopes, hilltops, and significant mature tree cover that provides habitat for wildlife. These features should be preserved to the greatest extent possible to maintain the environmental quality and scenic views within the area.

#### TRANSPORTATION/ACCESS

Columbia Avenue is the primary corridor in the Southall area. The corridor transitions from a suburban to urban character as you move north through the character area. North of Mack Hatch- er Boulevard, Columbia Avenue is interrupted by curb cuts, driveways, and smaller access roads. Since it is the primary corridor through the area, the numerous ingress and egress points cause

congestion and traffic efficiency concerns.

#### LAND USE AND GROWTH

A concentration of development is found adjacent to Columbia Avenue south of Downs Boulevard. This area, primarily industrial uses and the existing rock quarry, represents nearly half of the region's total industrial development. Some commercial and office space is also located in the area adja- cent to Columbia Avenue. With the primary land use being industrial, the character of this area dif- fers from other areas in the City. Commercial and office space is located in larger, warehouse-style buildings. Parts of Columbia Avenue are flanked by excessive signage which creates visual blight along the street.

It is anticipated that many of the industrial uses will continue to exist in the long term. Future de- velopments near these sites should respond to the impacts of these industrial uses.

Aside from industrial uses, much of Southall is es- tate residential, particularly in the western portion of the area. The lack of sewer infrastructure in this part of the character area has limited the amount of new development in the area. Transportation infrastructure is also limited to portions of the area due to the topography. The existing scenic quality of the area is desired, and future development will need to protect these existing features.

In addition to the large-lot residential homes, there is a small multi-family development located south of Century Court. Currently, the develop- ment provides over 100 units and plans to expand to the adjacent property to the east.



## APPENDIX B

### WEST HARPETH

#### DEMOGRAPHICS/ GENERAL INFORMATION

The West Harpeth Character Area contains 6,120 acres located on the northwestern edge of the UGB. The area is bound to the northeast by the Harpeth River and to the west and northwest by the West Harpeth River. The Central Franklin Character Area is located to the east, and the Southall Character Area bounds the area to the south. The West Harpeth Character Area is one of the primary focus areas for new residential development in the City and is undergoing rapid change.

#### ENVIRONMENTAL/ GEOLOGY/TOPOGRAPHY

The West Harpeth Character Area is constrained to the north, west, and south by environmental features. The Harpeth River, which wraps the west and north sides of the character area, creates a valuable, vegetated corridor through the area. This riparian corridor, the associated 100- and 500-year floodplains, and the adjacent vegetation impact the development potential of the surrounding vacant land. Significant hills are located along the western boundary of the area and have been preserved as part of approved development plans.

#### TRANSPORTATION/ACCESS

New Highway 96 West transverses the area and provides the area's only primary west-east con-

nection. This existing two-lane roadway provides the primary transportation route for numerous residential subdivisions, with many having individual access points along the street. Many of these access points are not controlled and allow for both right and left turn lanes. Downs Boulevard, Boyd Mill Avenue, and Del Rio Pike, all two-lane connectors, provide secondary routes through the area, but they do not extend throughout the entire character area.

Carlisle Lane/ Del Rio Pike, a two-lane rural corridor, is the only roadway that extends north from New Highway 96 West. There are some smaller roadways in the vacant area north of Highway 96, but the roadways are used for access to local farmsteads and do not provide continuous access through the area.

Due to the limited number of roadways in this area, future development and rising densities are a concern. Current residents, employees, and visitors have limited transportation routes, which causes congestion and inefficiencies. Future transportation projects are necessary for the area. The primary recommended project is the completion of the Mack Hatcher Parkway with the construction of both the northwest and southwest segments. With the completion of the Mack Hatcher Parkway corridor, the West Harpeth Character Area will have additional vehicular access, which will

reduce the vehicular counts on surrounding roadways. In addition, new and enhanced roadways will also be necessary to promote and support growth in the vacant area to the north of Highway 96.

#### LAND USE AND GROWTH

Nearly one-half of the West Harpeth area is vacant or agricultural. This area, located between Highway 96 and the Harpeth River corridor, is divided between four to five owners and includes five historic properties/ farmsteads. The surrounding area is primarily residential, although some nonresidential uses are located in Westhaven.

Westhaven is the largest residential subdivision in the area and was designed using traditional neighborhood development (TND) principles. When complete, the community will include nearly 3,000 residential units, in addition to some local commercial and office uses. In addition to Westhaven, the area is also seeing development interest in multiple, small residential developments throughout the area.

At the intersection of Highway 96 and Downs Boulevard, there are some neighborhood commercial uses, including a pharmacy, gas station, and office spaces. Additional commercial uses are found in the Westhaven community and include

## APPENDIX B

### WEST HARPETH

a mix of local retail shops, restaurants, and a grocery store.

The forces that may have the greatest impact on the future character of the West Harpeth Character Area include the improvement of infrastructure and community facilities. The completion of Mack Hatcher Parkway, expanded power lines, and the expansion of sewer and water infrastructure will open the area to additional development.

## APPENDIX C

### DEVELOPMENT SUITABILITY ANALYSIS

The development suitability analysis was performed using the CommunityViz software plugin for ArcGIS and data sets provided by the City of Franklin. Relative suitability was calculated for nine individual suitability factors. These factors were then weighted to calculate an overall suitability score for each parcel in the Urban Growth Boundary. Suitability scores are calculated as a number between 0 and 100, with higher scores representing greater development suitability. The suitability scores are relative, and parcels with low suitability scores may not be considered to be totally undevelopable. It may be that a large portion of the site is undevelopable but not the whole site. Also, as utility infrastructure is extended, and roadways are constructed or improved, development suitability may change.

#### Suitability Factors

Nine suitability factors were used in the analysis, they include: floodway and floodplain; hillsides and hilltops; fire stations; sewer service; employment centers; commercial centers; stream buffers; primary thoroughfares; secondary thoroughfares.

#### Factor Type

Two types of factors were used in the analysis. The first type is proximity based; the closer the parcel is to the target area for each factor (i.e. commercial center, thoroughfare, fire station), the higher the suitability score. The second type of factor is overlay based. For these factors, the amount of overlap between the parcel and the target area (i.e. floodplain, hillside) is calculated. Parcels with higher amounts of overlap result in lower suitability scores. Figure C.1 is a summary of the suitability factors and their respective types.

#### Factor Weighting

Individual suitability factors were weighted to calculate the overall suitability scores. Physical development constraints (i.e. flood-prone land, hillsides and hillcrests, and stream buffers) were weighted more heavily than the majority of the proximity measures (i.e. proximity to employment centers, primary thoroughfares, and fire stations, for example). Proximity to sewer service was also weighted heavily since the lack of sewer service significantly impacts the intensity of development that the land can support. Factor weighting is included in Figure C.1.

Figure C.2 depicts the results of the land suitability analysis. It is a combination of the nine individual factors and takes into account the factor weighting. Individual maps for each factor can be found on the following page in Figures C.3 through C.11.

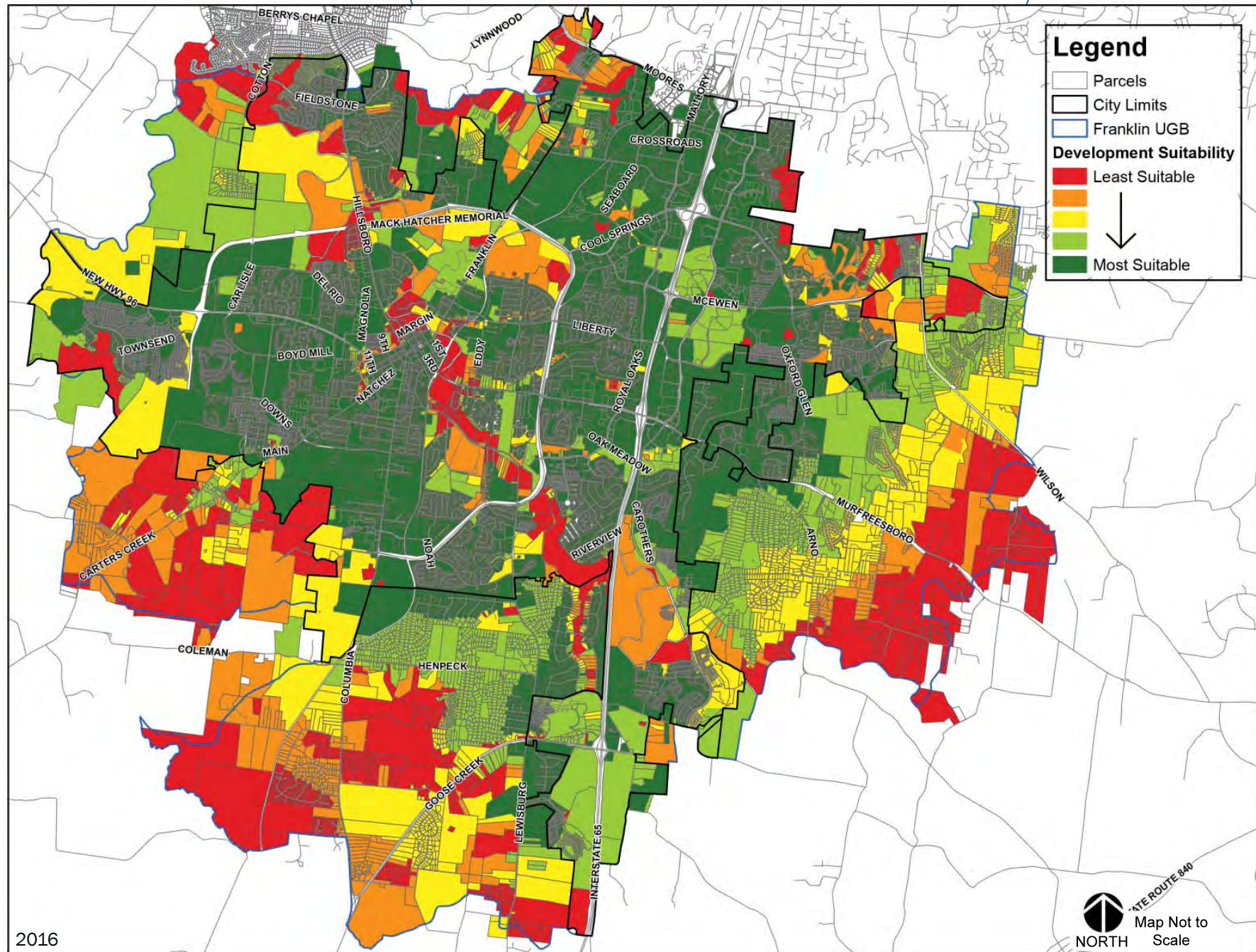
FIGURE C.1: LAND USE SUITABILITY FACTOR SUMMARY

| FACTOR                  | DESCRIPTION                                                                                                                                                                  | TYPE              | WEIGHT |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------|
| Floodway and Floodplain | Special Flood Hazard Areas defined as the area to be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year (Zones A and AE). | Amount of Overlap | 9.0    |
| Hillsides and Hilltops  | Defined as areas included in the Hillside/Hillcrest Overlay (HHO) District.                                                                                                  | Amount of Overlap | 9.0    |
| Fire Stations           | Locations included in the Franklin "FireStations" shapefile.                                                                                                                 | Proximity         | 2.0    |
| Sewer Service           | Sewer lines as included in the Franklin "WwtGravityPipe" and "WwtPressurizedPipe" shapefiles.                                                                                | Proximity         | 7.5    |
| Employment Centers      | Defined as the McEwen character area.                                                                                                                                        | Proximity         | 1.0    |
| Commercial Centers      | Groups of non-office commercial land use as determined by the "GLU" designation on the "PARCELSLCS" shapefile.                                                               | Proximity         | 1.0    |
| Stream Buffers          | Areas included within a 60-foot buffer on either side of streams.                                                                                                            | Amount of Overlap | 4.0    |
| Primary Thoroughfares   | Interstate 65 and Mack Hatcher Parkway.                                                                                                                                      | Proximity         | 2.5    |
| Secondary Thoroughfares | Thoroughfares with access to Interstate 65 (Moores Lane, Cool Springs Blvd., McEwen Drive, SR 96/Murfreesboro Road, Peytonsville Road/Goose Creek Bypass)                    | Proximity         | 1.5    |



# APPENDIX C

FIGURE C.2: LAND USE SUITABILITY MAP (INCLUDES ALL FACTORS AND REFLECTS FACTOR WEIGHTING)





## APPENDIX C

FIGURE C.3: LAND USE SUITABILITY - FLOODWAY AND FLOODPLAIN

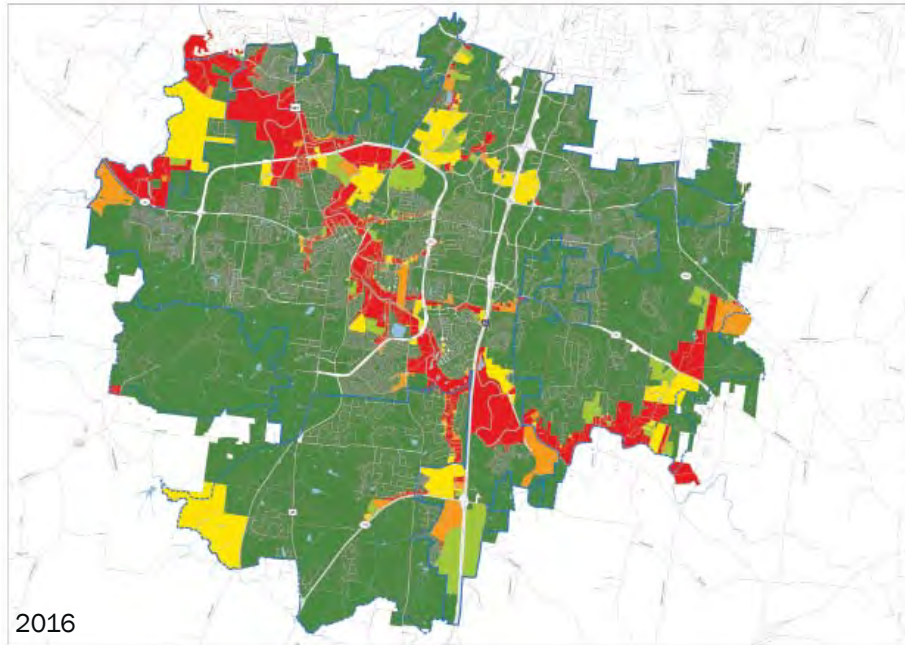


FIGURE C.4: LAND USE SUITABILITY - HILLSIDES AND HILLTOPS

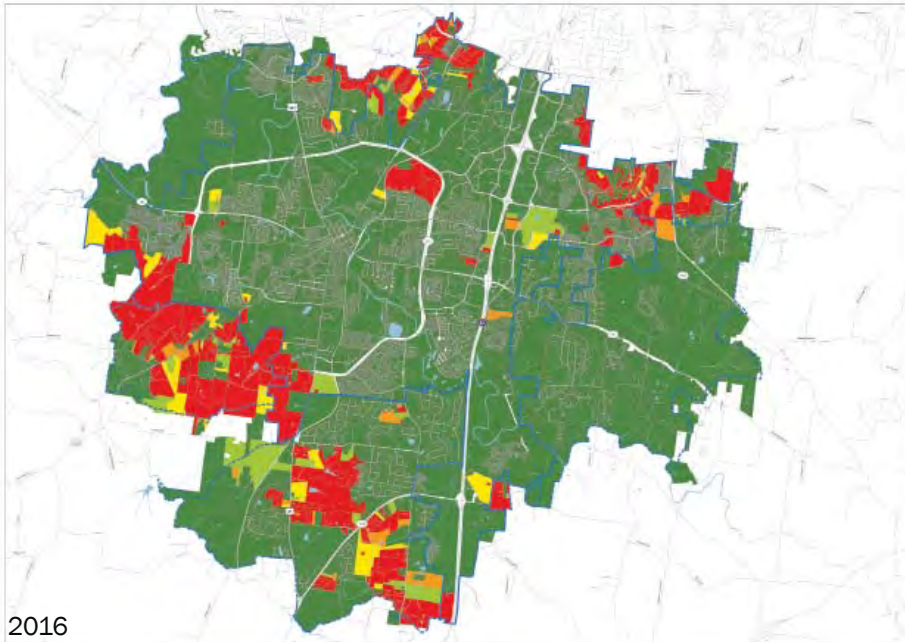


FIGURE C.5: LAND USE SUITABILITY - FIRE STATIONS

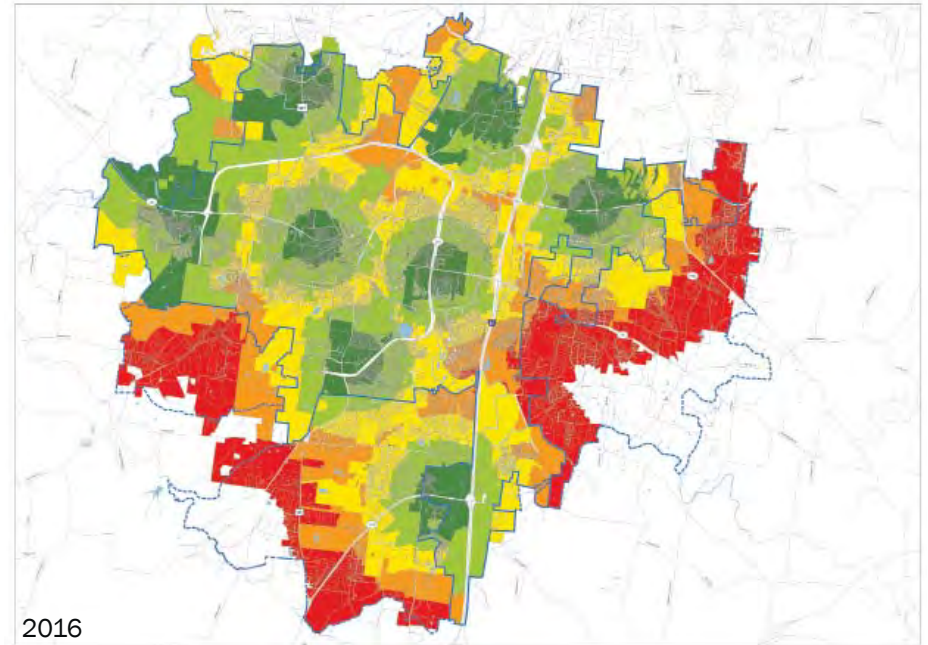
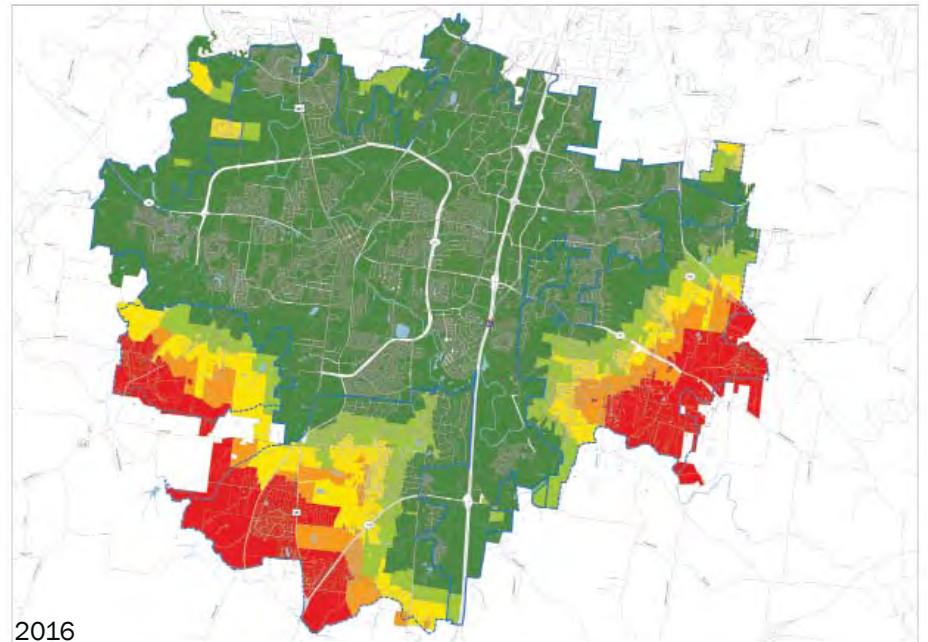


FIGURE C.6: LAND USE SUITABILITY - SEWER SERVICE





## APPENDIX C

FIGURE C.7: LAND USE SUITABILITY - EMPLOYMENT CENTERS

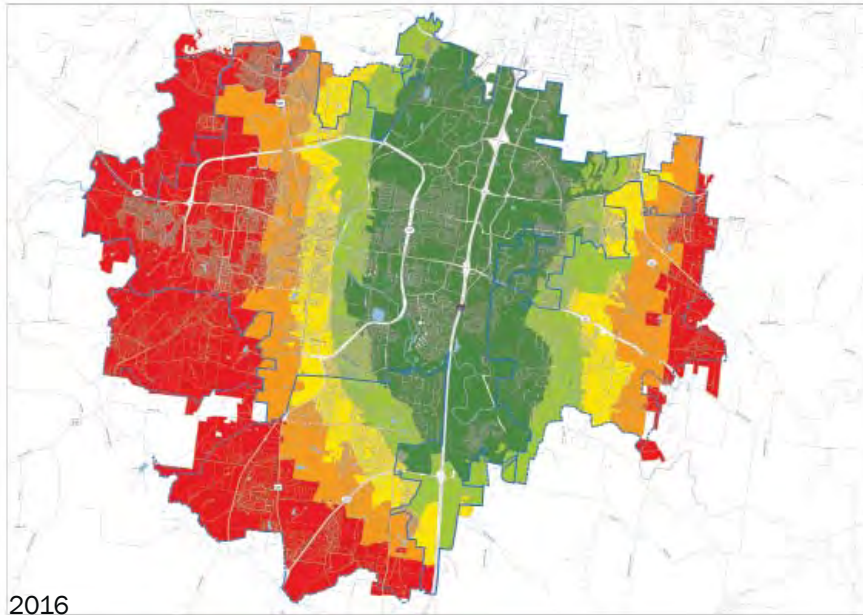


FIGURE C.8: LAND USE SUITABILITY - COMMERCIAL CENTERS

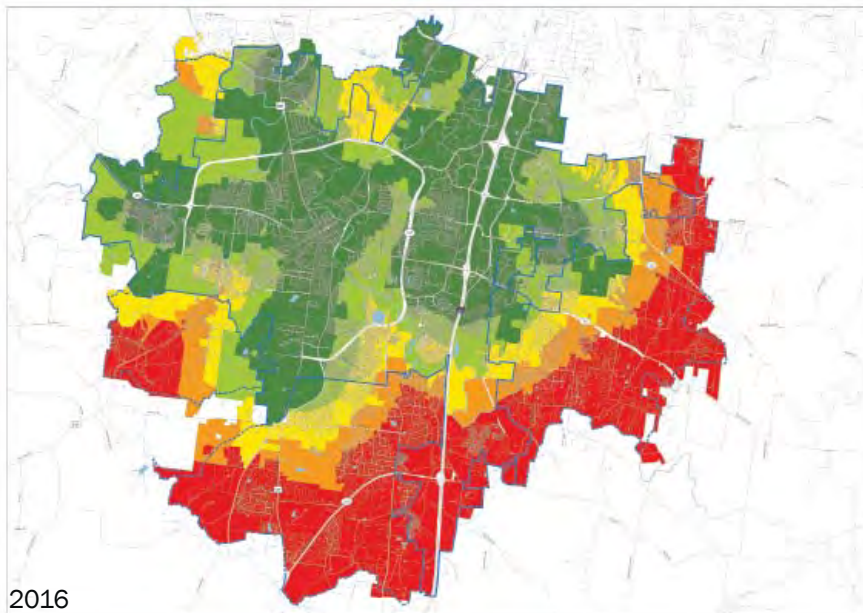


FIGURE C.9: LAND USE SUITABILITY - STREAM BUFFERS

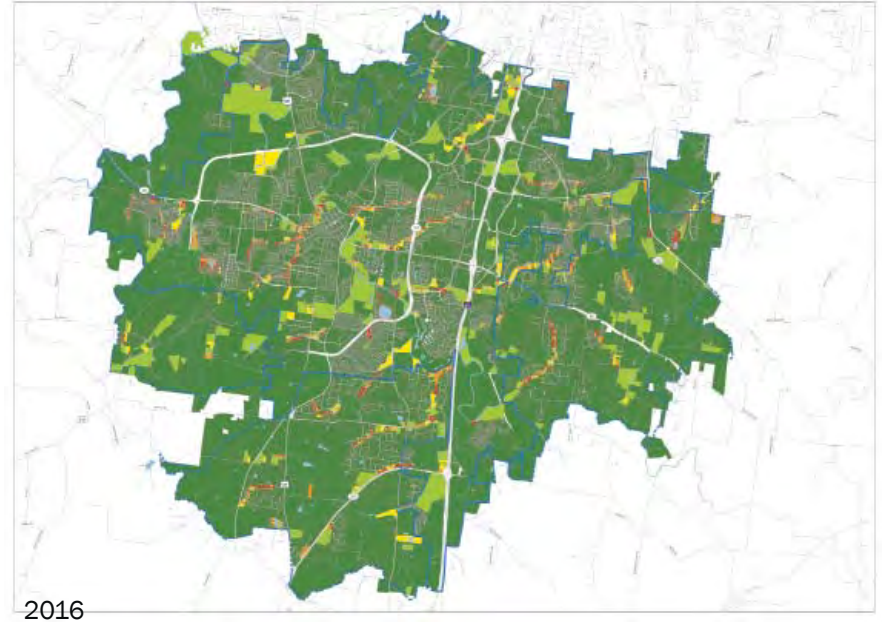
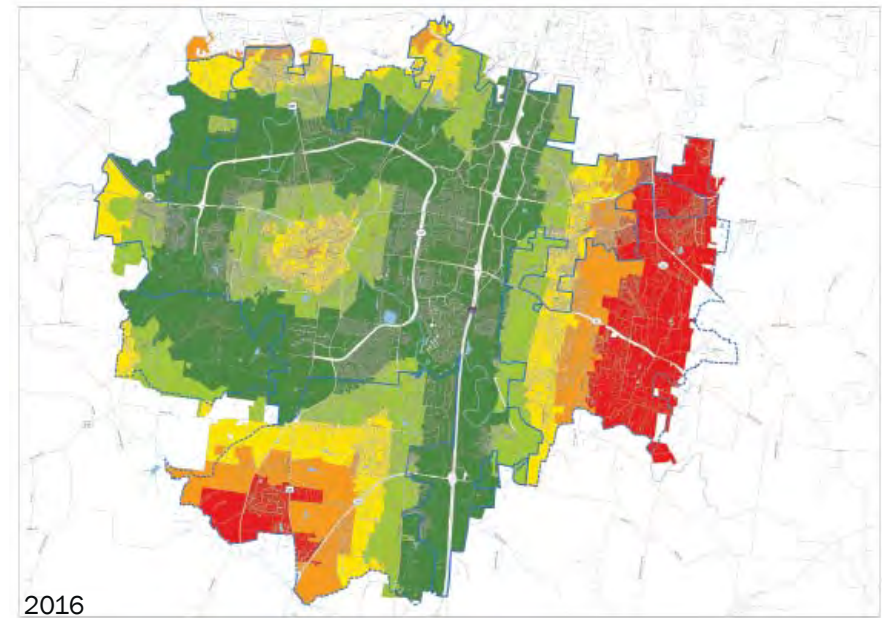
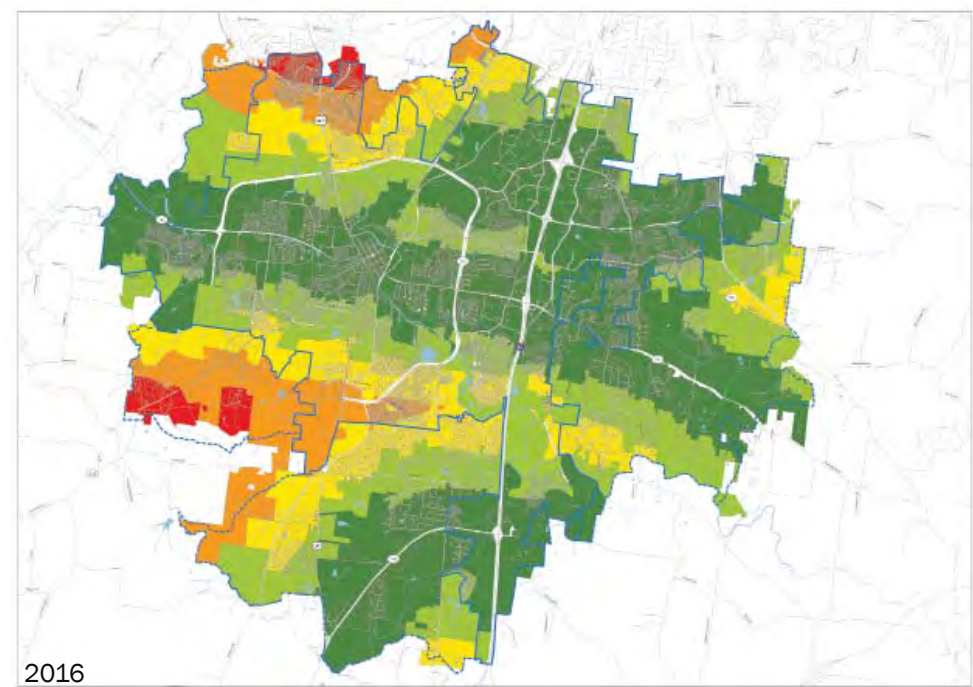


FIGURE C.10: LAND USE SUITABILITY - PRIMARY THOROUGHFARES



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FIGURE C.11: LAND USE SUITABILITY - SECONDARY THOROUGHFARES

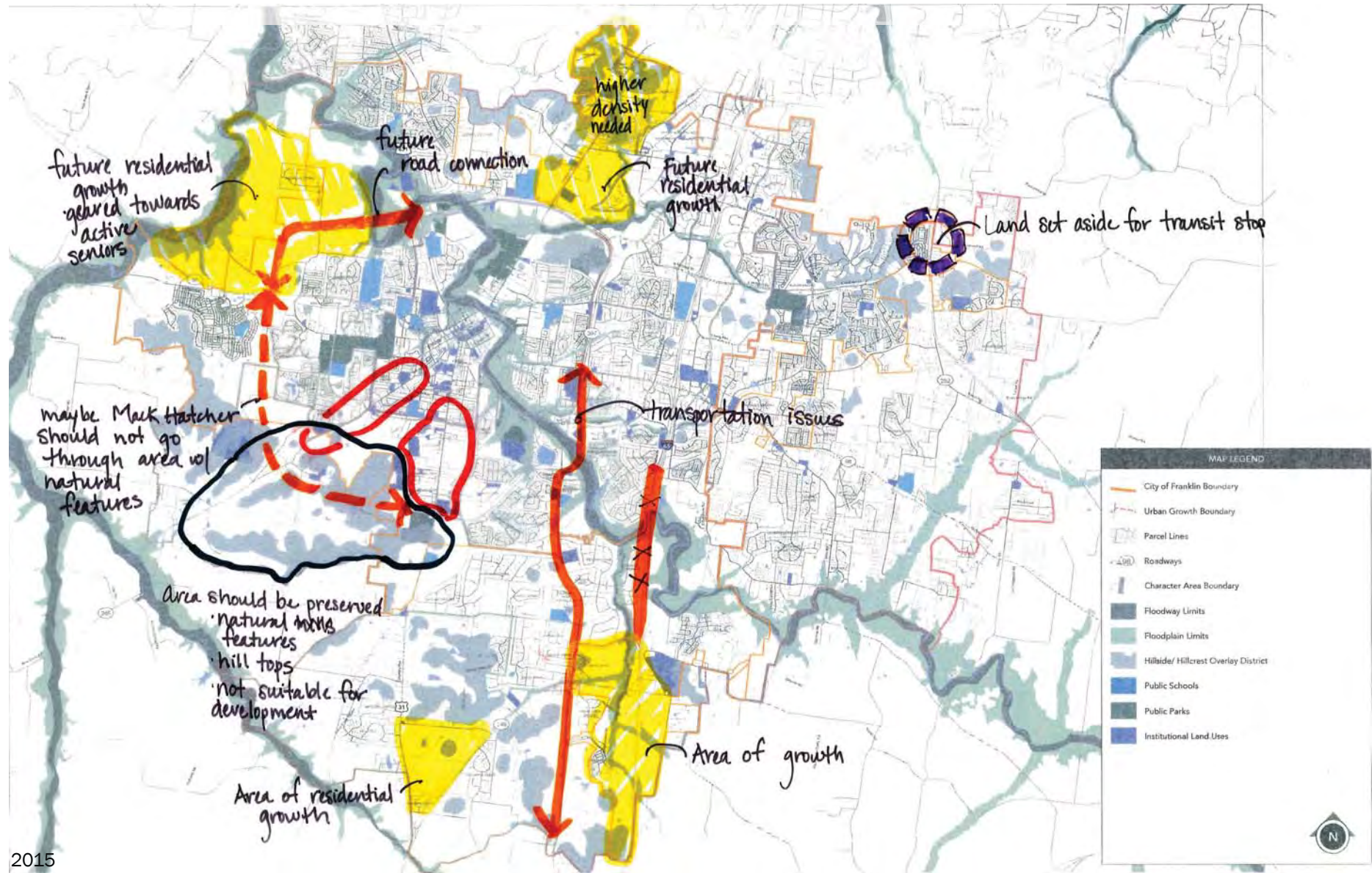




## APPENDIX D

### PUBLIC WORKSHOP SERIES MAPS

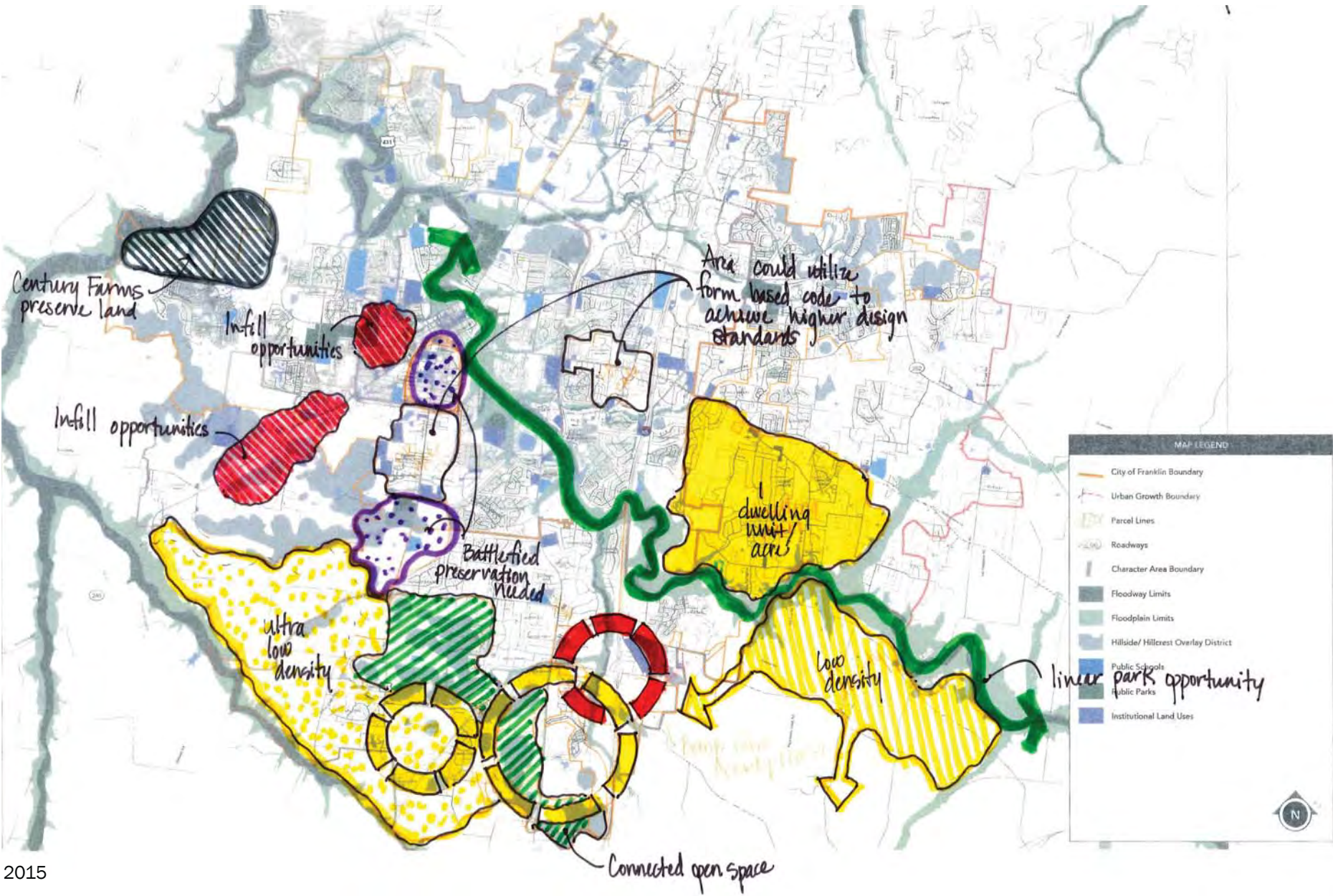
FIGURE D.1: WORKSHOP SUMMARY MAP - CITYWIDE NOTES - GROWTH AND ISSUES





APPENDIX D

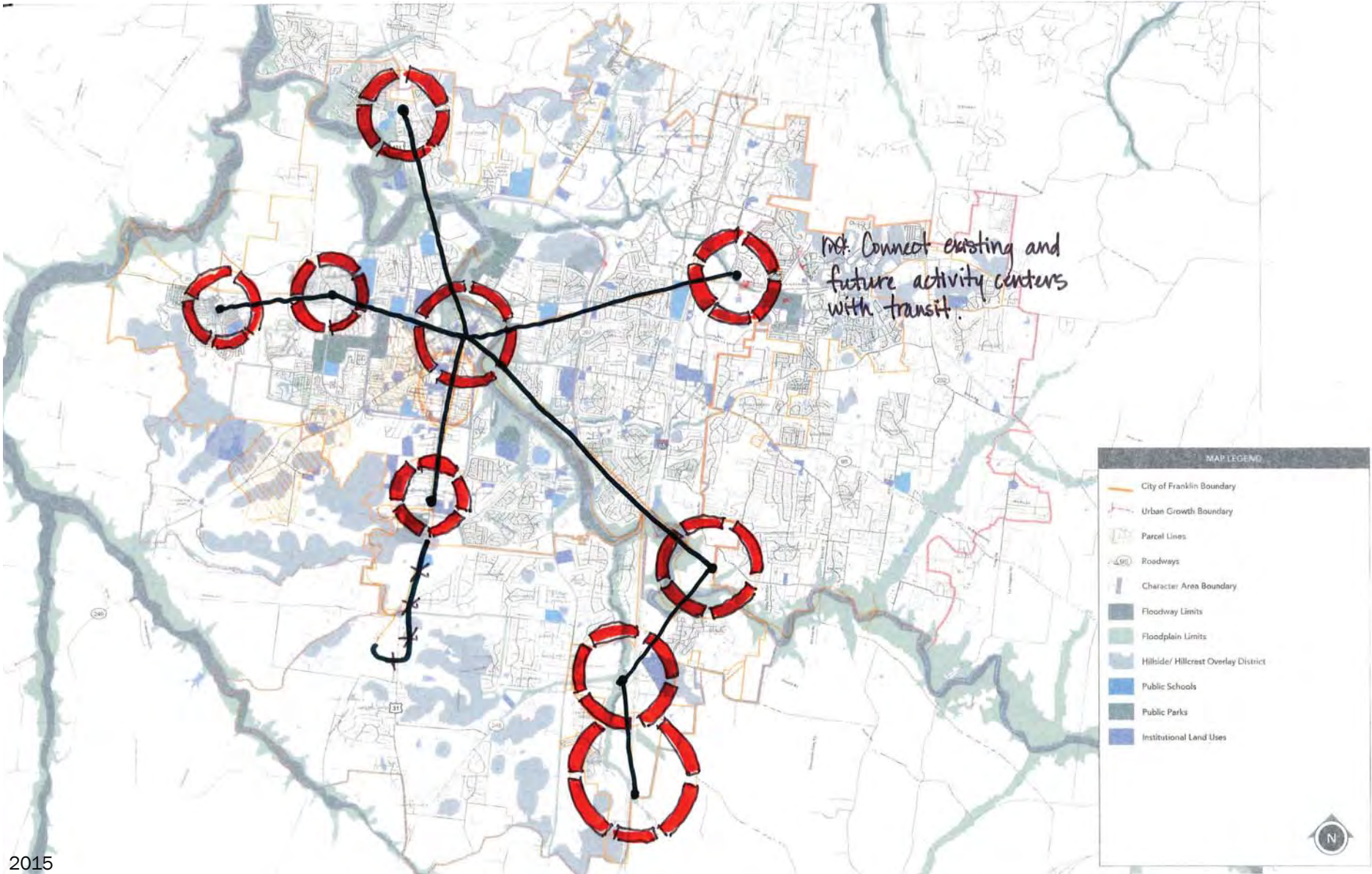
FIGURE D.2: WORKSHOP SUMMARY MAP - CITYWIDE NOTES - OPPORTUNITIES





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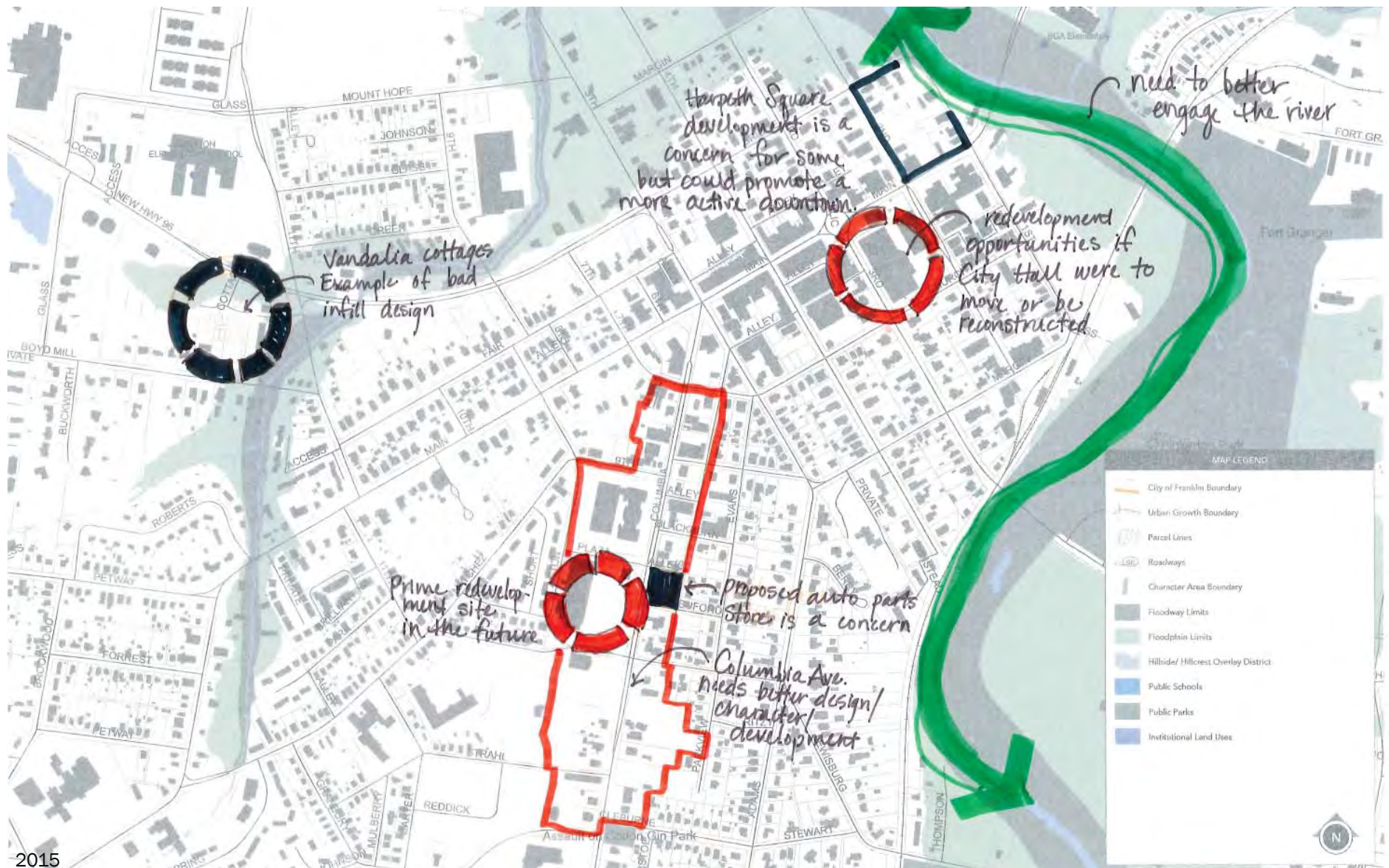
FIGURE D.3: WORKSHOP SUMMARY MAP - CITYWIDE NOTES - TRANSIT CONNECTIONS





## APPENDIX D

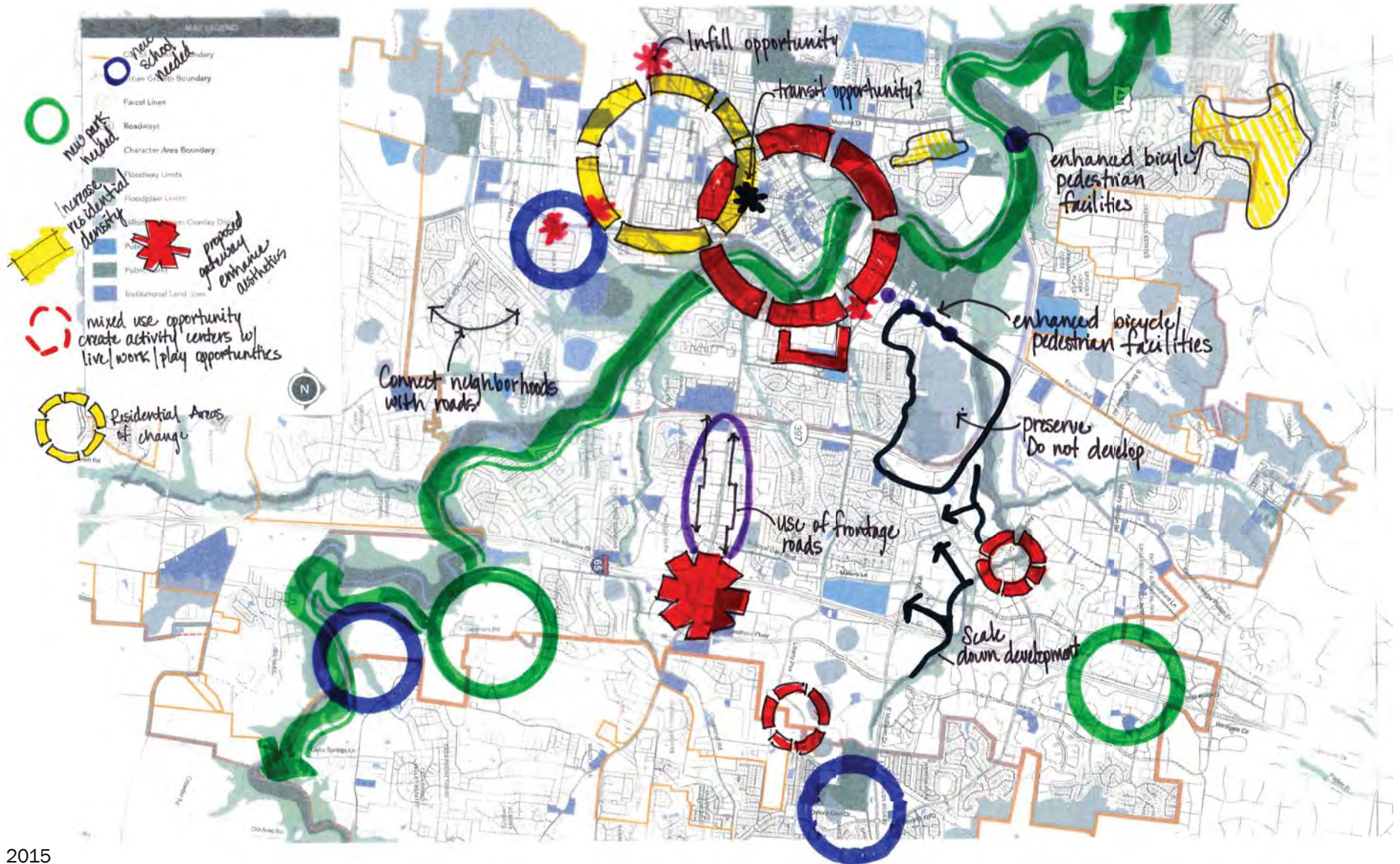
FIGURE D.4: WORKSHOP SUMMARY MAP - DOWNTOWN NOTES





## APPENDIX D

FIGURE D.5: WORKSHOP SUMMARY MAP - CENTRAL FRANKLIN, CARNTON, MCEWEN NOTES

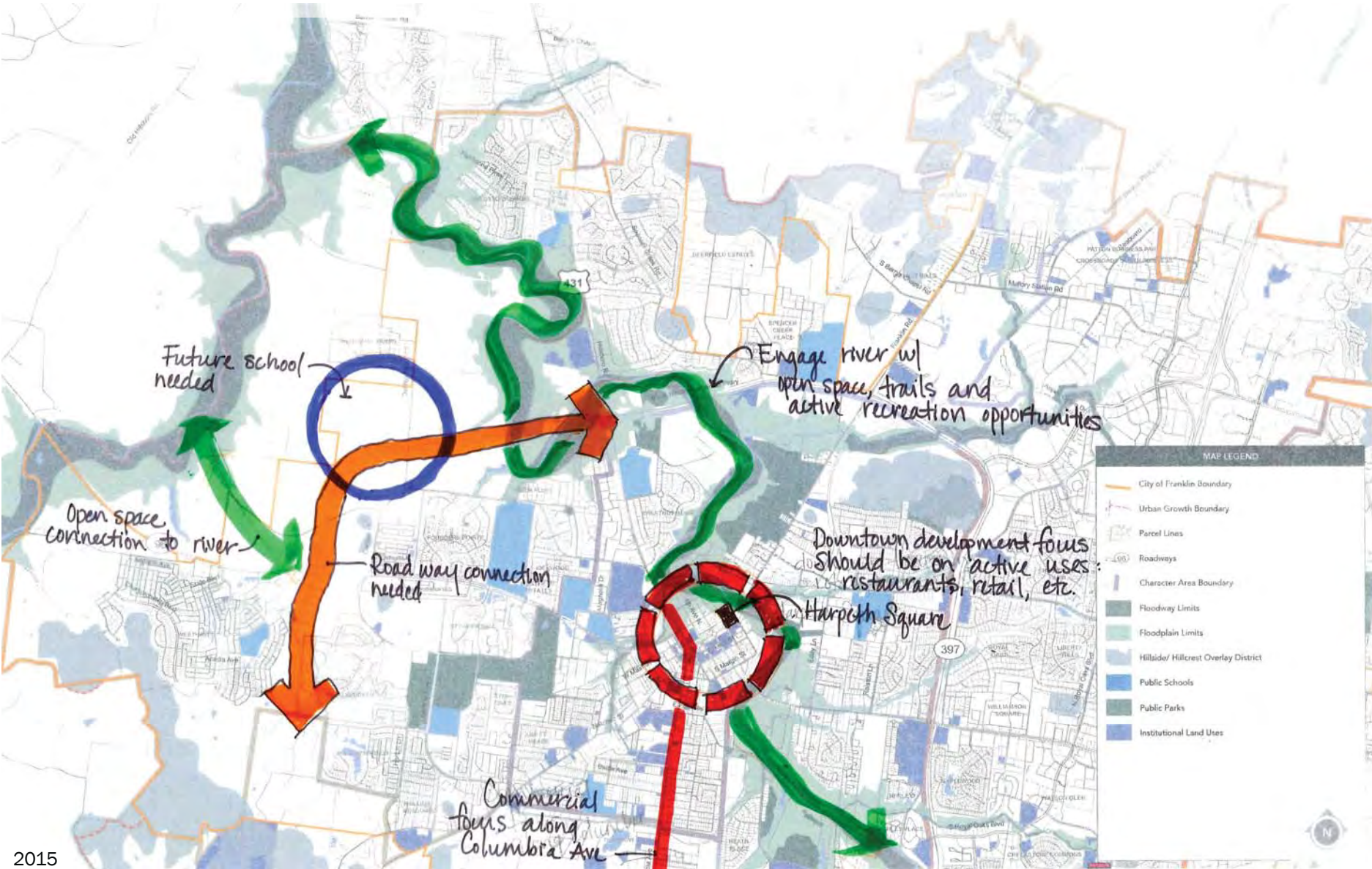


2015



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FIGURE D.6: WORKSHOP SUMMARY MAP - WEST HARPETH & BERRYS CHAPEL NOTES

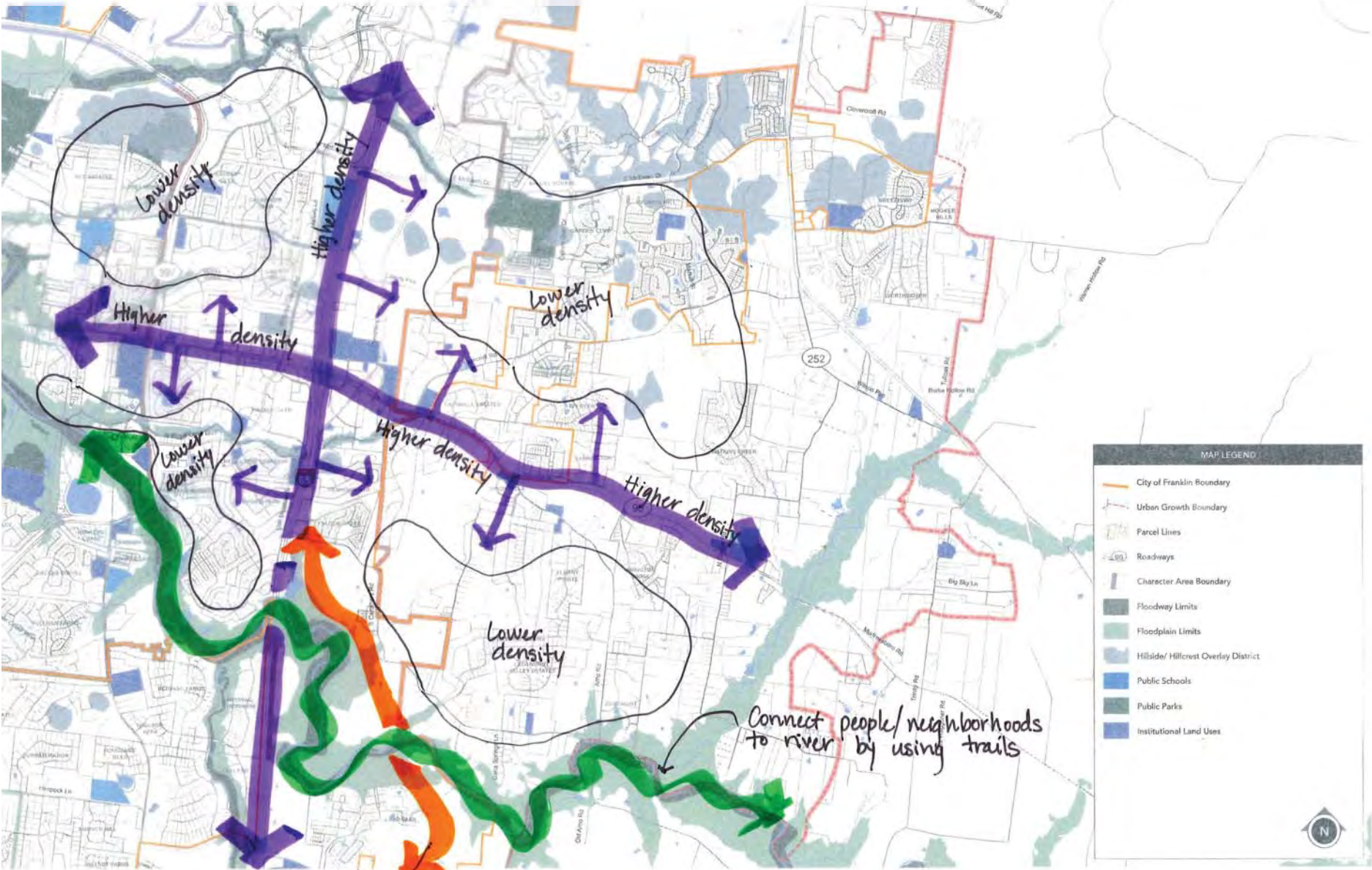


2015



APPENDIX D

FIGURE D.7: WORKSHOP SUMMARY MAP - SEWARD HALL NOTES



2015

# APPENDIX E

## INFILL CHARACTER MAPPING

Infill development includes any development or redevelopment of existing structures, parcels, blocks, or neighborhoods within Central Franklin, its surrounding areas, and other well-developed areas within the City.

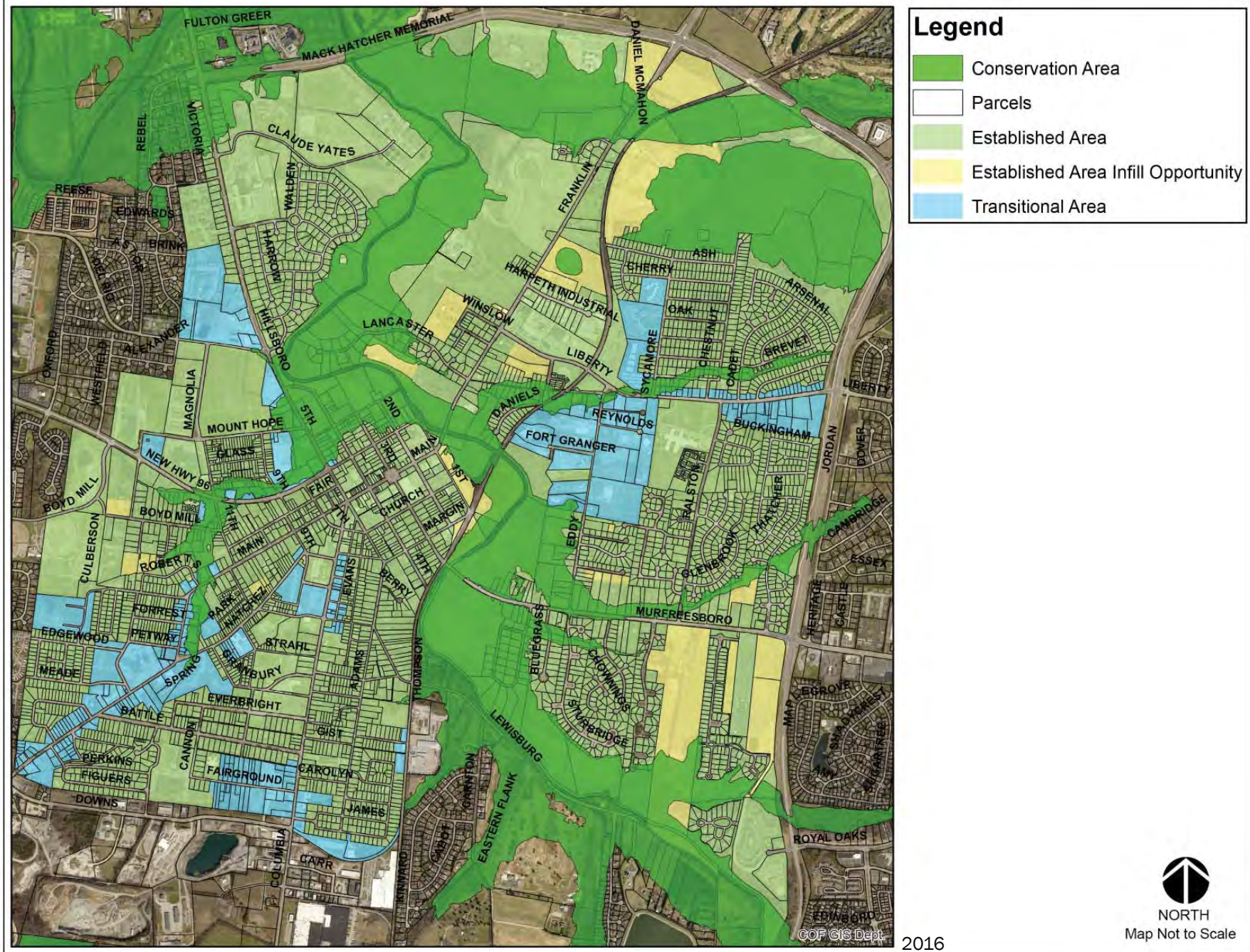
Established Areas are places where the existing character is desired to be preserved. These areas include historic neighborhoods, established neighborhoods, and certain streets within Central Franklin. The infill map (See Fig. E.1) shows potential infill opportunities within established areas. The design concept special considerations address appropriate development form and use potential.

Transitional areas are places where change in neighborhood form is expected or enhancement of community character is desired. These areas may include neighborhoods, centers, and corridors with mixed uses in locations where growth and change are expected to be concentrated. Design concepts define the future character, rather than the existing character, with corresponding design guidelines.

See Figure E.1 Infill - Established and Transitional Areas Map.



FIGURE E.1: INFILL - ESTABLISHED AND TRANSITIONAL AREAS MAP





# APPENDIX F

## CORRIDOR CHARACTER MATRIX AND MAP

### APPLICATION SECTION

An important consideration in land use and transportation planning is the reciprocal relationship between these two functions. Transportation systems and their adjacent land uses shape the character of an area.

The Corridor Character Map identifies the character or “personality” of the major and minor arterial and collector streets in the UGB. The chart below outlines how streets and public spaces should be designed to best interact with the land uses and character of an area. This chart is the basis for recommendations pertaining to land use and transportation decisions and outlines possible and optimal design considerations.

The corridor character, and subsequent recommendations, does not attempt to alter the functional classification of streets. Rather, this application of desired design serves to enhance the qualitative experience along the corridor in a thoughtful, inclusive, and comprehensive way. This application considers organized land use patterns, sense of place, site access, and safe, comfortable, and balanced transportation options in its designations. The application of these policies should work in coordination with Connect Franklin and the Transportation and Street Technical Standards.

# APPENDIX F

FIGURE F.1: CORRIDOR CHARACTER MATRIX

| CORRIDOR TYPE & DEFINITION                                                                                                                                                                                                                                       | CONTEXT CONTINUUM  | DESIGN CONCEPTS                                                                                | ROADWAY SECTION TYPES | DESIGN                  |                                 |                                               |        |                       |                                  |                                              |                      | MOBILITY                        |                                 |                                 |                                 |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------|-----------------------|-------------------------|---------------------------------|-----------------------------------------------|--------|-----------------------|----------------------------------|----------------------------------------------|----------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|-------------------|
|                                                                                                                                                                                                                                                                  |                    |                                                                                                |                       | Lane Width <sup>2</sup> | Median                          | Access Management                             | Curbed | Streetscape Furniture | Street Trees & Other Landscaping | Lighting Scale                               | Green Infrastructure | Sidewalks                       | On-Street Bicycle Facilities    | Multi-Use Path                  | On-Street Parking               | Transit Amenities |
| <b>Main Street</b><br>Streets, typically located in the downtown core, that are characterized either by a concentration of office and retail uses with residential uses on upper floors or by residential uses within walking distance of office and retail uses | Arterial           | Compact Residential, Fifth Avenue North, Historic Residential, Main Street, Office Residential | 2-4 lanes             | 10-12 feet              | No                              | Yes, reduced conflict points with pedestrians | Yes    | Yes                   | Yes                              | Pedestrian                                   | Yes                  | Yes                             | Possible, based on Section Type | No                              | Yes                             | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Collector          |                                                                                                | 2-3 lanes             | 10-12 feet              | No                              | Yes, reduced conflict points with pedestrians | Yes    | Yes                   | Yes                              | Pedestrian                                   | Yes                  | Yes                             | Possible, based on Section Type | No                              | Yes                             | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Local <sup>1</sup> |                                                                                                | 2 lanes               | 10-12 feet              | No                              | Yes, reduced conflict points with pedestrians | Yes    | Yes                   | Yes                              | Pedestrian                                   | Yes                  | Yes                             | Possible, based on Section Type | No                              | Yes                             | Yes <sup>4</sup>  |
| <b>Mixed Use</b><br>Streets, typically located in areas along a major arterial street, that are characterized by a concentration of office and retail uses with residential uses on upper floors of some buildings or by active recreational uses                | Arterial           | Neighborhood Commercial, Neighborhood Mixed-Use, Recreation, Regional Commerce                 | 3-4 lanes             | 12 feet                 | Possible, based on Section Type | Yes                                           | Yes    | No                    | Yes                              | Street and Pedestrian                        | Yes                  | Yes                             | No                              | Yes                             | No                              | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Collector          |                                                                                                | 2-3 lanes             | 10-12 feet              | Possible, based on Section Type | Yes, reduced conflict points with pedestrians | Yes    | Yes                   | Yes                              | Pedestrian                                   | Yes                  | Yes                             | Yes, based on Section Type      | Yes, based on Section Type      | Yes                             | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Local <sup>1</sup> |                                                                                                | 2-3 lanes             | 10-12 feet              | Possible, based on Section Type | Yes, reduced conflict points with pedestrians | Yes    | Yes                   | Yes                              | Pedestrian                                   | Yes                  | Yes                             | Possible, based on Section Type | Possible, based on Section Type | Yes                             | Yes <sup>4</sup>  |
| <b>Neighborhood</b><br>Streets characterized by a variety of residential uses with a mix of lot sizes or by a mix of light industrial, office, and local commercial uses                                                                                         | Arterial           | Industrial Flex, Mixed Residential, Multifamily Residential, Single-family Residential         | 3-4 lanes             | 12 feet                 | Yes                             | Yes                                           | Yes    | No                    | Yes                              | Street and Pedestrian                        | Yes                  | Yes                             | Yes, based on Section Type      | Yes, based on Section Type      | No                              | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Collector          |                                                                                                | 2-3 lanes             | 10-12 feet              | Yes                             | No                                            | Yes    | No                    | Yes                              | Street and Pedestrian (for residential uses) | Yes                  | Yes                             | Yes, based on Section Type      | Yes, based on Section Type      | Possible, based on Section Type | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Local <sup>1</sup> |                                                                                                | 2-3 lanes             | 10-12 feet              | Possible, based on Section Type | No                                            | Yes    | No                    | Yes                              | Pedestrian (for residential uses)            | Yes                  | Yes                             | Possible, based on Section Type | Possible, based on Section Type | Possible, based on Section Type | Yes <sup>4</sup>  |
| <b>Scenic Corridor</b><br>Streets, characterized by natural landscapes, rural viewsheds, and scenic vistas that generally serve low-density residential and recreational uses                                                                                    | Arterial           | Conservation, Conservation Subdivision, Large-lot Residential                                  | 2-4 lanes             | 12 feet                 | Possible, based on Section Type | Yes                                           | Yes    | No                    | Yes <sup>3</sup>                 | Street, if any                               | Yes                  | Possible, based on Section Type | No                              | Yes                             | No                              | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Collector          |                                                                                                | 2-3 lanes             | 10-12 feet              | Possible, based on Section Type | No                                            | Yes    | No                    | Yes <sup>3</sup>                 | Pedestrian, if any                           | Yes                  | Possible, based on Section Type | No                              | Yes                             | No                              | Yes <sup>4</sup>  |
|                                                                                                                                                                                                                                                                  | Local <sup>1</sup> |                                                                                                | 2-3 lanes             | 10-12 feet              | Possible, based on Section Type | No                                            | Yes    | No                    | Yes <sup>3</sup>                 | Pedestrian, if any                           | Yes                  | Possible, based on Section Type | No                              | Possible, based on Section Type | No                              | Yes <sup>4</sup>  |

1. Local streets are not individually shown on the map but are defined by the design concept in which they are located.

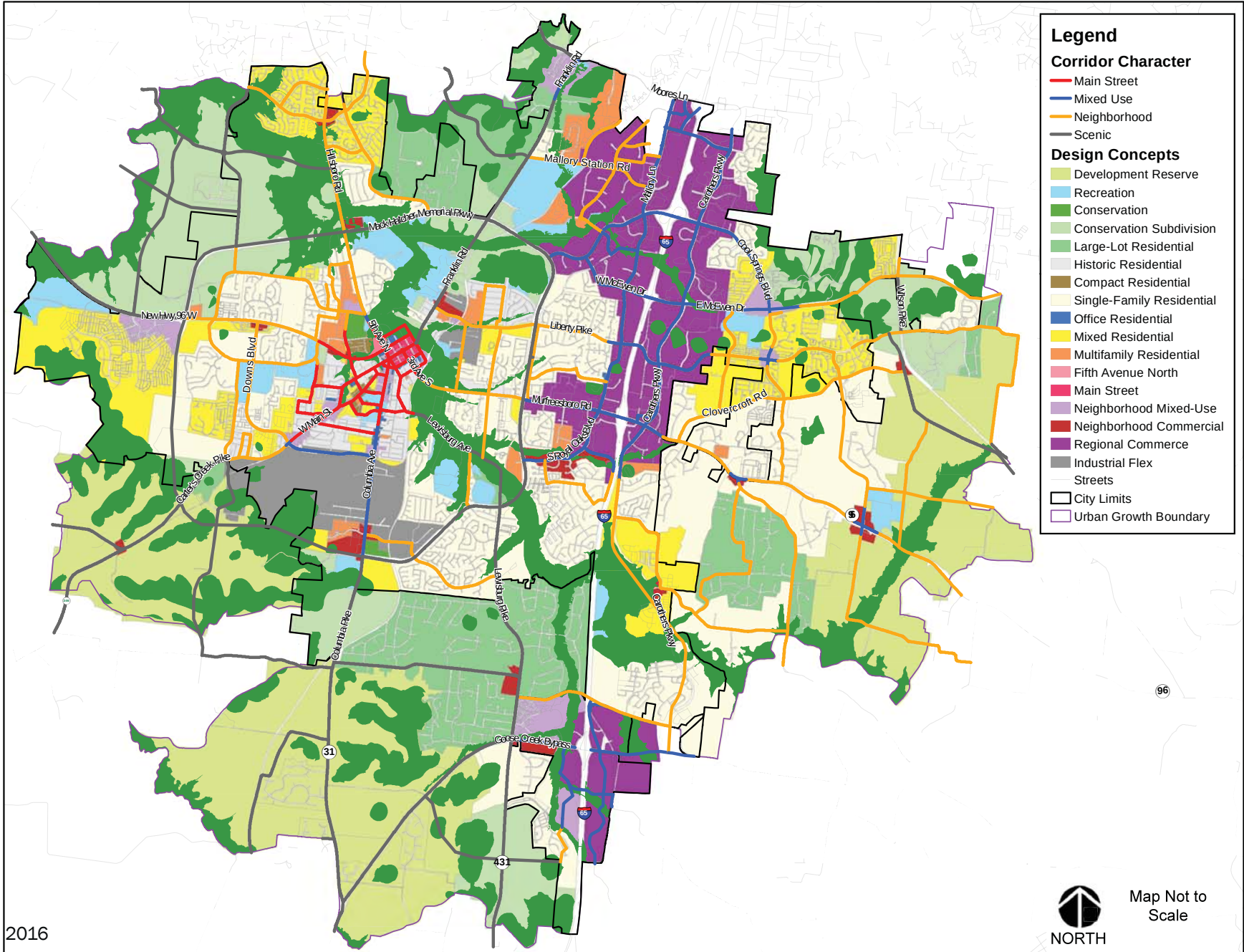
2. The pavement width shall be reviewed by the Engineering and Fire Departments. Minimum lane widths should be encouraged as long as the streets are designed to ensure sufficient turning movement of emergency response vehicles.

3. Trees and landscaping should be provided through the use of an informal landscape design in order to sustain the scenic and rural quality of the area.

4. The guidelines for transit amenities are established by the Franklin Transit Authority. These guidelines will provide general parameters for designing and placing transit amenities and related facilities serving the Franklin Transit service area.

# APPENDIX F

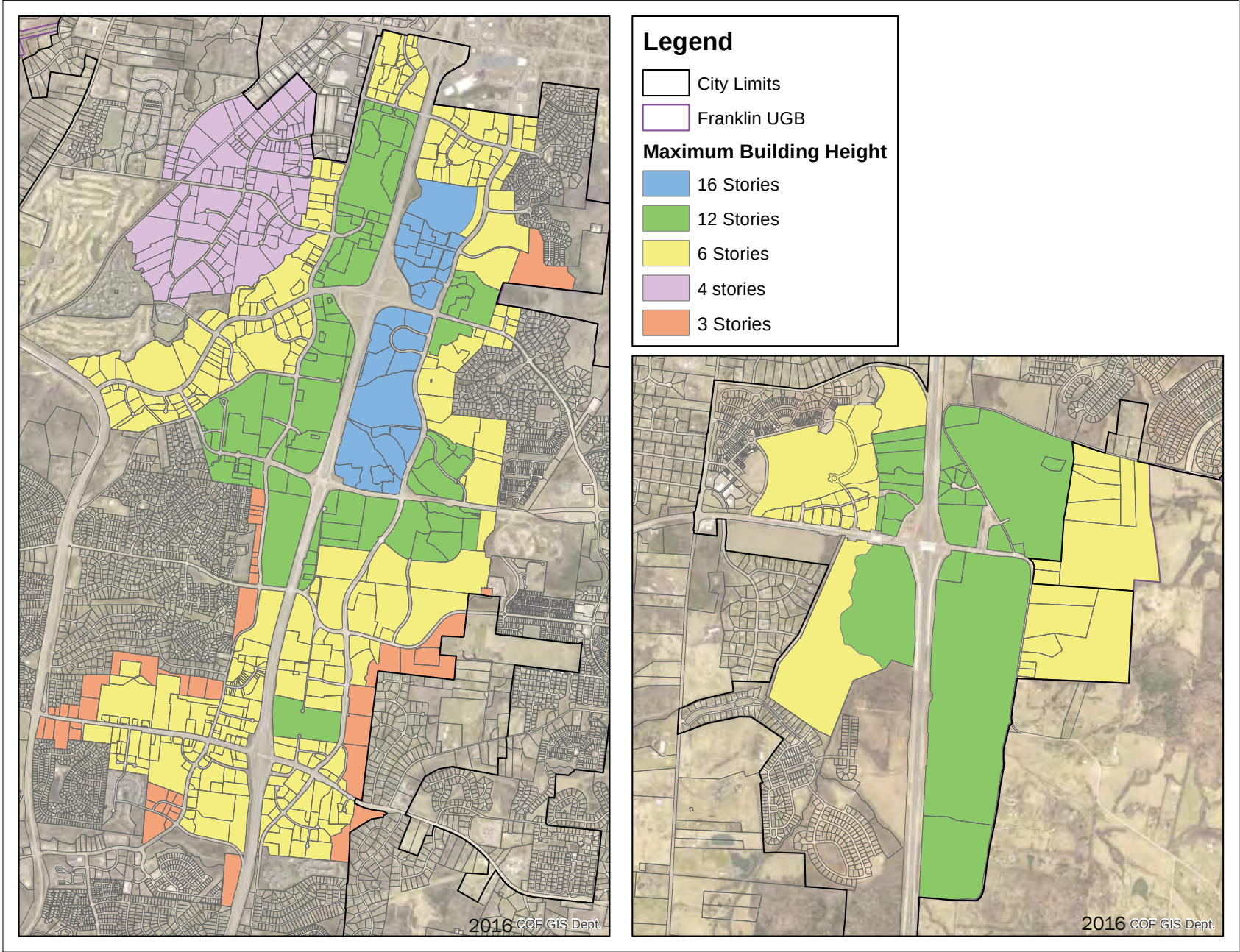
FIGURE F.2: CORRIDOR CHARACTER MAP



Map Not to Scale



APPENDIX G  
INTERSTATE CORRIDOR BUILDING HEIGHTS  
FIGURE G.1: INTERSTATE CORRIDOR BUILDING HEIGHT MAP





# APPENDIX H

## PHOTOGRAPH INDEX AND CREDITS

PAGE IMAGE (IMAGES ARE LISTED LEFT TO RIGHT AND TOP TO BOTTOM)

|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cover | Downtown Franklin, Eastern Flank Battle Park, West McEwen Drive, the Harpeth River, Downtown Franklin                                                                                                                                                                                                                                                                                                                                                  |
| 5     | Downtown Franklin at night via My Historic Franklin Photo Contest                                                                                                                                                                                                                                                                                                                                                                                      |
| 6     | Harlinsdale Park via My Historic Franklin Photo Contest                                                                                                                                                                                                                                                                                                                                                                                                |
| 9     | Historic Photo of the Franklin Theatre                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 13    | Railroad tracks via My Historic Franklin Photo Contest                                                                                                                                                                                                                                                                                                                                                                                                 |
| 15    | East McEwen Drive looking west, Healthways at Cool Springs Boulevard and Carothers Parkway intersection                                                                                                                                                                                                                                                                                                                                                |
| 16    | Franklin Main Street, Cool Springs Galleria, and Columbia State grand opening                                                                                                                                                                                                                                                                                                                                                                          |
| 17    | Westhaven students and parents walking to school (westhaventn.com) Westhaven Porch Fest, and Berry Farms                                                                                                                                                                                                                                                                                                                                               |
| 18    | Franklin Square                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 19    | Harpeth River and the Park at Harlinsdale Farm via My Historic Franklin Photo Contest                                                                                                                                                                                                                                                                                                                                                                  |
| 20    | Human-size chessboard in Westhaven open space, swingset in Barclay, and footbridge in Westhaven                                                                                                                                                                                                                                                                                                                                                        |
| 21    | Pike and Rose in Bethesda, MD ( <a href="http://upstatebusinessjournal.com/news/rick-erwin-open-clemson-eatery/">http://upstatebusinessjournal.com/news/rick-erwin-open-clemson-eatery/</a> ); Founder's Square in Westhaven                                                                                                                                                                                                                           |
| 22    | Five Points in Downtown Franklin, Berry Farms, and pedestrian bridge near Pinkerton Park                                                                                                                                                                                                                                                                                                                                                               |
| 23    | Office building at 3rd Avenue and Bridge Street; house on the corner of Adams Street and Jennings Street                                                                                                                                                                                                                                                                                                                                               |
| 24    | Founder's Square in Westhaven                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 28    | Hard Bargain conceptual, Natchez Street homes, and Greenwood Avenue Cottages ( <a href="https://placeshakers.files.wordpress.com/2011/01/cottage-neighborhood.jpg">https://placeshakers.files.wordpress.com/2011/01/cottage-neighborhood.jpg</a> )                                                                                                                                                                                                     |
| 32    | Harpeth River, The Confederate Cemetery at Carnton Plantation, and an aerial of Roper's Knob                                                                                                                                                                                                                                                                                                                                                           |
| 34    | Image of a conceptual layout, Harlinsdale Manor                                                                                                                                                                                                                                                                                                                                                                                                        |
| 39    | Haystacks off US 31                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 40    | Conceptual image of potential development along Fifth Avenue North and existing conditions looking south                                                                                                                                                                                                                                                                                                                                               |
| 43    | Lewisburg Pike, Fair Street, and Evans Street                                                                                                                                                                                                                                                                                                                                                                                                          |
| 46    | Rolling Hills Church and offices off Noah Drive                                                                                                                                                                                                                                                                                                                                                                                                        |
| 49    | House on Deerfield Lane, residence on Scamblers Knob ( <a href="http://ap.rdcpix.com/1253031628/cec8a88bd306be-568930d783e0ed7340l-m0xd-w640_h480_q80.jpg">http://ap.rdcpix.com/1253031628/cec8a88bd306be-568930d783e0ed7340l-m0xd-w640_h480_q80.jpg</a> ) and home on Echo Lane ( <a href="http://ap.rdcpix.com/1953343154/7774c54a4291a3aaa5c6d33dbc2635f2l-m0l.jpg">http://ap.rdcpix.com/1953343154/7774c54a4291a3aaa5c6d33dbc2635f2l-m0l.jpg</a> ) |
| 53    | Franklin Main Street                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 56    | Grand opening for the Franklin Theatre, Franklin Main Street, and Main Street Festival                                                                                                                                                                                                                                                                                                                                                                 |
| 57    | Townhomes in Westhaven, townhomes in Gateway Village, and single-family homes on Daniels Drive                                                                                                                                                                                                                                                                                                                                                         |

## APPENDIX H

### PHOTOGRAPH INDEX AND CREDITS

|     |                                                                                                                                                                                                                                                       |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 58  | Townhomes in Celebration, FL and a duplex in New Orleans, LA                                                                                                                                                                                          |
| 62  | Dwell Apartments, Charleston South Carolina, and Westhaven multi-family homes                                                                                                                                                                         |
| 66  | Commercial area in Longmont, CO and Northfield Shopping Center in Denver, CO                                                                                                                                                                          |
| 69  | Conceptual layout of traditional vs conventional form and Westhaven live/work units                                                                                                                                                                   |
| 70  | Westhaven Town Center, Serenbe, and conceptual rendering from missingmiddle.com                                                                                                                                                                       |
| 71  | St. Louis Park, MN and Fort Mill, SC                                                                                                                                                                                                                  |
| 74  | Columbia Avenue in Downtown Franklin and Gateway Village Town Center                                                                                                                                                                                  |
| 80  | All photos in Downtown Franklin                                                                                                                                                                                                                       |
| 83  | Fort Granger and Pinkerton Park                                                                                                                                                                                                                       |
| 85  | The Park at Harlinsdale Farm and the Harpeth River                                                                                                                                                                                                    |
| 86  | Nissan North Americas and Pike and Rose Rendering in Bethesda, MD ( <a href="https://www.perseiapartments.com/wp-content/uploads/2014/02/Per-Sei-Exterior.jpg">https://www.perseiapartments.com/wp-content/uploads/2014/02/Per-Sei-Exterior.jpg</a> ) |
| 89  | Healthways Building, Aspen Grove Bank, and Franklin Park                                                                                                                                                                                              |
| 92  | Carlisle Subdivision, Charlton Green, Habersham, Serenbe, and Berry Farms                                                                                                                                                                             |
| 95  | Westhaven and open space in Barclay                                                                                                                                                                                                                   |
| 96  | Berry Farms                                                                                                                                                                                                                                           |
| 97  | Short Farm, residential estate at the corner of Franklin Road and Mack Hatcher, and two photos from Berry Farms                                                                                                                                       |
| 98  | Accessory dwelling unit, duplex in New Orleans, big house concept , Fontanel, and townhomes in Westhaven                                                                                                                                              |
| 99  | Dwell apartments, Fountains of Franklin, Franklin High School, Fort Granger, and Habersham live/work units                                                                                                                                            |
| 102 | Pedestrian trail at the Franklin United Methodist Church property                                                                                                                                                                                     |
| 107 | Public workshops held at Eastern Flank Clubhouse                                                                                                                                                                                                      |
| 109 | Public workshops held at Eastern Flank Clubhouse                                                                                                                                                                                                      |
| 110 | <a href="http://upstatebusinessjournal.com/news/rick-erwin-open-clemson-eatery/">http://upstatebusinessjournal.com/news/rick-erwin-open-clemson-eatery/</a>                                                                                           |
| 111 | Public workshops held at City Hall and Columbia State                                                                                                                                                                                                 |
| 113 | Franklin Park open space                                                                                                                                                                                                                              |

Most of the photos were taken by the Planning and Sustainability Department staff. All photos of Berry Farms were provided by Boyle Investment Company.

## APPENDIX I

ADOPTION RESOLUTION

TO BE ADDED....

# ENVISION



# FRANKLIN

PRESERVING THE PAST, PLANNING THE FUTURE

DECEMBER 2016





# Role of the Plan

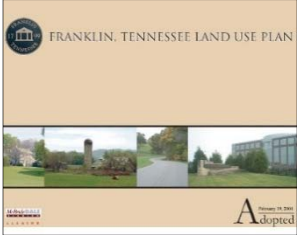
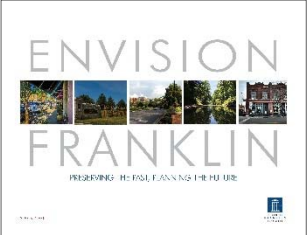


- It is a general plan for physical development and articulates the vision for the future of the City
- History of Plans adopted by the Franklin Municipal Planning Commission
  - Long Range Plan 1989
  - Land Use Plan 2004
  - *Envision Franklin Draft 2017*



# Why Update?



|                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                 |                                                                                                                                                                                                                                        |
| <p>Adopted in 2004</p>                                                                                                                                                                                                                                           | <p>Drafted 2015-2016</p>                                                                                                                                                                                                                                                                                                  |
| <p>Includes:</p> <ul style="list-style-type: none"> <li>15 Guiding Principles</li> <li>7 Design Concepts</li> <li>9 Character Areas</li> <li>60 Special Areas</li> </ul>                                                                                         | <p>Includes:</p> <ul style="list-style-type: none"> <li>6 Major Objectives</li> <li>8 Guiding Principles</li> <li>17 Design Concepts + Special Considerations</li> </ul>                                                                                                                                                  |
| <p>Issues in Implementation:</p> <ul style="list-style-type: none"> <li>Need for more detail in both land use and design</li> <li>Land use and development trends have changed since adoption</li> <li>Constant requests for Land Use Plan amendments</li> </ul> | <p>New elements:</p> <ul style="list-style-type: none"> <li>Design concepts include recommendations on land use, building form, and design</li> <li>Special considerations for certain sites, particularly in Central Franklin and along scenic corridors</li> <li>Links transportation, character, and design</li> </ul> |

# Public Process



- Almost two-year public process with consulting firm CHA/REA
- Initial visioning open houses, numerous public meetings, workshops, and community outreach



# Public Process



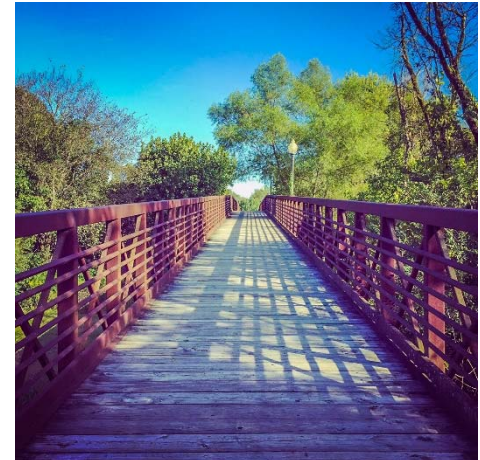
- Visioning Open Houses— 200 people
- Initial Draft Open Houses— 200+ people
- FrankTalks— 60 people
- Downtown Franklin Association— 65 people
- Franklin Tomorrow— 20 people
- Chamber Real Estate Round Table— 20 people
- Design Professionals— 15 people
- Franklin Rotary Breakfast— 65 people
- Franklin Tomorrow Breakfast with the Mayors— (booth)
- Williamson Inc. Chamber Luncheon— (booth)
- Social Media (Facebook/Twitter)— 16,000+ people



# Envision Franklin Vision



Franklin will be a connected community of vibrant neighborhoods anchored by its historic downtown. The City seeks to strategically manage growth while preserving historic resources and natural beauty. Exceptionally designed places will enhance Franklin's distinctive character and foster continued economic vitality.



# Major Objectives





# Exceptional Design

Design development to create exceptional places





# Regional Commerce

Direct higher intensity and taller buildings toward the I-65 corridor





# Neighborhood Nodes

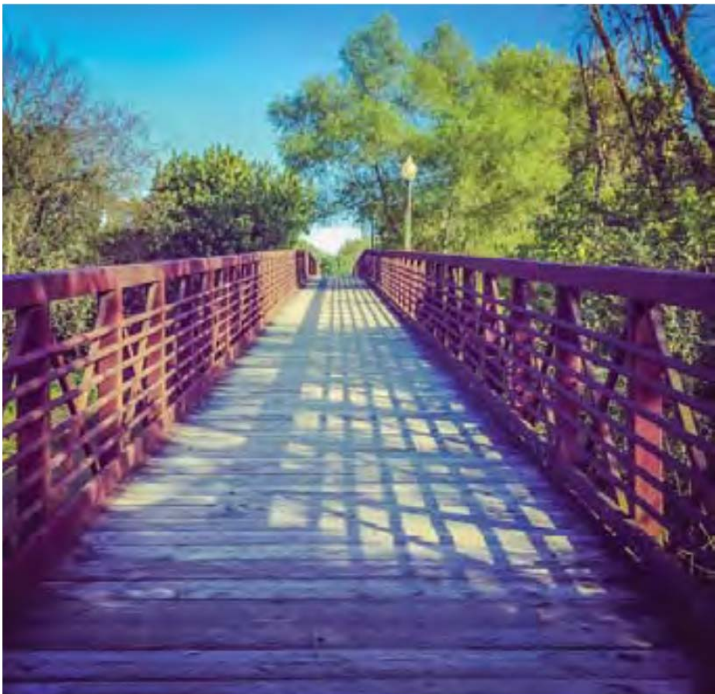
Strategically locate commercial nodes to serve surrounding neighborhoods





# Connectivity

Improve connectivity with multi-use paths, sidewalks, and trails





# Historic Preservation

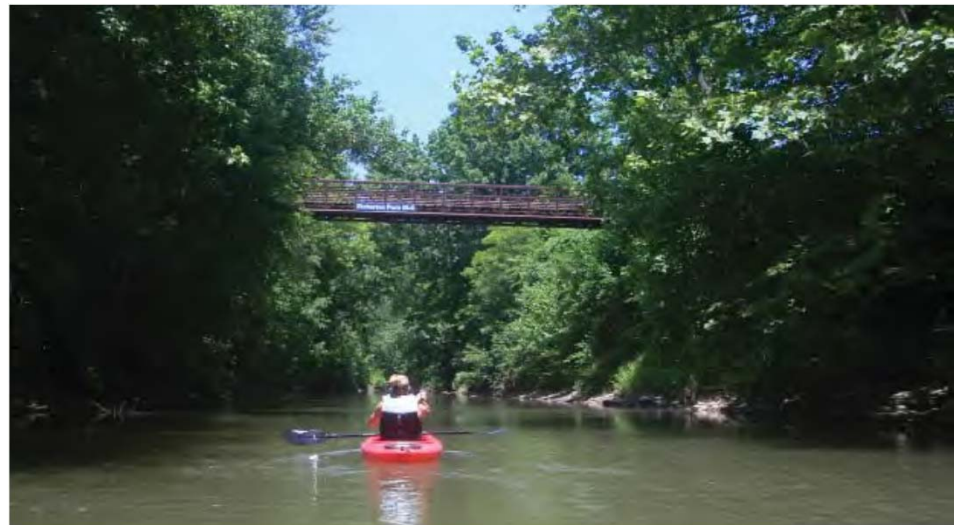
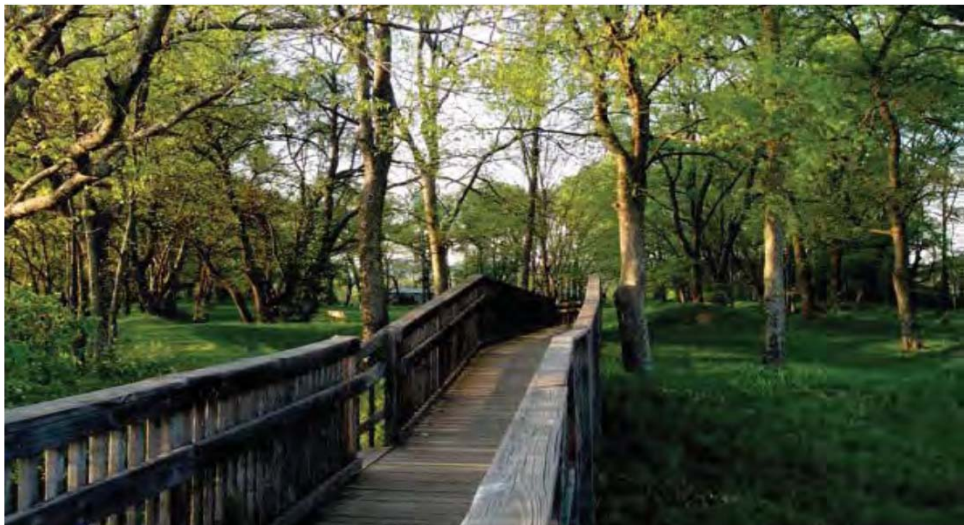
Protect character of historic areas and ensure contextually compatible infill





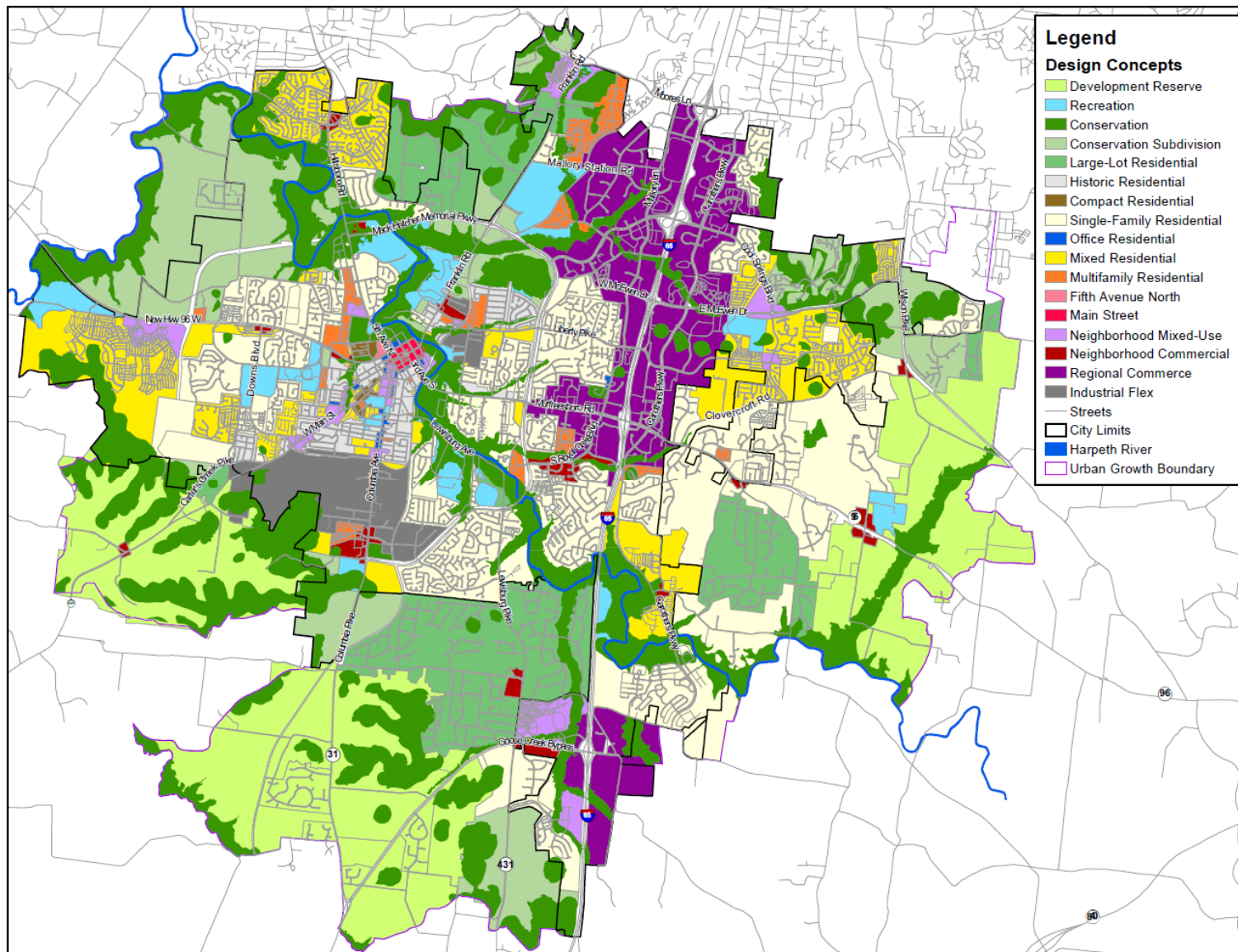
# Natural Beauty

Preserve natural beauty along scenic corridors and viewsheds





# Design Concepts Map



# Envision Franklin Adoption



- FMPC Public Hearing
- Formal Vote by FMPC



# Next Steps



- Process to update Zoning Ordinance
- Transition time
  - Some development projects may get caught between the Land Use Plan, Zoning Ordinance and Envision Franklin
  - Staff reports will address them and be flexible on that guidance where appropriate





# December 2016 Final Draft of Envision Franklin

## Overview of Revisions

### Design Concept Map Changes

**The following map changes were made to better reflect existing conditions.**

1. Reid Hill Commons residential changed from Single Family Residential to Mixed Residential to reflect existing conditions.
2. Westhaven Golf Course changed from Mixed Residential to Recreation to reflect existing conditions.
3. Assisted Living at New Hwy 96 and Mack Hatcher changed from Single Family to Mixed Residential to reflect existing conditions.
4. Fountains of Franklin changed from Single Family to Multifamily to reflect existing conditions.
5. Deleted Conservation Design Concept over the Split Log Road because it is in the Brentwood corporate limits.
6. The Stream Valley northern section changed from Regional Commerce to Neighborhood Mixed-Use to reflect entitlements.
7. Hardison Hills changed from Multifamily to Mixed Residential to reflect existing conditions.
8. Rucker Avenue changed from Single Family Residential to Historic Residential to better protect the existing neighborhood character.
9. Rucker Park changed from Single Family Residential to Mixed Residential to reflect existing conditions.
10. Rolling Meadows changed from Single Family Residential to Historic Residential to protect the existing neighborhood character.
11. The properties on Franklin Road across from the Factory changed from Single Family Residential to Neighborhood Commercial (barber shop, flower shop) and lots on Harpeth Industrial Court with frontage on Franklin Road changed from Industrial Flex to Neighborhood Commercial to coincide with zoning.
12. Properties along Thompson Alley changed from Historic Residential to Mixed Residential to reflect existing conditions.
13. Franklin Housing Authority properties changed from Multifamily Residential to Mixed Residential to better reflect their master plan.

**The following changes were made based upon community feedback, input from the Planning Commissioners and Aldermen, and staff recommendations.**

14. The Seaboard Lane area was changed from Industrial Flex to Regional Commerce with a special consideration.
15. The Property south of Oak Meadow Drive at the corner of South Royal Oaks Boulevard changed from Multifamily to Neighborhood Commercial due to community input and recent Planning Commission and BOMA decisions.
16. Riverview Estate on Franklin Road was changed from Mixed Residential to Conservation Subdivision to better account for the environmental constraints, existing neighborhood character, and historic resources. A Special Consideration was also created.

17. Centennial Hall Estate and the parcel directly to the north were changed from Single Family Residential to Conservation Subdivision and a special consideration was created to account for the environmental constraints, historic resources, and rural street conditions.
18. The properties located on the north side of Boyd Mill Avenue between Downs Boulevard and 96W changed from Single Family Residential to Large Lot Residential due to sewer constraints, inadequate roadway infrastructure, and to reflect existing zoning.
19. The eastern side of Wilson Pike near the McEwen Drive intersection changed from Single Family Residential to Conservation Subdivision to account for the environmental constraints and allow for duplex and big house residential uses.
20. The properties on West Main Street and 11th Avenue changed from Neighborhood Mixed-Use to Office Residential (accounting office to 11th Ave on south side of West Main Street).
21. Several properties along Carters Creek Pike changed from Single Family Residential to Large-Lot Residential, Conservation Subdivision, and Development Reserve to better account for the limited sewer access, rural character, and long planning horizon for any roadway improvements.
22. The southeast quadrant of the intersection of the Future Mack Hatcher Parkway and 96 W changed from Single Family Residential to Mixed Residential to reflect existing zoning.
23. Properties adjacent to Amelia Park and Tap Root Hills changed from Development Reserve to Single Family Residential.
24. The deep lots located east of Lewisburg Avenue between Berry Circle and Stewart Drive changed from Large-Lot Residential to Historic Residential to better address their context.
25. The deep lots located north of Murfreesboro Road between Eddy Lane and Mack Hatcher Parkway changed from Large-Lot Residential to Historic Residential to better address context.
26. The Neighborhood Commercial area located at the intersection of 96E and North Chapel Road was enlarged to include the SE corner.

**Data Changes:**

27. The street layer was modified to consistently show the ROW.
28. The most up-to-date FEMA floodplain data is now used for the Conservation Design Concept.
29. The Harpeth River boundaries were enhanced.
30. The Conservation Overlay was clipped from the Fifth Ave North Design Concept to reflect Plan recommendations and removed from property near Wilson Pike within Brentwood (in Franklin UGB).

**Other Map Changes:**

31. The existing land use designation of Berry Farms was changed from Agriculture to Vacant for the Land Use map on page 10.
32. The southwest quadrant of the McEwen Drive and Carothers Parkway intersection was changed from a maximum of 16 stories to a maximum of 12 stories on the Interstate Corridor Building Height Map in Appendix G. This was done to balance out the intersection.
33. The Corridor Character Map and Matrix were updated in concert with Engineering recommendations.
34. All maps throughout Envision Franklin have been dated.

## Envision Franklin Text Changes:

Page 7: Six major objectives of Envision Franklin were added to help clarify priorities.

Page 11: Statements were added about growth and development in Franklin.

Page 15: In the Managed Growth Guiding Principle section, Bullet B was revised to support compact land use patterns.

Page 17: In the Vibrant Neighborhoods Section, Bullet B was revised to encourage a range of housing options and price points both for rent and for sale. Bullet C was revised to encourage multi-use paths.

Page 17: In the Vibrant Neighborhoods Guiding Principle section, a statement was added about providing play areas for children by encouraging larger lots and usable open space near homes on small lots. A statement was added about encouraging a variety of lot sizes, not just the minimums.

Page 18: In the Historic Preservation Guiding Principle section, a sentence about the importance of preserving the large front lawns of historic estates was added.

Page 20: In the Exceptional Design Guiding Principle, Bullets A, C, and E were revised.

Page 29: In the Compact Residential Design Concept, language was added in the building height section to recommend new structures be within one-half story of the average building height along the same block face.

Page 32: In the Conservation Design Concept, a statement was added to encourage new development to design around conservation areas and to use these areas for light recreation. Statements about sidewalk and multi-use paths were added throughout the city.

Page 33: In the Conservation Design Concept, a statement was added about selective clearing in the Amenities section to support trails, scenic vistas, informal gathering spaces, and other forms of passive recreation. Statements were added in the Bicycle and Pedestrian section to provide connected trails between all of the conservation areas.

Page 36: In the Conservation Subdivision Design Concept, a special consideration was added to support limited residential development at the Centennial Hall Estate if the grounds and views of the historic home are preserved. A special consideration for Riverview Historic Estate was created to preserve the rural viewshed along Franklin Road and ensure any future development occurs behind the historic home and accessory structures. Statements were added in the Bicycle and Pedestrian section to provide connections to other conservation areas.

Page 39: In the Development Reserve Design Concept, statements about the suitability analysis and the timing and coordination of infrastructure were added.

Page 54: In the Main Street Design Concept, statements were revised and added in the Building Placement section to ensure the front setback on new development is compatible. Statements were added in the Bicycle and Pedestrian section to encourage wider sidewalks that would accommodate outdoor dining and comfortable pedestrian movement.



Page 61: In the Mixed Residential Design Concept, a Special Consideration was added for the property at the southeast quadrant of the Columbia Pike and Mack Hatcher Parkway intersection to limit building height to a maximum of two stories to protect the views of Winstead Hill.

Page 63: In the Multifamily Design Concept, statements were modified in the Building Character section to support individual ground-floor entrances to each unit. A statement was added in the building character part to encourage an appropriate mix of architectural styles and building materials.

Page 68: In the Neighborhood Commercial Design Concept, the building height was revised to encourage two stories at the street and allow a third story if recessed.

Page 69: In the Neighborhood Commercial Design Concept, a Special Consideration was added for the parcel at the southwest corner of Hillview Lane and Columbia Pike to keep building height at one story to protect views of Winstead Hill. A Special Consideration was created to allow assisted living along South Royal Oaks Boulevard. A Special Consideration was added to the consideration of future Neighborhood Commercial nodes that should not encroach down neighborhood or scenic corridors.

Page 71: In the Neighborhood Mixed-Use Design Concept, Assisted Living and Live-Work were added as secondary uses. The building height maximum was changed to allow structures taller than three stories if part of a master planned development and compliant with the Transitional Features section of the Zoning Ordinance. Language was also added in the Building Placement section to encourage wider sidewalks.

Pages 72 and 88: In the Regional Commerce and Neighborhood Mixed-Use Design Concepts, language was added in the Building Character section to allow multifamily structures to have individual ground floor entrances to each unit when ground floor commercial space is not viable.

Page 72: In the Neighborhood Mixed-Use Design Concept, statements in the Building Character section were clarified to allow drive-through uses if they are designed without the need of a front drive aisle.

Page 73: In the Neighborhood Mixed-Use Design Concept, a Special Consideration was created to acknowledge that there may be a need for future mixed-use nodes that are not yet mapped.

Page 76: In the Neighborhood Mixed-Use Design Concept, a statement was added in the First Avenue South Special Consideration clarifying that Figure 4.4 is based upon significant floodplain alterations.

Page 89: In the Regional Commerce Design Concept, the 950' building height maximum was removed from the Building Height section. Additional statements were added to ensure new structures are subordinate to nearby hillsides and that the building form, massing, and scale of new buildings should be balanced at intersections. This will ensure previously approved projects will not lose entitlements.

Page 91: In the Regional Commerce Design Concept, a special consideration was added about the Seaboard Lane area moving it from Industrial Flex to Regional Commerce with a maximum height of four-stories. This is in response to feedback received about this area being more commercial than industrial and better facilitating the development of this area.

Page 93: In the Single Family Residential Design Concept, a statement was added about preserving the integrity of existing neighborhoods and subdivisions.

Page 98: Modified definition of Farmstead Compound to better explain the purpose and intent.

Page 100: The definition of Light Industry was modified and includes auto-oriented uses, self-storage facilities, breweries, and veterinarians with outdoor kennels.

Page 123: Corrected sentence about how Eastern Flank Battlefield was acquired.

Page 125: In Appendix B, language was updated to account for the completion of the Goose Creek interchange and I-65 widening and how infrastructure has been planned and extended with approved development. Development figures were also added to reflect the large-scale development approved within the area.

Page 132: Corrected typo about the West Harpeth River

Page 127: Added statement that Mack Hatcher is also a north-south connection

page 129: Removed sentence about a junk yard being located on Columbia Pike.

Page 130: Corrected statement about Liberty Pike being a two-lane corridor

**Miscellaneous:**

- Statements were added in the Amenities section of several design concepts to ensure open space is an integral part of site design and not an afterthought.
- Statements were added for scenic corridors where significant setbacks are recommended.
- Pages 36, 39, 50, 60, 73, 89: A statement about preserving and designing around historic site features such as cemeteries, barns, accessory structures, and agriculturally related features was added to several design concepts.
- Several minor grammatical and formatting changes were made that are not listed.

# ENVISION FRANKLIN

## COMMENT CARD INPUT

The table below is a summary of the contents of the comment cards provided by citizens during the public outreach period for Envision Franklin. The actual citizen comments are on the following pages and have been organized by category. If one citizen had comments about multiple topics, those comments were broken out into corresponding categories. Raw data is available upon request.

| Topic Category                     | Specifics                                   | Number of Comments |
|------------------------------------|---------------------------------------------|--------------------|
| <b>Positive Comments</b>           |                                             | <b>16</b>          |
|                                    |                                             |                    |
| <b>Connectivity</b>                |                                             | <b>38</b>          |
|                                    | More Trails and Sidewalks                   | 19                 |
|                                    | More Street Network/Roadway Improvements    | 13                 |
|                                    | Incorporate Transit                         | 6                  |
| <b>Growth</b>                      |                                             | <b>24</b>          |
|                                    | Infrastructure/Annexation/Services          | 3                  |
|                                    | Concerns About Current Growth               | 11                 |
|                                    | Supports Additional Building Height         | 6                  |
|                                    | Does Not Support Additional Building Height | 4                  |
| <b>Character/Built Environment</b> |                                             | <b>8</b>           |
|                                    |                                             |                    |
| <b>Natural Resources</b>           |                                             | <b>15</b>          |
|                                    | Open Space and Harpeth River                | 9                  |
|                                    | Water, Energy, Noise, and Light             | 6                  |
| <b>Design Concepts</b>             |                                             | <b>38</b>          |
|                                    | General                                     | 6                  |
|                                    | Neighborhood Commercial and Mixed Use       | 9                  |
|                                    | Historic Residential                        | 3                  |
|                                    | Compact Residential                         | 4                  |
|                                    | Large Lot                                   | 1                  |
|                                    | Development Reserve                         | 1                  |
|                                    | Conservation Subdivision                    | 1                  |
|                                    | Multifamily                                 | 7                  |
|                                    | Industrial Flex                             | 2                  |
|                                    | Institutional                               | 1                  |
|                                    | Recreation                                  | 1                  |
|                                    | Residential/Affordable Housing              | 2                  |
| <b>Other</b>                       |                                             | <b>5</b>           |



## POSITIVE COMMENTS

1. My compliments on your overall planning for the city. Looks great for the future.
2. I thought the preservation and information was clearly explained.
3. Very well thought out. Like the vision.
4. I am so impressed by the unbelievable amount of work you have poured out to produce these charts and graphics. Well done! There is so much information in them and love for our city. Thank you all so much and keep up the good work!
5. Thanks for keeping us so well informed. I have lived in many places, City of Franklin people are the most available.
6. Obviously a great deal of effort, time, and talent went into the Envision plan. It's a lot to digest. I just hope that the "growth for growth's sake" mentality which seems to have been manifest in certain past decisions will not truly be discarded in favor of a very critical consideration of new building proposals, taking residents' views into account as a first priority. What I have seen, read, and heard of this open house give some room for optimism.
7. Good plans, need to try and find most favorable plan for everyone. I really like trying to preserve the historic feel of Franklin while also trying to accompany the massive growth.
8. We love all the thought you've put into this. Thank you.
9. This was helpful.
10. Great visuals-good job!
11. Thank you so much for putting on your open house regarding land use plans for our great town. Community involvement is a cornerstone of a great town and you all do a great job providing opportunities for everyone to take part.
12. Great presentation
13. Great to have a plan that can be communicated to the community at large. Well developed and presented plan! Thanks for inviting my input both word and on infill development group.
14. Positives: Excited about preservation of hilltops, addition of City landscaping, sidewalks, & lighting. Also building height restrictions to maintain small town feel. Dedication to more recreation and conservation areas.
15. Thank you for an informative session.
16. We appreciate the City informing residents of future growth plans.

## CONNECTIVITY

### Trails and Sidewalks

1. Fan of the multi-green space design. Walking, biking, parks are critical to maintaining a town feel.
2. Bike lanes and multi-use paths are a plus.
3. An urgency for bike lanes would be nice.
4. I think we need increased emphasis on walkability and connectivity. I really like Franklin Tomorrow's plans and think they should be implemented. It will not be easy, but it's important for future of our city.

5. Main concerns-want city to be more walkable-connect sidewalks, bike paths, etc.
6. I believe Franklin has an opportunity to embrace biking/walking-It will bring strong tourism to our town. We will need to invest in trails and bridges in our green space.
7. My main concern is the lack of sidewalks. I live inside Lucinda Ct. and Eddy Lane. I have seen too many times people get narrowly hit by a car walking on Eddy Lane. It is very dangerous and I don't walk with my kids because it's unsafe. We feel trapped in our neighborhood because we don't have sidewalks. We would be active all over, to school, to the Factory, to Pinkerton but now I'm only able to access these places by driving and they are right next to me. Please, please consider the need of sidewalks. People are walking on Eddy anyway and someone will get hurt. Thanks, Danielle Avery.
8. Definitely need sidewalks from the bridge on Franklin Road to Harlinsdale!
9. We need to connect downtown Franklin to the Eastern Flank Park/Carnton with a walking trail. The park is under-utilized because it is only "safely" accessible by car. Residents of Heath Place would be able to walk downtown, eliminate excess/additional car traffic.
10. I would like to see greenways that connect from Lewisburg to downtown to happen sooner rather than later.
11. Safety concern should be addressed - a sidewalk added on Franklin Road from corner of Franklin/Liberty Southbound to Harpeth river bridge E. Main Street
12. Alternative Transit: include retrofitting Carothers to have a bike-commuter friendly option. Currently, there is no safe place for cyclists. Leveraging the ability of people to live close to work and adopt alternative modes of transit is crucial to keeping traffic at bay and keep the attractiveness of the area.
13. We need to prioritize sidewalks and walking paths-especially from downtown to the Factory and Harlinsdale.
14. Should plan for a walking bridge west of the Franklin Road Bridge for access to Harlinsdale.
15. Franklin Civil War Trail— As many tourists come to Franklin for its Civil War history and to visit Carnton, the Carter House, and the Lotz House, it would be nice to have those easily connected. I think a glaring omission is a trail or walk-way to lead tourists between Carnton and the Carter House. It's only about a mile or so to walk it, but in order to visit both sites, one has to get back in their car. A pedestrian-friendly path connecting Carter Hill Park (when completed) to Carnton would be fantastic. Although we have markers around the city, there is no "official" trail to easily lead cyclists and pedestrians around the city to explore our Civil War sites. What could be done to better lead tourists around town (similar to Boston's Freedom Trail)?
16. Heath Place Island—I live in the Heath Place subdivision. I love its proximity to downtown (only 1.3 miles from my house to Chip). However, we find ourselves on a bit of an island. Even though downtown is easily within walking distance, we consistently have to get into our cars to go downtown due to the fact there is no bike or pedestrian sidewalk along Lewisburg Pike. Many folks in our community love to go downtown but are unable to walk there due to the dangers of Lewisburg Pike. How can we connect Heath Place to downtown? A connector would be well-received by the folks in our community.
17. I think traffic can be mitigated if the City develops and implements a strong bicycle path system. Most of the roads in Franklin are not safe to ride a bicycle. I also think a bike-share program will help reduce traffic, but if the roads aren't bikeable the bike-share program won't be used. A strong bicycle path system would entail adding designated bike lanes and widening some roads

(especially east McEwen, Wilson Pike, Clovercroft Road, Murfreesboro Road from Mack Hatcher to Margin).

18. Need sidewalks on 96 Highway to cross I-65.
19. Extension of 1<sup>st</sup> Ave N should be a linear park/greenway focused on connection to the river including a pedestrian bridge connected to Harlinsdale.

## **Street Network and Roadway Improvements**

1. Connected community—this is of great importance to the majority of Franklin residents and must be reinforced by the political will of our elected leadership.
2. Traffic flow may be enhanced by adding right hand turn lanes and improving light timing.
3. We love living in Franklin! The traffic is getting worse!!! Do what you can, we support you.
4. We cannot drive safely down E. McEwen which if approved will take 4-6 years to complete.
5. Please remember the one lane tunnel on Wilson.
6. The only issue I would bring up is the elimination of the two single lane overpasses on Wilson Pike.
7. Roads are already becoming congested as is. As the volume of use rises, main roads must be widened, new roads must be planned, and parking for many must be planned.
8. When will Mack Hatcher be completed?
9. Plan to put a main emphasis on infrastructure. Try and figure out ways to produce the least amount of travel and vehicle driving.
10. You will likely need more access to I-65 than Goose Creek Bypass + 840 (Stream Valley/Berry Farm Area)
11. Overpass over 65 south of Goose Creek? Second entrance for Stream Valley?
12. As I look at all the future plans for Franklin some ideas are very beautiful and would certainly make a lovely, quaint city even more beautiful. But as you make more development possible, the traffic increases. Some roads in the county are just not capable of supporting the increase, safely. Certainly that is the biggest challenge. The connectivity inside the city makes sense, but outside the city limits, the connectivity creates threats to the welfare of the citizens.
13. Please accelerate the SR96 Gateway Enhancement Project, between I-65 and Royal Oaks Blvd. This stretch of road is undergoing redevelopment pressures now and has long been in need of safety improvements. The sooner the concept can be identified, the more that development can conform and participate in the improvements. - A MAJOR CORRIDOR -

## **Transit**

1. Transit element should be stronger and more specific.
2. Traffic-please help- bus/trolley/bike?
3. Locate transit oriented development in a kind of land use zone. E.g., the hospital and medical office complex at Murfreesboro Road near I-65. Gives direction for locating transit hubs facilitating such development.
4. Was any consideration given to transit oriented developments along potential regional light rail/mass transit connectors? Franklin is not an island in terms of people living/working inside and outside the city limits.
5. How will this plan respond to transit? The MPO's south corridor study may suggest development patterns (urban form, density, use) that are different than the vision. Franklin must have a



community conversation about density. Residents must understand the flip side of prohibiting high density/multifamily/tall buildings/loss of farmland and open space. No opportunities for premium transit (LRT, BRT)

6. Trail and transit-oriented development zones.

## GROWTH

### Infrastructure/Annexation/Services

1. I think most of the concept vision is positive, however, there seems to be a big disconnect for the areas that are already waiting to be a part of simple resources like sewerage/sewer lines and natural gas. I've been waiting 12 years to be able to be on the sewer system.
2. Large tract M.P. developments (Fieldstone Farms, Westhaven) can under-write "Adequate" infrastructure improvements that multiple small tract developments cannot. I question long transitioning to county-size residential lot development within the UGB. Let the county be the transition. It's surprising the large lot residential poster guidelines are the same as single family guidelines & vice versa. UGB limits should be re-opened and revisited to better conform to sewer drainage basins.
3. If city wants to control UGB's development, then it should be annexed before development occurs. Consideration of transfer of development rights from UGB to core if want to control development in that area.

### Concerned about current growth

1. It is time to quit overdeveloping Franklin.
2. Please don't let Franklin become like Austin, TX. Round Rock to San Marcos—traffic and subdivisions, like L.A.
3. It is very easy for the developers to come to this area, pay very little to develop i.e. infrastructure, schools, services, etc. There is no cap, no cost to them. It falls upon the taxpayers and ruins the quality of life for residents and the culture. High residential ruins our tax base, hurts tourism (which actually makes money!) We are losing Franklin and Williamson County to over-development, lack of roads, quality of life.
4. I love Franklin, but it no longer has a small town feel, no matter how often we say it. Our infrastructure is being overwhelmed, yet new project keep getting approved. Look at Columbia Avenue. The City has been talking about the Mack Hatcher extension since I returned to Franklin 14 years ago (FHS grad).
5. The City should not offer tax incentives to new businesses looking to relocate to Franklin.
6. How does the exponential increase in traffic make Franklin a more desirable place to live? Is Franklin trying to compete with Nashville?
7. The allure of Franklin was its small town appeal. The average American dream is a nice house on a nice spot of quiet property. Yet, massive development is considered progress.
8. Franklin's area Infrastructure is going to be unable to sustain the population growth, as throughout the entire Nashville and surrounding areas traffic congestion. Emergency services will need more support. Franklin has had a stable community for decades, unfortunately, history repeats as how overdevelopment has had a negative impact on the environment.

9. Where is all the traffic going?
10. Very concerned about roads/drainage/etc. Infrastructure for an already crowded town.
11. Envision Franklin p. 11 -Our residents want to keep Franklin Franklin. Which means maintaining the established community character and quality of life. Managed Growth? Franklin's growth is already totally out of control. Growth is not responsible if infrastructure cannot support it. Quality of life is reduced by increased traffic. The role of the plan is to articulate what Franklin's residents want for their future. Our residents want to keep Franklin Franklin. Quality of life is decreased as traffic increases. Schools-are becoming overcrowded. Scenic views-now include tall buildings. Cost of living-our children cannot afford to live in the town they grew up in. "While growth can bring economic opportunity and prosperity, it can also fundamentally alter the established community character and quality of life due to increased traffic, influx of people, and the loss of natural amenities and open spaces." Traffic is awful!!! Please stop all of the growth. The community needs to catch up before adding more development. Outside developers don't care what they are creating and destroying because they do not live here.

### **Support Additional Building Height**

1. 16 stories should include all Galleria commercial complex
2. Uniformity of building heights-16 stories on south side of McEwen should extend to I-65.
3. I question the vary heights along I-65. This is where density must Happen! Has infrastructure in place.
4. 12 story buildings should extend both sides of Carothers to Liberty.
5. Like the building height options with location. Like the idea of purposeful re-use of the right buildings
6. In fitting with current building heights (Drury?). I support the 12 story height change along Mallory Lane.

### **Does not support additional building height**

1. I do not want the office buildings any taller.
2. Buildings over 16 stories - who is paying for the upgrades the fire department needs to keep those structures safe? I vote not the residents - I don't need more professionals in the area - current limits are enough.
3. I have concern about allowing taller buildings, as this increases density and thus traffic.
4. 12 story area west of I-65 adjacent to residential 12 to 1 to 2 stories. What about 3 story setback. East side 6 stories adjacent to gated community-buffering. Managed growth-the City seeks responsible growth that enhances quality of life and preserves its scenic beauty. Scenic views are not preserved if they include 16 story buildings. The plan doesn't follow its own guidelines. Natural Beauty-"Scenic viewsheds and vistas should be preserved as amenities." You can't make claims like this and support allowing 16 story buildings. Another example of the Plan contradicting itself. "Building up and not out" leads to increased traffic and interrupts our scenic views. "Project design should carefully address the potential undesirable impacts on existing uses, including traffic." Addressing the impact does not equal eliminating the impact. Traffic gets worse every day. Multifamily residential "Maximum of three stories inside and four stories outside of Mack Hatcher Parkway." You'll allow a 16 story commercial building, but not a 5 story

residential building?! “Create an attractive urban viewshed” This would drastically change the definition of our small town. A city skyline and the associated traffic will not keep Franklin Franklin. The guiding principles of the Plan are supposed to be “preserving the city’s unique identity and character.” It appears that only applies to downtown, because our unique identity and character does not include any 16 story buildings. 16 stories? Your representative tonight is calling a 33% increase in height a slight (?) increase! Hardly slight. I reject this plan for developers to increase their profits at the expense of our city’s image and charm. Please reject this idea. Franklin’s residents will not benefit from this. Our surface streets are already being choked. Adding this level of density can only make things worse. Stop already! Money grabbing developers are ruining Franklin. Buildings in Cool Springs at one time were not to exceed 10 stories. What happened?? The views of this hills are being covered up and it is extremely sad this beautiful area is being destroyed.

## CHARACTER/BUILT ENVIRONMENT

1. Downtown (historic) needs more business to support living in downtown area (grocer/etc.)
2. As new residents we hope the downtown does not lose its quaint uniqueness by bringing in too many chain stores to downtown area or lose the beautiful tree lined roads.
3. Recommend form based zoning for certain areas (within Mack Hatcher) and traditional.
4. We love the aesthetics of Franklin - why we moved here vs. Murfreesboro (among other reasons). Please continue to keep the neon signs to a minimum, etc. This is much more aesthetically pleasing.
5. I really wish Franklin would get back to the southern charm we use to have. Over the last 8 years, we have been moving towards an urban contemporary look and feel in some of the areas with the highest visibility. Though I think we should have a nice mix of all types of architecture and design, we are one of the historic towns in the south and we seem to be moving away from that charm. I simply believe that we should encourage more southern architecture to help continue our identity of southern charm that has been eroding over the last decade.
6. Please restrict double-lot development (two homes sharing a drive on one lot). It is not the visual character we want in Franklin.
7. How did Auto Zone get zoning approval to build right on Columbia Avenue-that might be worth better controls (i.e. zoning).
8. Infill Development - I hope the new Envision Franklin Plan will actually adhere to its tenets, instead of caving on areas due to developer pressure.

## NATURAL RESOURCES

### Open Space and Harpeth River

1. Protect the Harpeth!
2. Love the concepts of 1) preserving significant green space (both small pockets and large natural expanse Fig D p 139) 2) maximizing design opportunities to reflect and encourage enjoyment of the River.



3. Keep pushing neighborhood parks. The plan shows big voids in recreation areas, although there is significant amount of floodplain within the UGB that could be allocated and incentivized with density swaps.
4. Recreation Area - Rumor of new park in vicinity of 65 S of Murfreesboro, North of Long lane. I believe Franklin needs large park without traffic noise on E of 65, like Smith Park in Franklin.
5. Subdivisions don't have much green space-we need more. Work with parks.
6. Transfer of development right for conservation.
7. Please do not run Mack Hatcher through natural areas.
8. Putting parking lots in floodplains is not a good option. I see a development of a hotel to be placed in the floodplain in downtown Franklin. I was told it is okay because parking will be on the lowest floor. If out of town guests park in the lot while staying in a hotel and then a flood occurs their vehicle will be destroyed. This idea isn't right!!!
9. All I see is our "scenic beauty" being scraped from the face of our city and surrounding area. We need more accessible natural areas, nature parks, set aside land that will not be developed for monetary gain. Let us enjoy our nature. Requiring that developers create walkways between developments is not nature preservation. I hate seeing the wooded areas being bulldozed over. The wildlife is quickly losing their habitat which is shameful. Liberty Pike near Carothers Parkway was a beautiful area and it is so sad to watch it being destroyed!!! Franklin has lost its beautiful charm.

### **Water, Energy, Noise, and Light**

1. The water systems need a more robust facility network to supply quality water with the drastic population boom we hope to facilitate.
2. The demand for power will grow as the population increases. We need to build a reliable, growing power system to accommodate the needs of our growing population.
3. Please be active in managing 1) noise and 2) light pollution (adopt Dark Sky Society standards)
4. Concern for future recreation areas and use by City - increased noise by trucks dumping and loading dirt/mulch (Currently at Carnton Site) adjacent to neighborhoods (Polk Place/Carton). Increased events and noise volume (some over 80+ decibels).
5. Concerns/Problems: Extension of Mack Hatcher to East & West and managing noise for existing neighborhoods through walls/trees & landscaping. Recreation area noise levels and use by City for dumping (mulch/dirt) & truck noise (7am) beeping.
6. I understand that a noise barrier is likely TDOT's decision, but I would favor one adjacent to Stream Valley.

## **DESIGN CONCEPTS**

### **General Comments**

1. How do you deal with conflicts in your concepts? Increase density where infrastructure supports it vs leaving large lot zoning on existing property. Any chance for better collaboration with County?
2. Why 17 design concepts?

3. How do you balance density in zoning between the existing setting (lower density) and infrastructure (supports higher density).
4. Development suitability maps should be a key element in development review. Is it? Seems unclear.
5. Need to map surrounding community land use so that it can be seen what surrounding communities are doing.
6. Would like to hear more about “big picture” - where/how Franklin wants to develop. Also, any additional thoughts about public transportation + public housing/shelter. (Lower income needs).

## **Neighborhood Commercial and Neighborhood Mixed Use**

1. Neighborhood mixed-use—important component to creating a more walkable community and reducing congestion.
2. We would like to extend/enlarge the commercial node at the corner of North Chapel Road and Hwy 96. Specifically add approx. 10 acres to the southeast corner. Please see the attached letter and map for specifics.
3. Neighborhood Commercial: Town center image on the board-as Franklin increases in density, parking is important! Currently, parking at lunch at Whole Foods or Jason’s Deli stinks. The image of a town center is nice-but this is not always appropriate given the need to accommodate customers. Keep this a livable community that confronts reality of consumers in their vehicles!
4. Berry Farms - Rural Plains is not neighborhood mixed-use
5. Given enough density, small retail components within a mainly residential project could be considered an “Amenity,” and reduce vehicle trips.
6. The East side of I-65 needs lunch options. It’s incredibly unbalanced from Hwy 96 to Baker’s Bridge so you have a lot of office workers who need to travel further to do errands/grab lunch.
7. If Liberty Pike is extended to Wilson Pike, would/could be a location for neighborhood commercial.
8. Like the idea of moving retail and multi-residential parking inside of structures from the road. However, there is a concern over security with that design.
9. Consider adequate parking-old people can’t walk long distances-avoid “shared parking” again old people can’t park easily. Avoid large footprint building. They tend to attract crime.

## **Historic Residential**

1. New homes built on Old Liberty Pike do not appear to be built within the guidelines of staying within the neighborhood older home structure.
2. Infill projects-too many. I have yet to see one (except Main Street where the “Dozier” house and 5 or 6 others) that seems to fit the “context” of the neighborhood.
3. We need to preserve historic properties-by some definition of historic (maybe pre-1930). But let’s not start calling 1950’s red brick by this definition-better to rebuild with historic-now construction.

## **Compact Residential**

1. I really like the compact residential uses-especially the accessory dwellings, live-work, etc. As an affordable housing advocate, this type of planning is part of the solution if done right. I believe

in all new construction keeping in with the historical identity, and that all infill should be compatible in character with area. I love all the comments under Hard Bargain neighborhood. The vision is still alive. The one thing I did not agree with is that you did not label the Mt. Hope Cemetery nor the area we call "the hill" as Hard Bargain. I realize this is still in the "idea stage," but this area has all been referred to as Hard Bargain since the 1800s. As you know, Habitat, Hard Bargain Assn and Community Housing Partnership are proposing to the City to let us build affordable/workforce housing. It is an urban planner's dream location.

2. Compact residential: urban village appeal, with live/work space lite retail services. Compact residential should extend to "The Hill"
3. Warehouse on Mt. Hope converted to Live/work space, 96 & 5<sup>th</sup> up to some repurpose to include restaurants/bars - trendy & office.
4. Need conservation zoning for historic city without HOZ i.e. Natchez height in compact prop needs limits.

### **Large Lot**

1. Large Lot-more than one accessory structure

### **Development Reserve**

1. I am very pleased that Wilson Pike was left as we requested. Thank you.

### **Conservation Subdivision**

1. Concerned that conservation subdivision concept will not preserve or promote infill. Ref specifically to Mack Hatcher Bypass. These areas need to be "development reserve." Having development reserve at the outer edge of the city will help encourage development in core and regional commerce areas.

### **Multifamily**

1. If your intent is to minimize/discourage multi-family/assisted living, you have achieved your goal. I question grouping both assisted living and multi-family together, as they are very different uses and infrastructure loads.
2. I do not want to see any more apartments in the Cool Springs area. The transient students have lowered the Centennial scores.
3. Maximize use of existing infrastructure by allowing higher density and mix of uses. By maximizing land-use, we can preserve more open space and natural resources; Example mandated sidewalks against traditional suburban retail is never utilized to its potential. In a higher density pedestrian friendly design will maximize sidewalk.
4. Oak Meadow area:
  - Southeast corner of South Royal Oak and Oak Meadow. It is important to me that this property remain commercial. More apartments will exacerbate the traffic problems.
  - I request that the SE corner of Oak Meadows and South Royal Oaks remain zoned commercial.
  - The revised land use (proposed) plan shows the SE corner of Oak Meadow & S. Royal Oaks as Multi-family residential in the future. We have been told twice at this Open House that this property will change back to neighborhood commercial in the revised



plan to become public in Dec '16. We are in full support of this change back to neighborhood commercial & that is why we are here today. We'll be back in December to assure ourselves that the change back was not overlooked.

- Please ensure that the Southeast Corner of Royal Oaks and Oak Meadow are included in the plan for neighborhood commercial.

## **Industrial Flex**

1. Be bold enough to "envision" light-industrial out of core-Franklin. Make Franklin walkable and move light industrial out if walkable to downtown Franklin (south on Columbia.) Cliff Whitmore
2. Industrial Flex (Seaboard Area) consider another concept or make sure this type of activity is called out/supported.

## **Institutional**

1. The result of increase population puts extreme pressure on current population. So as the city and BOMA plans the future use of certain areas, another area to plan for is land use for cemeteries. Obviously the private sector would have to provide funeral home uses but I read that cities could take on the responsibility of a cemetery. As the wonderful resource of Williamson County disappears, the land(!) that need for when people die, will be unavailable, near the City anyway. Final thoughts, serve the current residents of Franklin and Williamson County before the development for future residents, preserve what is there now and our lifestyle, our safety, and quality of life. You have a wonderful place now, can you keep it?

## **Recreation**

1. Why is the city's water treatment plant "recreation"?

## **Affordable Housing**

1. Regarding residential development, there has been a group of people pushing for "affordable housing". The problem with mandated affordable housing is it always traps people who need affordable housing into a deed restricted and regulated development that they cannot capitalize off their investment. I do not agree with mandated affordable housing but I do support opportunities for upward mobility. This leads me to a thought of encouraging developers to look at building practices of building smaller homes with the ability to increase square footage and improvements in the future. I may be wrong, but it seems to me that unless you are building a custom home, most of the building process and finishing of a home are not of the high quality standards that people want. I also believe that the cost of asking a builder to add upgrades are higher than doing it yourself after the fact for general updates and additions. I believe that the development process is costing more and more each year and that is what drives up the prices of homes to the point it is out of reach for a lot of people for a product that not of the same overall quality. That is why I think if we encourage developments, for example, that are less square footage but are designed for future renovations/build out, it would allow for a lower price point for younger families, but sets up the family that is growing to increase their home's footprint more easily in the future. My home had a 200 square foot space over the garage that was easily accessible, but my section had a limit of square feet it could build. It was a builder agreement between the multiple builders in the McKay's Mill neighborhood. It cost

me more to have the builder insulate and run AC to the space than it did for me to complete the drywall and electricity. I added about 200 sq ft to my home at a much smaller cost after the fact than it would have cost me if the builder had done it. This cost would have been compounded if I added it to my initial mortgage. I think this is a key to provide homes at lower price point but still empower people with their investment. If you can buy a 2,000 square foot home for a young family of 3 but later are able to build out or expand based on your needs of a growing family, it allows for better financial management and family function. I have been in my 2600 sqft home for about 13 years. I have added to and updated most every room of my home. It suits my needs perfectly today but 10 years ago it was too large but I felt I needed the space to grow into. Today my home is a little over 2800 sq ft and though I would love to change a few things, it suits my needs. There are other homes in my neighborhood that are much smaller in size but the design makes it so very hard to add usable square feet without drastic structural changes. This traps people into making only 1 of 2 decisions, living in a functionally deficient home or move. So today, it just seems as though smaller homes are not able to scale to a growing family's needs. If I can buy a 2000 square foot home at the current estimated value of \$270,000 today (\$135 per sq ft). But then add an additional 400 square foot in the future at \$100 square foot. My home's value will increase without overpaying for the square foot and hopefully keep homes costs someone management for people looking to break into the market.

2. Should identify target areas that would be appropriate for residential increase in density (i.e. one house knock down build 2 more residential). Would like to see more townhouses near downtown or Cool Springs near high commercial areas, in \$190k-\$230k range.

## OTHER

1. Don't Live in/for the past, "Historic" Franklin, Make history providing for the people of today, Make history, equality, "Historic" Franklin
2. Composition of Planning Commission-developers and others who stand to benefit from project approval SHOULD NOT be members. Their expertise may be by way of consulting but not as voters. This is clearly a conflict of interest.
3. When writing regulations/rules need to make them clear so developers are not able to continuously ask for exceptions and waivers. Implement "WHAT" would constitute a possible exception or waiver. No need to write regulation if you are going to continuously give unlimited waivers. Put foot down and say NO. i.e. a square peg don't fit a round hole- don't give waiver.
4. Consider Edvat (?) areas (or mapping them).
5. Commerce requires more space to support the economy while offering more jobs to residents. A modular design must be considered to make future expansion easier-while allowing changes to the landscape to have minimal repercussions on the nearby residents.

# ENVISION



# FRANKLIN

## Facebook Summary

The City used Facebook to inform citizens of Envision Franklin and to elicit feedback. The City generated twenty posts, including videos. All of the responses are attached in the following pages. Each post has a summary page that lists the number of people reached, likes, comments, and shares. The video posted on September 8, 2016 about the Fifth Avenue Design Concept reached over 16,000 people with over 7,000 people watching the video. The June 17, 2016 post regarding building height generated the most comments.

# Envision Franklin Facebook Comments

**Post Details**

**City of Franklin, TN - Municipal Government**  
Published by Milissa Reiersen [?] · June 6 · 🌐

Hey Franklin, do you like this place? Why or why not? #EnvisionFranklin  
(photo credit: Patrick Square)



 **Get More Likes, Comments and Shares**  
Boost this post for \$20 to reach up to 3,900 people.

2,001 people reached [Boost Post](#)

 Jim Hysen, Leyla Aykac Agaoglu and 24 others

9 Comments 

 Like  Comment  Share  Hootlet

Reported stats may be delayed from what appears on posts ✕

**2,001** People Reached

**36** Likes, Comments & Shares

|                       |                      |                       |
|-----------------------|----------------------|-----------------------|
| <b>26</b><br>Likes    | <b>26</b><br>On Post | <b>0</b><br>On Shares |
| <b>10</b><br>Comments | <b>10</b><br>On Post | <b>0</b><br>On Shares |
| <b>0</b><br>Shares    | <b>0</b><br>On Post  | <b>0</b><br>On Shares |

**267** Post Clicks

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## CommentShare

### Comments



**Kristi Rosenthal Hackett** Beautiful! Looks like a community- oriented, family- friendly design. Would love to see a neighborhood like this walking distance to downtown Franklin.

[Like](#) · [Reply](#) · [Message](#) · [June 6 at 2:37pm](#)



**Steve Dycus** I like the small front yards & front porches near the sidewalks. I like the tree-lined streets. I like the variation of the traditional home styles. It reminds me of [Lockwood Glen](#). #FranklinTN

[Like](#) · [Reply](#) · [Message](#) · [June 6 at 2:50pm](#)



**Mandy Powell Whitson** Beautiful. I love a big front porch and inviting area.

[Like](#) · [Reply](#) · [Message](#) · [June 6 at 3:35pm](#)



**Gary Kelly** Honestly, I am confused about the question. Are you talking about Franklin in general, or this picture? If so, where is this?

[Like](#) · [Reply](#) · [Message](#) · [June 6 at 4:36pm](#)





**City of Franklin, TN - Municipal Government** We are talking about this picture and what you like (or don't like) about it. This particular place is in Clemson, SC. In preparation for the update to the Franklin Land Use Plan, The City is looking in other locations throughout the country for best...[See More](#)  
[Like](#) · [Reply](#) · Commented on by [Milissa Reiersen](#) · [June 7 at 8:37am](#)



**Joy Wolski** Only if the back yards are a good size. Otherwise there is no personal space. Kind of silly especially with houses that large.  
[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 6 at 7:29pm](#)



**Roxana Preda** I do like this place, looks really warm and inviting. However, I think the staircases end too close to the road, it feels a little bit uncomfortable. The houses are beautiful, very "Franklin" like, the porches and the light poles are the "it" for perfection. I don't mind dreaming about this beautiful place! Good job designing it!  
[Like](#) · [Reply](#) · [Message](#) · [June 6 at 9:18pm](#)



**Web Webster** I like it if it's connected to other neighborhoods via sidewalks and streets, and if there are houses of varying size and value in the neighborhood.  
[Like](#) · [Reply](#) · [Message](#) · [June 7 at 9:54am](#)



**Chuck Flott** As long as there is a turning lane into the sub.  
[Like](#) · [Reply](#) · [Message](#) · [July 8 at 9:16pm](#)



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your input is critical.

#### TWO OPPORTUNITIES TO ATTEND:

Sept. 26th, 4:30-7:30pm  
 Franklin City Hall  
 109 Third Ave. S., Franklin, TN 37064

Sept. 27th, 7:30-9:30am  
 Columbia State Community College, Williamson Campus  
 1228 Liberty Pike, Franklin, TN 37067

Visit [www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin) for more information.

[#PartOfTheSolution](#) [#KeepFranklinFranklin](#)  
[Like](#) · [Reply](#) · [Message](#) · [September 14 at 1:08pm](#)

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A wide-angle photograph of a modern, multi-story office building with a glass facade. The building is situated on a landscaped campus with green lawns, trees, and a curved asphalt driveway. Several cars are parked along the driveway. In the foreground, a black car is visible. The sky is blue with scattered white clouds. A tall black light pole stands on the left side of the frame. A yellow pedestrian crossing sign is visible on the right side of the driveway. The overall scene depicts a professional and well-maintained corporate environment.

5,906 people reached

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  Ryan Crosslin, Marlena DeSantis and 35 others 62 Comments 

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3

[Like](#) · [Reply](#) · [Message](#) · [5](#) · [June 17 at 8:15am](#)

1 Reply



**Katherine Faulman** How about putting a stop to the building altogether? We have enough traffic, no public transit, and our beautiful scenery is going away.

[Like](#) · [Reply](#) · [Message](#) · [16](#) · [June 17 at 8:29am](#)

10 Replies



**Gary Kelly** Are we suggesting a higher than current limits, which are what? Or are we suggesting we lower limits elsewhere? Or keep limits elsewhere, but higher near interstate?

[Like](#) · [Reply](#) · [Message](#) · [June 17 at 8:30am](#)



**City of Franklin, TN - Municipal Government** The City is currently conducting a Height Overlay (HTO) District Study to evaluate building height standards along I-65. For more information on the detailed recommendations of the study, including the boundaries of the district and proposed height lim...[See More](#)

### City of Franklin, TN : Height Overlay Study

The Height Overlay District (HTO) is a zoning overlay that allows a buildings to be constructed up to twelve (12) stories in height.

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**Glenn Grabbe** Yea make em taller

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 17 at 8:34am](#)



**Jeff Ledbetter** What is wrong with simply capping growth? What makes Williamson Country (and Franklin) desirable will cease to exist if the current course is continued.

[Like](#) · [Reply](#) · [Message](#) · [19](#) · [June 17 at 8:43am](#)

2 Replies



**Crystal Moore** I'd rather have the buildings near the interstate go a few stories taller, and maintain what green space we have left. But that height should not be permitted to go beyond the I-65 corridor. The interior of Franklin should be maintained.

[Like](#) · [Reply](#) · [Message](#) · [5](#) · [June 17 at 8:47am](#)



**Judy Maddox Goodwin** Stop building!

[Like](#) · [Reply](#) · [Message](#) · [6](#) · [June 17 at 8:52am](#)



**[Daphne McKell Bock](#)** Franklin is already a concrete circus. And there are plans to make it worse. Progress blah blah blah...

[Like](#) · [Reply](#) · [Message](#) · [4](#) · [June 17 at 9:10am](#)



**[Kathy Caudill](#)** So these buildings are taller near the freeway to keep from building in other space?? What exactly "other space" is left?? There is building everywhere! I don't believe Franklin/WillCo has the ability to say no to growth. We have been here for almost 11 years and it hasn't stopped since. Actually growth has sped up. Meanwhile... infrastructure!

[Like](#) · [Reply](#) · [Message](#) · [4](#) · [June 17 at 9:41am](#)

2 Replies



**[Julie Fritz Hunt](#)** Welcome to Atlanta.

[Like](#) · [Reply](#) · [Message](#) · [7](#) · [June 17 at 9:56am](#)

1 Reply



**[Beth Callard Vriesman](#)** No building without adequate infrastructure addition. That means road widening and parking.

[Like](#) · [Reply](#) · [Message](#) · [6](#) · [June 17 at 10:00am](#)



**[Jeff Ledbetter](#)** Before it's all said and done, we'll probably ending up seeing a "Carnton Commons" strip-mall on Lewisburg Pike.

[Like](#) · [Reply](#) · [Message](#) · [2](#) · [June 17 at 10:04am](#)



**[Michael Bishop](#)** Yes

[Like](#) · [Reply](#) · [Message](#) · [June 17 at 10:05am](#)



**[Ann Walker](#)** I think there has to be a vote to see what the residents want. Franklin was a quaint small town which made you feel you were living in Mayberry the perfect town on TV or do you want to become like Nashville. If you have lived in the area for decades you can remember what Nashville used to be like. It was a sleeper you new change would eventually catch up but you had mixed feelings. Now Williamson county has the same decision to make. Personally I like the Mayberry feel keeping the skyscrapers at bay. Infrastructure will crumble if not upgraded as you grow. Sometimes you have to make the decision "Have we grown enough?" Sometimes a moratorium on expansion provides time to reflect. Best of luck to Franklin that has been known as a top small town in the US. Are you willing to loose the best of both worlds close to the action yet a shining diamond of small town USA.

[Like](#) · [Reply](#) · [Message](#) · [6](#) · [June 17 at 10:24am](#)

1 Reply





[Nancy Rossi Westerman](#) Yes. Cap the height of new buildings! We are saving the rolling hills but you can't see them through the buildings. Plus, we are already sprawling. At McEwen & Carothers, the building hasn't even been started and they are clearing the land at Liberty. And the land was cleared at the circle on McEwen more than two years ago and no building. I'm tired of looking at dirt! And what's with the hill behind Target on Columbia? Are we going into the hills now?

[Like](#) · [Reply](#) · [Message](#) · [4](#) · [June 17 at 10:33am](#)

4 Replies



[Austin Benjamin Raymond](#) Keep it east of 65, and you've got my vote 😊. Less habitation off the interstate, less cruising, and while we are at it, expand hw96-i65 junction to a 6 lane bridge or build a McEwen styled crossing. People who think Franklin exists solely along i65 need to get out a bit more. There's plenty of land and green space. Carother's had already become a business district. Let's keep attracting the manufacturing. More jobs, happy citizens who may not have to travel to Nashville. Besides, we all know that Cool Springs is the boom that has amplified public projects in Franklin.

[Like](#) · [Reply](#) · [Message](#) · [June 17 at 10:54am](#)



[Austin Benjamin Raymond](#) What are these infrastructure nessisities people keep referencing?

[Like](#) · [Reply](#) · [Message](#) · [June 17 at 10:57am](#)

3 Replies



[Austin Benjamin Raymond](#) Like the bloke that won't sell his land to complete the MacHatcher loop around franklin? Or maybe the new signs for "no right turn on red". Or, the 30 mph zones not a one of you follow. Perhaps, it's the limited parking at the Factory at Franklin, or the incline near columbia Avenue that causes snow storm accidents every year.

[Like](#) · [Reply](#) · [Message](#) · [June 17 at 11:01am](#)

4 Replies



[Devon Ross](#) Yes

[Like](#) · [Reply](#) · [Message](#) · [June 17 at 11:06am](#)



[Kerri Faulkner Harvey](#) Your killing the goose that laid the golden eggs

[Like](#) · [Reply](#) · [Message](#) · [5](#) · [June 17 at 11:22am](#)

1 Reply



**Nita Chapman** Maybe it's time for Franklin's leaders to start being a bit more selective in their building/development approvals. We're already behind on building the infrastructure needed to support this huge growth spurt. Traffic has definitely gotten worse over ...[See More](#)  
[Like](#) · [Reply](#) · [See Response](#) · [9](#) · June 17 at 11:27am

4 Replies



**Eric Spindler** Yes make them taller so we don't completely flatten entire forests to build more short buildings along Carothers

[Like](#) · [Reply](#) · [Message](#) · [1](#) · June 17 at 12:35pm



**Gary McDow** No

[Like](#) · [Reply](#) · [Message](#) · [1](#) · June 17 at 12:57pm



**City of Franklin, TN - Municipal Government** Thanks to everyone for the input! Be on the lookout for more #EnvisionFranklin posts and continue to share your thoughts. Your comments help shape the City's Land Use Plan, which is currently undergoing an update. A public meeting to gather community feedback on the draft plan will take place in the fall. We hope to see you there! <http://www.franklintn.gov/.../2015-land-use-plan-update>

### City of Franklin, TN : Land Use Plan Update

The Franklin Land Use Plan (LUP) is a general guide to the City's policies and objectives for its own long range growth and evolution. It sets the vision for both the City of Franklin and its Urban Growth Boundary (UGB) and is adopted and maintained by the Franklin Municipal Planning Commission. The...  
FRANKLINTN.GOV

[Like](#) · [Reply](#) · [Remove Preview](#) · [1](#) · June 17 at 1:02pm

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**City of Franklin, TN - Municipal Government** [Ann Walker](#) take a look at the Parks Master Plan. There is not a camp ground at this time, but plenty of other open spaces planned.<http://franklintn.gov/home/showdocument?id=23936>

[Like](#) · [Reply](#) · Commented on by [Milissa Reiersen](#) · June 17 at 4:15pm

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Write a reply...



**Joan Sundwall Paulson** No!!! It is extremely sad to see all of the beautiful country and wooded areas being destroyed for more buildings and houses. Franklin has definitely lost the charm that it once had. Taller buildings will cover up the scenic views of the beautiful hills.

[Like](#) · [Reply](#) · [Message](#) · [8](#) · June 17 at 1:04pm



**Gary McDow** Short building part of what makes Franklin special. If you start wanting look and be like bigger city Franklin will lose its appeal and be just another town you see anywhere. If you want big city look move.

[Like](#) · [Reply](#) · [Message](#) · [5](#) · [June 17 at 1:07pm](#)



**City of Franklin, TN - Municipal Government** Also, we are getting some really great feedback on this post, many of you may be interested in the Citizen Government Academy! You can learn what City Leaders are doing to address infrastructure, growth, traffic and more! It's not too late to sign up, and it's free! It just takes up a little bit of your time! We'd love to have you!<http://www.franklintn.gov/.../citizens-government-academy>



### City of Franklin, TN : Citizens Government Academy

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2 Replies



**Amy Butler** No. The tall buildings are already starting to cover up the beautiful hills. Franklin has the advantage at this time to pick and choose who they let in to this community as far as business goes. We should do everything within our power to keep the beauty and charm here as much as possible.

[Like](#) · [Reply](#) · [Message](#) · [7](#) · [June 17 at 1:21pm](#)



**Bryce Bruner** Yes!

[Like](#) · [Reply](#) · [Message](#) · [June 17 at 2:27pm](#)



**Glenn Grabbe** But definitely not anything over 10 stories.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 17 at 3:34pm](#)

1 Reply



**Rita Matthews** I'm just getting tired of all the building going on myself.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 17 at 4:03pm](#)



**Luanne Gillig McConnell** Please stop!!!!!!

[Like](#) · [Reply](#) · [Message](#) · [3](#) · [June 17 at 5:04pm](#)



**Juli Holcomb** HELL NO! Seriously? The roadways cant handle what we have. The Hillsboro Rd widening is nice.....25+ years overdue.....and the proposed Columbia Ave widening is, well...I wont go there. Seems that some areas of Franklin are ignored while pushing g...[See More](#)

[Like](#) · [Reply](#) · [Message](#) · [6](#) · [June 17 at 9:03pm](#)

1 Reply



**Kathi Lynn Stampley** I am so tired of seeing construction wherever I go. It is ruining this sweet town. Franklin is not nearly as good as it used to be. Please stop pouring concrete. Our green is disappearing fast. It is so incredibly sad.  
[Like](#) · [Reply](#) · [Message](#) · [5](#) · [June 17 at 9:08pm](#)

1 Reply



**Monica Bagnara** I live in California and have visited Franklin many times so i keep up via FB. I agree with many people here to keep it green and not to let it become a big city. It is such a beautiful place to visit. I think it will lose its charm if you allow too many large businesses...and your traffic will be horrible like it is here....  
[Like](#) · [Reply](#) · [Message](#) · [2](#) · [June 17 at 10:27pm](#)



**Shannon Jones Banks** Yes  
[Like](#) · [Reply](#) · [Message](#) · [June 17 at 11:11pm](#)



**Brandon Anglin** Yes time to build up and not out, the demand is definitely there  
[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 18 at 12:55am](#)

1 Reply



**Lori Basch Fishkind** Makes no difference. The more you build, the more that will be built It will spread anyway. It would be a bandaid and then you will have both to deal with.  
[Like](#) · [Reply](#) · [Message](#) · [June 18 at 7:04am](#) · [Edited](#)

1 Reply



**Chris Hesson Boyd** I appreciate you asking. I think Cool Springs development is okay 3- 10 stories if that will keep the growth of commercial away from downtown Franklin and the Hillsboro and Franklin rd corridors.  
[Like](#) · [Reply](#) · [Message](#) · [June 18 at 9:31am](#)

1 Reply



**Terrah Trimble** Yes  
[Like](#) · [Reply](#) · [Message](#) · [June 18 at 1:05pm](#)





**Marcia Apple Franks** Yes

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 18 at 1:28pm](#)



**Stephen Delaney** Keep Franklin green and stop the madness. NOW!!!! I am actually wondering how much longer I can live here. Been in too many other places with untamed growth. Make that GREED!

[Like](#) · [Reply](#) · [Message](#) · [2](#) · [June 18 at 3:15pm](#)

1 Reply



**Jill Anne** No!

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 20 at 5:39pm](#)



**City of Franklin, TN - Municipal Government** If anyone is interested in learning more about the height overlay study please go to this website <http://franklintn.gov/.../long-range.../height-overlay-study> or/and you can also attend a public meeting about the study on June 27th at 6pm in the City Hall Training room.

### City of Franklin, TN : Height Overlay Study

The Height Overlay District (HTO) is a zoning overlay that allows a buildings to be constructed up to twelve (12) stories in height.

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**Gary McDow** It should not even be debated the idea from the beginning it's crazy. no tall buildings. And remember we pay the taxes we should have to say not some committee

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 22 at 2:24pm](#)

3 Replies



**Tim Cornwell** It's necessary, they should go up a few stories if need be, the growth/anti growth debate isn't the question. Franklin will continue to grow, don't forget a huge reason our city is so nice is due to the revenue created by this growth in many different ways. The local government will do a good job of keeping this overlay only in certain areas. I honestly don't know why/how an extra 3 to 4 story overlay would hurt a thing. What's the downside of going from 12 or 14 (whatever it is currently) up to 17 or 18? It isn't like they will be in residential neighborhoods, blocking views etc....

[Like](#) · [Reply](#) · [Message](#) · [June 23 at 6:08pm](#)

1 Reply



**Natalie Carrel Abruzzo** Not without addressing the traffic on the roads nearby first. McEwen Drive, Carothers, Cool Springs Blvd, Mallory Lane.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 24 at 6:21am](#)



**Kelly Brown** No. The city needs managed growth and doing it by adding stories to buildings is not the answer. We're already at a point where traffic is crazy and our quality of life is impacted.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 24 at 7:55am](#)

1 Reply



**Kelly Brown** And watch out west side. Once the east is inundated with buildings, people and traffic, you're next. It's out of control.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [June 24 at 8:02am](#)



**Bob Moreo** Yes - up taller closer to the freeway is much better than sprawling out along the arterials

[Like](#) · [Reply](#) · [Message](#) · [June 24 at 10:49am](#)

1 Reply



**Bob Moreo** Also taller can allow for integrated parking decks below buildings

[Like](#) · [Reply](#) · [Message](#) · [June 24 at 10:50am](#)



**Diana Gant Tullis** No No No No No. Could we please get an alderman that protect those of us in the Cool Springs area. Bev Burger DOES NOT represent us in any way shape or form!

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [July 3 at 10:59pm](#)

1 Reply



**Steve Lerman** Bev has been helpful with getting after the folks responsible for cutting the grass/removing the weeds (a constant battle by I-65!!) All that said - We really do need to take a different direction on development. My taxes shouldn't be going up ten cents to help pay for infrastructure. The developers should either fully fund the additional roads and schools, (police, fire etc.) or they should not be allowed to develop and get rich while sticking the existing residents with the bills. I do disagree with Mr. Stuckey - growth if NOT inevitable. It should be controlled and tax neutral to surplus funding. Growth should be slowed down to preserve the green spaces, and reduce the pressure on unfunded transportation.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [July 5 at 12:58pm](#)

1 Reply



**Michael Phillips** A traffic study conducted by the City of Franklin in 2012 determined that some of the feeder routes in the city would need to be six lanes wide and have three turn lanes at some intersections to accommodate anticipated future traffic. Franklin has already determined that it will never be able to adequately accommodate the

traffic demand of the city. It is ludicrous to even consider adding an additional four stories to buildings knowing that would make the city's traffic problems even worse.

[Like](#) · [Reply](#) · [Message](#) · [July 6 at 10:31am](#)



**Troy Snider** No for two reasons- 1. Traffic is a nightmare right now near those streets and will just get worse. 2. The tall buildings will block the view of the scenic hills and ridge-line.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [July 26 at 8:06am](#)

1 Reply



**Morton Stein** Mort Stein To deal with the extra traffic, why not require that the companies provide housing in the area for the workers that will added by the additional height given? This would enable them to either walk, bicycle or take local transit to work.

[Like](#) · [Reply](#) · [Message](#) · [August 30 at 2:37pm](#)



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

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[#PartOfTheSolution](#) [#KeepFranklinFranklin](#)

[Like](#) · [Reply](#) · [Message](#) · [September 14 at 1:06pm](#)



**Michael Phillips** This question is disingenuous.

"Should buildings near I-65 be allowed to be 3-4 stories taller IF IT COULD KEEP THESE USES FROM SPRAWLING INTO OTHER AREAS OF FRANKLIN?" ...[See More](#)

[Like](#) · [Reply](#) · [Message](#) · [September 15 at 2:31pm](#)



**Michael Phillips** [#BePartOfTheSolution](#) to [#KeepFranklinFranklin](#)

<https://www.facebook.com/KeepFranklinFranklinTN>

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**City of Franklin, TN - Municipal Government**

Published by Stephen Price [?] · June 20 ·

Would you like to have a place like this to enjoy in Franklin?  
#EnvisionFranklin (photo credit: Craig Lee)



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Boost this post for \$20 to reach up to 4,000 people.

4,795 people reached

**Boost Post**



Chuck Flott, Jim Hysen and 130 others

12 Comments 1 Share



Like



Comment



Share



Hootlet

**4,795** People Reached

**159** Reactions, Comments & Shares

**130**



Like

**126**

On Post

**4**

On Shares

**5**



Love

**5**

On Post

**0**

On Shares

**1**



Wow

**1**

On Post

**0**

On Shares

**23**

Comments

**21**

On Post

**2**

On Shares

**1**

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**Tommy Pierce** Umm, can we please get side walks from Down-Town to the Factory / [Harlinsdale Farm](#). first please!!!  
UGHH

[Like](#) · [Reply](#) · [Message](#) · 11 · June 20 at 4:35pm



**Michael-Robin Bruso** Looks similar to the Liberty Bridge at Falls Park in Greenville, SC <http://www.fallspark.com/175/The-Liberty-Bridge>

[Like](#) · [Reply](#) · [Message](#) · June 20 at 5:19pm

1 Reply



**Amber McCutcheon** May I help you build it?

[Like](#) · [Reply](#) · [Message](#) · June 20 at 6:41pm



**Kathy Caudill** Yes!! Also, more sidewalks would be great too. Specifically all along Lewisburg, down past Carnton.

[Like](#) · [Reply](#) · [Message](#) · 3 · June 20 at 8:20pm

1 Reply





**Gary Kelly** Of course. Who would said no? Is there a real question in here somewhere?

[Like](#) · [Reply](#) · [Message](#) · 1 · June 20 at 8:44pm · Edited



**Virginia Pearre Egbert** Sidewalks along West Main near Battle Ave too.... Tons of people walking through that section of town!

[Like](#) · [Reply](#) · [Message](#) · 3 · June 20 at 8:57pm



**Marcia Apple Franks** Looks like Greenville, SC! BIG YES!!!

[Like](#) · [Reply](#) · [Message](#) · 1 · June 20 at 10:30pm



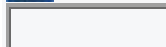
**Jeff Ledbetter** I thought it actually was a picture of Greenville at first glance. Why do we want to look like Greenville?

[Like](#) · [Reply](#) · [Message](#) · June 21 at 8:50am



**Rick Stults** The city is obviously seeking inspiration for river walk areas from cities like Greenville & Chattanooga

[Like](#) · [Reply](#) · [Message](#) · June 21 at 9:45am



Write a reply...



**Barbara Paugh Christensen** How about completing the Mack Hatcher Bypass???! 🙄🙄🙄🙄

As promised 20 years ago. 😊😊

[Like](#) · [Reply](#) · [Message](#) · 4 · June 21 at 7:01pm · Edited



**City of Franklin, TN - Municipal Government** We are trying! That is a state road and needs state funding!

[Like](#) · [Reply](#) · Commented on by Milissa Reiersen · June 22 at 3:21pm



**Barbara Paugh Christensen** Tell that to all who were promised traffic relief on the west side of Franklin! Talk about over promising & not delivering.

[Like](#) · [Reply](#) · [Message](#) · 1 · June 22 at 6:11pm



**Michael Phillips** That is a city problem and needs city action.

It is not a priority for the city, they don't think there is enough traffic on the west side of town to justify the expense.

[Like](#) · [Reply](#) · [Message](#) · 1 · August 24 at 9:09pm



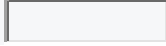
**Barbara Paugh Christensen** Michael Phillips I , obviously, don't agree. West haven was built on a promise for road infrastructure. Another lie.

[Like](#) · [Reply](#) · [Message](#) · 1 · August 24 at 9:46pm



**Michael Phillips** Mack Hatcher must be completed and must have a minimum of four lanes all the way around! Anything less is a failure by City Hall.

[Like](#) · [Reply](#) · [Message](#) · August 25 at 1:32pm



Write a reply...



**Jim Hysen** Yes! Smart growth! Less urban sprawl! Not making anymore land. Got to use every inch of dirt efficiently

[Like](#) · [Reply](#) · [Message](#) · [1](#) · June 26 at 6:37pm



**Michael Phillips** Yes, of course. This would do more to make Franklin great than taller office buildings will.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · June 28 at 9:25am



**Michael Phillips** It will take 45 minutes to get there because of traffic. You won't be able to find a parking spot. And, the view will include the city's new 16 story skyline in Cool Springs.

[Like](#) · [Reply](#) · [Message](#) · August 24 at 9:12pm



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your ...[See More](#)

[Like](#) · [Reply](#) · [Message](#) · September 14 at 1:06pm

## Post Details

Reported stats may be delayed from what appears on posts



**City of Franklin, TN - Municipal Government**  
Published by Milissa Reiersen [?] · June 24 ·

#EnvisionFranklin We want your feedback for our City Land Use Plan!



**Is the City providing enough variety of lot sizes in its new neighborhoods?**

 **Get More Likes, Comments and Shares**  
Boost this post for \$20 to reach up to 4,000 people.

3,182 people reached

[Boost Post](#)

  Steve Dycus, Jean Vul and JasonNina Milton · 10 Comments · 3 Shares

[Like](#) [Comment](#) [Share](#) [Hootlet](#)

**3,182** People Reached

**56** Reactions, Comments & Shares

|                                                                                                     |                      |                        |
|-----------------------------------------------------------------------------------------------------|----------------------|------------------------|
| <b>15</b><br> Like | <b>2</b><br>On Post  | <b>13</b><br>On Shares |
| <b>1</b><br> Angry | <b>1</b><br>On Post  | <b>0</b><br>On Shares  |
| <b>36</b><br>Comments                                                                               | <b>10</b><br>On Post | <b>26</b><br>On Shares |
| <b>4</b><br>Shares                                                                                  | <b>3</b><br>On Post  | <b>1</b><br>On Shares  |

**389** Post Clicks

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**NEGATIVE FEEDBACK**

|                         |                         |
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| <b>4</b> Hide Post      | <b>0</b> Hide All Posts |
| <b>0</b> Report as Spam | <b>0</b> Unlike Page    |

## CommentShare

### Comments

- 

**Laura Martin** Unfortunately, no. #1 reason we did not choose a new/newer build when we purchased 1.5 years ago.  
[Like](#) · [Reply](#) · [Message](#) · [1](#) · June 25 at 7:19am
- 

**Elizabeth Mitilineos-StVincent** When you can shake hands with your neighbor, through each respective bathroom window, you know the lots are too small....  
[Like](#) · [Reply](#) · [Message](#) · [3](#) · June 25 at 3:39pm
- 

**Nita Chapman** Uhm.....no!  
[Like](#) · [Reply](#) · [Message](#) · June 26 at 12:34am
- 

**Derrick Solomon** No, not a chance. Becoming more like Springhill's subdivisions.  
[Like](#) · [Reply](#) · [Message](#) · June 26 at 3:03pm
- 

**Bobbie Lou Attkisson** No!  
[Like](#) · [Reply](#) · [Message](#) · June 27 at 7:31pm



**Natalie Carrel Abruzzo** What about affordability in its new neighborhoods? A \$500,000 new house requires a tiny lot here. If you want an actual yard that'll cost you another 100,000+.

[Like](#) · [Reply](#) · [Message](#) · [June 28 at 6:18am](#)



**Melissa Carr Fitzgerald** No. The neighborhood being built next to us has 10 feet on one side of the house and 20 on the other...for a driveway. 14 homes on a 6 acre lot. They are beautiful inside but at 600k who is gonna buy them? Where do people park if they want to have 8-10 friends/family over? We have to think about the future we are creating. We have to do better than this.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [August 25 at 1:04am](#) · [Edited](#)



**Amanda Mae Steele** [#envisionfranklin](#) - definitely not big enough. Pretty obvious money is the goal and not quality of living.

[Like](#) · [Reply](#) · [Message](#) · [July 28 at 9:59am](#)



**Michael Phillips** 100% of responders said No.  
Another example of quality of life deteriorating in our city.

[Like](#) · [Reply](#) · [Message](#) · [August 24 at 9:16pm](#)



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your input is critical.

#### TWO OPPORTUNITIES TO ATTEND:

Sept. 26th, 4:30-7:30pm  
Franklin City Hall  
109 Third Ave. S., Franklin, TN 37064

Sept. 27th, 7:30-9:30am  
Columbia State Community College, Williamson Campus  
1228 Liberty Pike, Franklin, TN 37067

Visit [www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin) for more information.

[#PartOfTheSolution](#) [#KeepFranklinFranklin](#)

[Like](#) · [Reply](#) · [Message](#) · [September 14 at 1:07pm](#)



## Post Details

Reported stats may be delayed from what appears on posts



**City of Franklin, TN - Municipal Government**  
Published by Milissa Reiersen [?] · June 27 · 🌐

Would you like to see a place like this in the Cool Springs area? Why or why not? #EnvisionFranklin



👍 **Get More Likes, Comments and Shares**  
Boost this post for \$20 to reach up to 4,000 people.

834 people reached

[Boost Post](#)

👍 🤔 22

12 Comments 1 Share

Like Comment Share Hootlet

**834** People Reached

**44** Reactions, Comments & Shares

|                       |                      |                       |
|-----------------------|----------------------|-----------------------|
| <b>24</b><br>Like     | <b>21</b><br>On Post | <b>3</b><br>On Shares |
| <b>1</b><br>Wow       | <b>1</b><br>On Post  | <b>0</b><br>On Shares |
| <b>15</b><br>Comments | <b>15</b><br>On Post | <b>0</b><br>On Shares |
| <b>4</b><br>Shares    | <b>1</b><br>On Post  | <b>3</b><br>On Shares |

**233** Post Clicks

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**NEGATIVE FEEDBACK**

|                         |                         |
|-------------------------|-------------------------|
| <b>2</b> Hide Post      | <b>0</b> Hide All Posts |
| <b>0</b> Report as Spam | <b>0</b> Unlike Page    |

**David Franzen** I would rather see widening and beautification projects on existing roads instead of building more retail for marginal chains. I would be much more excited to see an upgraded traffic control center and water treatment plant than I would new space that independent shop owners can never afford.

Why are we insisting on more growth and recognition that "we're number one" when local folks I talk to say they avoid downtown these days?

Like · Reply · Message · 18 · June 27 at 11:47am

### 3 Replies



**Kathi Lynn Stampley** No more construction in Franklin!!!! It is beyond ridiculous now!!

Like · Reply · Message · 9 · June 27 at 5:16pm



**John Brock** Franklin should adopt a Total Sustainability Measure that would help ensure that new major construction, retail or not, is able to exceed success probabilities established by the measure. The program should include an economic impact study as one component of the overall program. Other components should include education, crime, social development and other major impact studies that together make up the measure. This helps ensure that the project is not only 150% dedicated to long term success, but that it is 200% capable of achieving it prior to development.

Like · Reply · Message · 1 · June 27 at 10:12pm



**Jeff Ledbetter** Ridiculously stupid.

[Like](#) · [Reply](#) · [Message](#) · 1 · June 27 at 10:26pm



**Rick Stults** They won't be happy until Franklin is a slick, soulless, Disneyland

[Like](#) · [Reply](#) · [Message](#) · 3 · June 28 at 8:42am



**Sandy Squires Bennett** PLEASE keep the history and hometown feel of Franklin. That's why we moved here. PLEASE stop the high price specialty shops and bring back the local businesses and owners that are neighbors.

[Like](#) · [Reply](#) · [Message](#) · 2 · June 28 at 8:26pm



**Candace Logue** No no no

[Like](#) · [Reply](#) · [Message](#) · 1 · July 1 at 10:32am



**Diana Gant Tullis** NO, Franklin has been ruined by just these types of developments.

[Like](#) · [Reply](#) · [Message](#) · 1 · July 3 at 10:37pm



**Bryant Brabson** Don't we already have this over on Meridian near CHS HQ?

[Like](#) · [Reply](#) · [Message](#) · 1 · July 4 at 12:50pm



**Gw Elliott** This is the future of Franklin. Imagine how those of us who remember Coolsprings as a farm feel.....

[Like](#) · [Reply](#) · [Message](#) · 1 · July 4 at 7:53pm



**Michael Phillips** Again, 100% of respondents said NO!

The city planners and the planning commission must be stopped before our city is ruined....[See More](#)

[Like](#) · [Reply](#) · [Message](#) · August 24 at 9:21pm



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your input is critical.

TWO OPPORTUNITIES TO ATTEND:

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Franklin City Hall

109 Third Ave. S., Franklin, TN 37064

Sept. 27th, 7:30-9:30am

Columbia State Community College, Williamson Campus

1228 Liberty Pike, Franklin, TN 37067

Visit [www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin) for more information.

[#PartOfTheSolution](#) [#KeepFranklinFranklin](#)

[Like](#) · [Reply](#) · [Message](#) · September 14 at 1:07pm

Post Details

Reported stats may be delayed from what appears on posts

City of Franklin, TN - Municipal Government
Published by Milissa Reiersen · July 26 ·

The City has posted the draft update to the Land Use Plan entitled, "Envision Franklin." Two public meetings set for September!  
<http://www.franklintn.gov/Ho.../Components/News/News/4720/1071>

ENVISION

FRANKLIN

PRESERVING THE PAST, PLANNING THE FUTURE

**City of Franklin, TN : Land Use Plan Update: Envision Franklin**

The City has completed a draft update to the Land Use Plan, entitled "Envision Franklin." The draft is available at the links below.

FRANKLINTN.GOV

Get More Likes, Comments and Shares
Boost this post for \$20 to reach up to 4,000 people.

2,521 people reached

Boost Post

Erin Mataj, Bobbie Lou Attkisson and 4 others · 2 Comments · 12 Shares

Like
 Comment
 Share
 Hootlet

2,521 People Reached

38 Reactions, Comments & Shares

6 Like
5 On Post
1 On Shares

9 Angry
1 On Post
8 On Shares

11 Comments
8 On Post
3 On Shares

12 Shares
12 On Post
0 On Shares

172 Post Clicks

2 Photo Views
81 Link Clicks
89 Other Clicks

NEGATIVE FEEDBACK

6 Hide Post
0 Hide All Posts

0 Report as Spam
0 Unlike Page

**Michael Phillips** Pay attention City of Franklin, I think you'll find that the majority of residents are adamantly opposed to increasing building heights 33%.

[Like](#) · [Reply](#) · [Message](#) · 4 · July 26 at 12:09pm

**Michael Phillips** @CityofFranklin create an Event for these public meetings. Events can be shared across social media. They can create dialog and provide a platform for citizens that are unable to attend the meetings. And, the Events will generate calendar reminders so that people won't forget about a meeting that is two months away. Unless, of course, you would prefer to only have two residents show up like at the last meeting.

[Like](#) · [Reply](#) · [Message](#) · 2 · July 26 at 12:23pm

**City of Franklin, TN - Municipal Government** Sure we can create an event. Of course we want to get as many people as possible to the meetings. We hope you get the opportunity to read the entire plan. This has been over a year in the making.

[Like](#) · [Reply](#) · 1 · Commented on by Milissa Reiersen · July 26 at 1:32pm

**City of Franklin, TN - Municipal Government** We also post meetings on our website on the City Calendar at this link. These may or may not be on there yet. <http://franklintn.gov/what-s-new/calendar> You can sign up for updates for

20

anything new posted on the website here <http://franklinton.gov/what-s-new/news-updates> scroll down and you can sign up for email updates, we have close to 1,000 email subscribers!

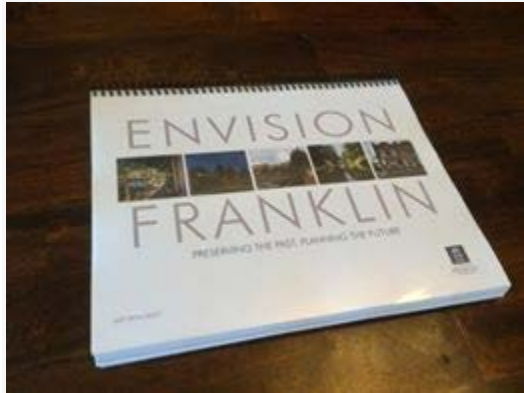
## City of Franklin, TN : Calendar

FRANKLINTN.GOV

[Like](#) · [Reply](#) · [Remove Preview](#) · Commented on by Milissa Reiersen · July 26 at 1:40pm



**Michael Phillips** I've got my copy and I'll be sure to read every word. I'm already signed up for all email updates.



[Like](#) · [Reply](#) · [Message](#) · July 26 at 4:39pm · Edited



**Jeff Ledbetter** Michael Phillips Where did you get that printed copy?

[Like](#) · [Reply](#) · [Message](#) · July 27 at 7:49am



**Michael Phillips** Jeff, I took a digital file on a thumb drive to The UPS Store and had them print it.

[Like](#) · [Reply](#) · [Message](#) · July 27 at 8:03am



**Jeff Ledbetter** Michael Phillips Ah, ok. I was hoping the City was providing hard-copies free of charge. .

[Like](#) · [Reply](#) · [Message](#) · [1](#) · July 27 at 9:44am





**Evelyn Johnsey England** Congratulations on your new position.Emily is looking great.

[Like](#) · [Reply](#) · [Message](#) · August 11 at 9:36pm



**Lydia Harper Smith** Way to go Emily!!! You're daddy is so proud of you ❤️.!

[Like](#) · [Reply](#) · [Message](#) · August 12 at 10:11pm



**Michael Phillips** Collective community vision...

The community wants less traffic, not more.

The community wants scenic viewsheds, not a skyline.

[Like](#) · [Reply](#) · [Message](#) · 1 · August 25 at 1:25pm · Edited

#### Post Details



Video

Post



**City of Franklin, TN - Municipal Government: Learn about #EnvisionFranklin**

#EnvisionFranklin, Preserving the past, planning the future

3:01 · Uploaded on 08/10/2016 · [View Permalink](#)

#### Video Performance In This Post



|                            |       |   |
|----------------------------|-------|---|
| 🕒 Minutes Viewed           | 1,185 | > |
| 👤 Unique Viewers           | 2,019 | > |
| 🎥 Video Views              | 2,469 | > |
| 🎥 10-Second Views          | 1,006 | > |
| 📅 Video Average Watch Time | 0:29  | > |
| 👥 Audience and Engagement  |       | > |

New Post With This Video

Edit Post

Boost Post

**8/10/16 (Post two)**

**Hinton Neighbours** shared [City of Franklin, TN - Municipal Government's video](#).

August 15 ·

**Lauren Harris Riley**, our best friend, [Emily Hunter](#)!!!! Emily, you look amazing on camera! Way to articulate!

[Show Attachment](#)

[Like](#) Show more reactions

[Comment](#) [Share](#)

1010

**Comments**



**Adrienne Michelle Johnson** Great Job [Emily](#)!!!

[Like](#) · [Reply](#) · August 15 at 9:09am



Write a comment...



**Tom Collins** shared [City of Franklin, TN - Municipal Government's video](#).

August 11 ·

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**Dr. Jordan Shaw** shared [City of Franklin, TN - Municipal Government's video](#).

August 11 ·

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**[Denise Hunter Barnes](#)** shared [City of Franklin, TN - Municipal Government's video](#).

August 11 ·

My niece, [Emily Hunter](#). How professional you are!

[Show Attachment](#)

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11 [Debbie Henry](#), [Emily Hunter](#) and 9 others

**Comments**



**[Regina Myers](#)** Is Kevin her dad?

[Like](#) · [Reply](#) · [August 11 at 8:12pm](#)



[Denise Hunter Barnes](#) replied · 1 Reply



**[Emily Hunter](#)** Thanks!! I manage to be professional sometimes

[Like](#) · [Reply](#) · [1](#) · [August 11 at 8:37pm](#)



**[Regina Myers](#)** She looks like her dad. Good job Emily!!

[Like](#) · [Reply](#) · [August 12 at 11:04am](#)



Write a comment...



**[Susan Barnes Coleman](#)** shared [City of Franklin, TN - Municipal Government's video](#).

August 11 ·

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**Comments**





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**Emily Hunter** shared [City of Franklin, TN - Municipal Government's video](#).

August 11 ·

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48 Amanda Rose, Susan Barnes Coleman and 46 others

**Comments**

[View 11 more comments](#)



**Shelby Greene Guthrie** You rocked it!! No doubt the most articulate & professional Director ever! so much to be proud of .

[Like](#) · [Reply](#) · [August 12 at 12:48pm](#)



**Beth Wheeler Parrish** Great job Emily!

[Like](#) · [Reply](#) · [August 12 at 9:21pm](#)



**Beth Fullerton Logan** Great job , so proud of you

[Like](#) · [Reply](#) · [August 12 at 11:23pm](#)



**Pam Montesi** What a wonderful interview, Emily!!!!

You look so beautiful and you "knocked it out of the park"!!!! I am SO PROUD OF YOU!!!!!!!

[Like](#) · [Reply](#) · [2](#) · [August 13 at 8:14pm](#)



Write a comment...



**Franklin Park - Live, Work, Play** shared [City of Franklin, TN - Municipal Government's video](#).

August 11 ·

This wonderful segment on developments in Franklin was filmed out our very own One Franklin Park! Be sure to get more information about the future of Franklin on September 26th & 27th!

[Show Attachment](#)



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[Milissa Reiersen](#) shared a [video](#) to the group: [i heart franklin TN](#).

August 11 ·

[#EnvisionFranklin](#) Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings! [www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin)

[Show Attachment](#)



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Comments



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August 11 ·

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[Share](#)

1 Jeffie Nicholson

Comments



[Milissa Reiersen](#) shared a [video](#) to the group: [Lockwood Glen Neighbors](#).

August 11 ·

[#EnvisionFranklin](#) Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings![www.franklinton.gov/envisionfranklin](http://www.franklinton.gov/envisionfranklin)

[Show Attachment](#)



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2Steve Dycus and 1 other

**Comments**



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[Jeffie Nicholson](#) shared [City of Franklin, TN - Municipal Government's video](#).

August 11 ·

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**Comments**



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[Milissa Reierson](#) shared a [video](#) to the group: [Focus on Franklin \(TN\)](#).

August 11 ·

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2Jeffie Nicholson and Adam Kimble

**Comments**



**Milissa Reierson** shared a [video](#) to the group: [Leadership Franklin Alumni Association](#).

August 11 ·

**#EnvisionFranklin** Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings![www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin)

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2Debbie Henry and 1 other

**Comments**



Write a comment...



**Milissa Reierson** shared a [video](#) to the group: [Downtown Neighborhood Association, Franklin, Tennessee](#).

August 11 ·

**#EnvisionFranklin** Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings![www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin)

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1Sam Whitson

**Comments**



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**Milissa Reiersen** shared a [video](#) to the group: [Cannonwood - Franklin](#).

August 11 ·

**#EnvisionFranklin** Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings![www.franklinton.gov/envisionfranklin](http://www.franklinton.gov/envisionfranklin)  
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**Milissa Reiersen** shared a [video](#) to the group: [Founders Pointe Community](#).

August 11 ·

**#EnvisionFranklin** Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings![www.franklinton.gov/envisionfranklin](http://www.franklinton.gov/envisionfranklin)  
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Comments



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**Milissa Reiersen** shared a [video](#) to the group: [Carothers Cove Neighbors](#).

August 11 ·

**#EnvisionFranklin** Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings![www.franklinton.gov/envisionfranklin](http://www.franklinton.gov/envisionfranklin)  
[Show Attachment](#)



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1Lisa Clayton

**Comments**



Write a comment...



**Milissa Reiersen** shared a [video](#) to the group: [The Highlands at Ladd Park Residents](#).

August 11 ·

[#EnvisionFranklin](#) Have you seen the draft plan? Do you know what it entails? What do you see for the future of our great city? Watch the video, go to the website, attend the public meetings![www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin)

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[Like](#)Show more reactions

[Comment](#)[Share](#)

**Comments**



Write a comment...



**Milissa Reiersen** shared a [video](#) to the group: [Franklin Insiders](#).

August 11 ·

[Show Attachment](#)



[Like](#)Show more reactions

[Share](#)

2Max Cook II and Stephanie Turner

**Comments**

Some posts may not appear here because of their privacy settings.

**Deanna Lambert Thomas** Great video! [Stephen Price](#) and [Milissa Reiersen](#)

[Unlike](#) · [Reply](#) · [Message](#) · 1 · August 10 at 10:32pm



**Robert Springer** [Rob Cesternino](#)

[Like](#) · [Reply](#) · [Message](#) · [1](#) · August 11 at 5:09am



**Chad Jason Dannenfelser** Great job [Milissa Reiersen](#) and Emily Hunter!

[Unlike](#) · [Reply](#) · [Message](#) · [2](#) · August 11 at 11:15am



**Kitty Council Hawkins** You are so impressive! So proud of you.

[Like](#) · [Reply](#) · [Message](#) · August 11 at 6:59pm



**Norwood Jones** Neat Emily

[Like](#) · [Reply](#) · [Message](#) · August 11 at 9:15pm



**Evelyn Johnsey England** Congratulations on your new position.Emily is looking great.

[Like](#) · [Reply](#) · [Message](#) · August 11 at 9:36pm



**Lydia Harper Smith** Way to go Emily!!! You're daddy is so proud of you ❤️.!

[Like](#) · [Reply](#) · [Message](#) · August 12 at 10:11pm



**Michael Phillips** Collective community vision...

The community wants less traffic, not more.

The community wants scenic viewsheds, not a skyline.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · August 25 at 1:25pm · Edited

Post Details

Video

Post

City of Franklin, TN - Municipal Government

was live.

Published by Stephen Price

?

August 12

#EnvisionFranklin: Preserving Natural Beauty

03:20

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6,137 people reached

Boost Post

Like

Love

Wow

Comments

Shares

67

17 Comments

11 Shares

Like

Comment

Share

Hootlet

6,137 People Reached

2,978 Video Views

217 Reactions, Comments & Shares

|             |            |              |
|-------------|------------|--------------|
| 163 Like    | 66 On Post | 97 On Shares |
| 3 Love      | 1 On Post  | 2 On Shares  |
| 3 Wow       | 0 On Post  | 3 On Shares  |
| 38 Comments | 19 On Post | 19 On Shares |
| 11 Shares   | 11 On Post | 0 On Shares  |

769 Post Clicks

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| 0 Report as Spam | 0 Unlike Page    |

Post Details

Video

Post

City of Franklin, TN - Municipal Government

#EnvisionFranklin: Preserving Natural Beauty

3:20

Uploaded on 08/12/2016

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Video Performance In This Post

Peak Live Viewers

14

Minutes Viewed

1,392

Unique Viewers

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Video Views

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10-Second Views

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Video Average Watch Time

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Audience and Engagement

liam Franklin Hubbard shared City of Franklin, TN - Municipal Government's live video.

33



August 13 ·

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2Josh Womack and Jennifer Ivey

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**Michael Skinner** shared City of Franklin, TN - Municipal Government's [live video](#).

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10Mandy Powell Whitson, Debbie Henry and 8 others

Comments



**Robert Huff** Thanks Mike

Like · Reply · August 13 at 7:40am



**Rudy Jordan** Good! Thanks for posting this, Mike!

Like · Reply · August 13 at 9:26am



Write a comment...

Some posts may not appear here because of their privacy settings.

Write a comment...



**Scott Willett** · 0:55 Conservation???? Really?!?!? Creeks that use to exist are gone now. All of the construction here has killed small creeks, wells, and other wildlife. Conservation my born and raised in Franklin BUTT. If conservation is one of the 17 design concepts it's probably LAST on the list and money is first.

Like · Reply · Message · 1 · August 12 at 10:25pm



**City of Franklin, TN - Municipal Government** · Thank you for your feedback. We are doing our best with the overwhelming growth our city is experiencing. Please take a look at the plan here [www.franklintn.gov/envisionfranklin](http://www.franklintn.gov/envisionfranklin) and attend the public meetings. Your input is valuable to us, especially since you have lived here such a long time.

### City of Franklin, TN : Land Use Plan Update: Envision Franklin

The City has completed a draft update to the Land Use Plan, entitled "Envision Franklin." The draft is available at the links below.

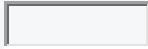
FRANKLINTN.GOV

[Like](#) · [Reply](#) · [Remove Preview](#) · Commented on by [Milissa Reiersen](#) · [August 15 at 9:23am](#)



**Michael Phillips** · Money certainly seems to be the motivating factors behind some of decisions made at city hall.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [August 25 at 1:28pm](#)



Write a reply...



**Frances Boyd Olliff** · 1:41 Awesome! Know you guys are so very proud!!! What an intelligent and handsome son!

[Unlike](#) · [Reply](#) · [Message](#) · [1](#) · [August 12 at 2:27pm](#)



**Katherine Kusmierz Machul** · 2:31 Nice job, Andrew!

[Unlike](#) · [Reply](#) · [Message](#) · [1](#) · [August 12 at 9:44am](#)



**Tim Kaczmarek** · 0:47 WOW !

[Unlike](#) · [Reply](#) · [Message](#) · [1](#) · [August 12 at 9:40am](#)



**Sherry Wedge** · 3:06 Great job Drew

[Unlike](#) · [Reply](#) · [Message](#) · [1](#) · [August 12 at 12:06pm](#)



**Scott Hondo Hallock Sr.** · 3:20 Outstanding!

[Unlike](#) · [Reply](#) · [Message](#) · [1](#) · [August 12 at 12:20pm](#)



**Louise Petersen** · 0:39 Good job Drew! Very proud of you!!!

[Unlike](#) · [Reply](#) · [Message](#) · [3](#) · [August 12 at 2:58pm](#)



**Lynette Miller Biggar** · 1:57 Wow!! I know you are proud! He looks so professional.....and I knew him back when....ha□

[Like](#) · [Reply](#) · [Message](#) · [1](#) · [August 12 at 4:33pm](#)



**Ed Clark** · 1:31 Is that the little guy I used to know???  
Awesome job, Drew!

[Like](#) · [Reply](#) · [Message](#) · [August 12 at 6:11pm](#)



**Ron Topinka** · 3:20 Developers build these but the city will maintain them which the taxpayers will pay for

[Like](#) · [Reply](#) · [Message](#) · [August 14 at 5:40am](#)



**Robin F Wolff** · 0:50 Apple did not fall from from the tree...just amazing

[Like](#) · [Reply](#) · [Message](#) · [August 14 at 7:43am](#)



**Jill Pietrusinski** · 2:26 Very impressive!

[Like](#) · [Reply](#) · [Message](#) · [August 14 at 7:41am](#)



**Wayne Roach** · 0:00 Awesome job

[Like](#) · [Reply](#) · [Message](#) · [August 12 at 7:48pm](#)



**Gene Dutkiewicz** · 3:19 Great job Andrew!

[Like](#) · [Reply](#) · [Message](#) · [August 12 at 6:30pm](#)

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#EnvisionFranklin: Neighborhood Mixed-Use

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Video Performance In This Post

|                          |       |
|--------------------------|-------|
| Peak Live Viewers        | 10    |
| Minutes Viewed           | 566   |
| Unique Viewers           | 1,277 |
| Video Views              | 1,362 |
| 10-Second Views          | 430   |
| Video Average Watch Time | 0:25  |
| Audience and Engagement  |       |

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**Sherry A. Knowles** · 0:51 what about the townhouses that look out on the publix loading docks and we're never told before they purchased?

Like · Reply · Message · 2 · August 15 at 2:36pm

**City of Franklin, TN - Municipal Government** · You would need to contact the developer/builder about that issue.

Like · Reply · Commented on by Milissa Reiersen · August 15 at 2:49pm

[View more replies](#)

**Sherry A. Knowles** · 2:01 buyer beware !

Like · Reply · Message · August 15 at 2:36pm

**David Hirst** · 0:00 Have visited once, love the ambience, friendly small town feel. See you all again this fall

Like · Reply · Message · August 16 at 6:52pm

**Lori Jarosz** shared [City of Franklin, TN - Municipal Government's live video](#).

39

## Post Details

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**City of Franklin, TN - Municipal Government**

Published by Buffer [?] · August 20 ·

#EnvisionFranklin articulates the long-term vision that will direct future development in a way that strengthens the City and creates exceptional places for people. See the plan here <http://buff.ly/2b6eGdR>



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5,265 people reached

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76

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**106** Reactions, Comments & Shares

**86**



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On Shares

**2**



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**0**

On Shares

**13**

Shares

**12**

On Post

**1**

On Shares

**306** Post Clicks

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Link Clicks

**109**

Other Clicks

### NEGATIVE FEEDBACK

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**0** Hide All Posts

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**0** Unlike Page

**Sharon Read** such a pretty city, I loved visiting.

Like · Reply · Message · August 20 at 9:51am



**Judith Page** Such a beautiful town.

Like · Reply · Message · August 20 at 1:40pm



**Elizabeth Nguyen** Beautiful town

Like · Reply · Message · August 20 at 11:49pm



**Michael Phillips** It also would allow developers to put up 16 story buildings, changing the landscape of our "small city" and creating a traffic nightmare. This one aspect of the plan does not strengthen the city, it will negatively impact the quality of life of our citizens and visitors.

Like · Reply · Message · August 25 at 1:18pm



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your ...[See More](#)

[Like](#) · [Reply](#) · [Message](#) · September 14 at 1:05pm

**ilissa Reiersen** shared a [photo](#) to the group: [Franklin Insiders](#).

August 22 ·

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3Max Cook II, Susan Barnes Coleman and Mike Diana Beasley

[Comments](#)



**Lori Jarosz** shared [City of Franklin, TN - Municipal Government's photo](#).

August 20 ·

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**Donna Townsend** shared [City of Franklin, TN - Municipal Government's photo](#).

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**Susan Barnes Coleman** shared [City of Franklin, TN - Municipal Government's photo](#).

August 20 ·



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**Catherine Binhlam, Realtor - Keller Williams Realty** shared City of Franklin, TN - Municipal Government's photo.

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**Darlene Anderson** shared City of Franklin, TN - Municipal Government's photo.

August 20 •

My hometown.

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4Rosey Johnson, Jane Reed Newcome and 2 others

Comments



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**J Edward Campbell** shared City of Franklin, TN - Municipal Government's [photo](#).

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1Debbie Henry

Comments



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**City of Franklin, TN - Municipal Government**  
Published by Buffer [?] · August 21 ·

#EnvisionFranklin What would you like for Franklin's future? Attend the public meetings! <http://buff.ly/2bnKzvV>

**Get More Likes, Comments and Shares**  
Boost this post for \$20 to reach up to 4,000 people.

3,274 people reached

Boost Post

Sandy Burr, Billy Jones and 25 others

7 Comments 1 Share

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**3,274** People Reached

**48** Reactions, Comments & Shares

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| <b>29</b><br>Like     | <b>26</b><br>On Post | <b>3</b><br>On Shares |
| <b>1</b><br>Love      | <b>1</b><br>On Post  | <b>0</b><br>On Shares |
| <b>13</b><br>Comments | <b>11</b><br>On Post | <b>2</b><br>On Shares |
| <b>5</b><br>Shares    | <b>1</b><br>On Post  | <b>4</b><br>On Shares |

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|-------------------------|-------------------------|
| <b>4</b> Hide Post      | <b>0</b> Hide All Posts |
| <b>0</b> Report as Spam | <b>0</b> Unlike Page    |

**erri Faulkner Harvey** The way it use to be 😞  
Like · Reply · Message · 6 · August 21 at 7:10am

## 2 Replies

**Michael Phillips** Less traffic.  
More pedestrian connectivity.  
Views that do not include 16 story buildings....[See More](#)  
Like · Reply · Message · 9 · August 21 at 8:25am · Edited

**Andy Tiedt** Need to allow the city's infrastructure to catch up with growth. Mack Hatcher extension must get built soon it's strangling the west side of the city.  
Like · Reply · Message · 8 · August 21 at 8:33am

**Ann Walker** Never to loose it's small town charm. Remember what made Franklin a popular and a place you wanted to live and visit  
Hopefully it will never have tall commercial buildings that will cause it to loose it's idenity. Also that an abundance of

43

green space always be maintained with reminders of the old Franklin. You have a jewel don't ever allow dollar signs in the name of progress to take that away.

[Like](#) · [Reply](#) · [Message](#) · 1 · August 21 at 6:03pm



**Michael Phillips** Please create Facebook events for the public meetings.

[Unlike](#) · [Reply](#) · [Message](#) · 1 · August 21 at 10:14pm



**City of Franklin, TN - Municipal Government** Done for these, check them out in our events section.

[Like](#) · [Reply](#) · 1 · Commented on by Milissa Reiersen · August 22 at 2:11pm

[View more replies](#)



**Michael Phillips** Please attend the public meetings and let your voice be heard.

Sept 26, 2016...[See More](#)

[Like](#) · [Reply](#) · [Message](#) · August 24 at 8:46pm



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your ...[See More](#)

[Like](#) · [Reply](#) · [Message](#) · September 14 at 1:05pm

## Post Details

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### City of Franklin, TN - Municipal Government

Published by Milissa Reiersen [?] · September 1 · 🌐

Learn more about Envision Franklin  
here <http://www.tennessean.com/story/news/local/williamson/2016/08/26/en-vision-franklin-offers-guidelines-growth/88750214/>



### Envision Franklin offers guidelines for growth

Here are the highlights of Envision Franklin, the city's upcoming, long-term planning document.

TENNESSEAN.COM



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1,424 people reached

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👍 Catherine Bingham, Ann Walker and 4 others



👍 Like    💬 Comment    ➦ Share    📧 Hootlet

**1,424** People Reached

**6** Likes, Comments & Shares

**6**

Likes

**6**

On Post

**0**

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Comments

**0**

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**15** Post Clicks

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## Post



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[Like](#) · [Reply](#) · [Message](#) · September 8 at 12:39pm



**John Hunt** 🙌

[Like](#) · [Reply](#) · [Message](#) · September 8 at 3:08pm



**Cathleen Crunk** Jason Crunk

[Like](#) · [Reply](#) · [Message](#) · September 8 at 3:22pm



**Kelly Dannenfelser** Jason Collins

[Like](#) · [Reply](#) · [Message](#) · [1](#) · September 8 at 5:41pm

## 2 Replies



**Jon Harris** And just as I was beginning to enjoy the view of Rest Haven Cemetery from 5th Ave.

[Like](#) · [Reply](#) · [Message](#) · [1](#) · September 8 at 9:33pm



**City of Franklin, TN - Municipal Government** Not to worry Jon, the block along 5th with the cemeteries is in the Conservation design concept, which contemplates no new development. It's also deeper in the floodplain.

[Like](#) · [Reply](#) · [1](#) · Commented on by Milissa Reiersen · September 9 at 9:35am



**Jody Davis Smith** Just don't loose the ambiance of Franklin.

[Like](#) · [Reply](#) · [Message](#) · September 9 at 7:57am



**Candis Mcgough** We LOVE DOWNTOWN FRANKLIN.. The stores are great...

[Like](#) · [Reply](#) · [Message](#) · September 9 at 8:28am



**City of Franklin, TN - Municipal Government** Thank you, Ben Johnson for allowing viewers to [#EnvisionFranklin](#) with your excellent concept rendering presented in this piece. Special thanks to Kristina Bell and Debbie Smartt for contributing to this presentation with your colorful photographs, as well.

[Like](#) · [Reply](#) · [1](#) · Commented on by Stephen Price · September 9 at 8:57am



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your ...[See More](#)

[Like](#) · [Reply](#) · [Message](#) · September 14 at 1:07pm



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September 10 •

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[1 Comment](#)

6Rick McAllister, Peggy Ruff Walton and 4 others



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2Patty Ann Thompson Chappell and Anna Jennings Austin

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September 9 •

Looking forward to learning more !!

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3Mary Ellen Tyson, Lisa Land and Robin Moore

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### Comments



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### Comments



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**Eric Anderson** Uh, yes! I have been saying this for a long time! Make it happen....

[Like](#) · [Reply](#) · September 9 at 8:49am



Write a comment...



**Kelly Dannenfelser** shared a [video](#) to the group: [Fans of Historic Downtown Franklin](#).

September 8 ·

[#EnvisionFranklin](#)

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Like

8Jeffie Nicholson, Ed Rainey and 6 others

Comments



**Michael Phillips** Please join the City at an open house to discuss Franklin's Future.

The draft Envision Franklin provides policies that will direct future development, including land uses, site design, building height, and more. The City wants to hear from YOU! Your...[See More](#)

**City of Franklin, TN : Land Use Plan Update: Envision Franklin**

The City has completed a draft update to the Land Use Plan, entitled "Envision Franklin." The draft is available at the links below.

FRANKLINTN.GOV

[Like](#) · [1](#) · September 14 at 12:53pm



**Juice Bar Franklin** shared [City of Franklin, TN - Municipal Government's video](#) — 🙌 feeling accomplished at [Franklin Historic District](#).

September 8 · [Franklin](#) ·

Wait for it.....💚😊

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[2 Comments](#)

16Joni Johnson Cole, Angela Price and 14 others

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3Chris Conlee, Wanda Boatman and LeAnn Harden Blackman

**Comments**



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**Comments**



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**[Kelly Dannenfelser](#)** shared [City of Franklin, TN - Municipal Government's video](#).

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**Comments**



**[Kathie Moore](#)** Yes!!! Smart design!

[Like](#) · [Reply](#) · [1](#) · [September 8 at 2:25pm](#)



**[Kelly Dannenfelser](#)** [Debbie Carrington Smartt](#)

[Like](#) · [Reply](#) · [September 8 at 5:09pm](#)



Debbie Carrington Smartt replied · 1 Reply



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**9/26/16 Public meeting/open house at City Hall...(video)**  
**(no comments)**

Post Details

Video

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**City of Franklin, TN - Municipal Government**  
#EnvisionFranklin Open House  
3:11 · Uploaded on 09/26/2016 · View Permalink

**Video Performance In This Post**

Peak Live Viewers

9

Minutes Viewed

185

Unique Viewers

504

Video Views

524

10-Second Views

135

Video Average Watch Time

0:09

Audience and Engagement

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**Envision Franklin Guiding Principles**

The principles further define the vision and reflect the desired planning practices and respectful use of land and resources. The guiding principles are organized around eight themes:

1. Managed Growth
2. Economic Vitality
3. Vibrant Neighborhoods
4. Historic Preservation
5. Natural Beauty
6. Exceptional Design
7. Connected Community
8. Context-Responsive Infill

FRANKLIN  
*insider*

### Video Performance In This Post

|                            |        |
|----------------------------|--------|
| 🕒 Minutes Viewed           | 98 >   |
| 👤 Unique Viewers           | 365 >  |
| 📺 Video Views              | 383 >  |
| ⏱️ 10-Second Views         | 106 >  |
| ⌚ Video Average Watch Time | 0:05 > |
| 👥 Audience and Engagement  | >      |

**City of Franklin, TN - Municipal Government: ENVISION FRANKLIN OVERVIEW\_1**

#EnvisionFranklin: Public Meeting/Open House tonight at City Hall at 4:30-7:30, it is a come and go meeting. Also tomorrow morning at 7:30-9:30 at Columbia State. Hope to see you there. Your input is valuable! [www.franklinton.gov](http://www.franklinton.gov)

3:01 · Uploaded on 09/26/2016 · [View Permalink](#)

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New Post With This Video
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### City of Franklin, TN - Municipal Government

Published by Stephen Price [?] · September 26 at 4:09pm ·

#EnvisionFranklin Open House / Public Meeting starts at 4:30 at City Hall.  
We will be here until 7:30! For more information:  
[www.franklin.tn.gov/envisionfranklin](http://www.franklin.tn.gov/envisionfranklin)



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1,273 People Reached

3 Likes, Comments & Shares

3

Likes

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0

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**City of Franklin, TN - Municipal Government** added 5 new photos.

Published by Milissa Reiersen [?] · September 27 at 10:23am · 🌐

Thank you Franklin for the overwhelming response to our [#EnvisionFranklin](#) public meetings this week!



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1,388 people reached

[Boost Post](#)

👍 James Svoboda, Vee Ullstad and 3 others



👍 Like

💬 Comment

➦ Share

📧 Hootlet

**1,388** People Reached

**5** Likes, Comments & Shares

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Comments

**0**

On Post

**0**

On Shares

**0**

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January 6, 2017

Emily Hunter  
Director  
City of Franklin Planning & Sustainability Department  
109 3<sup>rd</sup> Ave. S.  
Franklin, Tenn. 37064

Dear Ms. Hunter:

As you are aware, Franklin Tomorrow is an organization of residents, business representatives, and other community leaders within the City that share a common goal of engaging the community, fostering collaboration, and advocating for a shared vision for the future of Franklin. Over the last several months, members of the Franklin Tomorrow Board undertook a thorough review of the draft *Envision Franklin Plan*, a well-written and commendable plan, crafted by the City of Franklin. The hard work, time, and effort that you and your Staff committed to this plan is clear.

Below, you will find Franklin Tomorrow's review comments of the draft plan. Our collective comments are of one voice and are intended to promote and advance a shared vision that our organization has developed over time with input from thousands of Franklin residents over the past 15 years. We hope you find our in-depth review and specific comments to be illustrative of our passion for this community and that our support for this plan allows Franklin to be a City with a robust economy, vibrant neighborhoods, distinct character, and great people. With this in mind, we ask for your full consideration of our comments, as we offer our support to the City's *Envision Franklin Plan*.

## **Review Comments**

### Role of the Plan

- Franklin Tomorrow supports the *Envision Franklin Plan* being a guiding document of the Planning Commission.
- Population and employment projections of the Plan appear to be lower than other projections contained within documents of the City of Franklin (*Source: 2015 Development Report*). This may result in underutilization of higher density solutions necessary to accommodate a higher population.

### Vision & Guiding Principles

#### Managed Growth

- Franklin Tomorrow, through our organization's Vision City trips, has seen the purposeful actions of other communities in managing growth and their use of public infrastructure investments to strategically direct growth. Thus, Franklin Tomorrow fully supports the

City's Managed Growth guiding principle and encourages the City to play an active role in initiatives and policies to do so. Franklin Tomorrow supports and encourages ongoing coordination with surrounding municipalities and the County as a means of ensuring growth within the City and the City's UGB are consistent with Franklin's envisioned growth plans and community character.

#### Economic Vitality

- Franklin Tomorrow fully supports the Economic Vitality guiding principle and the specifics of the Plan's statements under this guiding principle. Franklin Tomorrow further encourages the Planning Commission and BOMA to work to create a stronger link between this guiding principle and land use and investment decisions by the City, specifically in the category of housing and employment.

#### Vibrant Neighborhoods

- This guiding principle speaks to promoting and encouraging a mix of uses within neighborhoods, an approach supported by Franklin Tomorrow. However, there appears to be a disconnect between this guiding principle and plans and policies within the City of Franklin. Franklin Tomorrow encourages the Planning Commission and BOMA to advance plans and policies that would allow such actions by right rather than by exception or rezoning.

#### Historic Preservation

- Franklin Tomorrow fully supports the guiding principle of Historic Preservation and the statements of this guiding principle.

#### Natural Beauty

- Franklin Tomorrow fully supports the guiding principle of Natural Beauty and the statements of this guiding principle.

#### Exceptional Design

- Franklin Tomorrow fully supports the guiding principle of Exceptional Design and the statements of this guiding principle.

#### Connected Community

- In recent years Franklin Tomorrow has found an ever-growing interest among residents and the business community in the promotion of greater connectivity in Franklin, specifically in the area of non-motorized modes (walking and biking). Franklin Tomorrow fully supports the guiding principle of Connected Community and the statements of this guiding principle and further encourages the Planning Commission and BOMA to advance plans, policies, and investments that increase greater non-motorized connectivity within and throughout Franklin.

#### Context-Responsive Infill

- Franklin Tomorrow fully supports the guiding principle of Context-Responsive Infill and the statements of this guiding principle.

## Design Concepts

### Compact Residential (Pages 28-31)

- Franklin Tomorrow fully supports the concept of compact residential design for areas of Hard Bargain and Natchez Street neighborhoods and further encourages the use of this residential design concept for other locations within Franklin, as deemed appropriate.

### Conservation (Pages 32-33)

- Franklin Tomorrow fully supports the protection of sensitive lands and environmental features which define Franklin's character. To that end, Franklin Tomorrow supports the conservation provisions stated in *Envision Franklin Plan* to preserve the function, form, and character of these areas.

### Conservation Subdivision (Pages 34-38)

- While Franklin Tomorrow supports the concept of Conservation Subdivision as a means of protecting open space in its natural state, the primary use provision of single-family residential and the special consideration locations of this design concept seem to be in contradiction. Examples of this contradiction include setback provisions of 150- to 300-feet along certain corridors, reference of commercial, office, and other dwelling types within special consideration locations, and building height maximums of two stories. Greater clarity of Conservation Subdivision and the use provision of this design concept may need to be restated and/or clarified to ensure desired outcomes of this concept.

### Development Reserve (Page 39)

- The Development Reserve design concept seems to be lacking a table (with uses, form, site design, etc.) similar to other design concept provisions. Franklin Tomorrow encourages greater details for this design concept.

### Fifth Avenue North (Pages 40-42)

- Franklin Tomorrow supports the Fifth Avenue North design concept as a means of encouraging redevelopment of this corridor in character and form intrinsically linked to the vibrancies of the downtown core.

### Historic Residential (Pages 43-45)

- Franklin Tomorrow supports the Historic Residential design concept as a means of protecting the form and character of single-family neighborhoods in and around Downtown Franklin. If infill development is to occur in these areas, Franklin Tomorrow supports development patterns that are reflective of the scale and context of these traditional neighborhoods.

### Industrial Flex (Pages 46-48)

- Given the context in which this use has developed in Franklin and the locations identified for Industrial Flex, Franklin Tomorrow supports design concepts under Industrial Flex that could support residential and a mix of uses. Greater thought should be given to Industrial Flex areas and how these locations could develop/redevelop over time. The Seaboard Lane area seems to be missing from Special Considerations and is a great example of a location that could contain residential and/or mixed uses.

#### Large-Lot Residential (Pages 49-52)

- Franklin Tomorrow supports the protection and preservation of natural features, such as hillsides, hilltops, and tree fence rows. When development is to occur, Franklin Tomorrow supports development patterns and concepts that promote the preservation and protection of these areas and policies and strategies that direct development to more suitable areas and areas intended for higher use and density.

#### Main Street (Pages 53-56)

- Franklin Tomorrow supports the Main Street design concept, promoting historic preservation, context-sensitive design, and compatible infill, essential to a vibrant and walkable Downtown. Franklin Tomorrow believes the scale and form of areas found in the Main Street design concept area should place people first over vehicular needs.

#### Mixed Residential (Pages 57-61)

- Franklin Tomorrow supports the Mixed Residential design concept and its provisions that promote appropriate context, character, and scale as well as walkable, well-connected street systems that connect to surrounding neighborhoods and nearby destinations. Franklin Tomorrow supports this residential design concept as a means of creating a greater diversity of housing and housing types that allow for life-cycle housing for all ages and incomes.

#### Multifamily Residential (Pages 62-65)

- Franklin Tomorrow supports a diversity of housing and housing types that allows for all ages and incomes. The design concept of Multifamily Residential seems to be limiting and in fact, may be better conveyed by allowing such uses within a variety of design concepts (i.e., Regional Commerce and Industrial Flex), as opposed to being limited to areas identified in the Envision Franklin Plan Design Concepts Map.

#### Neighborhood Commercial (Pages 66-69)

- Franklin Tomorrow supports the Neighborhood Commercial design concept and its provisions that promote appropriate context, character, and scale for such uses. Franklin Tomorrow further supports the provisions of this design concept as the normal development pattern rather than this being an exception to land use and design standards (especially when it comes to planned unit developments).

#### Neighborhood Mixed-Use (Pages 70-79)

- Franklin Tomorrow supports the Neighborhood Mixed-Use design concept and its provisions that promote appropriate context, character, and scale as walkable and connected centers to the residential neighborhoods they support. Franklin Tomorrow believes this design concept has the greatest opportunity to promote vibrant, walkable residential neighborhoods. For this reason, Franklin Tomorrow encourages the City of Franklin to identify other areas within the City and the UGB where the design concept of Neighborhood Mixed-Use should be utilized.

#### Office Residential (Pages 80-82)

- Franklin Tomorrow supports the Office Residential design concept and its provisions as a means of maintaining established, historic single-family residential structures in their residential character.



#### Recreation (Pages 83-85)

- Franklin Tomorrow supports the Recreation design concept and encourages the City of Franklin to further plan how these areas can better interconnect public and private recreational opportunities. It is vital that these recreational areas are fully connected with the neighborhoods surrounding these opportunities. Having such plans will ensure better connectivity, appropriate utilization, and investments (public and private) as development occurs around these recreational areas.

#### Regional Commerce (Pages 86-90)

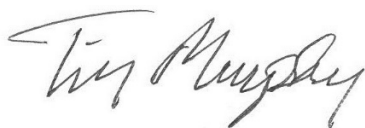
- Franklin Tomorrow supports the Regional Commerce design concept and its provisions that promote coordinated access, transit, non-motorized modes, the reduction and replacement of surfacing parking, and cohesive design that fits within the context of these high-intensity activity centers. Franklin Tomorrow further believes these areas are suitable for Multifamily Residential and Mixed Residential uses, both of which within Regional Commerce would aid in promoting higher levels of non-motorized travel, greater transit utilization, and less need for vehicular parking.

#### Single-Family Residential (Pages 91-94)

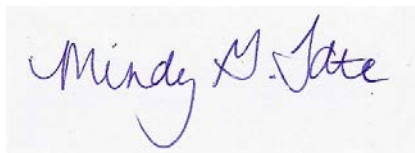
- Franklin Tomorrow supports the Single-Family Residential design concept and its provisions that promote a range of single-family residential opportunities, walkable neighborhoods, and well-connected streets that connect to surrounding neighborhoods and nearby destinations.

Thank you again for the opportunity to review and comment on the draft *Envision Franklin Plan*. We commend the City and its staff for the development of this Plan and the countless hours taken to create such a comprehensive guiding document. We hope you find our comments to be of value and add to promoting a shared vision that allows Franklin to implement and advance the principles and concepts of the *Envision Franklin Plan*. We further encourage the City of Franklin to establish the necessary policies and investments that are needed to fully implement and advance the collective shared vision of the *Envision Franklin Plan*.

Sincerely,



Tim Murphy  
President, Board of Directors  
Franklin Tomorrow Inc.



Mindy Tate  
Executive Director  
Franklin Tomorrow Inc.

Cc: Members of Franklin Planning Commission, City Administrator Eric Stuckey, Mayor Ken Moore & members of the Franklin Board of Mayor and Aldermen, Assistant City Administrator Vernon Gerth

**ORDINANCE 2016-51**

**TO BE ENTITLED, "AN ORDINANCE TO REZONE 23.61 ACRES FROM GENERAL COMMERCIAL (GC) DISTRICT TO SPECIFIC DEVELOPMENT VARIETY (SD-X 14.61/350,000/200) DISTRICT FOR THE PROPERTY LOCATED NORTH OF EAST MCEWEN DRIVE AND EAST OF CAROTHERS PARKWAY, (APEX VILLAGE PUD SUBDIVISION)."**

**WHEREAS**, the City of Franklin, Tennessee, encourages responsible growth and the sensible transition of land uses and densities; and

**WHEREAS**, the Specific Development Variety (SD-X 14.61/ 350,000/ 200) District provides zoning for land uses compatible with both the Franklin Land Use Plan and surrounding development; and

**WHEREAS**, the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee, adopted Resolution 2016-88, approving a Planned Unit Development (PUD) Development Plan as required by the Franklin Zoning Ordinance; and

**WHEREAS**, the zoning has been reviewed and approved by BOMA after a public hearing and a recommendation by the Franklin Municipal Planning Commission.

**NOW THEREFORE BE IT ORDAINED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:**

**SECTION I.** That the following described property shall be, and is hereby, rezoned from its present zoning classification of General Commercial (GC) District to Specific Development Variety (SD-X 14.61/350,000/200) District:

| PREMISES CONSIDERED |       |
|---------------------|-------|
| Map-Parcel          | Acres |
| 062—01417           | 5.84  |
| 062—01418           | 17.77 |
| Total               | 23.61 |

ALL OF THOSE TRACTS OR PARCELS OF LAND, situated in the Eighth Civil District, City of Franklin, Williamson County, Tennessee that include the lands shown on the Final Plat of Resource Centre Section 1 that are bounded on the West with the right or way of Carothers Parkway, on the Northwest by the centerline of Pacific Drive and the lands of Resource Centre Subdivision as recorded (plat book 57 page 130) , on the Northeast by Resource Parkway (plat book 50 page 122), on the East by Lot 1 of lands recorded in Plat book 50 page 122, and on the South by East McEwen Road ROW, and as filed in the Register's Office of Williamson County, Tennessee. (R.O.W.C., TN.) and being more particularly described as follows:

A TRACT OR PARCEL OF LAND, situated in the Eighth Civil District, City of Franklin, Williamson County, Tennessee that is bounded on the West with the right or way of Carothers Parkway, on the North and East by the lands of Lot 1 of Resource Centre Subdivision as recorded (plat book 56 page 97), and on the

South by E. McEwen Drive ROW, and as filed in the Register's Office of Williamson County, Tennessee. (R.O.W.C., TN.); being more particularly described as follows:

Beginning at the point of intersection of the easterly right-of-way line of Carothers Parkway variable in width) and the centerline line of Pacific Drive, variable in width (plat book 56 page 97), and the northwest corner of Lot 2 of Resource Centre – Section 1 ( plat book 56 page 97) of which this is a part; thence with the common line of said Lot 2 and the centerline of said Pacific Drive, (passing the southwest corner of Lot 3 of Resource Centre PUD (plat book 57 page 130) at 12.0') , South 65°03'52" East 67.04 feet, along said centerline to a point in a curve to the left having a radius of 145.00 feet and a central angle of 71°58'08"; thence, 182.13 feet along said curve, being subtended by a chord bearing North 87°25'04" East 170.39 feet to a point; thence, North 42°58'00" East 136.34 feet along said line to a point in a curve to the right having a radius of 300.00 feet and a central angle of 38°58'13"; thence, 204.05 feet along said curve, being subtended by a chord bearing North 62°27'06" East 200.14 feet to a point; thence, North 81°56'13" East 92.84 feet along said line to a point at the northerly corner of said Lot 2 and on the westerly right-of-way line of Resource Parkway (Plat Book 50, Page 122, R.O.W.C), 50 feet in width) and a curve to the left having a radius of 350.00 feet and a central angle of 31°45'22"; thence with said Lot 2 and along the right of way line of Resource Parkway, 293.99 feet along said curve, being subtended by a chord bearing South 23°54'23" East 191.51 Feet to a point; thence; South 39°47'04" East 161.79 feet to point; thence; South 39°47'04" East 124.43 feet along said line to a point on a curve to the left having a radius of 388.39 feet and a central angle of 17°43'34"; thence, 120.16 feet along said curve, being subtended by a chord of South 48°38'51" East 119.68 feet to a point; thence, South 57°30'38" East 196.93 feet along said line to a point on a curve to the right having a radius of 44.50 feet and a central angle of 50°36'07"; thence, 39.30 feet along said curve, being subtended by a chord of South 31°42'55" East 38.04 feet to a point on a curve to the left having a radius of 65.00 feet and a central angle of 50°36'07"; thence 57.41 feet along said curve, being subtended by a bearing of South 31°42'55" East 55.56 feet to a point on a curve to the left having a radius of 65.00 feet and a central angle of 50°23'47"; thence, 57.41 feet along said curve, being subtended by a bearing of South 82°12'52" East 55.35 feet to a curve to the right having a radius of 44.50 feet and a central angle of 53°00'53"; thence, 41.18 feet along said curve being subtended by a chord bearing South 80°54'19" East 39.72 feet to a point on a curve to the right having a radius of 335.00 feet and a central angle of 38°20'41"; thence 224.20 feet along said curve being subtended by a chord bearing South 35°13'32" East 220.04 feet to a point on the westerly right-of-way line of Resource Drive and the northwest corner of Lot 1 of Franklin Crest PUD Subdivision (plat book 50 page 122) ; thence, South 10°46'13" West 289.59 along the west line of said Lot 1 to a point on the northerly right-of-way line of East McEwen Drive variable in width) and the southwest corner of said Lot 1, and also being on a curve to the left having a radius of 14,373.46 feet and a central angle of 1°29'57"; thence leaving said Lot 1 and with the north line of East McEwen right of way, 376.07 feet along said curve being subtended by a chord bearing North 76°47'09" West 376.06 feet to a point; thence, South 13°30'14" West 14.08 feet along said line to a point; thence, North 76°29'46" West 16.78 feet along said line to a point; thence, North 76°29'46" West 69.46 feet along said line to a point; thence, North 79°43'43" West 253.17 feet along said line to a point; thence, North 79°43'43" West 74.77 feet along said line to a point; thence, North 82°57'40" West 42.23 feet along said line to a point; thence, North 82°57'40" West 26.67 feet along said line to a point on a curve to the left having a radius of 2,042.50 feet and a central angle of 4°45'11"; thence, 169.44 feet along said curve being subtended by a chord bearing North 85°20'16 West 169.39 feet to a point; thence, North 87°42'51" West 107.62 feet to a point; thence, South 38°35'28" East 3.40 feet to a point on a curve to the left having a radius of 2,078.93 feet and a central angle of 4°36'18"; thence, 169.09 feet along said curve being subtended by a chord bearing North 85°24'49" West 167.04 feet to a point; thence, North 87°42'52" West 102.05 feet along said line to a point on said easterly right-of-way line of Carothers Parkway; thence with said Carothers right of way, North 02°17'15" East 20.92 feet along said

line to a point on a curve to the right having a radius of 25.00 feet and a central angle of 77°55'24"; thence, 34.00 feet along said curve being subtended by a chord bearing North 29°22'11" West 31.44 feet to a point; thence, North 10°32'02" East 202.64 feet along said line to a point; thence, North 46°32'02" West 4.76 feet along said line to a point; thence, North 10°32'02" East 71.86 feet along said line to a point; thence, North 11°06'41" East 62.50 feet along said line; thence, North 11°30'15" East 60.54 feet along said line to a point; thence, North 14°37'54" East 58.30 feet along said line to a point; thence, North 18°12'11" East 58.26 feet along said line to a point on a curve to the right having a radius of 932.00 feet and a central angle of 4°01'25"; thence, 65.45 along said curve being subtended by a chord of North 21°23'46" East 65.44 feet to a point on a curve to the right having radius of 932.00 feet and a central angle of 1°31'47"; thence, 24.88 feet along said curve being subtended by a chord bearing North 24°10'23" East 24.88 feet to a point; thence, North 24°56'16" East 94.71 feet to the point of beginning and containing 23.612 acres more or less.

**SECTION II.** That the attached Location Map shall serve the purpose of further delimiting the geographical boundaries as described by this Ordinance.

**SECTION III.** BE IT FINALLY ORDAINED by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on third and final reading, the health, safety, and welfare of the citizens requiring it.

**ATTEST:**

**CITY OF FRANKLIN, TENNESSEE:**

By: \_\_\_\_\_  
**Eric Stuckey**  
City Administrator/Recorder

By: \_\_\_\_\_  
**Dr. Ken Moore**  
Mayor

Approved as to form by:

\_\_\_\_\_  
Shauna R. Billingsley  
City Attorney

PLANNING COMMISSION RECOMMENDED:

\_\_\_\_\_

PASSED FIRST READING:

\_\_\_\_\_

PUBLIC HEARING HELD:

\_\_\_\_\_

PASSED SECOND READING:

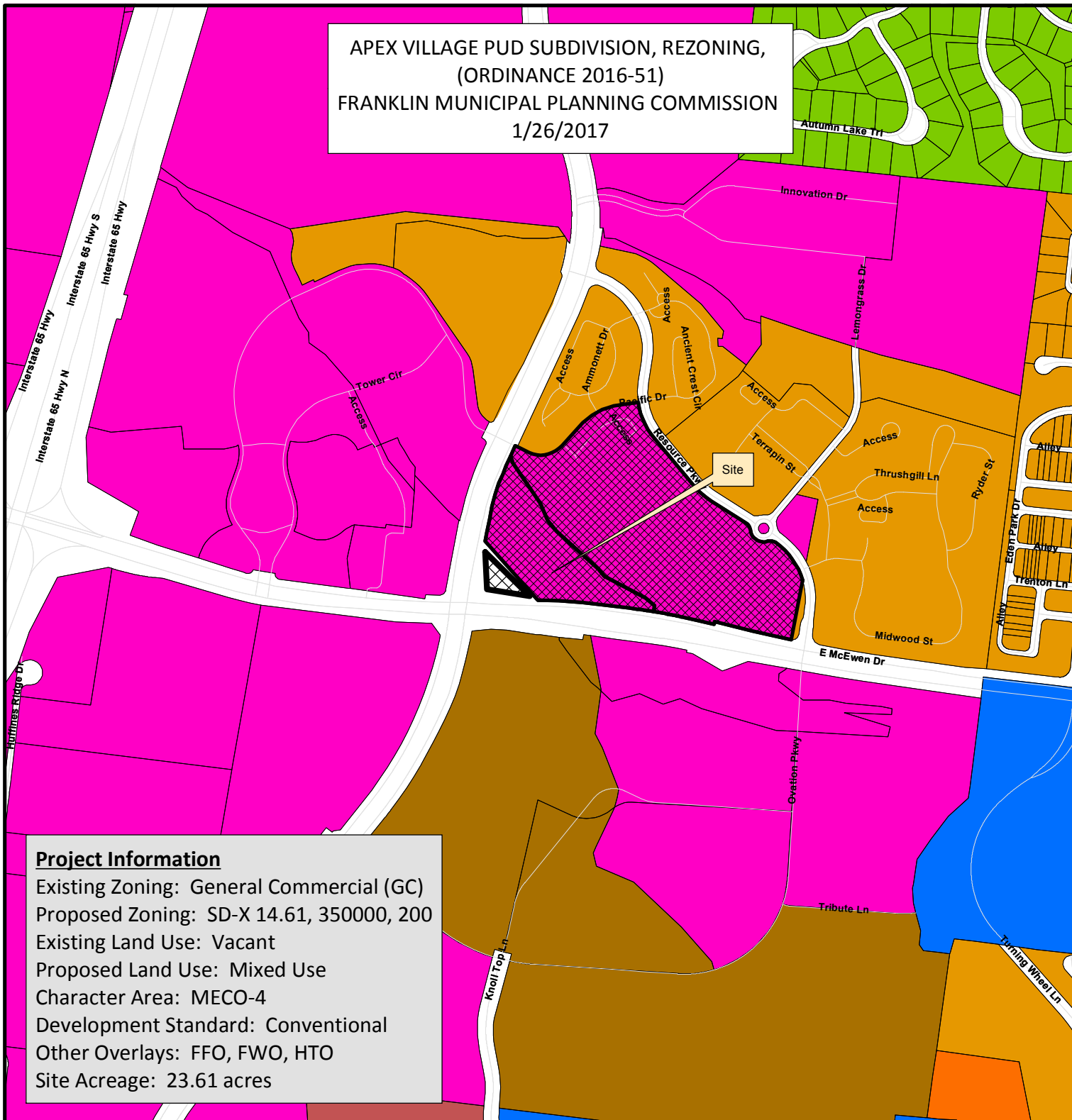
\_\_\_\_\_

PASSED THIRD READING:

\_\_\_\_\_



APEX VILLAGE PUD SUBDIVISION, REZONING,  
(ORDINANCE 2016-51)  
FRANKLIN MUNICIPAL PLANNING COMMISSION  
1/26/2017



**Project Information**

Existing Zoning: General Commercial (GC)  
Proposed Zoning: SD-X 14.61, 350000, 200  
Existing Land Use: Vacant  
Proposed Land Use: Mixed Use  
Character Area: MECO-4  
Development Standard: Conventional  
Other Overlays: FFO, FWO, HTO  
Site Acreage: 23.61 acres

- |                                        |                                       |
|----------------------------------------|---------------------------------------|
| Apex Village PUD Subdivision           | SD-R Specific Development-Residential |
| AG Agricultural District               | SD-X Specific Development-Variety     |
| ER Estate Residential                  | OR Office Residential District        |
| R-1 Residential District               | GO General Office District            |
| R-2 Residential District               | CC Central Commercial District        |
| R-3 Residential District               | NC Neighborhood Commercial District   |
| R-6 Residential District               | GC General Commercial District        |
| RM-10 Attached 10 Residential District | LI Light Industrial District          |
| RM-15 Attached 15 Residential District | HI Heavy Industrial District          |
| RM-20 Attached 20 Residential District | CI Civic and Institutional District   |



0 375 750 1,500  
Feet

This map was created by the Franklin Planning Department. It was compiled from the most authentic information available. The City is not responsible for any errors or omissions contained hereon. All data and materials (c) copyright 2017. All rights reserved.





**IMPACT STATEMENT NOTES:**  
FROM THIS SITE, IT IS APPROXIMATELY 1.5 MILES TO FIRE STATION 6 ON COOL SPRINGS BOULEVARD AND 5 MILES TO THE CITY POLICE DEPARTMENT LOCATED ON COLUMBIA AVENUE.

THE NEAREST PARK AND RECREATIONAL FACILITIES ARE LOCATED APPROXIMATELY 0.5 MILES EAST OF THE DEVELOPMENT ON MCEWEN DRIVE (LIBERTY PARK). CHEEK PARK AND THE WILLIAMSON COUNTY RECREATION CENTER ARE APPROXIMATELY 5 MILES FROM THE PROPOSED DEVELOPMENT.

WATER IS PROVIDED BY MALLORY VALLEY UTILITY DISTRICT VIA EXISTING 10" & 18" MAINS SURROUNDING THE SITE. WATER AVAILABILITY OF APPROXIMATELY 1160 SFUE HAS BEEN CONFIRMED BY MVUD FOR THIS DEVELOPMENT.

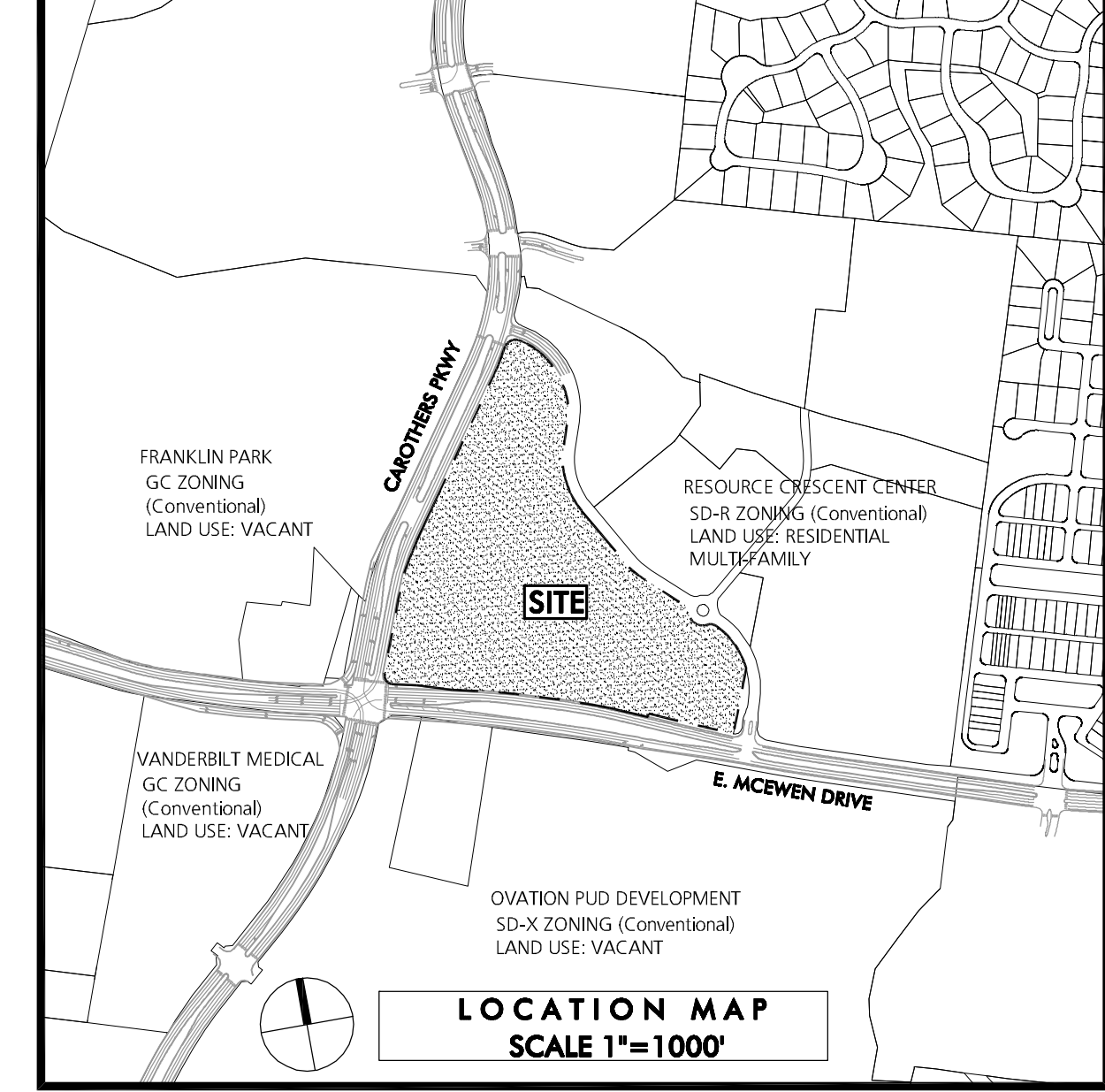
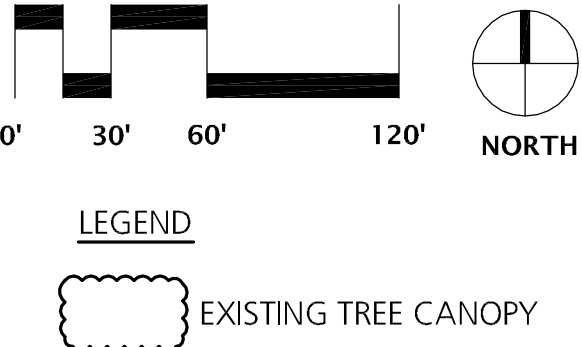
SANITARY SEWER WILL BE PROVIDED BY THE CITY OF FRANKLIN VIA EXISTING SEWER INFRASTRUCTURE ALONG EAST MCEWEN DRIVE AND CAROTHERS PARKWAY. THE CITY OF FRANKLIN HAS APPROVED THE ADDITION OF 780 SFUE FOR THE DEVELOPMENT.

REFUSE COLLECTION FOR THE DEVELOPMENT SHALL BE PROVIDED BY PRIVATE COLLECTION.

ENGINEERING PROVIDED BY:  
RYAN MCMASTER  
KIMLEY-HORN  
214 OCEANSIDE DRIVE  
NASHVILLE, TN. 37204  
(615) 564-2876  
ryan.mcmaster@kimley-horn.com

APPLICANT:  
JOHN HAAS  
EDGE  
210 12TH AVE. SOUTH  
SUITE 202  
NASHVILLE TN, 37203  
(615) 250-8154  
jhaas@edgela.com

DEVELOPER:  
KHRIS PASCARELLA  
CRESCENT LOCKWOOD, LLC  
205 POWELL AVENUE  
BRENTWOOD, TN 37027  
(615) 312-8242  
kpascarella@pearlstreetpartners.com



| SITE DATA                                  |                                                                  |
|--------------------------------------------|------------------------------------------------------------------|
| SITE AREA                                  | +/- 23.61 ACRES                                                  |
| MAP & PARCEL NUMBER                        | MAP 062, PARCELS 01417 & 01418                                   |
| ADDRESS                                    | CAROTHERS PARKWAY                                                |
| EXISTING ZONING/<br>CHARACTER AREA OVERLAY | GC - MCEWEN AREA 4                                               |
| RESIDENTIAL DENSITY                        | 14.61 DWU/ACRE                                                   |
| COMMERCIAL SQUARE FOOTAGE                  | 350,000                                                          |
| PROPOSED HOTEL KEYS                        | 200                                                              |
| PROPOSED ZONING                            | SPECIFIC DEVELOPMENT<br>VARIETY (SD-X) 14.61, 350,000, 200       |
| OTHER APPLICABLE OVERLAYS                  | FLOODWAY FRINGE OVERLAY (FFO)<br>FLOODWAY OVERLAY DISTRICT (FWD) |
| DEVELOPMENT STANDARD                       | CONVENTIONAL                                                     |
| EXISTING LAND USE                          | VACANT                                                           |
| PROPOSED LAND USE                          | MIXED-USE                                                        |
| INTENDED USES                              | ATTACHED RESIDENTIAL<br>OFFICE<br>RETAIL<br>HOTEL<br>RESTAURANT  |
| EXISTING TREE CANOPY                       | +/- 7.48 ACRES (32% OF SITE)                                     |

**Legal Description of Crescent Resource Center**  
**Part of Lands Recorded in Plat 56 page 97**  
**In the City of Franklin, Williamson County, TN.**

ALL OF THOSE TRACTS OR PARCELS OF LAND, situated in the Eighth Civil District, City of Franklin, Williamson County, Tennessee that include the lands shown on the Final Plat of Resource Centre Section 1 that are bounded on the West with the right or way of Carothers Parkway, on the Northwest by the centerline of Pacific Drive and the lands of Resource Centre Subdivision as recorded (plat book 57 page 130), on the Northeast by Resource Parkway (plat book 50 page 122), on the East by Lot 1 of lands recorded in Plat book 50 page 122, and on the South by East McEwen Road ROW, and as filed in the Register's Office of Williamson County, Tennessee. (R.O.W.C., TN.) and being more particularly described as follows:

Beginning at the point of intersection of the easterly right-of-way line of Carothers Parkway variable in width) and the centerline line of Pacific Drive, variable in width (plat book 56 page 97), and the northwest corner of Lot 2 of Resource Centre - Section 1 ( plat book 56 page 97) of which this is a part; thence with the common line of said Lot 2 and the centerline of said Pacific Drive, (passing the southwest corner of Lot 3 of Resource Centre PUD (plat book 57 page 130) at 12.01) , South 65°03'52" East 67.04 feet, along said centerline to a point in a curve to the left having a radius of 145.00 feet and a central angle of 71°58'08"; thence, 182.13 feet along said curve, being subtended by a chord bearing North 87°25'04" East 170.39 feet to a point; thence, North 42°58'00" East 136.34 feet along said line to a point in a curve to the right having a radius of 300.00 feet and a central angle of 38°58'13"; thence, 204.05 feet along said curve, being subtended by a chord bearing North 62°27'06" East 200.14 feet to a point; thence, North 81°56'13" East 92.84 feet along said line to a point at the northerly corner of said Lot 2 and on the westerly right-of-way line of Resource Parkway (Plat Book 50, Page 122, R.O.W.C.), 50 feet in width) and a curve to the left having a radius of 350.00 feet and a central angle of 31°45'22"; thence with said Lot 2 and along the right of way line of Resource Parkway, 293.99 feet along said curve, being subtended by a chord bearing South 23°54'23" East 191.51 Feet to a point; thence, South 38°47'04" East 161.79 feet to point; thence, South 39°47'04" East 124.43 feet along said line to a point on a curve to the left having a radius of 388.39 feet and a central angle of 17°43'34"; thence, 120.16 feet along said curve, being subtended by a chord of South 48°38'51" East 119.68 feet to a point; thence, South 57°30'38" East 196.93 feet along said line to a point on a curve to the right having a radius of 44.50 feet and a central angle of 50°30'07"; thence, 39.30 feet along said curve, being subtended by a chord of South 31°42'55" East 38.04 feet to a point on a curve to the left having a radius of 65.00 feet and a central angle of 50°30'07"; thence 57.41 feet along said curve, being subtended by a bearing of South 31°42'55" East 55.56 feet to a point on a curve to the left having a radius of 65.00 feet and a central angle of 50°23'47"; thence, 57.41 feet along said curve, being subtended by a bearing of South 82°12'52" East 55.35 feet to a curve to the right having a radius of 44.50 feet and a central angle of 53°00'53"; thence, 41.18 feet along said curve being subtended by a chord bearing South 80°54'19" East 39.72 feet to a point on a curve to the right having a radius of 335.00 feet and a central angle of 38°20'41"; thence 224.20 feet along said curve being subtended by a chord bearing South 35°13'32" East 220.04 feet to a point on the westerly right-of-way line of Resource Drive and the northwest corner of Lot 1 of Franklin Crest PUD Subdivision (plat book 50 page 122); thence, South 10°46'13" West 289.59 along the west line of said Lot 1 to a point on the northerly right-of-way line of East McEwen Drive variable in width) and the southwest corner of said Lot 1, and also being on a curve to the left having a radius of 14,373.46 feet and a central angle of 1°29'57"; thence leaving said Lot 1 and with the north line of East McEwen right of way, 376.07 feet along said curve being subtended by a chord bearing North 76°47'09" West 376.06 feet to a point; thence, South 13°30'14" West 14.08 feet along said line to a point; thence, North 76°29'48" West 16.78 feet along said line to a point; thence, North 76°29'48" West 88.46 feet along said line to a point; thence, North 79°43'43" West 253.17 feet along said line to a point; thence, North 79°43'43" West 74.77 feet along said line to a point; thence, North 82°57'40" West 42.23 feet along said line to a point; thence, North 82°57'40" West 126.67 feet along said line to a point on a curve to the left having a radius of 2,042.50 feet and a central angle of 4°45'11"; thence, 169.44 feet along said curve being subtended by a chord bearing North 85°20'16" West 169.39 feet to a point; thence, North 87°42'51" West 107.82 feet to a point; thence, South 38°35'28" East 3.40 feet to a point on a curve to the left having a radius of 2,078.93 feet and a central angle of 4°38'18"; thence, 169.09 feet along said curve being subtended

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| by a chord bearing North 85°24'49" West 167.04 feet to a point; thence, North 87°42'52" West 102.05 feet along said line to a point on said easterly right-of-way line of Carothers Parkway; thence with said Carothers right of way, North 02°17'15" East 20.92 feet along said line to a point on a curve to the right having a radius of 25.00 feet and a central angle of 77°55'24"; thence, 34.00 feet along said curve being subtended by a chord bearing North 29°22'11" West 31.44 feet to a point; thence, North 10°32'02" East 202.64 feet along said line to a point; thence, North 46°32'02" West 4.76 feet along said line to a point; thence, North 10°32'02" East 71.86 feet along said line to a point; thence, North 11°36'41" East 62.50 feet along said line; thence, North 11°36'15" East 60.54 feet along said line to a point; thence, North 14°37'54" East 56.30 feet along said line to a point; thence, North 18°12'11" East 58.26 feet along said line to a point on a curve to the right having a radius of 932.00 feet and a central angle of 4°01'25"; thence, 65.45 along said curve being subtended by a chord of North 21°23'48" East 65.44 feet to a point on a curve to the right having radius of 932.00 feet and a central angle of 1°31'47"; thence, 24.88 feet along said curve being subtended by a chord bearing North 24°10'23" East 24.88 feet to a point; thence, North 24°56'16" East 94.71 feet to the point of beginning and containing 23,612 acres more or less. |                          |
| Prepared by:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Harrah and Associates    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Roger H. Harrah RLS 2039 |
| NOTES:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          |
| 1. DEVELOPER TO RETAIN ALL MINERAL RIGHTS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| 2. NO STRUCTURES CURRENTLY EXIST ON SITE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| 3. THERE ARE NO HISTORIC STRUCTURES WITHIN 500' OF THE SITE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |

EDGE

LANDSCAPE ARCHITECTURE URBAN DESIGN

210 Twelfth Avenue South

Suite 202

Nashville, Tennessee 37203

P 615-250-8154 F 615-250-8155

Kimley»Horn

214 Crookside Drive, Nashville, TN 37204

Main: 615.584.2701 | www.kimleyhorn.com

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CONSULTANTS

SEAL

JOHN DAVID HAAS

REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT

01/05/17

PROJECT TITLE

APEX VILLAGE  
REZONING PLAN  
C.O.F. #6304  
FRANKLIN, TN

CLIENT

CRESCENT  
COMMUNITIES  
LLC

PROJECT NO.

COF #6304

Date

12/12/16

Revisions

1. PER CITY COMMENTS 01.05.17

Sheet Title

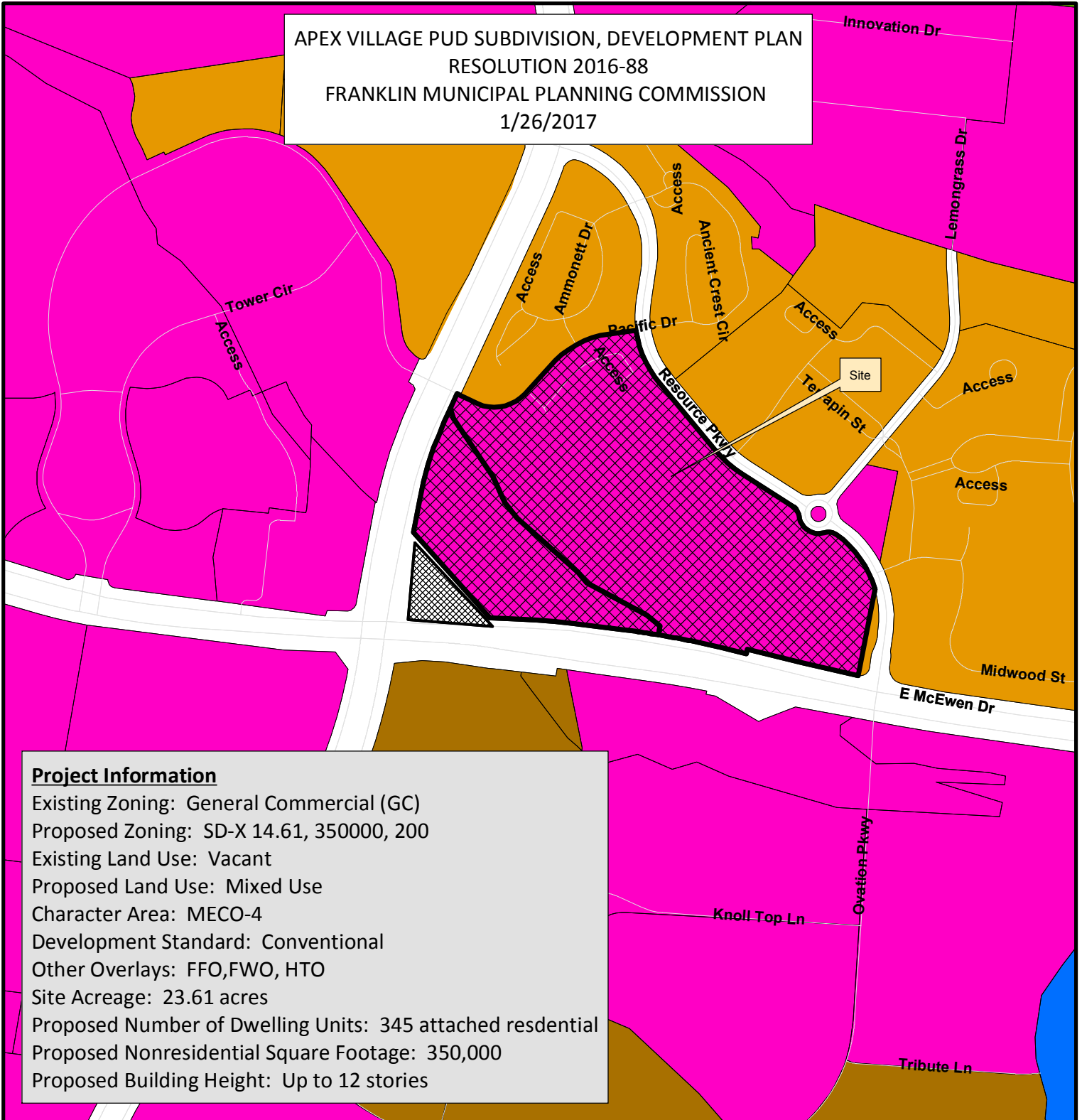
REZONING  
SHEET

Sheet Number

R 1.0



APEX VILLAGE PUD SUBDIVISION, DEVELOPMENT PLAN  
 RESOLUTION 2016-88  
 FRANKLIN MUNICIPAL PLANNING COMMISSION  
 1/26/2017



- |                                        |                                       |
|----------------------------------------|---------------------------------------|
| APEX Village PUD Subdivision           | SD-R Specific Development-Residential |
| AG Agricultural District               | SD-X Specific Development-Variety     |
| ER Estate Residential                  | OR Office Residential District        |
| R-1 Residential District               | GO General Office District            |
| R-2 Residential District               | CC Central Commercial District        |
| R-3 Residential District               | NC Neighborhood Commercial District   |
| R-6 Residential District               | GC General Commercial District        |
| RM-10 Attached 10 Residential District | LI Light Industrial District          |
| RM-15 Attached 15 Residential District | HI Heavy Industrial District          |
| RM-20 Attached 20 Residential District | CI Civic and Institutional District   |



0 250 500 1,000  
 Feet

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**RESOLUTION 2016-88**

**TO BE ENTITLED: "A RESOLUTION APPROVING A DEVELOPMENT PLAN FOR APEX VILLAGE PUD SUBDIVISION WITH 2 MODIFICATIONS OF DEVELOPMENT STANDARDS (MOS1-ATTACHED RESIDENTIAL LENGTH; MOS2- PARKLAND DEDICATION), FOR THE PROPERTY LOCATED NORTH OF EAST MCEWEN DRIVE AND EAST OF CAROTHERS PARKWAY."**

**WHEREAS**, the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee, has, or will, approve the zoning for the property as part of Ordinance 2016-51; and

**WHEREAS**, the Planned Unit Development (PUD) process is a review procedure that is intended to encourage innovative land planning and design and avoid the monotony sometimes associated with large developments by:

- (a) Reducing or eliminating the inflexibility that sometimes results from strict application of zoning standards that were designed primarily for individual lots;
- (b) Allowing greater freedom in selecting the means to provide access, light, open space, and design amenities;
- (c) Encouraging a sensitive design that respects the surrounding established land use character and natural or man-made features of the site including, but not limited to, trees, historic features, streams, hillsides, and floodplains;
- (d) Promoting quality design and environmentally sensitive development by allowing development to take advantage of special site characteristics, locations, and land uses; and
- (e) Allowing deviations from certain zoning standards that would otherwise apply if not contrary to the general spirit and intent of this ordinance; and

**WHEREAS**, the PUD process requires the approval of a Development Plan that is reviewed and approved by BOMA, after a public hearing and a recommendation by the Franklin Municipal Planning Commission; and

**WHEREAS**, in accordance with the provisions of the City of Franklin, Tennessee, Zoning Ordinance, and as required by *Tennessee Code Annotated* § 13-4-310, as amended, the approval of the Development Plan by the BOMA will initiate a vesting period during which the development standards adopted by the City and in effect on the date of approval shall remain the standards applicable to the approved Development Plan.

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:**

**SECTION I.** That the legal description of the property included in the Development Plan is as follows:

| PREMISES CONSIDERED |       |
|---------------------|-------|
| Map-Parcel          | Acres |
| 062—01417           | 5.84  |
| 062—01418           | 17.77 |
| Total               | 23.61 |



ALL OF THOSE TRACTS OR PARCELS OF LAND, situated in the Eighth Civil District, City of Franklin, Williamson County, Tennessee that include the lands shown on the Final Plat of Resource Centre Section 1 that are bounded on the West with the right or way of Carothers Parkway, on the Northwest by the centerline of Pacific Drive and the lands of Resource Centre Subdivision as recorded (plat book 57 page 130) , on the Northeast by Resource Parkway (plat book 50 page 122), on the East by Lot 1 of lands recorded in Plat book 50 page 122, and on the South by East McEwen Road ROW, and as filed in the Register's Office of Williamson County, Tennessee. (R.O.W.C., TN.) and being more particularly described as follows:

A TRACT OR PARCEL OF LAND, situated in the Eighth Civil District, City of Franklin, Williamson County, Tennessee that is bounded on the West with the right or way of Carothers Parkway, on the North and East by the lands of Lot 1 of Resource Centre Subdivision as recorded (plat book 56 page 97), and on the South by E. McEwen Drive ROW, and as filed in the Register's Office of Williamson County, Tennessee. (R.O.W.C., TN.); being more particularly described as follows:

Beginning at the point of intersection of the easterly right-of-way line of Carothers Parkway variable in width) and the centerline line of Pacific Drive, variable in width (plat book 56 page 97), and the northwest corner of Lot 2 of Resource Centre – Section 1 ( plat book 56 page 97) of which this is a part; thence with the common line of said Lot 2 and the centerline of said Pacific Drive, (passing the southwest corner of Lot 3 of Resource Centre PUD (plat book 57 page 130) at 12.0') , South 65°03'52" East 67.04 feet, along said centerline to a point in a curve to the left having a radius of 145.00 feet and a central angle of 71°58'08"; thence, 182.13 feet along said curve, being subtended by a chord bearing North 87°25'04" East 170.39 feet to a point; thence, North 42°58'00" East 136.34 feet along said line to a point in a curve to the right having a radius of 300.00 feet and a central angle of 38°58'13"; thence, 204.05 feet along said curve, being subtended by a chord bearing North 62°27'06" East 200.14 feet to a point; thence, North 81°56'13" East 92.84 feet along said line to a point at the northerly corner of said Lot 2 and on the westerly right-of-way line of Resource Parkway (Plat Book 50, Page 122, R.O.W.C), 50 feet in width) and a curve to the left having a radius of 350.00 feet and a central angle of 31°45'22"; thence with said Lot 2 and along the right of way line of Resource Parkway, 293.99 feet along said curve, being subtended by a chord bearing South 23°54'23" East 191.51 Feet to a point; thence; South 39°47'04" East 161.79 feet to point; thence; South 39°47'04" East 124.43 feet along said line to a point on a curve to the left having a radius of 388.39 feet and a central angle of 17°43'34"; thence, 120.16 feet along said curve, being subtended by a chord of South 48°38'51" East 119.68 feet to a point; thence, South 57°30'38" East 196.93 feet along said line to a point on a curve to the right having a radius of 44.50 feet and a central angle of 50°36'07"; thence, 39.30 feet along said curve, being subtended by a chord of South 31°42'55" East 38.04 feet to a point on a curve to the left having a radius of 65.00 feet and a central angle of 50°36'07"; thence 57.41 feet along said curve, being subtended by a bearing of South 31°42'55" East 55.56 feet to a point on a curve to the left having a radius of 65.00 feet and a central angle of 50°23'47"; thence, 57.41 feet along said curve, being subtended by a bearing of South 82°12'52" East 55.35 feet to a curve to the right having a radius of 44.50 feet and a central angle of 53°00'53"; thence, 41.18 feet along said curve being subtended by a chord bearing South 80°54'19" East 39.72 feet to a point on a curve to the right having a radius of 335.00 feet and a central angle of 38°20'41"; thence 224.20 feet along said curve being subtended by a chord bearing South 35°13'32" East 220.04 feet to a point on the westerly right-of-way line of Resource Drive and the northwest corner of Lot 1 of Franklin Crest PUD Subdivision (plat book 50 page 122) ; thence, South 10°46'13" West 289.59 along the west line of said Lot 1 to a point on the northerly right-of-way line of East McEwen Drive variable in width) and the southwest corner of said Lot 1, and also being on a curve to the left having a radius of 14,373.46 feet and a central angle of 1°29'57"; thence leaving said Lot 1 and with the north line of East McEwen right of way, 376.07 feet along said curve being subtended by a chord bearing North 76°47'09" West 376.06 feet to a point; thence, South 13°30'14" West 14.08 feet along said line to a

point; thence, North 76°29'46" West 16.78 feet along said line to a point; thence, North 76°29'46" West 69.46 feet along said line to a point; thence, North 79°43'43" West 253.17 feet along said line to a point; thence, North 79°43'43" West 74.77 feet along said line to a point; thence, North 82°57'40" West 42.23 feet along said line to a point; thence, North 82°57'40" West 26.67 feet along said line to a point on a curve to the left having a radius of 2,042.50 feet and a central angle of 4°45'11"; thence, 169.44 feet along said curve being subtended by a chord bearing North 85°20'16 West 169.39 feet to a point; thence, North 87°42'51" West 107.62 feet to a point; thence, South 38°35'28" East 3.40 feet to a point on a curve to the left having a radius of 2,078.93 feet and a central angle of 4°36'18"; thence, 169.09 feet along said curve being subtended by a chord bearing North 85°24'49" West 167.04 feet to a point; thence, North 87°42'52" West 102.05 feet along said line to a point on said easterly right-of-way line of Carothers Parkway; thence with said Carothers right of way, North 02°17'15" East 20.92 feet along said line to a point on a curve to the right having a radius of 25.00 feet and a central angle of 77°55'24"; thence, 34.00 feet along said curve being subtended by a chord bearing North 29°22'11" West 31.44 feet to a point; thence, North 10°32'02" East 202.64 feet along said line to a point; thence, North 46°32'02" West 4.76 feet along said line to a point; thence, North 10°32'02" East 71.86 feet along said line to a point; thence, North 11°06'41" East 62.50 feet along said line; thence, North 11°30'15" East 60.54 feet along said line to a point; thence, North 14°37'54" East 58.30 feet along said line to a point; thence, North 18°12'11" East 58.26 feet along said line to a point on a curve to the right having a radius of 932.00 feet and a central angle of 4°01'25"; thence, 65.45 along said curve being subtended by a chord of North 21°23'46" East 65.44 feet to a point on a curve to the right having radius of 932.00 feet and a central angle of 1°31'47"; thence, 24.88 feet along said curve being subtended by a chord bearing North 24°10'23" East 24.88 feet to a point; thence, North 24°56'16" East 94.71 feet to the point of beginning and containing 23.612 acres more or less.

**SECTION II.** That the attached Location Map shall serve the purpose of further delimiting the geographical boundaries as described by this Resolution.

**SECTION III.** That the overall entitlements for the Apex Village PUD Subdivision are as follows:

| Entitlements                               | APEX VILLAGE PUD<br>SUBDIVISION                         |
|--------------------------------------------|---------------------------------------------------------|
| Base Zone District                         | Specific Development Variety<br>14.61, 350000, 200      |
| Character Area Overlay                     | MECO-4                                                  |
| Other Zoning Overlays                      | FFO, FWO                                                |
| Development Standard                       | Conventional                                            |
| Number of Dwelling Units                   | 345                                                     |
| Number of Nonresidential<br>Square Footage | 300,000 square feet office<br>50,000 square feet retail |
| Number of Hotel Rooms                      | 200                                                     |
| Connectivity Index                         | 1.57                                                    |
| Open Space Requirements                    | 1.18 acres                                              |
| Number of Phases in<br>Development         | 1                                                       |

**SECTION IV.** That the Development Plan, the exhibits accompanying the Development Plan, and all conditions and restrictions placed upon the Development Plan by the Franklin Municipal Planning Commission and this Board shall be made a part of this Resolution as though copied verbatim herein, and that a permanent record of the Development Plan, the exhibits accompanying the Development Plan, and all such conditions and restrictions shall be kept in the Franklin Planning and Sustainability Department.

**SECTION V.** That the following Modifications of Development Standards (MOS) were requested and acted upon by the Board of Mayor and Aldermen, after review and recommendation by the Franklin Municipal Planning Commission:

|                                                                                            |                                                                                                                                                               |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MOS 1: Length of Attached Residential Building<br><br>Approved: _____<br><br>Denied: _____ | Request to build attached residential building with a maximum of 670 feet<br><br>Request to <u>approve</u> .<br><br><i>Staff recommended <u>approval</u>.</i> |
| MOS 2: Parkland Dedication<br><br>Approved: _____<br><br>Denied: _____                     | Construct open space improvements in lieu of payment<br><br>Request to <u>approve</u> _____.<br><br><i>Staff recommended <u>approval</u>.</i>                 |

**SECTION VI.** That this Resolution shall take effect from and after the passage of Ordinance 2016-51, on third and final reading, the health, safety, and welfare of the citizens requiring it.

---

**Eric S. Stuckey**  
City Administrator

---

**Dr. Ken Moore**  
Mayor

Approved as to form by:

---

Shauna R. Billingsley  
City Attorney

PREAPPLICATION CONFERENCE: 10/13/2016

BOMA/FMPC JOINT CONCEPTUAL WORKSHOP: 10/27/2016

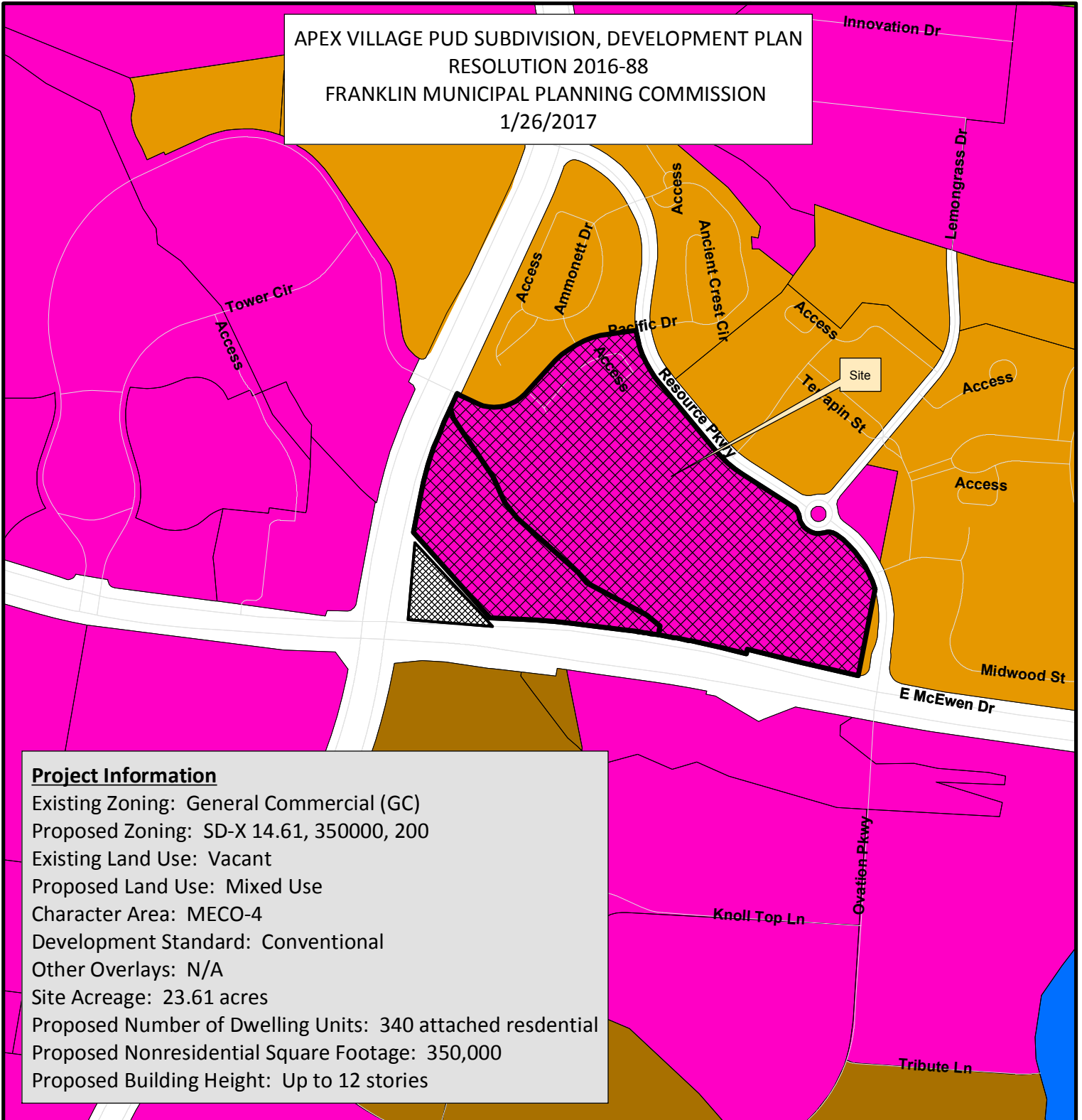
NEIGHBORHOOD MEETING: 11/2/2016

PLANNING COMMISSION RECOMMENDED APPROVAL: \_\_\_\_\_

PUBLIC HEARING AND BOMA APPROVAL: \_\_\_\_\_



APEX VILLAGE PUD SUBDIVISION, DEVELOPMENT PLAN  
 RESOLUTION 2016-88  
 FRANKLIN MUNICIPAL PLANNING COMMISSION  
 1/26/2017



**Project Information**

Existing Zoning: General Commercial (GC)  
 Proposed Zoning: SD-X 14.61, 350000, 200  
 Existing Land Use: Vacant  
 Proposed Land Use: Mixed Use  
 Character Area: MECO-4  
 Development Standard: Conventional  
 Other Overlays: N/A  
 Site Acreage: 23.61 acres  
 Proposed Number of Dwelling Units: 340 attached residential  
 Proposed Nonresidential Square Footage: 350,000  
 Proposed Building Height: Up to 12 stories

|                                        |                                       |
|----------------------------------------|---------------------------------------|
| APEX Village PUD Subdivision           | SD-R Specific Development-Residential |
| AG Agricultural District               | SD-X Specific Development-Variety     |
| ER Estate Residential                  | OR Office Residential District        |
| R-1 Residential District               | GO General Office District            |
| R-2 Residential District               | CC Central Commercial District        |
| R-3 Residential District               | NC Neighborhood Commercial District   |
| R-6 Residential District               | GC General Commercial District        |
| RM-10 Attached 10 Residential District | LI Light Industrial District          |
| RM-15 Attached 15 Residential District | HI Heavy Industrial District          |
| RM-20 Attached 20 Residential District | CI Civic and Institutional District   |



0 250 500 1,000  
 Feet

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## CONDITIONS OF APPROVAL:

Open Issues: 7 These issues are currently being filtered

## Engineering - PUD Plan Checklist

## General Issues

## 1. D. Statement of Impacts

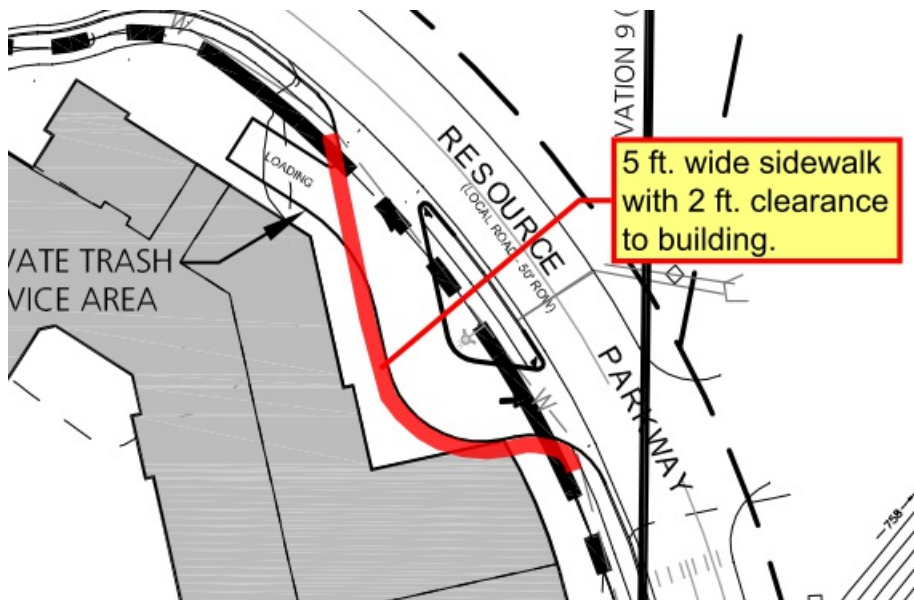
[carlb@franklinton.gov](mailto:carlb@franklinton.gov) The applicant has the option of requesting Roadway Impact Fee offsets for ROW and widening of Carothers Parkway and McEwen Drive along his site frontages. Associated signal modifications at the Carothers/McEwen intersection are also eligible for RIF offsets. No other signals or roadways are eligible for RIF offsets. The RIF offset agreement is to be submitted and approved by the Franklin Board of Mayor and Aldermen (BOMA) prior to the approval of the site plan for this development. The issue of storage and queuing from the roundabout into Deck Q is also to be resolved prior to the approval of the site plan for this development. For these reasons this issue shall remain open as a placeholder for site plan review.

## Engineering - Site Plan Checklist

## General Issues

## 2. D. Site Plan

[joseph.marlo@franklinton.gov](mailto:joseph.marlo@franklinton.gov) The loading area may be allowed if, in addition to the modifications/adjustments made, the applicant shifts the 5-foot wide sidewalk around to the southwest edge of the area as shown in the sketch below. A minimum 2-foot clearance shall be maintained between the back edge of the sidewalk and the nearest building.



## 3. ROW Dedication

[joseph.marlo@franklinton.gov](mailto:joseph.marlo@franklinton.gov) Applicant shall revise note to state "ROW to be dedicated via final subdivision plat after site plan approval." Applicant shall revise "Future R.O.W. Reservation" to be called out as "R.O.W. Dedication" on plans.

## 4. D. Site Plan

carlb@franklintn.gov All transportation related designs shall be completed according to MUTCD, AASHTO, and City of Franklin standards.

## Parks

### General Issues

#### 5. Parkland information

kevinl@franklintn.gov The Parks Department would give approval to the MOS going forward with a few changes to the letter supplied, notes being added to the plat and approved by BOMA.

Changes to the letter. This process is not being waived as it is being “met by the developer to design, construct and maintain all property called out in the exhibit supplied”. Add to the letter: “This land shall always be utilized for this passive/natural park as described in the exhibit” this to shall be placed on the plat for future reference. Place on the plat and include in the letter for reference “The trial system shall never be gated and always open to the general public and in an AAPE(All Access Public Easement).

\* The applicant shall add all above language by updating the letter supplied and notes added to plat.  
[Edited By Kevin Lindsey]

## Planning (Landscape)

### General Issues

#### 6. Tree vPreservatio Plan

larry.mizell@franklintn.gov The applicant shall revise the development plan to show and delineate a tree protection zone that meets the size requirements of the Zoning Ordinance. Tree removal and replacement within the tree protection zone shall be limited to the maximum extent possible to meet the intent of the tree protection ordinance.

Trees to be removed within the tree protection zone shall be replaced per the Zoning Ordinance Section 5.2.4(7). For required tree replacement not occurring on-site, tree bank contribution shall apply. The exact amount of the tree removal and tree bank contribution shall be determined with the site plan; however, the planned tree protection zone shall be shown on the development plan.

[Edited By Joshua King]

## Zoning

### Resource Ctr\_Pre App Dev Plan Set 09.23.16.pdf

#### 7. FFO

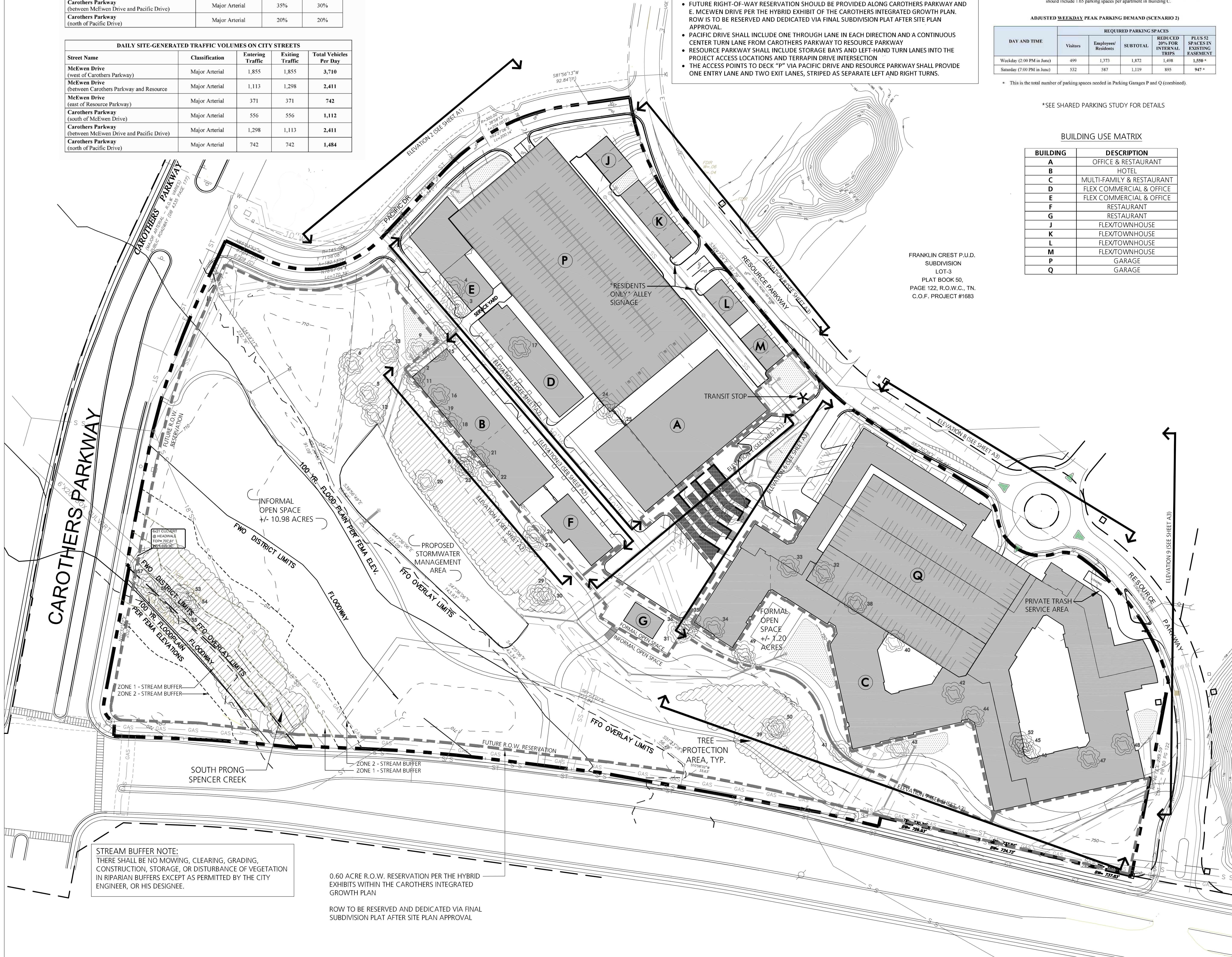
mollyp@franklintn.gov The applicant shall obtain a floodplain development permit prior to any disturbance of the FFO.



ANTICIPATED IMPACT ON THE STREETS AS SHOWN IN THE MAJOR THOROUGHFARE PLAN

| PERCENTAGES OF SITE-GENERATED TRAFFIC VOLUMES ON CITY STREETS |                |                  |                 |
|---------------------------------------------------------------|----------------|------------------|-----------------|
| Street Name                                                   | Classification | Entering Traffic | Exiting Traffic |
| McEwen Drive (west of Carothers Parkway)                      | Major Arterial | 50%              | 50%             |
| McEwen Drive (between Carothers Parkway and Resource Parkway) | Major Arterial | 30%              | 35%             |
| McEwen Drive (east of Resource Parkway)                       | Major Arterial | 10%              | 10%             |
| Carothers Parkway (south of McEwen Drive)                     | Major Arterial | 15%              | 15%             |
| Carothers Parkway (between McEwen Drive and Pacific Drive)    | Major Arterial | 35%              | 30%             |
| Carothers Parkway (north of Pacific Drive)                    | Major Arterial | 20%              | 20%             |

| DAILY SITE-GENERATED TRAFFIC VOLUMES ON CITY STREETS          |                |                  |                 |                        |
|---------------------------------------------------------------|----------------|------------------|-----------------|------------------------|
| Street Name                                                   | Classification | Entering Traffic | Exiting Traffic | Total Vehicles Per Day |
| McEwen Drive (west of Carothers Parkway)                      | Major Arterial | 1,855            | 1,855           | 3,710                  |
| McEwen Drive (between Carothers Parkway and Resource Parkway) | Major Arterial | 1,113            | 1,298           | 2,411                  |
| McEwen Drive (east of Resource Parkway)                       | Major Arterial | 371              | 371             | 742                    |
| Carothers Parkway (south of McEwen Drive)                     | Major Arterial | 556              | 556             | 1,112                  |
| Carothers Parkway (between McEwen Drive and Pacific Drive)    | Major Arterial | 1,298            | 1,113           | 2,411                  |
| Carothers Parkway (north of Pacific Drive)                    | Major Arterial | 742              | 742             | 1,484                  |



IMPACT STATEMENT NOTES:

1. FROM THIS SITE, IT IS APPROXIMATELY 1.5 MILES TO FIRE STATION 6 ON COOL SPRINGS BOULEVARD AND 5 MILES TO THE CITY POLICE DEPARTMENT LOCATED ON COLUMBIA AVENUE.
2. THE NEAREST PARK AND RECREATIONAL FACILITIES ARE LOCATED APPROXIMATELY 0.5 MILES EAST OF THE DEVELOPMENT ON MCEWEN DRIVE (LIBERTY PARK). CHEEK PARK AND THE WILLIAMSON COUNTY RECREATION CENTER ARE APPROXIMATELY 5 MILES FROM THE PROPOSED DEVELOPMENT.
3. THIS DEVELOPMENT WILL RESULT IN AN INCREASE OF 345 MULTI-FAMILY & TOWNHOME UNITS. BASED ON AN AVERAGE OF 0.10 SCHOOL AGE STUDENTS PER MULTI-FAMILY/TOWNHOME HOUSEHOLD, THIS WILL INCREASE THE CURRENT STUDENT SCHOOL POPULATION BY A TOTAL OF ±104 STUDENTS WITHIN THE FOLLOWING CATEGORIES: KENROSE ELEMENTARY (34 STUDENTS), SUNSET MIDDLE (34 STUDENTS), CENTENNIAL HIGH (34 STUDENTS).

4. WATER IS PROVIDED BY MALLORY VALLEY UTILITY DISTRICT VIA EXISTING 10" & 18" MAINS SURROUNDING THE SITE. WATER AVAILABILITY OF APPROXIMATELY 1160 SFUE HAS BEEN CONFIRMED BY MVUD FOR THIS DEVELOPMENT.
5. SANITARY SEWER WILL BE PROVIDED BY THE CITY OF FRANKLIN VIA EXISTING SEWER INFRASTRUCTURE ALONG EAST MCEWEN DRIVE AND CAROTHERS PARKWAY. THE CITY OF FRANKLIN HAS APPROVED THE ADDITION OF 1160 SFUE FOR THE DEVELOPMENT.
6. REFUSE COLLECTION FOR THE DEVELOPMENT SHALL BE PROVIDED BY PRIVATE COLLECTION.

NOTES:

1. DEVELOPER TO RETAIN ALL MINERAL RIGHTS.
2. NO STRUCTURES CURRENTLY EXIST ON SITE.
3. THERE ARE NO HISTORIC STRUCTURES WITHIN 500' OF THE SITE

APPLICANT IS REQUESTING THE FOLLOWING:

1. **SECTION 5.3.5 (3)(b) (ii) RESIDENTIAL DEVELOPMENT REQUIREMENT (DESIGN MODIFICATION)**  
APPLICANT IS REQUESTING THAT MAXIMUM LENGTH OF ANY ATTACHED RESIDENTIAL BUILDING CAN BE GREATER THAN 200 FEET.
2. **SECTION 5.5.4 - DEDICATION OF PUBLIC LAND FOR PARKS AND GREENWAYS/BLUEWAYS (MODIFICATION OF STANDARDS)**  
APPLICANT IS REQUESTING THAT THE REQUIREMENT FOR PARKLAND DEDICATION BY WAIVED IN LIEU OF A PRIVATELY HELD AND MAINTAINED OPEN SPACE WITH AN ALL ACCESS PUBLIC EASEMENT
3. **SECTION 5.10.4 (1) (iii) - CONNECTIVITY INDEX REQUIREMENT (MODIFICATION OF STANDARDS)**  
APPLICANT IS REQUESTING THAT THE MINIMUM CONNECTIVITY INDEX SCORE OF 1.65 CANNOT BE ACHIEVED DUE TO THE TOPOGRAPHIC CONDITIONS AND NATURAL FEATURES OF THE SITE.

SHARED PARKING

ADJUSTED WEEKDAY PEAK PARKING DEMAND (SCENARIO 1)

| DAY AND TIME               | REQUIRED PARKING SPACES |                     |          |                                |
|----------------------------|-------------------------|---------------------|----------|--------------------------------|
|                            | Visitors                | Employees/Residents | SUBTOTAL | REDUCED 20% FOR INTERNAL TRIPS |
| Weekday (2:00 PM in June)  | 489                     | 1,016               | 1,505    | 1,204                          |
| Saturday (7:00 PM in June) | 481                     | 100                 | 581      | 465                            |

\* This is the total number of parking spaces needed in Parking Garage P. Based on the data provided in Shared Parking. 2nd Edition, which was published by the Urban Land Institute. Parking Garage Q should include 1.65 parking spaces per apartment in Building C.

ADJUSTED WEEKDAY PEAK PARKING DEMAND (SCENARIO 2)

| DAY AND TIME               | REQUIRED PARKING SPACES |                     |          |                                |
|----------------------------|-------------------------|---------------------|----------|--------------------------------|
|                            | Visitors                | Employees/Residents | SUBTOTAL | REDUCED 20% FOR INTERNAL TRIPS |
| Weekday (2:00 PM in June)  | 499                     | 1,373               | 1,872    | 1,498                          |
| Saturday (7:00 PM in June) | 522                     | 587                 | 1,119    | 895                            |

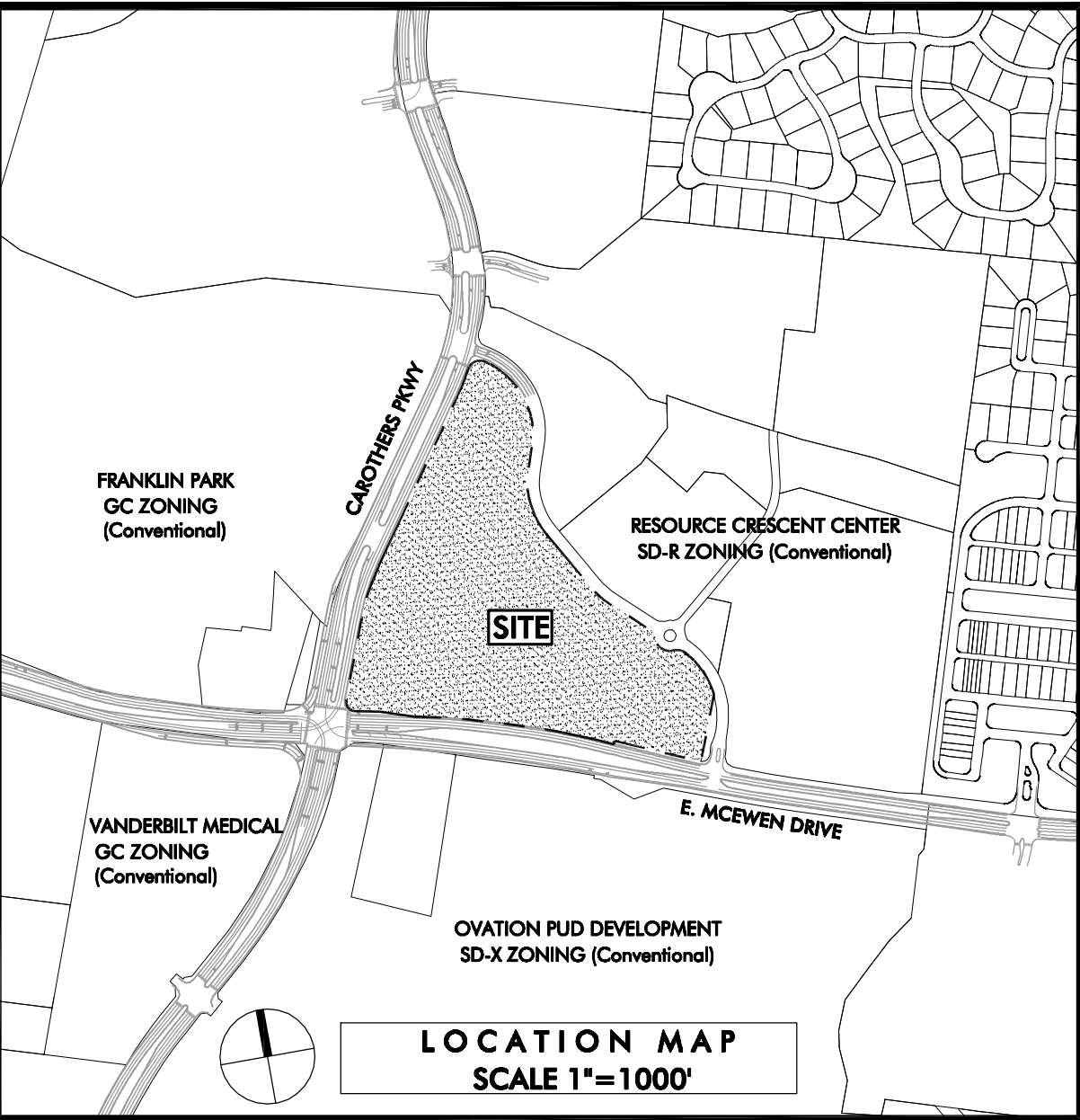
\* This is the total number of parking spaces needed in Parking Garages P and Q (combined).

\*SEE SHARED PARKING STUDY FOR DETAILS

BUILDING USE MATRIX

| BUILDING | DESCRIPTION               |
|----------|---------------------------|
| A        | OFFICE & RESTAURANT       |
| B        | HOTEL                     |
| C        | MULTI-FAMILY & RESTAURANT |
| D        | FLEX COMMERCIAL & OFFICE  |
| E        | FLEX COMMERCIAL & OFFICE  |
| F        | RESTAURANT                |
| G        | RESTAURANT                |
| J        | FLEX/TOWNHOUSE            |
| K        | FLEX/TOWNHOUSE            |
| L        | FLEX/TOWNHOUSE            |
| M        | FLEX/TOWNHOUSE            |
| P        | GARAGE                    |
| Q        | GARAGE                    |

FRANKLIN CREST P.U.D.  
SUBDIVISION  
LOT-3  
PLAT BOOK 50,  
PAGE 122, R.O.W.C., TN.  
C.O.F. PROJECT #1683



SITE DATA

SUBDIVISION/DEVELOPMENT  
MAP & PARCEL NUMBER  
ADDRESS

APEX VILLAGE  
MAP 062, PARCELS 01417 & 01418  
CAROTHERS PARKWAY

EXISTING ZONING  
CHARACTER AREA  
SPECIAL AREA  
OTHER APPLICABLE OVERLAYS

GC - GENERAL COMMERCIAL  
MCEWEN  
4  
FLOODWAY FRINGE OVERLAY (FFO)  
FLOODWAY OVERLAY DISTRICT (FWO)  
CONVENTIONAL

DEVELOPMENT STANDARD

ACREAGE OF SITE  
SQUARE FOOTAGE OF SITE

+/- 23.61 ACRES  
+/- 1,028,538 SQ. FT.

RESIDENTIAL DENSITY  
COMMERCIAL SQUARE FOOTAGE  
PROPOSED HOTEL KEYS

14.61 DWU/ACRE  
350,000  
200

PROPOSED ZONING

SPECIFIC DEVELOPMENT  
VARIETY (SD-X) 14.61, 350,000, 200

MINIMUM REQUIRED SETBACK LINES  
BUILDING SETBACKS

5 FT.

DEVELOPER:  
KHRIS PASCARELLA  
CRESCENT COMMUNITIES  
205 POWELL AVENUE  
BRENTWOOD, TN 37027  
(615) 312-8242  
kpascarella@pearlstreetpartners.com

APPLICANT:  
JOHN HAAS  
EDGE  
210 12TH AVE. SOUTH - SUITE 202  
NASHVILLE, TN 37203  
(615) 250-8154  
jhaas@edgela.com

BUILDING HEIGHT

12 STORIES MAX.

LANDSCAPE SURFACE RATIO  
MIN. LANDSCAPE SURFACE RATIO

0.40  
0.20

MINIMUM PARKING REQUIREMENT  
PARKING PROVIDED

SEE CHART THIS PAGE  
SEE CHART THIS PAGE

EXISTING TREE CANOPY

+/- 7.48 ACRES (32% OF SITE)

MIN. AREA OF EXISTING TREE CANOPY  
TO PRESERVE

+/- 1.80 ACRES (24% OF EXISTING CANOPY)

\*AREA OF PRESERVED TREE CANOPY

+/- 1.35 ACRES (18% OF EXISTING CANOPY)

(\*NOTE: APPLICANT SHALL RESOLVE ANY TREE CANOPY RETENTION ISSUES AT SITE PLAN SUBMITTAL WITH CITY OF FRANKLIN STAFF.)

FORMAL OPEN SPACE -

REQUIRED

+/- 1.18 ACRES (5% OF GROSS  
DEVELOPMENT SIZE)

FORMAL OPEN SPACE -

PROVIDED

+/- 1.20 ACRES (5% OF GROSS  
DEVELOPMENT SIZE)

INFORMAL OPEN SPACE -

REQUIRED

NONE

INFORMAL OPEN SPACE -

PROVIDED

+/- 10.98 ACRES (47% OF GROSS  
DEVELOPMENT SIZE)

\*REQUIRED PARKLAND DEDICATION

+/- 5.23 ACRES

\*PROVIDED PARKLAND

+/- 5.24 ACRES

\*APPLICANT IS REQUESTING A MODIFICATION OF STANDARDS - SEE NOTES THIS PAGE

RESIDENTIAL DENSITY

14.61 DUA

NET DENSITY (MINUS ROW)

14.90 DUA

NET DENSITY (MINUS ROW

& OVERLAY CONSTRAINTS)

18.90 DUA

PROPOSED NUMBER OF RESIDENTIAL UNITS BY USE TYPE

TOWNHOMES

15 UNITS

\*MULTI-FAMILY UNITS

330 UNITS

TOTAL UNITS

345 UNITS

\*MULTI-FAMILY UNITS WILL BE DIVIDED INTO THE FOLLOWING MIX:

STUDIOS

+/- 4% - 8%

ONE BEDROOM

+/- 50% - 54%

TWO BEDROOM

+/- 38% - 42%

THREE BEDROOM

+/- 2% - 6%

(NOTE THAT THIS IS AN APPROXIMATE UNIT MIX ONLY - ACTUAL UNIT MIX NUMBERS WILL BE PROVIDED AT SITE PLAN SUBMITTAL)

PROPOSED SQUARE FOOTAGE BY USE TYPE (NONRESIDENTIAL)

OFFICE

+/- 300,000 SF

COMMERCIAL

+/- 50,000 SF

HOTEL

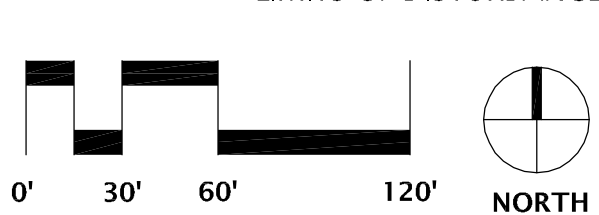
200 KEYS

LEGEND

TREE PROTECTION AREA

EXISTING SPECIMEN TREE

LIMITS OF DISTURBANCE



ENGINEERING PROVIDED BY:  
RYAN MCMASTER  
KIMLEY-HORN  
214 OCEANSIDE DRIVE  
NASHVILLE, TN 37204  
(615) 564-2876  
ryan.mcmaster@kimley-horn.com

APPLICANT:  
JOHN HAAS  
EDGE  
210 12TH AVE. SOUTH  
SUITE 202  
NASHVILLE, TN 37203  
(615) 250-8154  
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DEVELOPER:  
KHRIS PASCARELLA  
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kpascarella@pearlstreetpartners.com

CONSULTANTS

SEAL

PROJECT TITLE

CLIENT

PROJECT NO. COF #6305  
Date 12/12/16  
Revisions

1. PER CITY COMMENTS 01.05.17

Sheet Title

OVERALL  
DEVELOPMENT  
PLAN

Sheet Number

C 2.0

EDGE  
PLANNING LANDSCAPE ARCHITECTURE URBAN DESIGN

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Suite 202  
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Main: 615-564-2701 | www.kimleyhorn.com  
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01/05/17

APEX VILLAGE  
PUD DEVELOPMENT PLAN  
C.O.F. #6305  
FRANKLIN, TN

CRESCENT  
COMMUNITIES  
LLC





**ELEVATION 1 BUILDING F**  
SCALE: 1" = 20'

**BUILDING A**

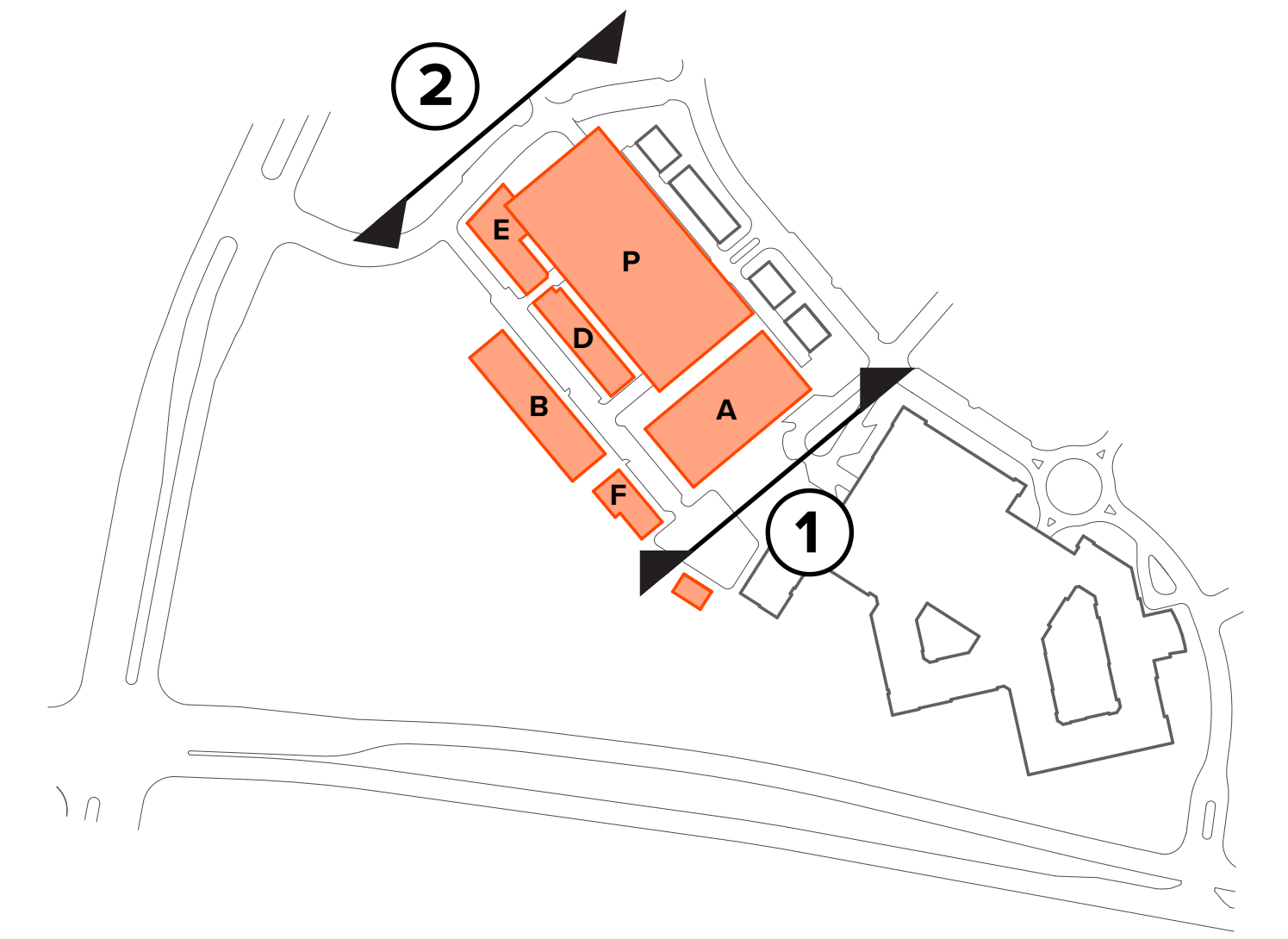


**ELEVATION 2**  
SCALE: 1" = 20'

**BUILDING P**

**BUILDING E**

**BUILDING B**



BUILDING MATERIALS TO INCLUDE:  
PRECAST CONCRETE, CONCRETE, NATURAL STONE  
CAST STONE, MASONRY (BRICK AND CMU) CEMENTITIOUS PANELS  
CURTAIN WALL AND STOREFRONT GLASS, STUCCO/ EIFS, WOOD

**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

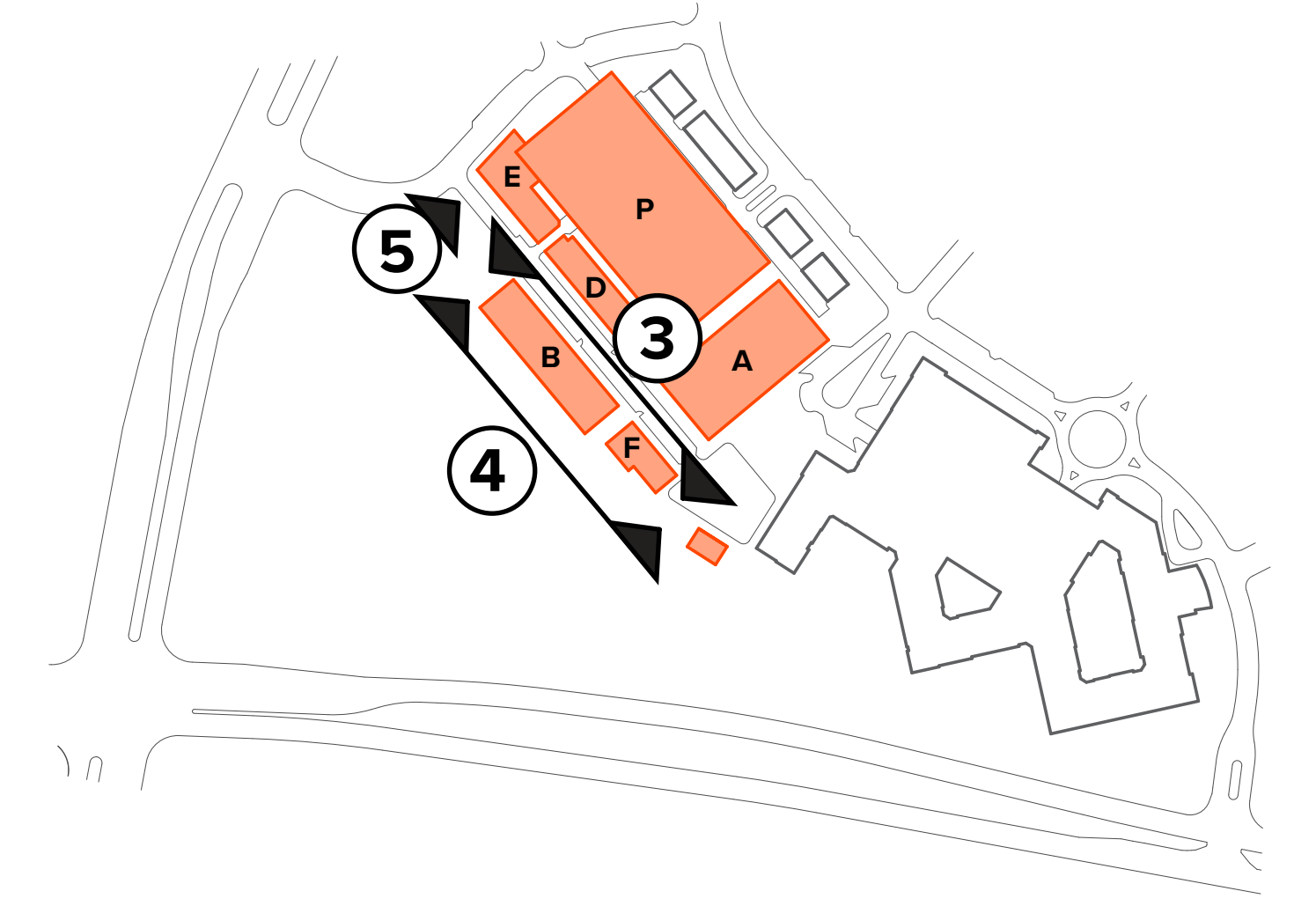
OFFICE, RETAIL &  
GARAGE ELEVATIONS  
**A1**





**ELEVATION 3 BUILDING F**  
SCALE: 1" = 20'

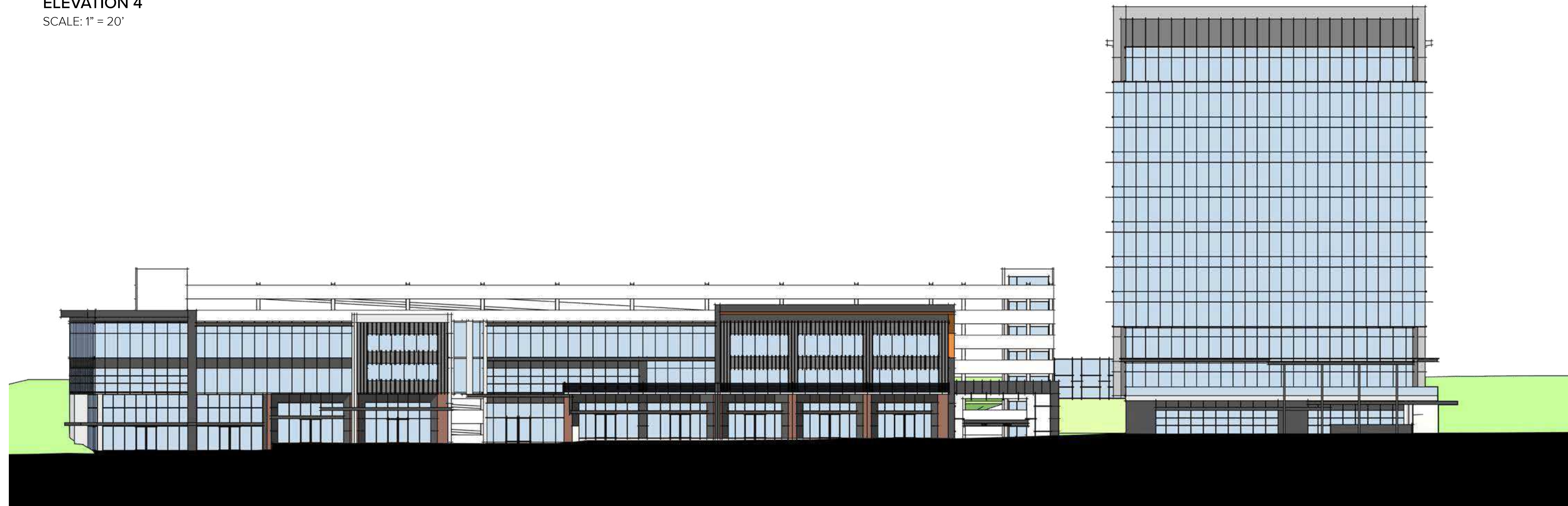
**BUILDING B**



**ELEVATION 4**  
SCALE: 1" = 20'

**BUILDING B**

**BUILDING F**



**ELEVATION 5**  
SCALE: 1" = 20'

**BUILDING E**

**BUILDING D**

**BUILDING A**

BUILDING MATERIALS TO INCLUDE:  
PRECAST CONCRETE, CONCRETE, NATURAL STONE  
CAST STONE, MASONRY (BRICK AND CMU) CEMENTITIOUS PANELS  
CURTAIN WALL AND STOREFRONT GLASS, STUCCO/ EIFS, WOOD

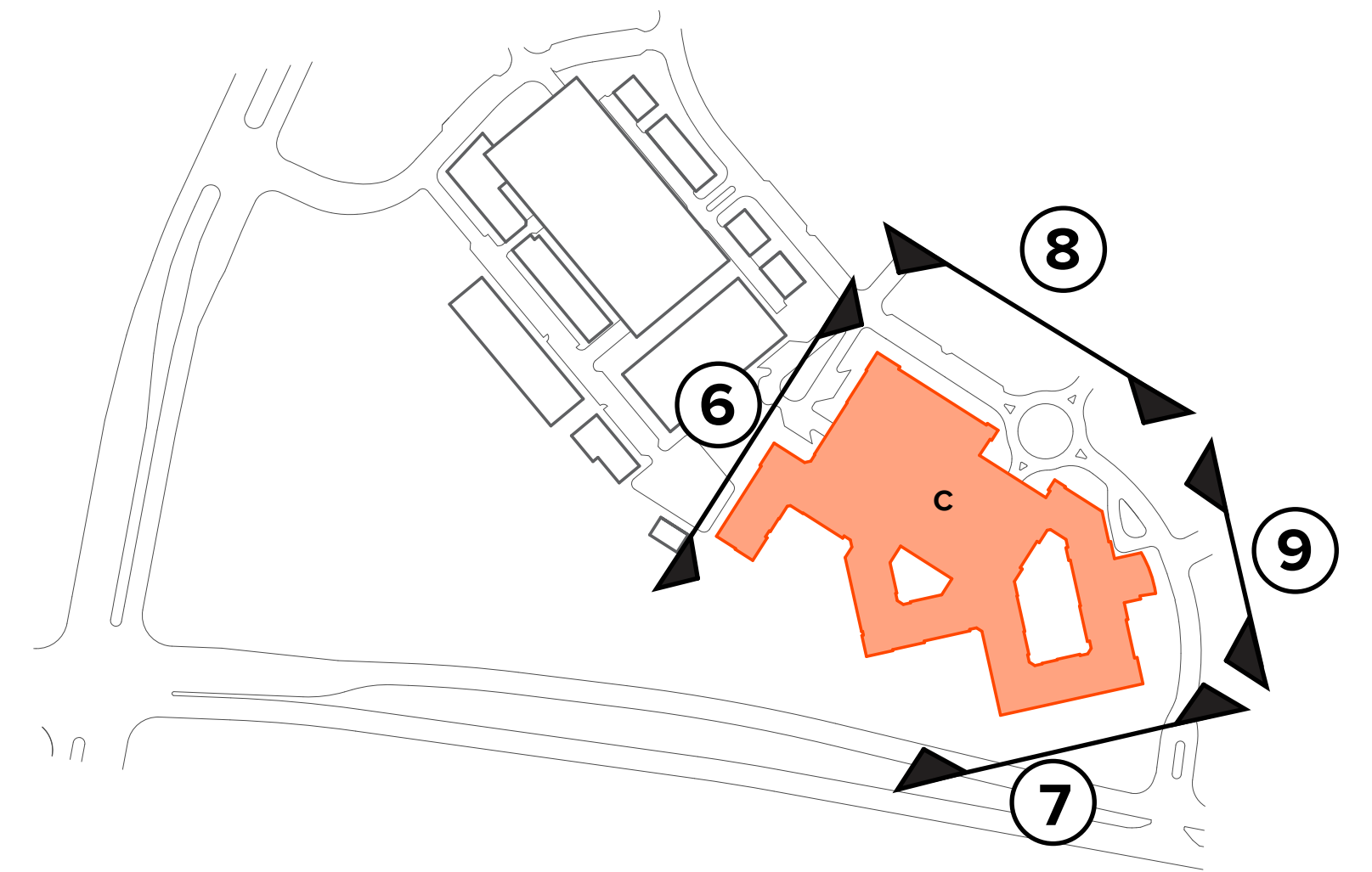
**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

RETAIL, OFFICE &  
HOTEL ELEVATIONS  
**A2**





**ELEVATION 6**  
SCALE: 1" = 20'



**ELEVATION 7**  
SCALE: 1" = 20'



**ELEVATION 8**  
SCALE: 1" = 20'



**ELEVATION 9**  
SCALE: 1" = 20'

BUILDING MATERIALS TO INCLUDE:  
STUCCO, METAL PANEL, CEMENTITIOUS LAP SIDING, CEMENTITIOUS PANELS

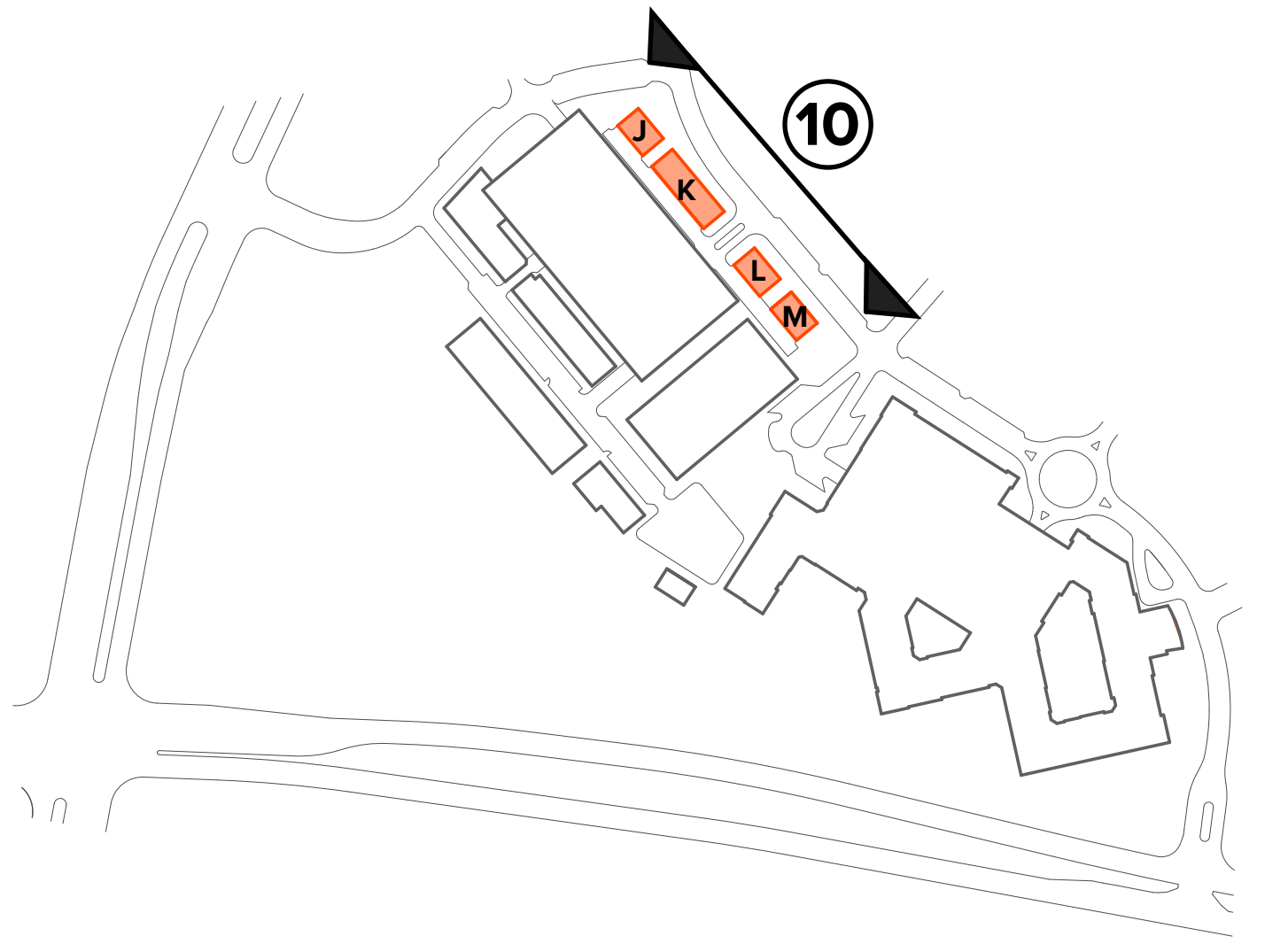
**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

**MUTI FAMILY  
ELEVATIONS  
A3**





**ELEVATION 10**  
SCALE: 1" = 20'



BUILDING MATERIALS TO INCLUDE:  
STUCCO, METAL PANEL, CEMENTITIOUS LAP SIDING, CEMENTITIOUS PANELS

**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

**TOWNHOME  
ELEVATIONS  
A4**



**F i s c h b a c h**  
**Transportation Group, LLC**  
**Traffic Engineering and Planning**

**Traffic Impact Study**

**Crescent Resources Centre (Bigby)**  
**Carothers Parkway and E. McEwen Drive**  
**Franklin, TN**

Prepared November 2016  
For Crescent Communities

FTG, LLC  
P.O. Box 682736  
Franklin, TN 37068  
(615) 771-8022 phone  
Gillian@FTGtraffic.com

## **Traffic Impact Study**

# **Crescent Resources Centre (Bigby) Carothers Parkway and E. McEwen Drive Franklin, Tennessee**

**Prepared November 2016**

**PREPARED FOR:**

Crescent Communities, LLC  
227 W. Trade St, Suite 1000  
Charlotte, NC 28202

**PREPARED BY:**

Ms. Gillian L. Fischbach, P.E., PTOE  
Fischbach Transportation Group (FTG, LLC)  
P.O. Box 682736  
Franklin, TN 37068  
Phone: (615) 771-8022  
FTG Project Number: 10765



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## **1. INTRODUCTION**

This traffic study has been prepared in order to identify the traffic impacts of a mixed-use development that is proposed to be constructed in the northeast quadrant of the intersection of E. McEwen Drive and Carothers Parkway in Franklin, Tennessee. Specifically, the project site is bounded by E. McEwen Drive, Carothers Parkway, Pacific Drive, and Resource Parkway.

For the purposes of this study, existing and background traffic volumes were established, and capacity analyses were conducted for these conditions. Also, trip generation calculations were performed, and the trips which are expected to be generated by the proposed project were distributed to the roadway system and added to the background traffic volumes. The roadways and intersections which provide access to the site were then re-evaluated to determine the traffic impacts of the proposed project. Access needs for the project were evaluated, and the necessary roadway and/or traffic control improvements were identified. This report presents the results of these analyses and the subsequent recommendations.

It is important to note that the scope of this Traffic Impact Study was provided by the City of Franklin Engineering Department and their third-party private consultant, Volkert, Inc. The approved scope is included in in [Appendix A](#).

## **2. PROJECT DESCRIPTION**

The location of the proposed project is shown in [Figure 1](#). As shown, the project site is located in the northeast quadrant of the intersection of E. McEwen Drive and Carothers Parkway in Franklin, Tennessee. Specifically, the project site is bounded by E. McEwen Drive, Carothers Parkway, Pacific Drive, and Resource Parkway.

The current project site plan is shown in [Figure 2](#). As shown, the proposed plan includes the following land uses:

- 325 apartments,
- 15 townhomes,
- 300,000 sq.ft. of office space
- A hotel with 200 rooms
- 50,000 sq.ft. of specialty retail space

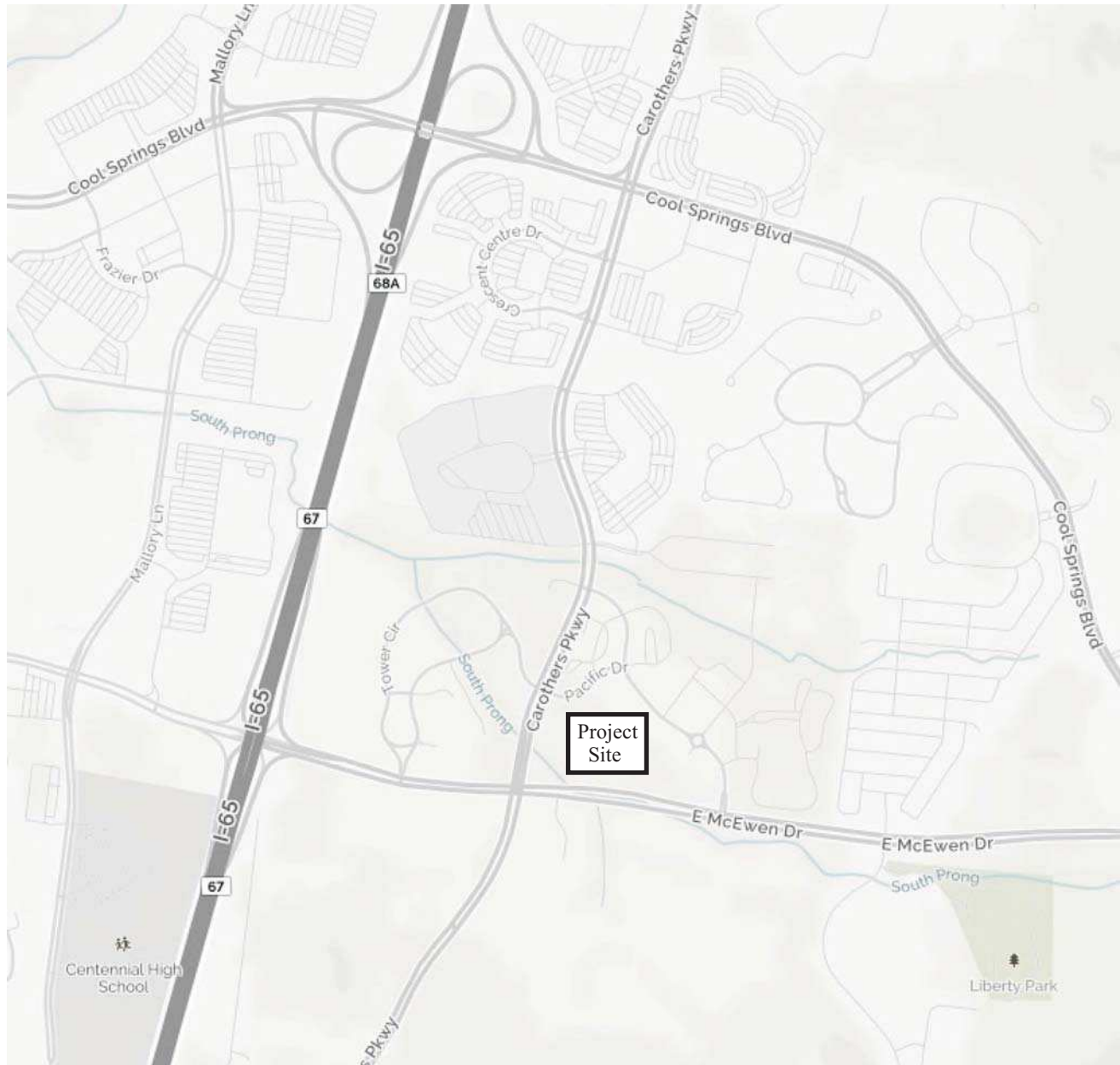
Access to the site will be provided by Pacific Drive and Resource Drive, as shown in the site plan.

In large part, economic and market considerations will dictate the pace and timing with which the proposed project is actually completed. The analyses conducted within this study are based on the estimation that the entire project will be completed within six years.

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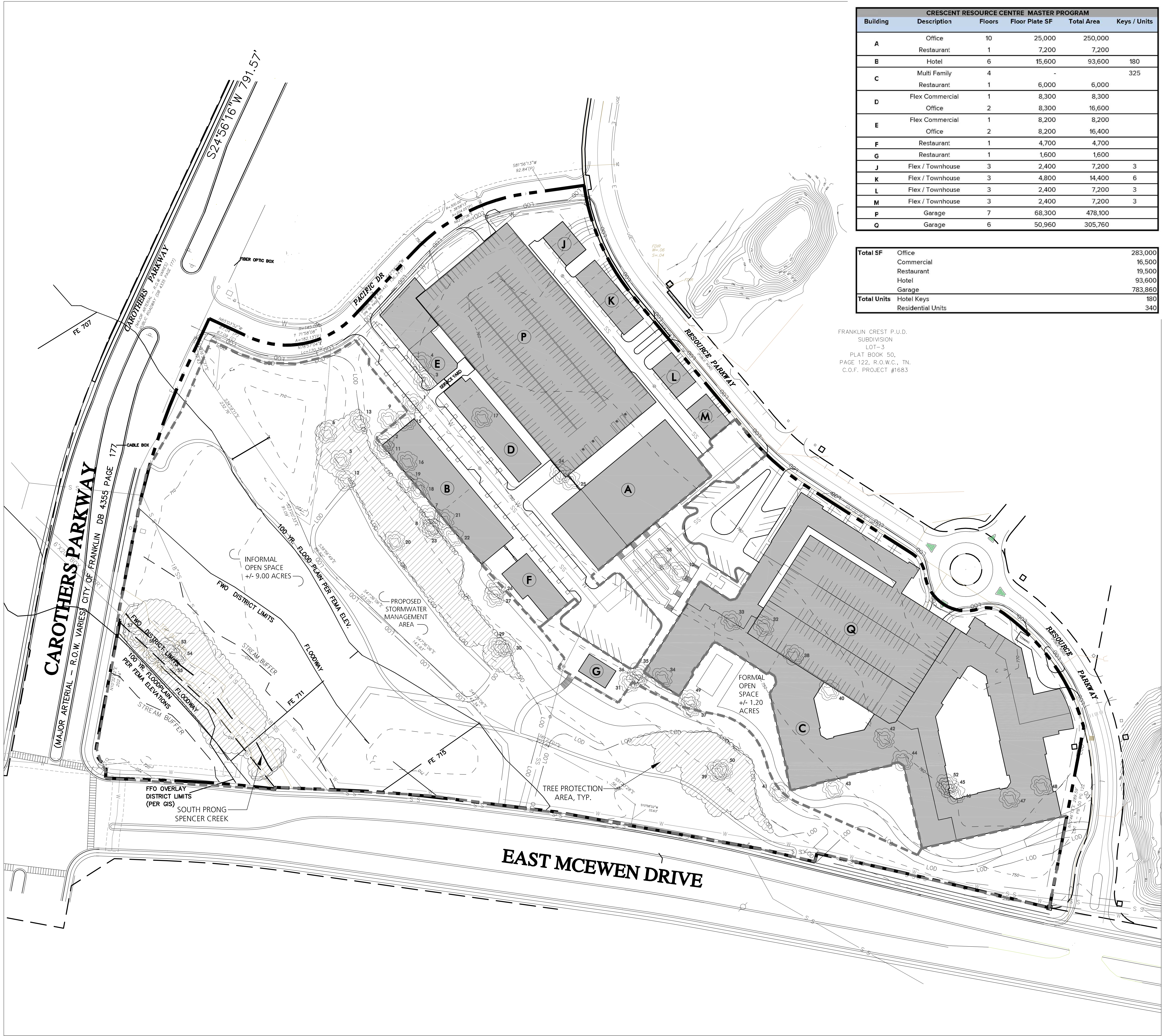
F i s c h b a c h  
Transportation Group, LLC  
Traffic Engineering and Planning



No Scale

Figure 1.  
Location of the Project Site

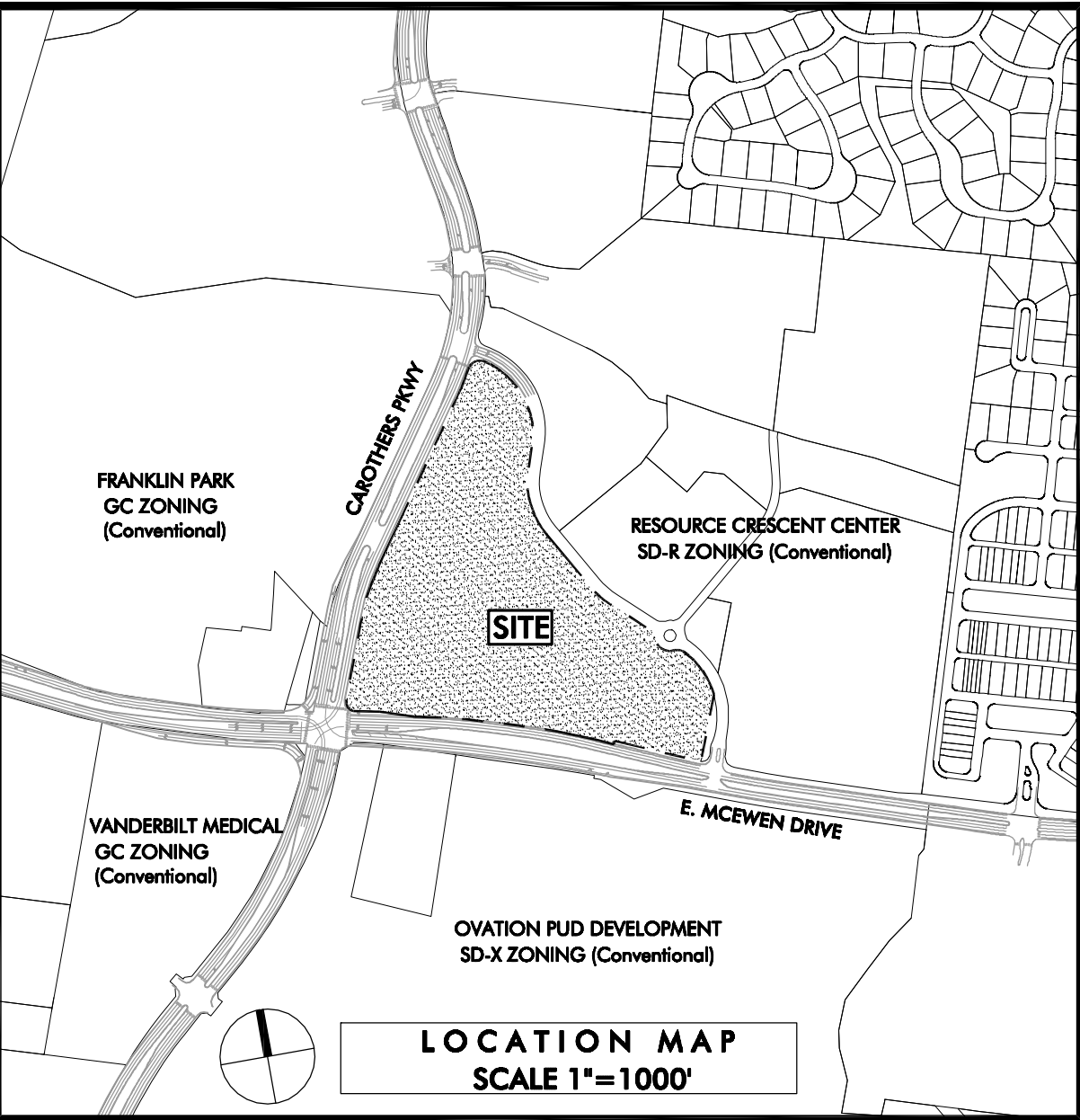




| CRESCENT RESOURCE CENTRE MASTER PROGRAM |                  |        |                |            |              |
|-----------------------------------------|------------------|--------|----------------|------------|--------------|
| Building                                | Description      | Floors | Floor Plate SF | Total Area | Keys / Units |
| A                                       | Office           | 10     | 25,000         | 250,000    |              |
|                                         | Restaurant       | 1      | 7,200          | 7,200      |              |
| B                                       | Hotel            | 6      | 15,600         | 93,600     | 180          |
| C                                       | Multi Family     | 4      | -              | -          | 325          |
|                                         | Restaurant       | 1      | 6,000          | 6,000      |              |
| D                                       | Flex Commercial  | 1      | 8,300          | 8,300      |              |
|                                         | Office           | 2      | 8,300          | 16,600     |              |
| E                                       | Flex Commercial  | 1      | 8,200          | 8,200      |              |
|                                         | Office           | 2      | 8,200          | 16,400     |              |
| F                                       | Restaurant       | 1      | 4,700          | 4,700      |              |
| G                                       | Restaurant       | 1      | 1,600          | 1,600      |              |
| J                                       | Flex / Townhouse | 3      | 2,400          | 7,200      | 3            |
| K                                       | Flex / Townhouse | 3      | 4,800          | 14,400     | 6            |
| L                                       | Flex / Townhouse | 3      | 2,400          | 7,200      | 3            |
| M                                       | Flex / Townhouse | 3      | 2,400          | 7,200      | 3            |
| P                                       | Garage           | 7      | 68,300         | 478,100    |              |
| Q                                       | Garage           | 6      | 50,960         | 305,760    |              |

|                   |            |         |
|-------------------|------------|---------|
| Total SF          | Office     | 283,000 |
|                   | Commercial | 16,500  |
|                   | Restaurant | 19,500  |
|                   | Hotel      | 93,600  |
| Total Units       | Garage     | 783,860 |
|                   | Hotel Keys | 180     |
| Residential Units |            | 340     |

FRANKLIN CREST P.U.D.  
SUBDIVISION  
LOT-3  
PLAT BOOK 50,  
PAGE 122, R.O.W.C., TN.  
C.O.F. PROJECT #1683



SITE DATA

|                                               |                                                                  |
|-----------------------------------------------|------------------------------------------------------------------|
| SUBDIVISION/DEVELOPMENT                       | CRESCENT RESOURCE CENTRE                                         |
| EXISTING ZONING                               | GC - GENERAL COMMERCIAL                                          |
| MAP & PARCEL NUMBER                           | MAP 062, PARCELS 01417 & 01418                                   |
| ADDRESS                                       | CAROTHERS PARKWAY                                                |
| PROPOSED ZONING                               | SD-X                                                             |
| CHARACTER AREA                                | MC EWEN                                                          |
| SPECIAL AREA                                  | 4                                                                |
| OTHER APPLICABLE OVERLAYS                     | FLOODWAY FRINGE OVERLAY (FFO)<br>FLOODWAY OVERLAY DISTRICT (FWD) |
| DEVELOPMENT STANDARD                          | CONVENTIONAL                                                     |
| ACREAGE OF SITE                               | +/- 23.61 ACRES                                                  |
| EXISTING TREE CANOPY                          | +/- 7.48 ACRES (32% OF SITE)                                     |
| MIN. AREA OF EXISTING TREE CANOPY TO PRESERVE | +/- 1.80 ACRES (24% OF EXISTING CANOPY)                          |
| AREA OF PRESERVED TREE CANOPY                 | +/- 1.35 ACRES (18% OF EXISTING CANOPY)                          |

- NOTES:
- DEVELOPER TO RETAIN ALL MINERAL RIGHTS.
  - NO STRUCTURES CURRENTLY EXIST ON SITE
  - THERE ARE NO HISTORIC STRUCTURES WITHIN 500' OF THE SITE

|                                |                                                |
|--------------------------------|------------------------------------------------|
| FORMAL OPEN SPACE - REQUIRED   | +/- 1.18 ACRES (5% OF GROSS DEVELOPMENT SIZE)  |
| FORMAL OPEN SPACE - PROVIDED   | +/- 1.20 ACRES (5% OF GROSS DEVELOPMENT SIZE)  |
| INFORMAL OPEN SPACE - REQUIRED | NONE                                           |
| INFORMAL OPEN SPACE - PROVIDED | +/- 9.00 ACRES (38% OF GROSS DEVELOPMENT SIZE) |

- APPLICANT IS REQUESTING A MODIFICATION OF STANDARDS FOR THE FOLLOWING:
- ITEM 5.2.4 (3) TREE CANOPY RETENTION REQUIREMENT = 24% OF EXISTING TREE CANOPY TO BE RETAINED
  - ITEM 5.3.5 (3)(b) (ii) RESIDENTIAL DEVELOPMENT REQUIREMENT = MAXIMUM LENGTH OF ANY ATTACHED RESIDENTIAL BUILDING SHALL BE 200 FEET.

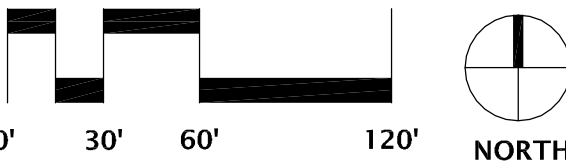
LEGEND

- TREE PROTECTION AREA
- EXISTING SPECIMEN TREE
- LOD LIMITS OF DISTURBANCE

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PLANNING LANDSCAPE ARCHITECTURE URBAN DESIGN  
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CONSULTANTS



09/23/16

RESOURCE CENTRE - SECTION 1, LOTS 1 & 2  
PUD DEVELOPMENT PLAN  
PRE-APPLICATION  
C.O.F. #XXXX  
FRANKLIN, TN

CRESCENT  
COMMUNITIES  
LLC

PROJECT NO. 0X-XXX.X  
Date 09/23/16  
Revisions

Sheet Title

DEVELOPMENT  
PLAN

Sheet Number

C 2.0



### 3. EXISTING TRAFFIC VOLUMES

In order to quantify the impact of the traffic that will be generated by the proposed project, peak hour traffic volumes were counted at the following locations:

1. McEwen Drive and the Ramps for I-65
2. E. McEwen Drive and Tower Circle
3. E. McEwen Drive and Carothers Parkway
4. E. McEwen Drive and Resource Parkway
5. Carothers Parkway and Tower Circle / Pacific Drive
6. Carothers Parkway and Apartments / Resource Parkway

This data was collected during the morning and evening peak hours on typical weekdays when schools were in session. The raw traffic volumes are included in [Appendix B](#). The existing laneage at the intersections within the study area is shown in [Figure 3](#), and the existing peak hour traffic volumes are shown in [Figure 4](#).

Using the existing peak hour traffic volumes shown in [Figure 4](#), capacity analyses were conducted for the intersections counted. Specifically, in order to identify current peak hour levels of operation within the study area, the capacity calculations were performed according to the methods outlined in the [Highway Capacity Manual 2010](#) (HCM2010). These analyses result in the determination of a Level of Service (LOS), which is a measure of evaluation is used to describe how well an intersection or roadway operates. LOS A represents free flow traffic operations, and LOS F suggests that the traffic demand exceeds the available capacity. In an urbanized area, LOS D is typically considered to be the minimum acceptable LOS. [Table 1](#) presents the descriptions of LOS for signalized intersections, and [Table 2](#) presents the descriptions of LOS for unsignalized intersections.

It is important to note that the City of Franklin Engineering Department provided the Synchro software files that were used to identify existing operations at the signalized intersections within the study area. Specifically, the files were updated to include the most-recent traffic volumes.

The results of the capacity analyses for the existing peak hour traffic volumes are shown in [Table 3](#), and [Appendix C](#) includes the capacity analyses worksheets. In particular, the results of the analyses for the signalized intersections within the study area are as follows:

#### **Intersection of McEwen Drive and the Ramps for I-65**

This intersection operates acceptably during both peak hours. However, the eastbound, westbound, and northbound left turns operate at LOS E during the AM peak hour.

#### **Intersection of E. McEwen Drive and Tower Circle**

This intersection operates acceptably during both peak hours. However, the eastbound left turns operate at LOS E during the AM peak hour.

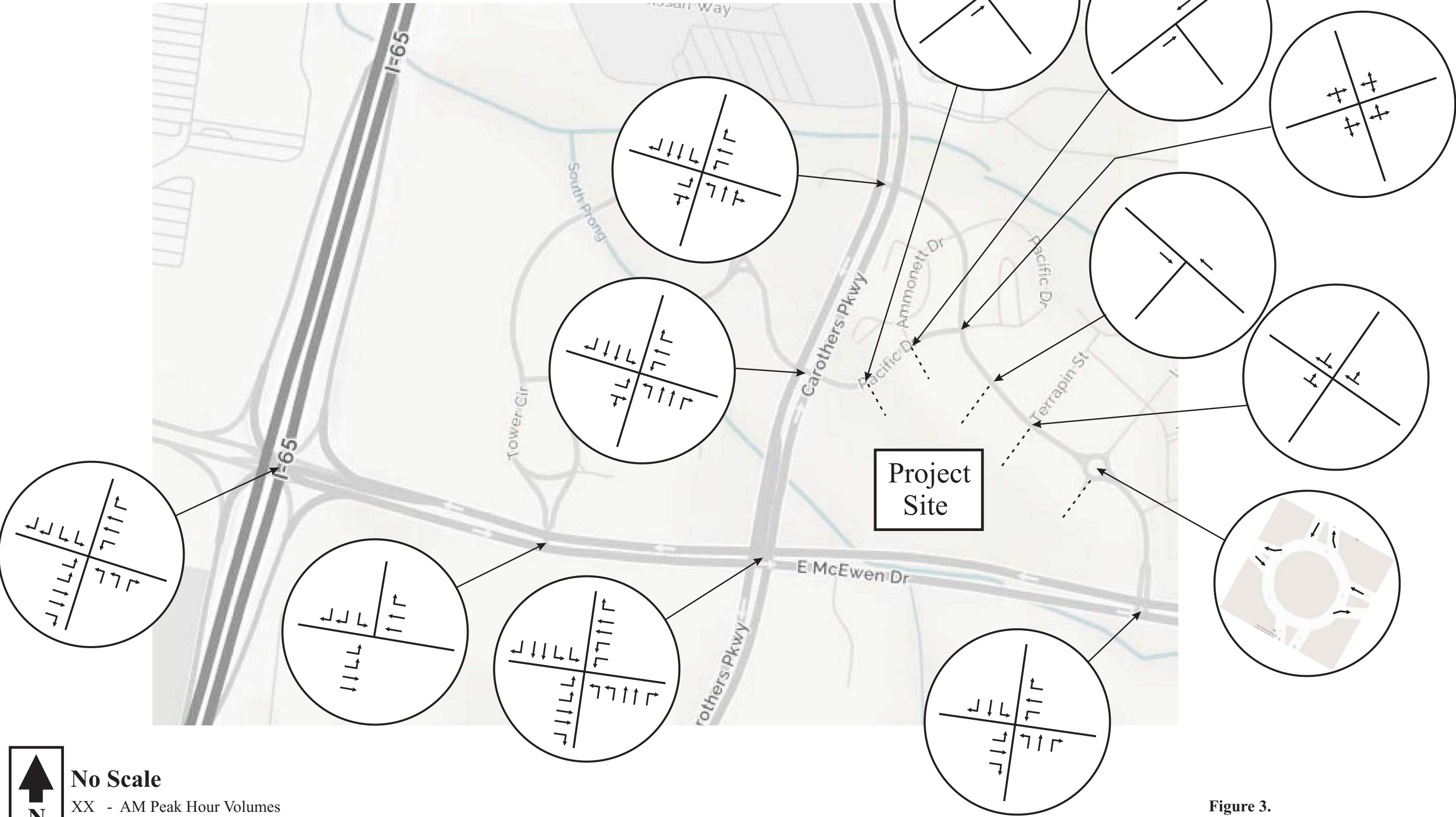


**Intersection of E. McEwen Drive and Carothers Parkway**

This intersection operates at LOS F during the AM peak hour and LOS C during the PM peak hour. During the AM peak hour, the eastbound left turns, in particular, operate with significant delays and vehicle queues. During the PM peak hour, the southbound through and right turn volumes are significant, and field observations indicate that these queues affect several intersections upstream on Carothers Parkway.

**Intersection of Carothers Parkway and Tower Circle/Pacific Drive**

This intersection operates at LOS B during both peak hours., and the vehicle delays and queues are relatively low.



 **No Scale**  
XX - AM Peak Hour Volumes  
(XX) - PM Peak Hour Volumes

Figure 3.  
Existing Laneage within the Study Area



Figure 4.  
Existing AM and PM Peak Hour Traffic Volumes



**TABLE 1. DESCRIPTIONS OF LOS FOR SIGNALIZED INTERSECTIONS**

| <b>Level of Service</b> | <b>Description</b>                                                                                                                                                                                                                                                         | <b>Average Control Delay per Vehicle (sec)</b> |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| A                       | Operations with very low control delay. Progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.                                                       | $\leq 10$                                      |
| B                       | Operations with stable flows. This generally occurs with good progression, short cycle lengths, or both. More vehicles stop than for LOS A, causing higher levels of average delay.                                                                                        | $> 10$ and $\leq 20$                           |
| C                       | Operations with stable flow. Occurs with fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping. | $> 20$ and $\leq 35$                           |
| D                       | Approaching unstable flow. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop.                                                     | $> 35$ and $\leq 55$                           |
| E                       | Unstable flow. In many cases, this is considered to be the limit for acceptable delay. These high delays generally indicate poor progression, long cycle lengths, and high v/c ratios.                                                                                     | $> 55$ and $\leq 80$                           |
| F                       | Unacceptable delay. This condition often occurs with oversaturation or with high v/c ratios. Poor progression and long cycle lengths may also cause such delay levels.                                                                                                     | $> 80$                                         |

Source: Highway Capacity Manual 2010 (HCM2010)

**TABLE 2. DESCRIPTIONS OF LOS FOR UNSIGNALIZED INTERSECTIONS**

| <b>Level of Service</b> | <b>Description</b> | <b>Average Control Delay (sec/veh)</b> |
|-------------------------|--------------------|----------------------------------------|
| A                       | Minimal delay      | $\leq 10$                              |
| B                       | Brief delay        | $> 10$ and $\leq 15$                   |
| C                       | Average delay      | $> 15$ and $\leq 25$                   |
| D                       | Significant delay  | $> 25$ and $\leq 35$                   |
| E                       | Long delay         | $> 35$ and $\leq 50$                   |
| F                       | Extreme delay      | $> 50$                                 |

Source: Highway Capacity Manual 2010 (HCM 2010)

**TABLE 3. EXISTING PEAK HOUR LEVELS OF SERVICE**

| INTERSECTION                                                              | TURNING MOVEMENT             | AM PEAK HOUR          |                              | PM PEAK HOUR          |                              |
|---------------------------------------------------------------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
|                                                                           |                              | LEVEL OF SERVICE      | 95 <sup>TH</sup> %-ILE QUEUE | LEVEL OF SERVICE      | 95 <sup>TH</sup> %-ILE QUEUE |
| <b>McEwen Drive and Ramps for I-65</b><br>(signalized)                    | <b>Overall Intersection</b>  | LOS C<br>(35 sec/veh) |                              | LOS C<br>(24 sec/veh) |                              |
| <b>E. McEwen Drive and Tower Drive</b><br>(signalized)                    | <b>Overall Intersection</b>  | LOS B<br>(14 sec/veh) |                              | LOS B<br>(14 sec/veh) |                              |
| <b>E. McEwen Drive and Carothers Parkway</b><br>(signalized)              | <b>Overall Intersection</b>  | LOS F<br>(96 sec/veh) |                              | LOS C<br>(35 sec/veh) |                              |
| <b>E. McEwen Drive and Resource Parkway</b><br>(unsignalized)             | Eastbound Left Turns         | LOS B                 | 1 veh                        | LOS A                 | 1 veh                        |
|                                                                           | Southbound Left Turns        | LOS C                 | 1 veh                        | LOS C                 | 1 veh                        |
|                                                                           | Southbound Right Turns       | LOS B                 | 1 veh                        | LOS A                 | 1 veh                        |
| <b>Carothers Parkway and Tower Circle / Pacific Drive</b><br>(signalized) | <b>Overall Intersection</b>  | LOS B<br>(12 sec/veh) |                              | LOS B<br>(14 sec/veh) |                              |
| <b>Carothers Parkway and Resource Parkway</b><br>(unsignalized)           | Northbound Left Turns        | LOS A                 | 0 veh                        | LOS C                 | 0 veh                        |
|                                                                           | Southbound Left Turns        | LOS C                 | 0 veh                        | LOS A                 | 1 veh                        |
|                                                                           | Eastbound Left Turns         | LOS D                 | 1 veh                        | LOS F                 | 0 veh                        |
|                                                                           | Eastbound Thrus/Right Turns  | LOS A                 | 0 veh                        | LOS C                 | 0 veh                        |
|                                                                           | Westbound Left Turns         | LOS F                 | 1 veh                        | LOS D                 | 1 veh                        |
|                                                                           | Westbound Thrus              | LOS A                 | 0 veh                        | LOS A                 | 0 veh                        |
|                                                                           | Westbound Right Turns        | LOS D                 | 1 veh                        | LOS A                 | 1 veh                        |
| <b>Resource Parkway and Pacific Drive</b>                                 | Northbound Turning Movements | LOS A                 | 1 veh                        | LOS A                 | 1 veh                        |



|                                                                       |                                    |       |       |       |       |
|-----------------------------------------------------------------------|------------------------------------|-------|-------|-------|-------|
| (unsignalized)                                                        | Southbound<br>Turning Movements    | LOS A | 1 veh | LOS A | 1 veh |
|                                                                       | Eastbound<br>Turning Movements     | LOS A | 1 veh | LOS A | 1 veh |
|                                                                       | Westbound<br>Turning Movements     | LOS A | 1 veh | LOS A | 1 veh |
| <b>Resource Parkway and<br/>Terrapin Street</b><br>(unsignalized)     | Eastbound<br>Left Turns / Thrus    | LOS A | 1 veh | LOS A | 1 veh |
|                                                                       | Southbound<br>Left and Right Turns | LOS A | 1 veh | LOS A | 1 veh |
| <b>Resource Parkway and<br/>Lemon Grass Drive</b><br>(traffic circle) | Eastbound<br>Approach              | LOS A | 1 veh | LOS A | 1 veh |
|                                                                       | Westbound<br>Approach              | LOS A | 1 veh | LOS A | 1 veh |
|                                                                       | Southbound<br>Approach             | LOS A | 1 veh | LOS A | 1 veh |

## 4. PROJECTION OF BACKGROUND TRAFFIC VOLUMES

It is important to note that the following projects have been approved for construction in the immediate vicinity of the project site:

### 1. Ovation

This project is under construction on the south side of E. McEwen Drive at Resource Parkway. In July 2013, RPM Transportation Consultants, LLC prepared traffic analyses for this project, and the peak hour traffic volumes generated by this project are shown in [Figure 5A](#). Also, it is important to note that a traffic signal will be installed at the intersection of E. McEwen Drive and Resource Parkway in conjunction with the Ovation project.

### 2. Greenway Center (Phase 2)

This project is planned for construction on the east side of Carothers Parkway and the northern terminus of Lemon Grass Drive. In November 2007, Wilbur Smith Associates prepared traffic analyses for this project, and the peak hour traffic volumes generated by this project are shown in [Figure 5B](#).

### 3. Franklin Park

This project is planned for construction on the west side of Carothers Parkway at Tower Circle and opposite Resource Parkway. In May 2012, CDM Smith prepared traffic analyses for this project, and the peak hour traffic volumes generated by this project are shown in [Figure 5C](#).

It is important to note that several other projects are under consideration for construction in the vicinity of the project site. Specifically, a mixed-use project called Franklin Summit may be constructed in the southeast quadrant of the intersection on McEwen Drive and the ramps for northbound I-65. However, to date, specific plans for this project have not been prepared, and so trip generation estimates and assignment of peak hour site-generated traffic volumes are not available. Therefore, when the Franklin Summit project progresses, the impacts of that project should be identified based on a specific site plan.

The peak hour traffic volumes shown in [Figures 5A, 5B, and 5C](#) were added to the existing traffic volumes in order to establish the background traffic volumes shown in [Figure 5D](#). Using these background peak hour traffic volumes, capacity analyses were conducted for the intersections within the study area. For these analyses, the following assumptions were made:

- A traffic signal will be installed at the intersection of E. McEwen Drive and Resource Parkway / Ovation.

- A traffic signal will be installed at the intersection of Carothers Parkway and Resource Parkway / apartments.
- All other existing infrastructure will be maintained and no additional improvements will be made.

The results of the capacity analyses for the background peak hour traffic volumes are shown in [Table 5](#), and [Appendix B](#) includes the capacity analyses worksheets. In particular, the results of the analyses for the signalized intersections within the study area are as follows:

#### **Intersection of McEwen Drive and the Ramps for I-65**

This intersection is expected to operate at LOS C during the AM peak hour and LOS F during the PM peak hour. During the AM peak hour, all of the left turns are expected to operate poorly. During the PM peak hour, several turning movements are expected to operate poorly, and the westbound right turns are expected to have significant queue lengths.

#### **Intersection of E. McEwen Drive and Tower Circle**

This intersection is expected to operate at LOS C during the AM peak hour and LOS F during the PM peak hour. During the AM peak hour, the eastbound and southbound left turns are expected to operate at LOS E. During the PM peak hour, several turning movements are expected to operate poorly, and the westbound throughs are expected to have significant queue lengths.

#### **Intersection of E. McEwen Drive and Carothers Parkway**

This intersection is expected to operate at LOS F during both peak hours. During the AM peak hour, all of the left turns, as well as the northbound throughs, are expected to operate poorly. The eastbound left turns, in particular, will have significant delays and vehicle queues. During the PM peak hour, the southbound through and right turn volumes will be significant, and these queues are expected to affect intersections upstream on Carothers Parkway.

#### **Intersection of E. McEwen Drive and Resource Parkway**

This intersection is expected to operate at LOS B during both peak hours., and the vehicle delays and queues are expected to remain relatively low.

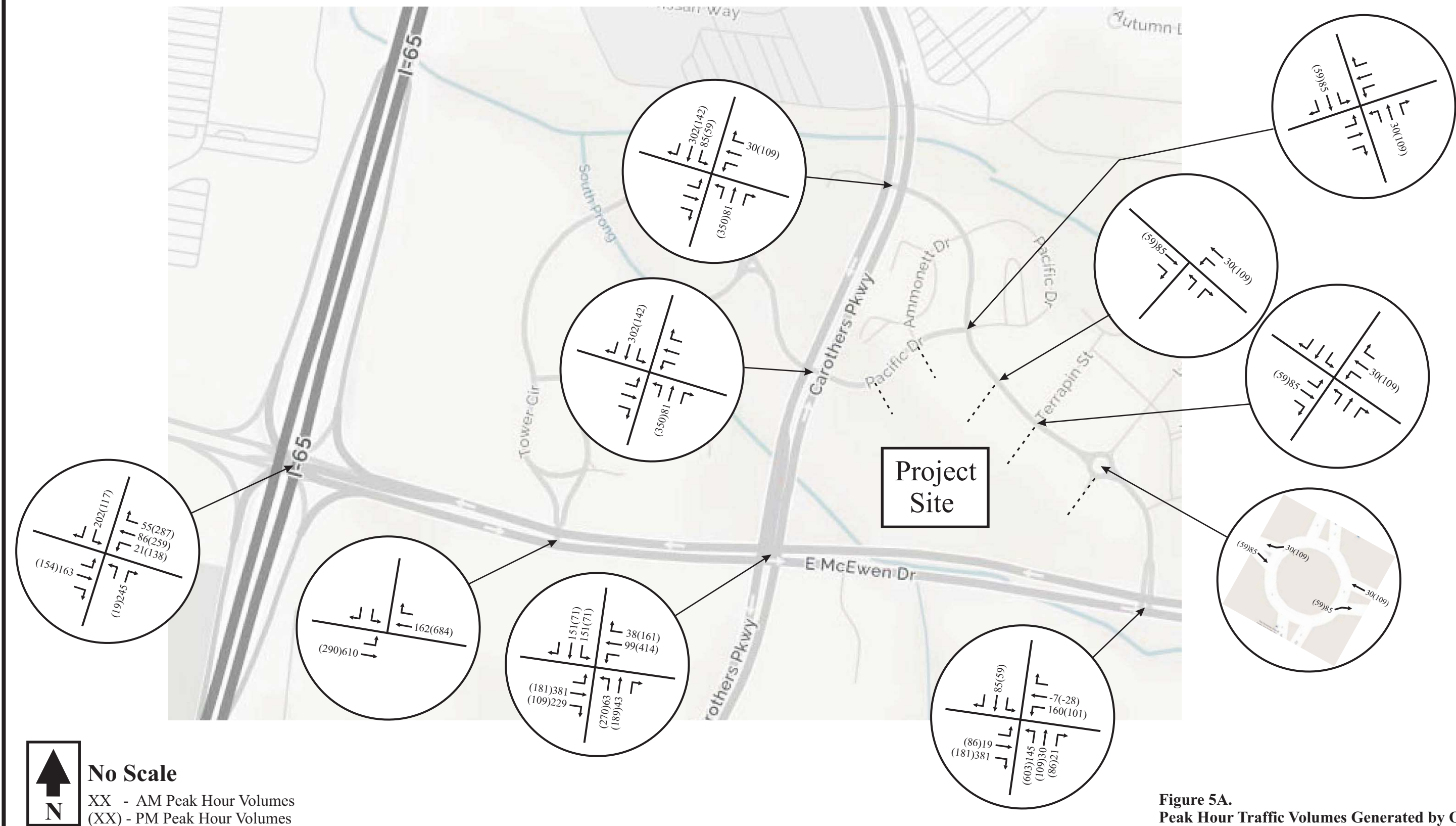
#### **Intersection of Carothers Parkway and Tower Circle/Pacific Drive**

This intersection is expected to operate at LOS C during the AM peak hour and LOS F during the PM peak hour. During the PM peak hour, the eastbound left turns and the southbound throughs are expected to have significant queues, and these queues are expected to affect several intersections upstream on Carothers Parkway.

#### **Intersection of Carothers Parkway and Resource Parkway**

This intersection is expected to operate at LOS B during the AM peak hour and LOS C during the PM peak hour. During the AM peak hour, the southbound lefts are expected to operate poorly. During the PM peak hour, the southbound throughs are expected to have significant queues, and these queues are expected to affect intersections upstream on Carothers Parkway.





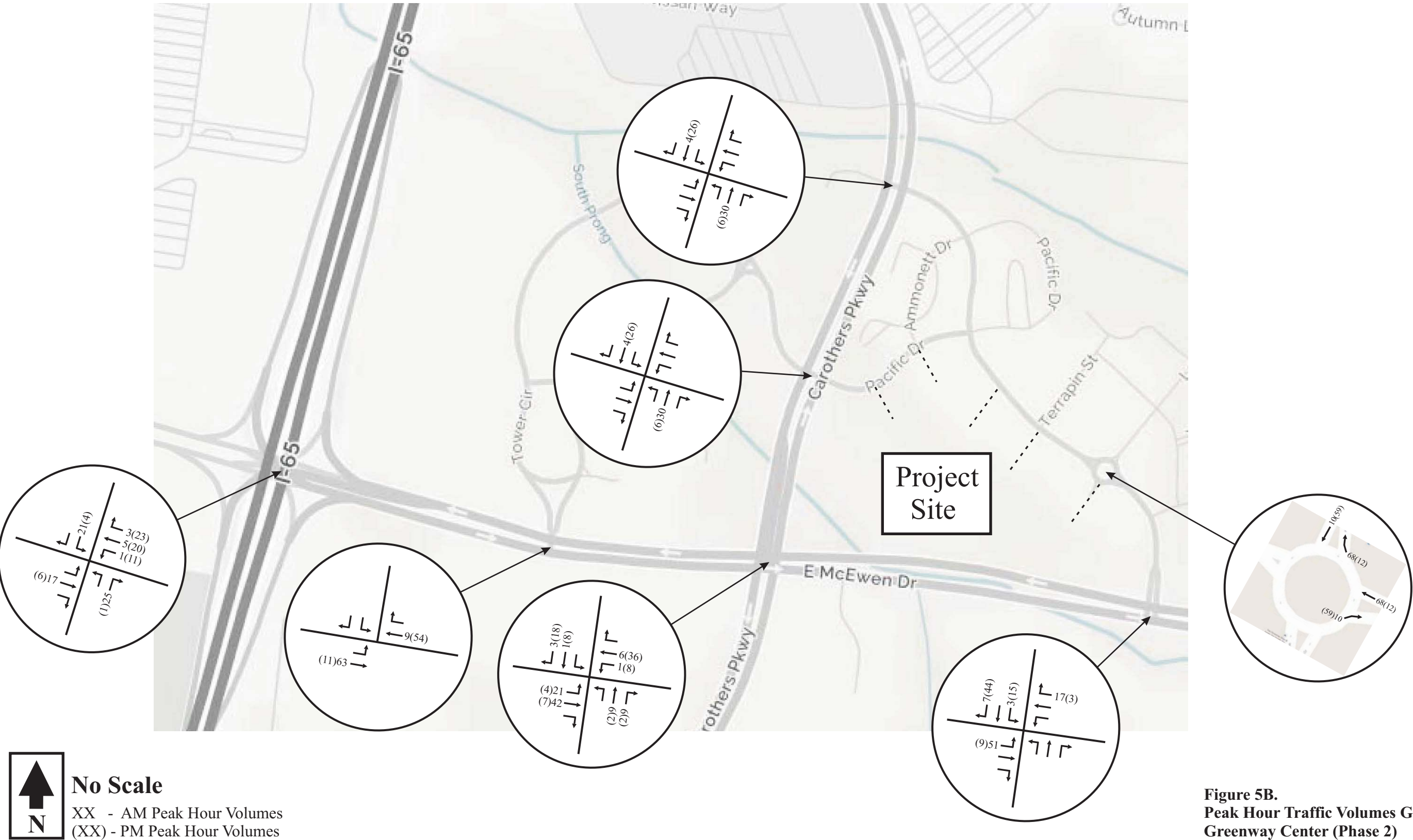


Figure 5B.  
Peak Hour Traffic Volumes Generated by  
Greenway Center (Phase 2)

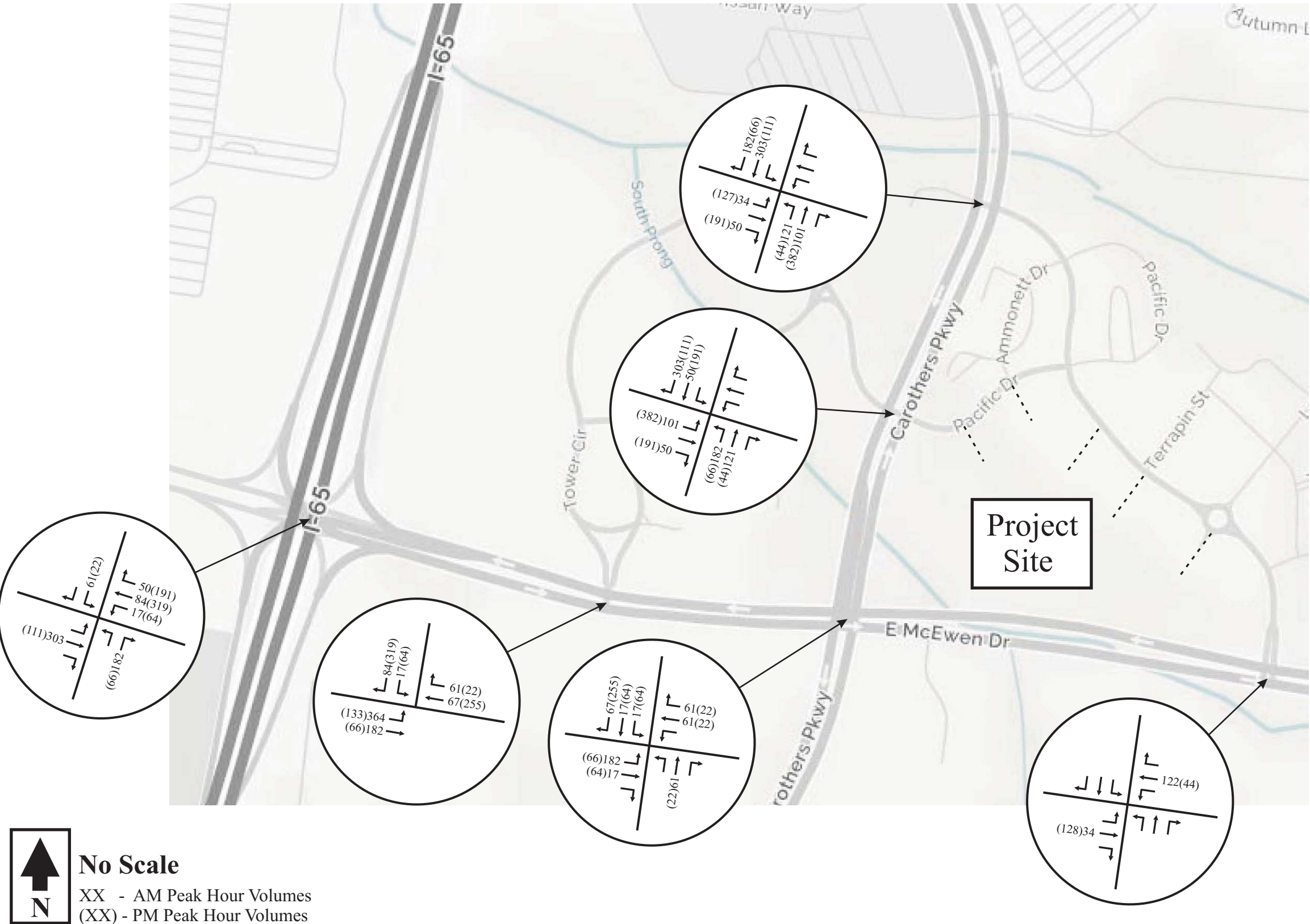


Figure 5C.  
Peak Hour Traffic Volumes Generated by  
Franklin Park





Figure 5D.  
Background Peak Hour Traffic Volumes

**TABLE 5. BACKGROUND PEAK HOUR LEVELS OF SERVICE**

| INTERSECTION                                                              | TURNING MOVEMENT                | AM PEAK HOUR           |                              | PM PEAK HOUR           |                              |
|---------------------------------------------------------------------------|---------------------------------|------------------------|------------------------------|------------------------|------------------------------|
|                                                                           |                                 | LEVEL OF SERVICE       | 95 <sup>TH</sup> %-ILE QUEUE | LEVEL OF SERVICE       | 95 <sup>TH</sup> %-ILE QUEUE |
| <b>McEwen Drive and Ramps for I-65</b><br>(signalized)                    | <b>Overall Intersection</b>     | LOS C<br>(33 sec/veh)  |                              | LOS F<br>(90 sec/veh)  |                              |
| <b>E. McEwen Drive and Tower Drive</b><br>(signalized)                    | <b>Overall Intersection</b>     | LOS C<br>(21 sec/veh)  |                              | LOS F<br>(160 sec/veh) |                              |
| <b>E. McEwen Drive and Carothers Parkway</b><br>(signalized)              | <b>Overall Intersection</b>     | LOS F<br>(229 sec/veh) |                              | LOS F<br>(234 sec/veh) |                              |
| <b>E. McEwen Drive and Resource Parkway</b><br>(signalized)               | <b>Overall Intersection</b>     | LOS B<br>(17 sec/veh)  |                              | LOS B<br>(17 sec/veh)  |                              |
| <b>Carothers Parkway and Tower Circle / Pacific Drive</b><br>(signalized) | <b>Overall Intersection</b>     | LOS C<br>(23 sec/veh)  |                              | LOS F<br>(168 sec/veh) |                              |
| <b>Carothers Parkway and Resource Parkway</b><br>(signalized)             | <b>Overall Intersection</b>     | LOS B<br>(17 sec/veh)  |                              | LOS C<br>(28 sec/veh)  |                              |
| <b>Resource Parkway and Pacific Drive</b><br>(unsignalized)               | Northbound Turning Movements    | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
|                                                                           | Southbound Turning Movements    | LOS A                  | 1 veh                        | LOS B                  | 1 veh                        |
|                                                                           | Eastbound Turning Movements     | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
|                                                                           | Westbound Turning Movements     | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
| <b>Resource Parkway and Terrapin Street</b><br>(unsignalized)             | Eastbound Left Turns / Thrus    | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
|                                                                           | Southbound Left and Right Turns | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |

|                                                                       |                        |       |       |       |       |
|-----------------------------------------------------------------------|------------------------|-------|-------|-------|-------|
| <b>Resource Parkway and<br/>Lemon Grass Drive</b><br>(traffic circle) | Eastbound<br>Approach  | LOS A | 1 veh | LOS A | 1 veh |
|                                                                       | Westbound<br>Approach  | LOS A | 1 veh | LOS A | 1 veh |
|                                                                       | Southbound<br>Approach | LOS A | 1 veh | LOS A | 1 veh |



## 5. IMPACTS OF PROPOSED DEVELOPMENT

### 5.1 TRIP GENERATION

Trip generation calculations were conducted in order to identify how much traffic will be generated by the proposed project. Trip generation data for daily and peak hour trips were identified from Trip Generation, Ninth Edition, which was published by the Institute of Transportation Engineers (ITE) in 2012. [Table 6](#) presents the daily and peak hour trip generations for proposed project, and these calculations are included in [Appendix D](#).

**TABLE 6. TRIP GENERATION FOR THE PROPOSED PROJECT**

| LAND USE                                                                   | SIZE           | DAILY TRAFFIC | GENERATED TRAFFIC |            |              |            |
|----------------------------------------------------------------------------|----------------|---------------|-------------------|------------|--------------|------------|
|                                                                            |                |               | AM PEAK HOUR      |            | PM PEAK HOUR |            |
|                                                                            |                |               | ENTER             | EXIT       | ENTER        | EXIT       |
| Multi-Family (LUC 220)                                                     | 325 units      | 2,162         | 33                | 133        | 131          | 71         |
| Townhomes (LUC 230)                                                        | 15 homes       | 124           | 2                 | 9          | 9            | 4          |
| Office (LUC 710)                                                           | 300,000 sq.ft. | 3,026         | 406               | 55         | 70           | 344        |
| Hotel (LUC 310)                                                            | 200 rooms      | 1,784         | 78                | 56         | 69           | 71         |
| Specialty Retail (LUC 826)                                                 | 25,000 sq.ft.  | 2,176         | 164               | 178        | 62           | 79         |
| <b>TOTAL</b>                                                               |                | <b>9,272</b>  | <b>683</b>        | <b>431</b> | <b>341</b>   | <b>569</b> |
| <b>TOTAL REDUCED 20% TO ACCOUNT FOR INTERNAL CAPTURE AND TRANSIT USAGE</b> |                | <b>7,418</b>  | <b>546</b>        | <b>345</b> | <b>273</b>   | <b>455</b> |

Studies have shown that, typically, a portion of the trips generated by mixed-use developments are captured, or "pass-by" trips from the adjacent street system. However, for the purposes of this study, it was assumed that none of the peak hour traffic generated by the proposed project will be pass-by traffic.

Also, studies have shown that it is common for a portion of the trips generated by mixed-use developments are internal to the site. For example, a portion of the vehicles generated by one of the residential land uses will shop at one or more of the commercial land uses and/or work in the office space. Therefore, consideration was given to the methodology included in NCHRP Report 684, which is endorsed by the Institute of Transportation Engineers (ITE) for estimating internal capture within mixed-use developments. The worksheets are included in [Appendix D](#), and based on this information, it was assumed that the daily and peak hour traffic volumes can be reduced by 20% to account for internal, shared trips.

## **5.2 TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT**

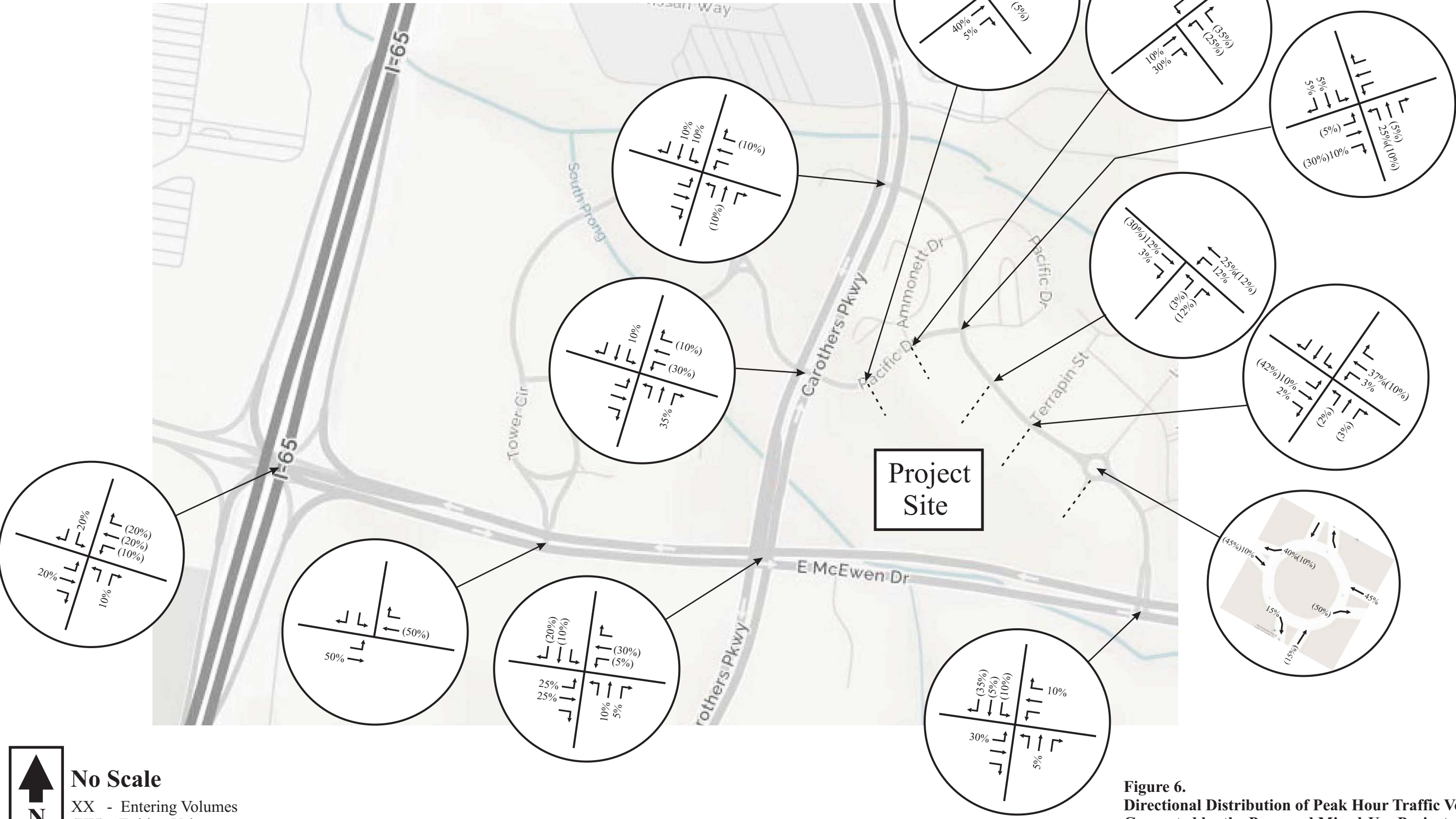
For the purposes of this study, it was estimated that the trips generated by the proposed project will access the project site according to the directional distribution shown in [Figure 6](#). It is important to note that these directional distributions were prepared with input and approval from the City of Franklin Engineering Department and their third-party private consultant. The development of these distributions was based on the following factors:

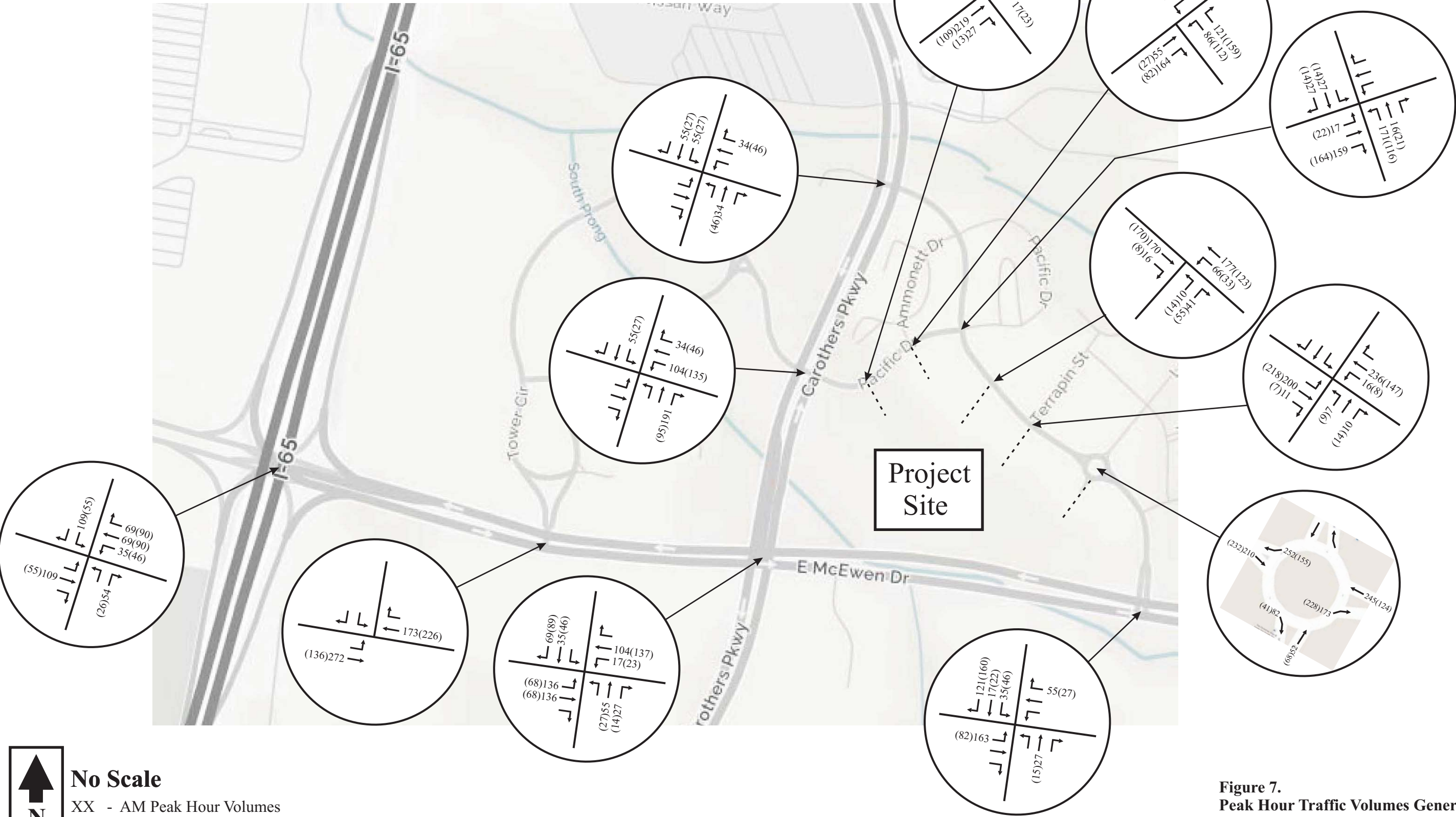
- existing land use characteristics,
- the directions of approach of the existing traffic,
- the access proposed for the project, and
- the locations of population centers in the area.

It is important to note that the distribution shown in [Figure 6](#) has been adjusted since a directional distribution was approved by the City of Franklin Engineering Department. These adjustments were made as the site plan was modified.

The peak hour trip generations and directional distribution were used to add the site-generated trips to the roadway system. [Figure 7](#) includes the peak hour traffic volumes that are expected to be generated by the proposed project.







**No Scale**  
↑  
N  
XX - AM Peak Hour Volumes  
(XX) - PM Peak Hour Volumes

**Figure 7.**  
**Peak Hour Traffic Volumes Generated**  
**by the Proposed Mixed-Use Project**

### 5.3 CAPACITY ANALYSES

In order to identify the projected peak hour traffic volumes at the completion of the proposed project, the trips generated by the project were added to the background peak hour traffic volumes. The resulting peak hour volumes are shown in [Figure 8](#).

Using the total projected peak hour traffic volumes, capacity analyses were conducted in order to determine the impact of the project on the roadway system. Specifically, these capacity analyses were used to evaluate the need for roadway and traffic control improvements within the study area. For these analyses, it was assumed that all background laneage and traffic control will be maintained and no additional improvements will be provided.

The results of the capacity analyses for the total projected peak hour traffic volumes are shown in [Table 7](#), and [Appendix C](#) includes the capacity analyses worksheets. In particular, the results of the analyses for the signalized intersections within the study area are as follows:

#### **Intersection of E. McEwen Drive and the Ramps for I-65**

This intersection is expected to operate at LOS C during the AM peak hour and LOS F during the PM peak hour. During the AM peak hour, the left turns are expected to operate poorly. During the PM peak hour, several turning movements are expected to operate poorly, and the westbound right turns are expected to have significant queue lengths.

#### **Intersection of E. McEwen Drive and Tower Circle**

This intersection is expected to operate at LOS B during the AM peak hour and LOS F during the PM peak hour. During the AM peak hour, the eastbound and southbound left turns are expected to operate at LOS E. During the PM peak hour, several turning movements are expected to operate poorly, and the westbound throughs are expected to have significant queue lengths.

#### **Intersection of E. McEwen Drive and Carothers Parkway**

This intersection is expected to operate at LOS F during both peak hours. During the AM peak hour, all of the left turns, as well as the northbound throughs, are expected to operate poorly. The eastbound left turns, in particular, will have significant delays and vehicle queues. During the PM peak hour, the southbound through and right turn volumes will be significant, and these queues are expected to affect intersections upstream on Carothers Parkway.

#### **Intersection of McEwen Drive and Resource Parkway**

This intersection is expected to operate at LOS C during both peak hours., and the vehicle delays and queues are expected to remain relatively low.

#### **Intersection of Carothers Parkway and Tower Circle/Pacific Drive**

This intersection is expected to operate at LOS D during the AM peak hour and LOS F during the PM peak hour. During the PM peak hour, the eastbound left turns and the southbound



throughs are expected to have significant queues, and these queues are expected to affect several intersections upstream on Carothers Parkway.

**Intersection of Carothers Parkway and Resource Parkway**

This intersection is expected to operate at LOS D during the AM peak hour and LOS C during the PM peak hour. During the AM peak hour, the southbound lefts are expected to operate poorly. During the PM peak hour, the southbound throughs are expected to have significant queues, and these queues are expected to affect intersections upstream on Carothers Parkway.

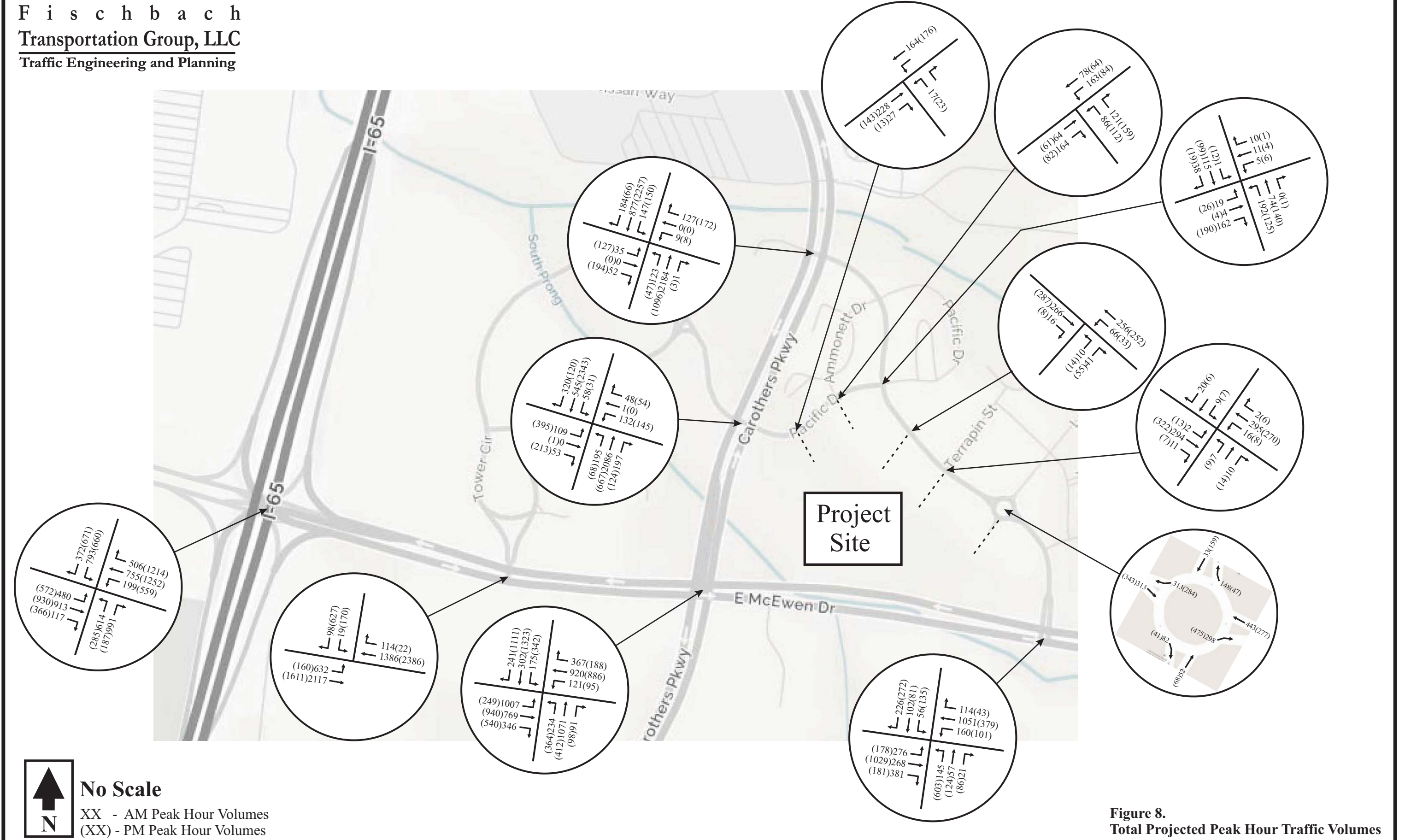


Figure 8.  
Total Projected Peak Hour Traffic Volumes

**TABLE 7. PROJECTED PEAK HOUR LEVELS OF SERVICE**

| INTERSECTION                                                                   | TURNING MOVEMENT             | AM PEAK HOUR           |                              | PM PEAK HOUR           |                              |
|--------------------------------------------------------------------------------|------------------------------|------------------------|------------------------------|------------------------|------------------------------|
|                                                                                |                              | LEVEL OF SERVICE       | 95 <sup>TH</sup> %-ILE QUEUE | LEVEL OF SERVICE       | 95 <sup>TH</sup> %-ILE QUEUE |
| <b>McEwen Drive and Ramps for I-65</b><br>(signalized)                         | <b>Overall Intersection</b>  | LOS C<br>(35 sec/veh)  |                              | LOS F<br>(128 sec/veh) |                              |
| <b>E. McEwen Drive and Tower Drive</b><br>(signalized)                         | <b>Overall Intersection</b>  | LOS C<br>(21 sec/veh)  |                              | LOS F<br>(270 sec/veh) |                              |
| <b>E. McEwen Drive and Carothers Parkway</b><br>(signalized)                   | <b>Overall Intersection</b>  | LOS F<br>(317 sec/veh) |                              | LOS F<br>(282 sec/veh) |                              |
| <b>E. McEwen Drive and Resource Parkway</b><br>(signalized)                    | <b>Overall Intersection</b>  | LOS C<br>(26 sec/veh)  |                              | LOS C<br>(21 sec/veh)  |                              |
| <b>Carothers Parkway and Tower Circle / Pacific Drive</b><br>(signalized)      | <b>Overall Intersection</b>  | LOS D<br>(55 sec/veh)  |                              | LOS F<br>(259 sec/veh) |                              |
| <b>Carothers Parkway and Resource Parkway</b><br>(signalized)                  | <b>Overall Intersection</b>  | LOS D<br>(42 sec/veh)  |                              | LOS C<br>(30 sec/veh)  |                              |
| <b>Resource Parkway and Pacific Drive</b><br>(unsignalized)                    | Northbound Turning Movements | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
|                                                                                | Southbound Turning Movements | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
|                                                                                | Eastbound Turning Movements  | LOS B                  | 1 veh                        | LOS B                  | 1 veh                        |
|                                                                                | Westbound Turning Movements  | LOS B                  | 1 veh                        | LOS C                  | 1 veh                        |
| <b>Resource Parkway and Terrapin Street / Project Access</b><br>(unsignalized) | Northbound Turning Movements | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
|                                                                                | Southbound Turning Movements | LOS A                  | 1 veh                        | LOS A                  | 1 veh                        |
|                                                                                | Eastbound                    | LOS B                  | 1 veh                        | LOS B                  | 1 veh                        |



|                                                                   |                                 |       |       |       |       |
|-------------------------------------------------------------------|---------------------------------|-------|-------|-------|-------|
|                                                                   | Turning Movements               |       |       |       |       |
|                                                                   | Westbound Turning Movements     | LOS B | 1 veh | LOS B | 1 veh |
| <b>Resource Parkway and Lemon Grass Drive</b><br>(traffic circle) | Eastbound Approach              | LOS A | 1 veh | LOS A | 2 veh |
|                                                                   | Westbound Approach              | LOS A | 2 veh | LOS A | 1 veh |
|                                                                   | Northbound Approach             | LOS A | 1 veh | LOS A | 1 veh |
|                                                                   | Southbound Approach             | LOS A | 1 veh | LOS A | 1 veh |
| <b>Pacific Drive and the Western Project Drive</b>                | Westbound Left Turns/Thrus      | LOS A | 0 veh | LOS A | 0 veh |
|                                                                   | Northbound Left and Right Turns | LOS B | 1 veh | LOS B | 1 veh |
| <b>Pacific Drive and the Garage Drive</b>                         | Westbound Left Turns            | LOS A | 1 veh | LOS A | 1 veh |
|                                                                   | Northbound Left Turns           | LOS C | 1 veh | LOS B | 1 veh |
|                                                                   | Northbound Right Turns          | LOS B | 1 veh | LOS A | 1 veh |
| <b>Resource Parkway and Northern Project Access</b>               | Northbound Left Turns/Thrus     | LOS A | 1 veh | LOS A | 1 veh |
|                                                                   | Eastbound Left and Right Turns  | LOS B | 1 veh | LOS B | 1 veh |

## 5.4 CAPACITY ANALYSIS COMPARISON

The results of the capacity analyses for the existing, background, and total projected peak hour traffic volumes are included in [Tables 8 and 9](#) for comparison purposes.

**TABLE 8. COMPARISON OF AM PEAK HOUR LEVELS OF SERVICE**

| INTERSECTION                                       | TURNING MOVEMENT     | LEVELS OF SERVICE     |                        |                            |
|----------------------------------------------------|----------------------|-----------------------|------------------------|----------------------------|
|                                                    |                      | EXISTING CONDITIONS   | BACKGROUND CONDITIONS  | TOTAL PROJECTED CONDITIONS |
| McEwen Drive and the Ramps for I-65                | Overall Intersection | LOS C<br>(35 sec/veh) | LOS C<br>(35 sec/veh)  | LOS C<br>(35 sec/veh)      |
| E. McEwen Drive and Tower Circle                   | Overall Intersection | LOS B<br>(14 sec/veh) | LOS C<br>(21 sec/veh)  | LOS C<br>(21 sec/veh)      |
| E. McEwen Drive and Carothers Parkway              | Overall Intersection | LOS F<br>(96 sec/veh) | LOS F<br>(229 sec/veh) | LOS F<br>(317 sec/veh)     |
| E. McEwen Drive and Resource Parkway               | Overall Intersection | (unsignalized)        | LOS B<br>(17 sec/veh)  | LOS C<br>(26 sec/veh)      |
| Carothers Parkway and Tower Circle / Pacific Drive | Overall Intersection | LOS B<br>(12 sec/veh) | LOS C<br>(23 sec/veh)  | LOS D<br>(55 sec/veh)      |
| Carothers Parkway and Resource Parkway             | Overall Intersection | (unsignalized)        | LOS B<br>(17 sec/veh)  | LOS D<br>(42 sec/veh)      |

**TABLE 9. COMPARISON OF PM PEAK HOUR LEVELS OF SERVICE**

| INTERSECTION                                       | TURNING MOVEMENT     | LEVELS OF SERVICE     |                        |                            |
|----------------------------------------------------|----------------------|-----------------------|------------------------|----------------------------|
|                                                    |                      | EXISTING CONDITIONS   | BACKGROUND CONDITIONS  | TOTAL PROJECTED CONDITIONS |
| McEwen Drive and the Ramps for I-65                | Overall Intersection | LOS C<br>(24 sec/veh) | LOS F<br>(90 sec/veh)  | LOS F<br>(128 sec/veh)     |
| E. McEwen Drive and Tower Circle                   | Overall Intersection | LOS B<br>(14 sec/veh) | LOS F<br>(160 sec/veh) | LOS F<br>(270 sec/veh)     |
| E. McEwen Drive and Carothers Parkway              | Overall Intersection | LOS C<br>(35 sec/veh) | LOS F<br>(234 sec/veh) | LOS F<br>(282 sec/veh)     |
| E. McEwen Drive and Resource Parkway               | Overall Intersection | (unsignalized)        | LOS B<br>(17 sec/veh)  | LOS C<br>(21 sec/veh)      |
| Carothers Parkway and Tower Circle / Pacific Drive | Overall Intersection | LOS B<br>(14 sec/veh) | LOS F<br>(168 sec/veh) | LOS F<br>(259 sec/veh)     |
| Carothers Parkway and Resource Parkway             | Overall Intersection | (unsignalized)        | LOS C<br>(28 sec/veh)  | LOS C<br>(30 sec/veh)      |

## 6. CONCLUSIONS AND RECOMMENDATIONS

It is important to note that the City of Franklin's existing zoning for the proposed project site allows all of the proposed land uses on the project site, with the exception of the apartments. The analyses presented in this study indicate that the following improvements and considerations should be incorporated into the current site plan in order to facilitate safe and efficient traffic operations within the study area:

1. As planned under background conditions with the construction of the Ovation mixed-use project, a traffic signal should be installed at the intersection of E. McEwen Drive and Resource Parkway.
2. As planned under background conditions, a traffic signal should be installed at the intersection of Carothers Parkway and Resource Parkway.
3. Each of the driveways for the structure parking should include one entering lane and two exiting lanes striped as separate left and right turn lanes.
4. Each of the driveways to surface parking should include one entering lane and one exiting lane, striped as a shared left and right turn lane.

It is important to note that the capacity analyses conducted for the purposes of this study indicate that the peak hour traffic volumes that are expected to be generated by the projects that have been approved for construction nearest the proposed project site will exceed the capacity of the existing intersections and roadway segments within the study area. Specifically, the Ovation and Franklin Park projects will add a total of 2,400,000 sq.ft of office space, 357,500 sq.ft. of retail space, a 300-room hotel, and 1,300 apartments to the study area. The traffic volumes generated by these land uses will exceed the capacity of the existing laneage and traffic control within the study area.

In October 2012, Kimley-Horn and Associates, Inc. prepared an Integrated Growth Plan for the City of Franklin to address the anticipated growth in the study area and identify future infrastructure improvements that will be needed to accommodate future traffic volumes. The Integrated Growth Plan assumed that the proposed project site would include 253 apartments and 300,000 sq.ft. of office space. These assumptions account for the majority of the peak hour traffic volumes that will be generated by the current proposal, and it is appropriate to assume that the recommendations included in the Integrated Growth Plan adequately account for the impacts of the proposed plan. Therefore, in conjunction with the proposed project, adequate right-of-way should be dedicated on the east side of Carothers Parkway and the north side of E. McEwen Drive to accommodate the City's future expansion of these facilities. Also, the Road Impact Fees generated by the proposed land uses should be aggregated with those collected by the other approved projects and applied to the future laneage and traffic control needs within the study area.



**APPENDIX A  
TRAFFIC IMPACT STUDY SCOPE PROVIDED BY  
THE CITY OF FRANKLIN AND VOLKERT, INC.**

City of Franklin  
Engineering Department  
**APPLICATION FORM**  
**REQUEST FOR APPROVED TRANSPORTATION IMPACT ANALYSIS**  
**REPORT**

|                 |                                         |                 |                               |
|-----------------|-----------------------------------------|-----------------|-------------------------------|
| Applicant Name: | <b>Pearl Street Partners, LLC</b>       | Applicant Name: | <b>FTG, LLC</b>               |
| Address:        | <b>205 Powell Place</b>                 | Address:        | <b>PO Box 682736</b>          |
|                 | <b>Brentwood, TN 37027</b>              |                 | <b>Franklin, TN 37068</b>     |
| Phone #:        | <b>(615) 312-8242</b>                   | Phone #:        | <b>(615) 771-8022</b>         |
| e-mail address: | <b>byoeckel@pearlstreetpartners.com</b> | e-mail address: | <b>Gillian@FTGtraffic.com</b> |

### **PROCESS OVERVIEW**

A Transportation Impact Analysis shall be prepared by the Applicant's Consultant or the City's Traffic Consultant using the standard format specified by the Institute of Transportation Engineers in accordance with the following:

- (i) The applicant shall submit a completed *Request for Transportation Impact Analysis Application Form* to the Engineering Department.
- (ii) Scope of Services
  - a. Following initial review of the application form, the Engineering Department shall prepare and submit a Scope of Services and schedule to the Applicant. If necessary a meeting will be scheduled to review and discuss the Scope of Services in detail.
  - b. Following approval the applicant will pay the City 90% of the estimated cost of the traffic impact study. At the completion of the study the City shall reimburse the applicant all remaining fees.
- (iii) Transportation impact analyses shall be prepared utilizing traffic data that are consistent with:
  - a. The land use and density data as referenced in the most current edition of Trip Generation, published by the Institute of Transportation Engineers;
  - b. Current city and state traffic counts for surrounding streets;
  - c. Any additional traffic counts performed as a part of preparing the study.

### **Attachment A**

City of Franklin Review Process for Transportation Impact Analysis

**Step 1 – Preliminary discussion with Consultant/Developer on project description including site plan.**

**Step 2 – Scoping of Transportation Impact Analysis between the City of Franklin and Consultant/Developer.**

**Step 3 – Consultant, Traffic Engineer and Director of Engineering execute a MOU (Fees may apply per COF Ordinance 2015-64.**

**Step 4 – Consultant/Developer pays review fee and submits Transportation Impact Analysis.**

**Step 5 – City of Franklin prepares initial comments on the transportation impact analysis, if necessary.**

**Step 6 – Consultant submits corrections/revisions to the transportation impact analysis, if necessary.**

**Step 7 – City of Franklin prepares initial comments on proposed mitigation measures, if necessary**

**Step 8 – Consultant submits corrections/revisions on proposed mitigation measures, if necessary and electronic copy of the transportation impact analysis.**

**Step 9 – City of Franklin issues an assessment letter**

## Attachment B

### Transportation Impact Analysis – Memorandum of Understanding (MOU)

This MOU acknowledges that the transportation impact analysis for the following project will be prepared in accordance with the latest version of City of Franklin Zoning Ordinance.

Project Name: **Village on the Hill (Crescent Resource Centre)**  
 Project Address: **Northeast quadrant of Carothers Parkway and McEwen Drive**  
 Project Description: **mixed-use (see attached)**

Attach a site map and a trip generation table with a description of the proposed land uses, ITE rates, estimated daily, morning, midday and afternoon peak hour volumes (ins/outs/totals), proposed trip credits, etc.

Project Buildout Year: **2022**    Ambient or CMP Growth Rate: **Background traffic to be discussed with the City of Franklin Engineering Department**

Study Intersections:

|                                                                                |                                                                                  |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| 1. <b>E. McEwen Drive and Tower Circle</b><br>(signalized)                     | 7. <b>Resource Parkway and Lemon Grass Drive / Project Access</b> (unsignalized) |
| 2. <b>Carothers Parkway and E. McEwen Drive</b><br>(signalized)                | 8. <b>E. McEwen Drive and Resource Parkway</b><br>(unsignalized)                 |
| 3. <b>Carothers Parkway and Tower Circle / Pacific Drive</b> (signalized)      | 9. <b>Pacific Drive and project access</b><br>(unsignalized)                     |
| 4. <b>Carothers Parkway and Resource Parkway</b><br>(unsignalized)             | 10. <b>McEwen Drive &amp; I-65 (signalized &amp; unsignalized)</b>               |
| 5. <b>Resource Parkway and Pacific Drive</b><br>(unsignalized)                 | 11.                                                                              |
| 6. <b>Resource Parkway and Terrapin Street / Project Access</b> (unsignalized) | 12.                                                                              |

Trip Credits: (Exact amount of credit subject to approval by City of Franklin)

|                          | Yes      | No       |
|--------------------------|----------|----------|
| Transit Usage            |          | <b>X</b> |
| Existing Active Land Use |          | <b>X</b> |
| Previous Land Use        |          | <b>X</b> |
| Internal Trip            | <b>X</b> |          |
| Pass-By Trip             | <b>X</b> |          |



Consultant

Name: **FTG, LLC**  
Address: **PO Box 682736; Franklin, TN**  
Phone No: **(615) 771-8022**  
Email: **Gillian@FTGtraffic.com**

Approved By: \_\_\_\_\_  
City of Franklin Traffic Engineer

Developer

**Pearl Street Partners, LLC**  
**205 Powell Place; Brentwood, TN**  
**(615) 312-8242**  
**byoeckel@pearlstreetpartners.com**

\_\_\_\_\_  
Director of Engineering

**Reason for Request:** (Planned Unit Development, Site Plan, Rezoning)  
**Concept Plan**

\_\_\_\_\_  
**Description of Proposed Project** (Address, Map/Parcel Number, etc.) (Attach a conceptual development plans showing all access points and adjacent streets.):  
**Northeast quadrant of Carothers Parkway and McEwen Drive**

\_\_\_\_\_  
**Existing Land Use** (be specific):  
**N/A**

\_\_\_\_\_  
**Proposed Land Use** (be specific):  
**Mixed-use (see attached)**

\_\_\_\_\_  
**Potential Development Yield** (number of residential units; building square footage, projected number of employees, hours of operations):  
**Mixed-use (see attached)**

**As applicant, I agree to pay to the City of Franklin 90% of the entire cost of the Transportation Impact Analysis.**

Property Owner Signature: \_\_\_\_\_

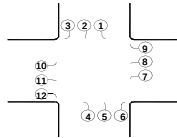
Property Owner Title: \_\_\_\_\_

Date: \_\_\_\_\_

The information above shall be submitted to the Engineering Department (109 3<sup>rd</sup> Ave South; Franklin, TN 37064) to review and provide estimated cost along with a proposed scope of services. All questions should be directed to Carl Baughman, Traffic Engineer III (615-791-3218).

**APPENDIX B  
EXISTING TRAFFIC COUNTS**

INTERSECTION TRAFFIC VOLUME COUNTS



LOCATION: McEwen Drive and the Ramps for I-65  
DATE: November 2015  
RECORDER: Burns  
NOTES: signalized

| LOCATION    | S/B Ramps from SB I-65 |   |       | N/B Ramps from NB I-65 |   |       | W/B McEwen Drive |       |       | E/B McEwen Drive |       |       | Hourly Total | 15-min Total |
|-------------|------------------------|---|-------|------------------------|---|-------|------------------|-------|-------|------------------|-------|-------|--------------|--------------|
| TIME        | 1                      | 2 | 3     | 4                      | 5 | 6     | 7                | 8     | 9     | 10               | 11    | 12    |              |              |
| 6:30-6:45   | 37                     |   | 73    | 63                     |   | 63    | 25               | 61    | 63    | 122              | 27    | 19    | 3,012        | 553          |
| 6:45-7:00   | 45                     |   | 72    | 104                    |   | 50    | 15               | 75    | 91    | 174              | 47    | 28    | 3,412        | 701          |
| 7:00-7:15   | 72                     |   | 103   | 109                    |   | 82    | 25               | 112   | 98    | 124              | 64    | 28    | 3,671        | 817          |
| 7:15-7:30   | 74                     |   | 85    | 148                    |   | 111   | 33               | 133   | 108   | 152              | 59    | 38    | 3,754        | 941          |
| 7:30-7:45   | 91                     |   | 95    | 185                    |   | 136   | 28               | 111   | 82    | 112              | 94    | 19    | 3,588        | 953          |
| 7:45-8:00   | 127                    |   | 88    | 149                    |   | 123   | 23               | 134   | 66    | 121              | 91    | 38    | 3,354        | 960          |
| 8:00-8:15   | 108                    |   | 104   | 132                    |   | 115   | 41               | 133   | 73    | 95               | 77    | 22    | 3,156        | 900          |
| 8:15-8:30   | 90                     |   | 84    | 115                    |   | 90    | 15               | 102   | 60    | 117              | 65    | 37    | 2,820        | 775          |
| 8:30-8:45   | 53                     |   | 85    | 107                    |   | 93    | 30               | 109   | 51    | 99               | 65    | 27    | 2,579        | 719          |
| 8:45-9:00   | 66                     |   | 109   | 130                    |   | 66    | 19               | 101   | 51    | 131              | 60    | 29    | 2,338        | 762          |
| 9:00-9:15   | 35                     |   | 69    | 96                     |   | 43    | 24               | 72    | 37    | 101              | 50    | 37    | 2,073        | 564          |
| 9:15-9:30   | 42                     |   | 82    | 80                     |   | 40    | 20               | 73    | 26    | 90               | 43    | 38    |              | 534          |
| 9:30-9:45   | 34                     |   | 88    | 77                     |   | 24    | 11               | 54    | 27    | 78               | 47    | 38    |              | 478          |
| 9:45-10:00  | 45                     |   | 90    | 75                     |   | 19    | 12               | 55    | 27    | 99               | 37    | 38    |              | 497          |
| 10:00-10:15 |                        |   |       |                        |   |       |                  |       |       |                  |       |       |              |              |
| 10:15-10:30 |                        |   |       |                        |   |       |                  |       |       |                  |       |       |              |              |
| 10:30-10:45 | 26                     |   | 88    | 62                     |   | 16    | 14               | 63    | 28    | 84               | 34    | 52    | 2,210        | 467          |
| 10:45-11:00 | 23                     |   | 95    | 83                     |   | 19    | 16               | 77    | 34    | 71               | 49    | 44    | 2,501        | 511          |
| 11:00-11:15 | 31                     |   | 100   | 64                     |   | 16    | 29               | 107   | 33    | 99               | 53    | 44    | 2,741        | 576          |
| 11:15-11:30 | 33                     |   | 110   | 82                     |   | 25    | 27               | 134   | 48    | 73               | 56    | 68    | 2,998        | 656          |
| 11:30-11:45 | 41                     |   | 140   | 71                     |   | 19    | 34               | 176   | 46    | 81               | 83    | 67    | 3,143        | 758          |
| 11:45-12:00 | 31                     |   | 117   | 73                     |   | 28    | 33               | 161   | 36    | 94               | 102   | 76    | 3,167        | 751          |
| 12:00-12:15 | 37                     |   | 139   | 67                     |   | 21    | 44               | 166   | 43    | 112              | 131   | 73    | 3,201        | 833          |
| 12:15-12:30 | 38                     |   | 120   | 70                     |   | 22    | 20               | 123   | 46    | 127              | 139   | 96    |              | 801          |
| 12:30-12:45 | 61                     |   | 136   | 60                     |   | 22    | 24               | 110   | 32    | 106              | 134   | 97    |              | 782          |
| 12:45-1:00  | 52                     |   | 109   | 61                     |   | 26    | 15               | 97    | 39    | 121              | 163   | 102   |              | 785          |
| 1:00-1:15   |                        |   |       |                        |   |       |                  |       |       |                  |       |       |              |              |
| 1:15-1:30   |                        |   |       |                        |   |       |                  |       |       |                  |       |       |              |              |
| 1:30-1:45   |                        |   |       |                        |   |       |                  |       |       |                  |       |       |              |              |
| 1:45-2:00   |                        |   |       |                        |   |       |                  |       |       |                  |       |       |              |              |
| 2:00-2:15   | 55                     |   | 102   | 48                     |   | 13    | 22               | 60    | 34    | 94               | 67    | 119   | 2,622        | 614          |
| 2:15-2:30   | 32                     |   | 106   | 46                     |   | 12    | 28               | 66    | 34    | 101              | 97    | 103   | 2,701        | 625          |
| 2:30-2:45   | 44                     |   | 93    | 58                     |   | 15    | 43               | 47    | 35    | 94               | 90    | 144   | 2,787        | 663          |
| 2:45-3:00   | 54                     |   | 125   | 42                     |   | 18    | 41               | 67    | 47    | 115              | 89    | 122   | 2,878        | 720          |
| 3:00-3:15   | 47                     |   | 123   | 64                     |   | 9     | 47               | 52    | 69    | 96               | 78    | 108   | 2,903        | 693          |
| 3:15-3:30   | 63                     |   | 120   | 54                     |   | 16    | 30               | 86    | 37    | 112              | 89    | 104   | 3,251        | 711          |
| 3:30-3:45   | 65                     |   | 113   | 63                     |   | 27    | 52               | 73    | 52    | 115              | 89    | 105   | 3,440        | 754          |
| 3:45-4:00   | 50                     |   | 126   | 41                     |   | 25    | 49               | 81    | 70    | 114              | 89    | 100   | 3,772        | 745          |
| 4:00-4:15   | 76                     |   | 125   | 73                     |   | 20    | 92               | 108   | 120   | 153              | 141   | 133   | 4,119        | 1,041        |
| 4:15-4:30   | 113                    |   | 141   | 54                     |   | 29    | 54               | 78    | 89    | 105              | 143   | 94    | 4,246        | 900          |
| 4:30-4:45   | 132                    |   | 156   | 66                     |   | 22    | 51               | 122   | 143   | 163              | 132   | 99    | 4,522        | 1,086        |
| 4:45-5:00   | 116                    |   | 155   | 77                     |   | 16    | 63               | 132   | 157   | 135              | 153   | 88    | 4,521        | 1,092        |
| 5:00-5:15   | 113                    |   | 175   | 71                     |   | 14    | 94               | 133   | 181   | 129              | 161   | 97    | 4,420        | 1,168        |
| 5:15-5:30   | 101                    |   | 185   | 71                     |   | 23    | 92               | 177   | 142   | 145              | 158   | 82    | 4,094        | 1,176        |
| 5:30-5:45   | 113                    |   | 180   | 68                     |   | 20    | 96               | 139   | 105   | 114              | 162   | 88    | 3,623        | 1,085        |
| 5:45-6:00   | 117                    |   | 170   | 55                     |   | 29    | 39               | 99    | 71    | 162              | 173   | 76    |              | 991          |
| 6:00-6:15   | 101                    |   | 150   | 50                     |   | 17    | 46               | 105   | 41    | 136              | 107   | 89    |              | 842          |
| 6:15-6:30   | 60                     |   | 146   | 43                     |   | 11    | 39               | 67    | 40    | 104              | 83    | 112   |              | 705          |
| TOTAL       | 2,744                  |   | 4,872 | 3,307                  |   | 1,605 | 1,555            | 4,231 | 2,712 | 4,770            | 3,871 | 3,018 |              |              |
| AM PK HR    | 400                    |   | 372   | 614                    |   | 485   | 125              | 511   | 329   | 480              | 321   | 117   | 7:15-8:15    |              |
| MID PK HR   | 188                    |   | 504   | 258                    |   | 91    | 103              | 496   | 160   | 466              | 567   | 368   | 12:00-1:00   |              |
| PM PK HR    | 462                    |   | 671   | 285                    |   | 75    | 300              | 564   | 623   | 572              | 604   | 366   | 4:30-5:30    |              |

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| AM PK PHF  | 0.79 |  | 0.89 | 0.83 |  | 0.89 | 0.76 | 0.95 | 0.76 | 0.79 | 0.85 | 0.77 | 0.98 | I/S PHF (AM)  |
| MID PK PHF | 0.77 |  | 0.91 | 0.92 |  | 0.88 | 0.59 | 0.75 | 0.87 | 0.92 | 0.87 | 0.90 | 0.96 | I/S PHF (MID) |
| PM PK PHF  | 0.88 |  | 0.91 | 0.93 |  | 0.82 | 0.80 | 0.80 | 0.86 | 0.88 | 0.94 | 0.92 | 0.96 | I/S PHF (PM)  |



AM PEAK

LOCATION: Mc Ewen & Tower  
 DATE: 5-Apr-16  
 TIME OF DAY: AM

ANALYST: HGB

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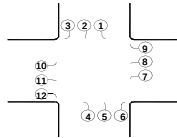
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INTERSECTION TRAFFIC VOLUME COUNTS

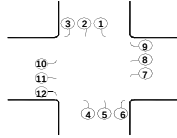


LOCATION: McEwen Drive and Carothers Parkway  
DATE: 20-Oct-15  
RECORDER: City of Franklin  
NOTES: signalized

| LOCATION    | S/B Carothers Parkway |       |       | N/B Carothers Parkway |       |      | W/B McEwen Drive |       |      | E/B McEwen Drive |       |       | Hourly Total | 15-min Total  |
|-------------|-----------------------|-------|-------|-----------------------|-------|------|------------------|-------|------|------------------|-------|-------|--------------|---------------|
| TIME        | 1                     | 2     | 3     | 4                     | 5     | 6    | 7                | 8     | 9    | 10               | 11    | 12    |              |               |
| 6:30-6:45   |                       | 20    | 11    | 9                     | 100   | 7    | 11               | 104   | 21   | 47               | 17    | 30    | 2,240        | 377           |
| 6:45-7:00   |                       | 20    | 20    | 31                    | 147   | 12   | 10               | 130   | 29   | 73               | 25    | 16    | 2,669        | 513           |
| 7:00-7:15   |                       | 18    | 10    | 43                    | 156   | 5    | 16               | 175   | 43   | 80               | 27    | 25    | 3,084        | 598           |
| 7:15-7:30   |                       | 17    | 21    | 59                    | 226   | 8    | 23               | 191   | 52   | 108              | 31    | 16    | 3,312        | 752           |
| 7:30-7:45   |                       | 23    | 35    | 45                    | 239   | 16   | 26               | 161   | 69   | 123              | 42    | 27    | 3,335        | 806           |
| 7:45-8:00   | 2                     | 28    | 31    | 47                    | 288   | 12   | 27               | 188   | 72   | 162              | 47    | 24    | 3,153        | 928           |
| 8:00-8:15   | 2                     | 16    | 17    | 50                    | 205   | 13   | 26               | 158   | 64   | 175              | 56    | 44    | 2,841        | 826           |
| 8:15-8:30   | 3                     | 31    | 19    | 29                    | 171   | 14   | 24               | 143   | 63   | 208              | 48    | 22    | 2,461        | 775           |
| 8:30-8:45   |                       | 29    | 23    | 31                    | 133   | 8    | 24               | 135   | 51   | 128              | 33    | 29    | 2,093        | 624           |
| 8:45-9:00   | 3                     | 35    | 23    | 32                    | 133   | 14   | 16               | 130   | 28   | 130              | 49    | 23    | 1,818        | 616           |
| 9:00-9:15   | 2                     | 36    | 20    | 19                    | 89    | 11   | 17               | 77    | 19   | 93               | 38    | 25    | 1,519        | 446           |
| 9:15-9:30   | 1                     | 40    | 24    | 27                    | 77    | 9    | 23               | 62    | 17   | 63               | 45    | 19    | 1,405        | 407           |
| 9:30-9:45   | 2                     | 46    | 21    | 15                    | 50    | 11   | 14               | 73    | 12   | 39               | 33    | 33    | 1,288        | 349           |
| 9:45-10:00  | 4                     | 26    | 15    | 18                    | 65    | 7    | 17               | 58    | 7    | 43               | 35    | 22    | 1,262        | 317           |
| 10:00-10:15 | 5                     | 41    | 14    | 25                    | 59    | 13   | 13               | 53    | 5    | 23               | 47    | 34    | 1,307        | 332           |
| 10:15-10:30 | 4                     | 34    | 28    | 16                    | 52    | 5    | 13               | 49    | 7    | 19               | 32    | 31    | 1,424        | 290           |
| 10:30-10:45 | 5                     | 42    | 32    | 26                    | 60    | 12   | 10               | 48    | 6    | 24               | 45    | 13    | 1,571        | 323           |
| 10:45-11:00 | 3                     | 40    | 49    | 22                    | 66    | 10   | 12               | 66    | 5    | 32               | 36    | 21    | 1,772        | 362           |
| 11:00-11:15 | 9                     | 72    | 93    | 27                    | 63    | 9    | 16               | 50    | 5    | 29               | 43    | 33    | 1,983        | 449           |
| 11:15-11:30 | 11                    | 50    | 109   | 30                    | 56    | 9    | 15               | 61    | 4    | 21               | 50    | 21    | 2,097        | 437           |
| 11:30-11:45 | 14                    | 65    | 151   | 35                    | 60    | 12   | 15               | 53    | 7    | 42               | 49    | 21    | 2,157        | 524           |
| 11:45-12:00 | 20                    | 96    | 135   | 25                    | 60    | 16   | 13               | 63    | 5    | 53               | 58    | 29    | 2,220        | 573           |
| 12:00-12:15 | 15                    | 96    | 127   | 22                    | 56    | 12   | 10               | 58    | 18   | 65               | 62    | 22    | 2,196        | 563           |
| 12:15-12:30 | 8                     | 85    | 82    | 21                    | 71    | 13   | 9                | 53    | 12   | 71               | 61    | 11    | 2,118        | 497           |
| 12:30-12:45 | 8                     | 78    | 94    | 29                    | 78    | 11   | 8                | 64    | 30   | 99               | 53    | 35    | 2,087        | 587           |
| 12:45-1:00  | 4                     | 61    | 67    | 21                    | 99    | 8    | 15               | 56    | 19   | 114              | 55    | 30    | 1,939        | 549           |
| 1:00-1:15   | 5                     | 70    | 66    | 12                    | 67    | 10   | 10               | 45    | 9    | 98               | 62    | 31    | 1,770        | 485           |
| 1:15-1:30   | 3                     | 58    | 47    | 10                    | 80    | 10   | 20               | 52    | 9    | 81               | 63    | 33    | 1,703        | 466           |
| 1:30-1:45   | 7                     | 58    | 48    | 22                    | 50    | 17   | 16               | 52    | 9    | 71               | 56    | 33    | 1,640        | 439           |
| 1:45-2:00   | 6                     | 62    | 34    | 10                    | 52    | 11   | 18               | 50    | 1    | 56               | 43    | 37    | 1,622        | 380           |
| 2:00-2:15   | 9                     | 62    | 37    | 25                    | 60    | 9    | 7                | 40    | 4    | 44               | 81    | 40    | 1,688        | 418           |
| 2:15-2:30   | 6                     | 44    | 39    | 22                    | 54    | 13   | 9                | 60    | 6    | 30               | 86    | 34    | 1,806        | 403           |
| 2:30-2:45   | 5                     | 54    | 47    | 30                    | 47    | 16   | 20               | 58    | 1    | 34               | 82    | 27    | 1,970        | 421           |
| 2:45-3:00   | 7                     | 81    | 45    | 30                    | 61    | 14   | 15               | 50    | 1    | 28               | 78    | 36    | 2,143        | 446           |
| 3:00-3:15   | 9                     | 85    | 69    | 40                    | 50    | 19   | 18               | 62    |      | 31               | 99    | 54    | 2,298        | 536           |
| 3:15-3:30   | 15                    | 85    | 62    | 32                    | 42    | 18   | 18               | 54    |      | 97               | 104   | 40    | 2,625        | 567           |
| 3:30-3:45   | 13                    | 123   | 86    | 18                    | 49    | 18   | 17               | 68    |      | 64               | 100   | 38    | 2,759        | 594           |
| 3:45-4:00   | 11                    | 150   | 73    | 21                    | 65    | 18   | 23               | 63    |      | 19               | 109   | 49    | 3,137        | 601           |
| 4:00-4:15   | 39                    | 267   | 206   | 27                    | 47    | 33   | 14               | 52    | 3    | 21               | 101   | 53    | 3,463        | 863           |
| 4:15-4:30   | 22                    | 202   | 140   | 17                    | 32    | 22   | 22               | 48    | 4    | 19               | 114   | 59    | 3,683        | 701           |
| 4:30-4:45   | 52                    | 338   | 182   | 22                    | 52    | 17   | 8                | 60    | 3    | 23               | 126   | 89    | 3,946        | 972           |
| 4:45-5:00   | 51                    | 241   | 165   | 27                    | 41    | 12   | 26               | 90    | 1    | 37               | 139   | 97    | 3,841        | 927           |
| 5:00-5:15   | 57                    | 297   | 242   | 18                    | 40    | 33   | 17               | 71    |      | 29               | 160   | 119   | 3,684        | 1,083         |
| 5:15-5:30   | 47                    | 258   | 160   | 27                    | 39    | 20   | 13               | 56    | 1    | 22               | 195   | 126   | 3,267        | 964           |
| 5:30-5:45   | 37                    | 213   | 139   | 17                    | 31    | 12   | 15               | 75    |      | 23               | 171   | 134   | 2,892        | 867           |
| 5:45-6:00   | 40                    | 147   | 110   | 17                    | 35    | 17   | 21               | 53    | 1    | 24               | 205   | 100   |              | 770           |
| 6:00-6:15   | 38                    | 148   | 103   | 11                    | 33    | 16   | 14               | 74    | 8    | 19               | 123   | 79    |              | 666           |
| 6:15-6:30   | 22                    | 117   | 66    | 15                    | 34    | 13   | 13               | 72    | 3    | 15               | 148   | 71    |              | 589           |
| TOTAL       | 626                   | 4,305 | 3,437 | 1,224                 | 3,920 | 645  | 777              | 3,764 | 734  | 2,949            | 3,562 | 2,035 |              |               |
| AM PK HR    | 7                     | 98    | 102   | 171                   | 903   | 55   | 103              | 650   | 268  | 668              | 193   | 117   | 7:30-8:30    |               |
| MID PK HR   | 51                    | 355   | 438   | 97                    | 265   | 52   | 40               | 238   | 65   | 288              | 234   | 97    | 11:45-12:45  |               |
| PM PK HR    | 207                   | 1,134 | 749   | 94                    | 172   | 82   | 64               | 277   | 5    | 111              | 620   | 431   | 4:30-5:30    |               |
| AM PK PHF   | 0.58                  | 0.79  | 0.73  | 0.86                  | 0.78  | 0.86 | 0.95             | 0.86  | 0.93 | 0.80             | 0.86  | 0.66  | 0.90         | I/S PHF (AM)  |
| MID PK PHF  | 0.64                  | 0.92  | 0.81  | 0.84                  | 0.85  | 0.81 | 0.77             | 0.93  | 0.54 | 0.73             | 0.94  | 0.69  | 0.95         | I/S PHF (MID) |
| PM PK PHF   | 0.91                  | 0.84  | 0.77  | 0.87                  | 0.83  | 0.62 | 0.62             | 0.77  | 0.42 | 0.75             | 0.79  | 0.86  | 0.91         | I/S PHF (PM)  |



INTERSECTION TRAFFIC VOLUME COUNTS



LOCATION: Carothers Parkway and Tower Circle/Pacific Drive  
DATE: 28-Oct-15  
RECORDER: City of Franklin  
NOTES: signalized

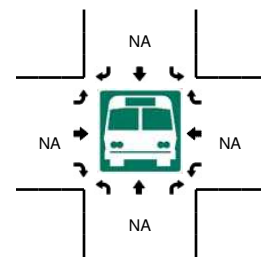
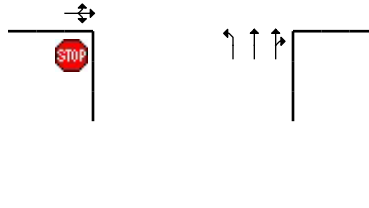
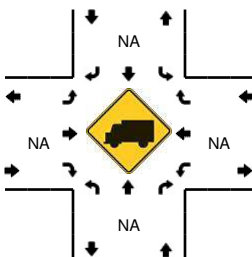
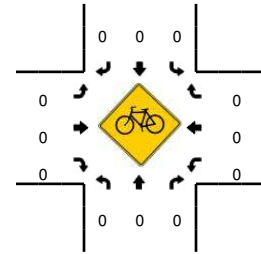
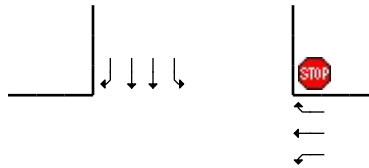
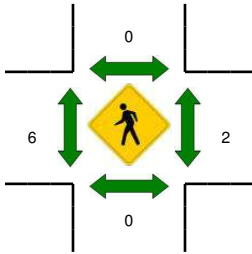
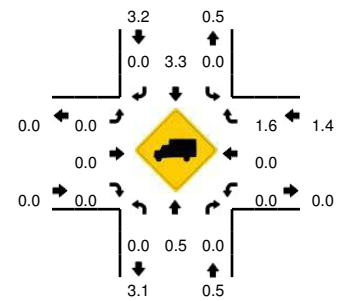
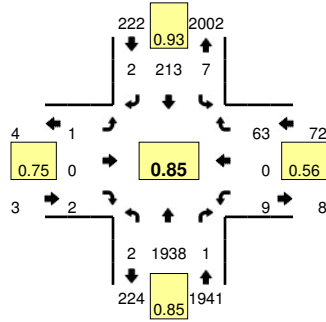
| LOCATION    | S/B Carothers Parkway |       |     | N/B Carothers Parkway |       |     | W/B Pacific Drive |   |    | E/B Tower Circle |    |     | Hourly Total | 15-min Total |
|-------------|-----------------------|-------|-----|-----------------------|-------|-----|-------------------|---|----|------------------|----|-----|--------------|--------------|
| TIME        | 1                     | 2     | 3   | 4                     | 5     | 6   | 7                 | 8 | 9  | 10               | 11 | 12  |              |              |
| 6:30-6:45   | 0                     | 24    | 4   | 4                     | 181   | 1   | 4                 | 0 | 3  | 0                | 0  | 1   | 1,333        | 222          |
| 6:45-7:00   | 0                     | 18    | 4   | 7                     | 239   | 0   | 3                 | 0 | 2  | 1                | 0  | 3   | 1,615        | 277          |
| 7:00-7:15   | 0                     | 35    | 4   | 1                     | 318   | 2   | 5                 | 1 | 4  | 2                | 1  | 2   | 1,963        | 375          |
| 7:15-7:30   | 1                     | 32    | 4   | 4                     | 403   | 1   | 9                 | 0 | 4  | 1                | 0  | 0   | 2,136        | 459          |
| 7:30-7:45   | 0                     | 48    | 3   | 3                     | 434   | 3   | 8                 | 0 | 3  | 1                | 0  | 1   | 2,072        | 504          |
| 7:45-8:00   | 1                     | 55    | 9   | 2                     | 544   | 0   | 7                 | 1 | 4  | 2                | 0  | 0   | 1,908        | 625          |
| 8:00-8:15   | 1                     | 54    | 1   | 4                     | 473   | 2   | 4                 | 0 | 3  | 4                | 0  | 2   | 1,584        | 548          |
| 8:15-8:30   | 0                     | 35    | 8   | 2                     | 337   | 3   | 3                 | 1 | 2  | 4                | 0  | 0   | 1,270        | 395          |
| 8:30-8:45   | 0                     | 38    | 4   | 3                     | 283   | 4   | 2                 | 0 | 1  | 4                | 0  | 1   | 1,071        | 340          |
| 8:45-9:00   | 1                     | 61    | 2   | 1                     | 224   | 3   | 3                 | 0 | 2  | 2                | 1  | 1   | 898          | 301          |
| 9:00-9:15   | 0                     | 55    | 7   | 8                     | 156   | 2   | 1                 | 0 | 1  | 4                | 0  | 0   | 753          | 234          |
| 9:15-9:30   | 0                     | 55    | 2   | 2                     | 127   | 2   | 2                 | 0 | 1  | 5                | 0  | 0   | 696          | 196          |
| 9:30-9:45   | 1                     | 55    | 5   | 1                     | 99    | 1   | 1                 | 0 | 1  | 3                | 0  | 0   | 666          | 167          |
| 9:45-10:00  | 2                     | 48    | 3   | 1                     | 97    | 1   | 1                 | 0 | 2  | 0                | 0  | 1   | 642          | 156          |
| 10:00-10:15 | 0                     | 91    | 2   | 1                     | 75    | 2   | 1                 | 0 | 0  | 0                | 2  | 3   | 699          | 177          |
| 10:15-10:30 | 0                     | 71    | 8   | 1                     | 80    | 0   | 2                 | 0 | 0  | 3                | 0  | 1   | 827          | 166          |
| 10:30-10:45 | 0                     | 68    | 0   | 1                     | 71    | 0   | 0                 | 0 | 1  | 2                | 0  | 0   | 959          | 143          |
| 10:45-11:00 | 0                     | 112   | 1   | 1                     | 91    | 5   | 0                 | 0 | 0  | 1                | 0  | 2   | 1,149        | 213          |
| 11:00-11:15 | 0                     | 208   | 1   | 0                     | 80    | 1   | 1                 | 0 | 4  | 7                | 0  | 3   | 1,286        | 305          |
| 11:15-11:30 | 1                     | 184   | 2   | 1                     | 94    | 0   | 3                 | 0 | 0  | 11               | 0  | 2   | 1,371        | 298          |
| 11:30-11:45 | 0                     | 209   | 5   | 2                     | 102   | 2   | 0                 | 0 | 2  | 8                | 0  | 3   | 1,444        | 333          |
| 11:45-12:00 | 0                     | 215   | 5   | 1                     | 114   | 4   | 3                 | 0 | 1  | 3                | 1  | 3   | 1,467        | 350          |
| 12:00-12:15 | 3                     | 193   | 5   | 6                     | 168   | 3   | 3                 | 0 | 0  | 5                | 0  | 4   | 1,444        | 390          |
| 12:15-12:30 | 0                     | 169   | 9   | 3                     | 174   | 5   | 2                 | 0 | 1  | 3                | 1  | 4   | 1,388        | 371          |
| 12:30-12:45 | 1                     | 142   | 7   | 0                     | 193   | 3   | 1                 | 0 | 1  | 5                | 1  | 2   | 1,253        | 356          |
| 12:45-1:00  | 2                     | 127   | 6   | 3                     | 177   | 2   | 4                 | 0 | 2  | 2                | 0  | 2   | 1,137        | 327          |
| 1:00-1:15   | 1                     | 149   | 9   | 3                     | 154   | 7   | 3                 | 0 | 1  | 5                | 0  | 2   | 1,032        | 334          |
| 1:15-1:30   | 2                     | 120   | 3   | 0                     | 101   | 1   | 4                 | 1 | 2  | 1                | 1  | 0   | 920          | 236          |
| 1:30-1:45   | 1                     | 96    | 2   | 0                     | 126   | 3   | 5                 | 0 | 4  | 2                | 0  | 1   | 866          | 240          |
| 1:45-2:00   | 0                     | 113   | 1   | 0                     | 101   | 0   | 2                 | 1 | 0  | 2                | 0  | 2   | 845          | 222          |
| 2:00-2:15   | 1                     | 114   | 4   | 2                     | 91    | 3   | 0                 | 0 | 1  | 3                | 0  | 3   | 873          | 222          |
| 2:15-2:30   | 1                     | 86    | 1   | 1                     | 87    | 2   | 0                 | 0 | 0  | 3                | 1  | 0   | 876          | 182          |
| 2:30-2:45   | 1                     | 131   | 1   | 0                     | 78    | 3   | 2                 | 0 | 1  | 1                | 0  | 1   | 949          | 219          |
| 2:45-3:00   | 1                     | 138   | 2   | 1                     | 96    | 2   | 4                 | 0 | 1  | 0                | 0  | 5   | 1,035        | 250          |
| 3:00-3:15   | 2                     | 149   | 1   | 1                     | 68    | 0   | 0                 | 0 | 1  | 1                | 0  | 2   | 1,108        | 225          |
| 3:15-3:30   | 0                     | 157   | 3   | 1                     | 84    | 2   | 0                 | 0 | 1  | 2                | 0  | 5   | 1,442        | 255          |
| 3:30-3:45   | 3                     | 218   | 3   | 1                     | 71    | 0   | 3                 | 0 | 1  | 1                | 0  | 4   | 1,710        | 305          |
| 3:45-4:00   | 0                     | 249   | 3   | 0                     | 56    | 4   | 3                 | 0 | 3  | 2                | 0  | 3   | 1,976        | 323          |
| 4:00-4:15   | 5                     | 474   | 2   | 1                     | 59    | 7   | 5                 | 0 | 2  | 1                | 0  | 3   | 2,195        | 559          |
| 4:15-4:30   | 2                     | 430   | 1   | 2                     | 71    | 5   | 3                 | 0 | 3  | 2                | 0  | 4   | 2,335        | 523          |
| 4:30-4:45   | 1                     | 474   | 1   | 0                     | 77    | 4   | 1                 | 0 | 1  | 5                | 0  | 7   | 2,342        | 571          |
| 4:45-5:00   | 1                     | 467   | 2   | 0                     | 57    | 7   | 1                 | 0 | 1  | 2                | 0  | 4   | 2,229        | 542          |
| 5:00-5:15   | 1                     | 600   | 3   | 1                     | 70    | 8   | 3                 | 0 | 0  | 4                | 1  | 8   | 2,032        | 699          |
| 5:15-5:30   | 1                     | 443   | 3   | 1                     | 63    | 10  | 1                 | 0 | 3  | 2                | 0  | 3   | 1,644        | 530          |
| 5:30-5:45   | 3                     | 367   | 3   | 1                     | 60    | 12  | 2                 | 0 | 2  | 5                | 1  | 2   | 1,328        | 458          |
| 5:45-6:00   | 3                     | 261   | 1   | 1                     | 66    | 4   | 1                 | 0 | 1  | 5                | 0  | 2   |              | 345          |
| 6:00-6:15   | 0                     | 266   | 2   | 0                     | 30    | 3   | 0                 | 0 | 3  | 6                | 0  | 1   |              | 311          |
| 6:15-6:30   | 0                     | 144   | 4   | 1                     | 47    | 10  | 4                 | 0 | 1  | 1                | 0  | 2   |              | 214          |
| TOTAL       | 44                    | 8,048 | 166 | 81                    | 7,047 | 149 | 120               | 5 | 78 | 139              | 11 | 105 |              |              |
| AM PK HR    | 3                     | 189   | 17  | 13                    | 1,854 | 6   | 28                | 1 | 14 | 8                | 0  | 3   | 7:15-8:15    |              |
| MID PK HR   | 4                     | 719   | 26  | 10                    | 649   | 15  | 9                 | 0 | 3  | 16               | 3  | 13  | 11:45-12:45  |              |
| PM PK HR    | 4                     | 1,984 | 9   | 2                     | 267   | 29  | 6                 | 0 | 5  | 13               | 1  | 22  | 4:30-5:30    |              |

|            |      |      |      |      |      |      |      |      |      |      |      |      |      |               |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|
| AM PK PHF  | 0.75 | 0.86 | 0.47 | 0.81 | 0.85 | 0.50 | 0.78 | 0.25 | 0.88 | 0.50 |      | 0.38 | 0.85 | I/S PHF (AM)  |
| MID PK PHF | 0.33 | 0.84 | 0.72 | 0.42 | 0.84 | 0.75 | 0.75 |      | 0.75 | 0.80 | 0.75 | 0.81 | 0.94 | I/S PHF (MID) |
| PM PK PHF  | 1.00 | 0.83 | 0.75 | 0.50 | 0.87 | 0.73 | 0.50 |      | 0.42 | 0.65 | 0.25 | 0.69 | 0.84 | I/S PHF (PM)  |

**LOCATION:** Carothers Pkwy -- Resource Pkwy  
**CITY/STATE:** Franklin , TN

**QC JOB #:** 13867213  
**DATE:** Thu, Aug 11 2016

**Peak-Hour: 7:30 AM -- 8:30 AM**  
**Peak 15-Min: 7:45 AM -- 8:00 AM**



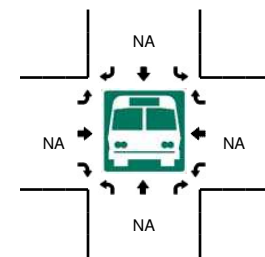
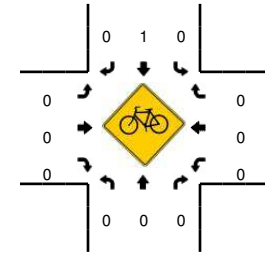
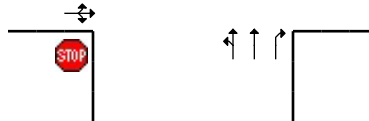
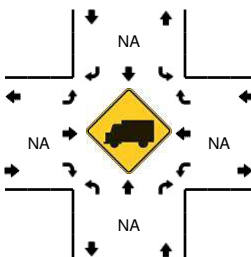
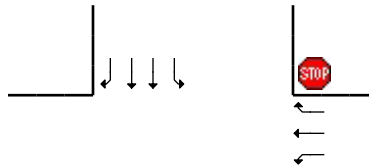
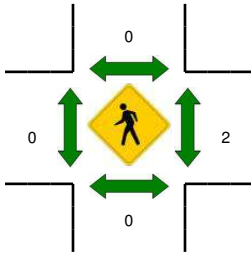
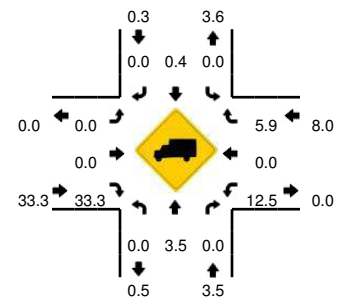
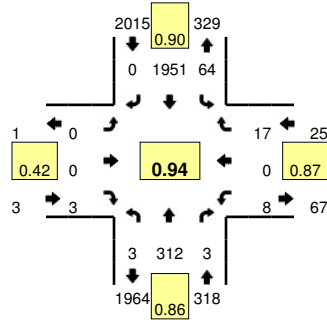
| 15-Min Count Period Beginning At | Carothers Pkwy (Northbound) |      |       |   | Carothers Pkwy (Southbound) |      |       |   | Resource Pkwy (Eastbound) |      |       |   | Resource Pkwy (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|-----------------------------|------|-------|---|-----------------------------|------|-------|---|---------------------------|------|-------|---|---------------------------|------|-------|---|-------|---------------|
|                                  | Left                        | Thru | Right | U | Left                        | Thru | Right | U | Left                      | Thru | Right | U | Left                      | Thru | Right | U |       |               |
| 6:00 AM                          | 1                           | 68   | 1     | 0 | 0                           | 10   | 0     | 1 | 0                         | 0    | 0     | 0 | 1                         | 0    | 4     | 0 | 86    |               |
| 6:15 AM                          | 1                           | 104  | 0     | 0 | 1                           | 20   | 1     | 0 | 0                         | 0    | 0     | 0 | 6                         | 0    | 6     | 0 | 139   |               |
| 6:30 AM                          | 3                           | 154  | 0     | 0 | 0                           | 23   | 1     | 1 | 0                         | 0    | 0     | 0 | 5                         | 0    | 10    | 0 | 197   |               |
| 6:45 AM                          | 2                           | 235  | 0     | 0 | 0                           | 51   | 1     | 0 | 0                         | 0    | 1     | 0 | 4                         | 0    | 15    | 0 | 309   | 731           |
| 7:00 AM                          | 2                           | 268  | 1     | 0 | 2                           | 51   | 1     | 0 | 0                         | 0    | 1     | 0 | 4                         | 0    | 13    | 0 | 343   | 988           |
| 7:15 AM                          | 2                           | 392  | 0     | 0 | 1                           | 34   | 0     | 0 | 0                         | 0    | 0     | 0 | 3                         | 0    | 12    | 0 | 444   | 1293          |
| 7:30 AM                          | 2                           | 440  | 0     | 0 | 3                           | 51   | 1     | 0 | 0                         | 0    | 0     | 0 | 4                         | 0    | 7     | 0 | 508   | 1604          |
| 7:45 AM                          | 0                           | 570  | 0     | 0 | 1                           | 49   | 0     | 0 | 1                         | 0    | 0     | 0 | 2                         | 0    | 33    | 0 | 656   | 1951          |
| 8:00 AM                          | 0                           | 510  | 0     | 0 | 2                           | 63   | 0     | 0 | 0                         | 0    | 1     | 0 | 1                         | 0    | 15    | 0 | 592   | 2200          |
| 8:15 AM                          | 0                           | 418  | 1     | 0 | 1                           | 50   | 1     | 0 | 0                         | 0    | 1     | 0 | 2                         | 0    | 8     | 0 | 482   | 2238          |
| 8:30 AM                          | 0                           | 322  | 1     | 0 | 2                           | 64   | 0     | 0 | 0                         | 0    | 0     | 0 | 2                         | 0    | 14    | 0 | 405   | 2135          |
| 8:45 AM                          | 0                           | 279  | 0     | 0 | 2                           | 59   | 1     | 0 | 0                         | 0    | 1     | 0 | 2                         | 0    | 7     | 0 | 351   | 1830          |
|                                  |                             |      |       |   |                             |      |       |   |                           |      |       |   |                           |      |       |   |       |               |
| Peak 15-Min Flowrates            | Northbound                  |      |       |   | Southbound                  |      |       |   | Eastbound                 |      |       |   | Westbound                 |      |       |   | Total |               |
|                                  | Left                        | Thru | Right | U | Left                        | Thru | Right | U | Left                      | Thru | Right | U | Left                      | Thru | Right | U |       |               |
| All Vehicles                     | 0                           | 2280 | 0     | 0 | 4                           | 196  | 0     | 0 | 4                         | 0    | 0     | 0 | 8                         | 0    | 132   | 0 | 2624  |               |
| Heavy Trucks                     | 0                           | 4    | 0     | 0 | 0                           | 4    | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 8     |               |
| Pedestrians                      | 0                           | 0    | 0     | 0 | 0                           | 0    | 0     | 0 | 0                         | 4    | 0     | 0 | 0                         | 0    | 0     | 0 | 4     |               |
| Bicycles                         | 0                           | 0    | 0     | 0 | 0                           | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0     |               |
| Railroad                         |                             |      |       |   |                             |      |       |   |                           |      |       |   |                           |      |       |   |       |               |
| Stopped Buses                    |                             |      |       |   |                             |      |       |   |                           |      |       |   |                           |      |       |   |       |               |

Comments:

**LOCATION:** Carothers Pkwy -- Resource Pkwy  
**CITY/STATE:** Franklin , TN

**QC JOB #:** 13867214  
**DATE:** Thu, Aug 11 2016

**Peak-Hour: 4:30 PM -- 5:30 PM**  
**Peak 15-Min: 5:00 PM -- 5:15 PM**



| 15-Min Count Period Beginning At | Carothers Pkwy (Northbound) |      |       |   | Carothers Pkwy (Southbound) |      |       |   | Resource Pkwy (Eastbound) |      |       |   | Resource Pkwy (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|-----------------------------|------|-------|---|-----------------------------|------|-------|---|---------------------------|------|-------|---|---------------------------|------|-------|---|-------|---------------|
|                                  | Left                        | Thru | Right | U | Left                        | Thru | Right | U | Left                      | Thru | Right | U | Left                      | Thru | Right | U |       |               |
| 4:00 PM                          | 0                           | 64   | 1     | 1 | 9                           | 437  | 0     | 0 | 1                         | 0    | 1     | 0 | 3                         | 0    | 5     | 0 | 522   |               |
| 4:15 PM                          | 0                           | 67   | 3     | 0 | 13                          | 401  | 0     | 0 | 0                         | 0    | 0     | 0 | 1                         | 0    | 3     | 0 | 488   |               |
| 4:30 PM                          | 0                           | 90   | 1     | 1 | 4                           | 512  | 0     | 0 | 0                         | 0    | 0     | 0 | 3                         | 0    | 4     | 0 | 615   |               |
| 4:45 PM                          | 1                           | 79   | 0     | 1 | 15                          | 406  | 0     | 0 | 0                         | 0    | 1     | 0 | 3                         | 0    | 3     | 0 | 509   | 2134          |
| 5:00 PM                          | 0                           | 63   | 2     | 0 | 23                          | 535  | 0     | 0 | 0                         | 0    | 2     | 0 | 0                         | 0    | 4     | 0 | 629   | 2241          |
| 5:15 PM                          | 0                           | 80   | 0     | 0 | 22                          | 498  | 0     | 0 | 0                         | 0    | 0     | 0 | 2                         | 0    | 6     | 0 | 608   | 2361          |
| 5:30 PM                          | 0                           | 71   | 0     | 0 | 21                          | 403  | 0     | 1 | 0                         | 0    | 6     | 0 | 0                         | 0    | 6     | 0 | 508   | 2254          |
| 5:45 PM                          | 0                           | 65   | 2     | 1 | 14                          | 282  | 0     | 0 | 0                         | 0    | 1     | 0 | 1                         | 0    | 10    | 0 | 376   | 2121          |
| 6:00 PM                          | 0                           | 56   | 0     | 0 | 14                          | 264  | 0     | 0 | 0                         | 0    | 1     | 0 | 1                         | 0    | 11    | 0 | 347   | 1839          |
| 6:15 PM                          | 1                           | 53   | 3     | 0 | 15                          | 164  | 0     | 0 | 0                         | 0    | 2     | 0 | 2                         | 0    | 13    | 0 | 253   | 1484          |
| 6:30 PM                          | 0                           | 51   | 1     | 0 | 11                          | 127  | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 14    | 0 | 204   | 1180          |
| 6:45 PM                          | 0                           | 53   | 1     | 0 | 11                          | 88   | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 5     | 0 | 158   | 962           |
|                                  |                             |      |       |   |                             |      |       |   |                           |      |       |   |                           |      |       |   |       |               |
| Peak 15-Min Flowrates            | Northbound                  |      |       |   | Southbound                  |      |       |   | Eastbound                 |      |       |   | Westbound                 |      |       |   | Total |               |
|                                  | Left                        | Thru | Right | U | Left                        | Thru | Right | U | Left                      | Thru | Right | U | Left                      | Thru | Right | U |       |               |
| All Vehicles                     | 0                           | 252  | 8     | 0 | 92                          | 2140 | 0     | 0 | 0                         | 0    | 8     | 0 | 0                         | 0    | 16    | 0 | 2516  |               |
| Heavy Trucks                     | 0                           | 4    | 0     | 0 | 0                           | 4    | 0     | 0 | 0                         | 0    | 4     | 0 | 0                         | 0    | 4     | 0 | 16    |               |
| Pedestrians                      | 0                           | 0    | 0     | 0 | 0                           | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                           | 0    | 0     | 0 | 0                           | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0     |               |
| Railroad                         | 0                           | 0    | 0     | 0 | 0                           | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0     |               |
| Stopped Buses                    | 0                           | 0    | 0     | 0 | 0                           | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0                         | 0    | 0     | 0 | 0     |               |

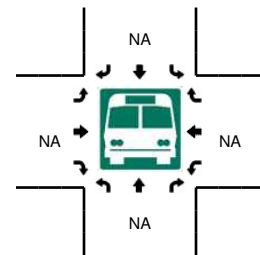
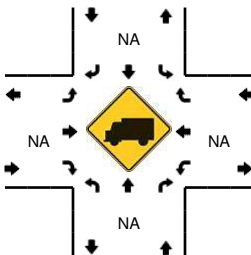
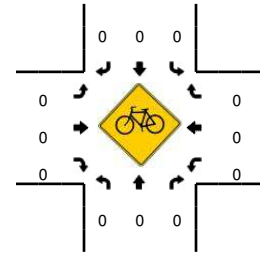
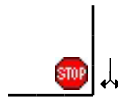
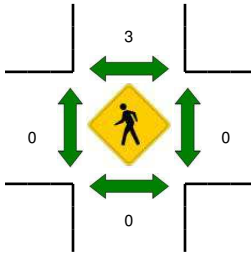
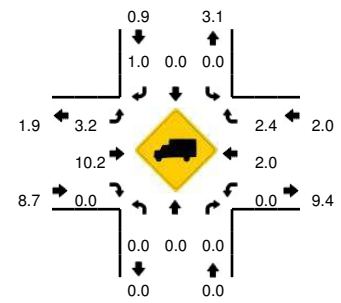
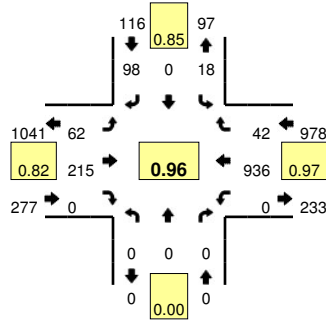
**Comments:**



**LOCATION:** Resource Pkwy -- E. McEwen Dr  
**CITY/STATE:** Franklin, TN

**QC JOB #:** 13867219  
**DATE:** Thu, Aug 11 2016

**Peak-Hour: 7:30 AM -- 8:30 AM**  
**Peak 15-Min: 7:45 AM -- 8:00 AM**



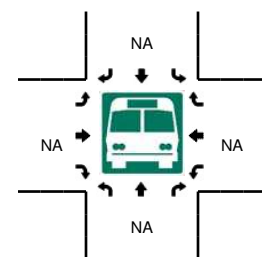
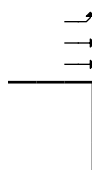
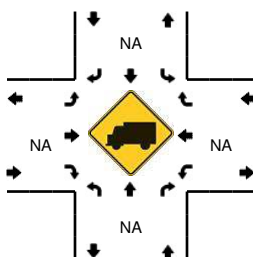
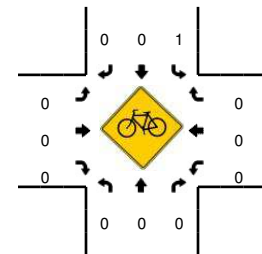
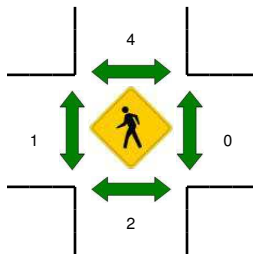
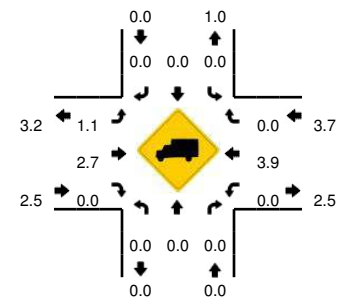
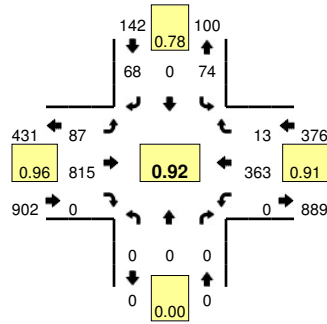
| 15-Min Count Period Beginning At | Resource Pkwy (Northbound) |      |       |   | Resource Pkwy (Southbound) |      |       |   | E. McEwen Dr (Eastbound) |      |       |   | E. McEwen Dr (Westbound) |      |       |   | Total        | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------------------|------|-------|---|--------------------------|------|-------|---|--------------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                     | Thru | Right | U | Left                     | Thru | Right | U |              |               |
| 6:00 AM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 10    | 0 | 1                        | 17   | 0     | 0 | 0                        | 37   | 0     | 0 | 65           | 608           |
| 6:15 AM                          | 0                          | 0    | 0     | 0 | 1                          | 0    | 18    | 0 | 2                        | 32   | 0     | 0 | 0                        | 53   | 0     | 0 | 106          |               |
| 6:30 AM                          | 0                          | 0    | 0     | 0 | 3                          | 0    | 20    | 0 | 3                        | 43   | 0     | 0 | 0                        | 121  | 2     | 0 | 192          |               |
| 6:45 AM                          | 0                          | 0    | 0     | 0 | 6                          | 0    | 21    | 0 | 5                        | 53   | 0     | 0 | 0                        | 156  | 4     | 0 | 245          |               |
| 7:00 AM                          | 0                          | 0    | 0     | 0 | 3                          | 0    | 18    | 0 | 7                        | 63   | 0     | 0 | 0                        | 200  | 4     | 0 | 295          |               |
| 7:15 AM                          | 0                          | 0    | 0     | 0 | 2                          | 0    | 20    | 0 | 20                       | 51   | 0     | 0 | 0                        | 192  | 9     | 1 | 295          |               |
| 7:30 AM                          | 0                          | 0    | 0     | 0 | 3                          | 0    | 31    | 0 | 12                       | 43   | 0     | 1 | 0                        | 233  | 15    | 0 | 338          | 1173          |
| 7:45 AM                          | 0                          | 0    | 0     | 0 | 3                          | 0    | 20    | 0 | 21                       | 63   | 0     | 2 | 0                        | 239  | 8     | 0 | 356          | 1284          |
| 8:00 AM                          | 0                          | 0    | 0     | 0 | 10                         | 0    | 19    | 0 | 11                       | 56   | 0     | 2 | 0                        | 223  | 8     | 0 | 329          | 1318          |
| 8:15 AM                          | 0                          | 0    | 0     | 0 | 2                          | 0    | 28    | 0 | 11                       | 53   | 0     | 2 | 0                        | 241  | 11    | 0 | 348          | 1371          |
| 8:30 AM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 13    | 0 | 11                       | 49   | 0     | 2 | 0                        | 196  | 8     | 0 | 279          | 1312          |
| 8:45 AM                          | 0                          | 0    | 0     | 0 | 1                          | 0    | 13    | 2 | 14                       | 41   | 0     | 1 | 0                        | 197  | 5     | 0 | 274          | 1230          |
| <b>Peak 15-Min Flowrates</b>     | <b>Northbound</b>          |      |       |   | <b>Southbound</b>          |      |       |   | <b>Eastbound</b>         |      |       |   | <b>Westbound</b>         |      |       |   | <b>Total</b> |               |
| All Vehicles                     | 0                          | 0    | 0     | 0 | 12                         | 0    | 80    | 0 | 84                       | 252  | 0     | 8 | 0                        | 956  | 32    | 0 | 1424         |               |
| Heavy Trucks                     | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 28   | 0     | 0 | 0                        | 32   | 0     | 0 | 60           |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0            |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0            |               |
| Railroad                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0            |               |
| Stopped Buses                    | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0            |               |

Comments:

**LOCATION:** Resource Pkwy -- E. McEwen Dr  
**CITY/STATE:** Franklin, TN

**QC JOB #:** 13867220  
**DATE:** Thu, Aug 11 2016

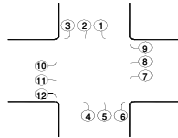
**Peak-Hour: 5:00 PM -- 6:00 PM**  
**Peak 15-Min: 5:15 PM -- 5:30 PM**



| 15-Min Count Period Beginning At | Resource Pkwy (Northbound) |      |       |   | Resource Pkwy (Southbound) |      |       |   | E. McEwen Dr (Eastbound) |      |       |   | E. McEwen Dr (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------------------|------|-------|---|--------------------------|------|-------|---|-------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                     | Thru | Right | U | Left                     | Thru | Right | U |       |               |
| 4:00 PM                          | 0                          | 0    | 0     | 0 | 14                         | 0    | 12    | 0 | 30                       | 164  | 0     | 0 | 0                        | 71   | 6     | 0 | 297   | 1203          |
| 4:15 PM                          | 0                          | 0    | 0     | 0 | 12                         | 0    | 12    | 0 | 13                       | 140  | 0     | 1 | 0                        | 76   | 3     | 0 | 257   |               |
| 4:30 PM                          | 0                          | 0    | 0     | 0 | 8                          | 0    | 21    | 0 | 24                       | 185  | 0     | 0 | 0                        | 83   | 5     | 0 | 326   |               |
| 4:45 PM                          | 0                          | 0    | 0     | 0 | 11                         | 0    | 16    | 0 | 24                       | 191  | 0     | 0 | 0                        | 81   | 0     | 0 | 323   |               |
| 5:00 PM                          | 0                          | 0    | 0     | 0 | 24                         | 0    | 23    | 0 | 13                       | 221  | 0     | 0 | 0                        | 80   | 1     | 0 | 362   | 1268          |
| 5:15 PM                          | 0                          | 0    | 0     | 0 | 26                         | 0    | 23    | 0 | 24                       | 208  | 0     | 0 | 0                        | 99   | 4     | 0 | 384   | 1395          |
| 5:30 PM                          | 0                          | 0    | 0     | 0 | 13                         | 0    | 11    | 0 | 22                       | 193  | 0     | 0 | 0                        | 94   | 3     | 0 | 336   | 1405          |
| 5:45 PM                          | 0                          | 0    | 0     | 0 | 11                         | 0    | 11    | 0 | 28                       | 193  | 0     | 0 | 0                        | 90   | 5     | 0 | 338   | 1420          |
| 6:00 PM                          | 0                          | 0    | 0     | 0 | 8                          | 0    | 13    | 0 | 23                       | 161  | 0     | 0 | 0                        | 74   | 4     | 0 | 283   | 1341          |
| 6:15 PM                          | 0                          | 0    | 0     | 0 | 4                          | 0    | 19    | 0 | 15                       | 123  | 0     | 0 | 0                        | 69   | 3     | 0 | 233   | 1190          |
| 6:30 PM                          | 0                          | 0    | 0     | 0 | 3                          | 0    | 9     | 0 | 15                       | 113  | 0     | 0 | 0                        | 72   | 4     | 0 | 216   | 1070          |
| 6:45 PM                          | 0                          | 0    | 0     | 0 | 2                          | 0    | 9     | 0 | 19                       | 107  | 0     | 0 | 0                        | 53   | 4     | 0 | 194   | 926           |
|                                  |                            |      |       |   |                            |      |       |   |                          |      |       |   |                          |      |       |   |       |               |
| Peak 15-Min Flowrates            | Northbound                 |      |       |   | Southbound                 |      |       |   | Eastbound                |      |       |   | Westbound                |      |       |   | Total |               |
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                     | Thru | Right | U | Left                     | Thru | Right | U |       |               |
| All Vehicles                     | 0                          | 0    | 0     | 0 | 104                        | 0    | 92    | 0 | 96                       | 832  | 0     | 0 | 0                        | 396  | 16    | 0 | 1536  |               |
| Heavy Trucks                     | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 4    | 0     | 0 | 0                        | 16   | 0     | 0 | 20    |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 4    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 4     |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0     |               |
| Railroad                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0     |               |
| Stopped Buses                    | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0                        | 0    | 0     | 0 | 0     |               |

Comments:

INTERSECTION TRAFFIC VOLUME COUNTS



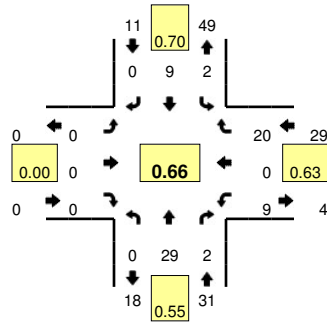
LOCATION: Resource Parkway and Pacific Drive  
DATE: 7-Jul-15  
RECORDER: City of Franklin  
NOTES: unsignalized

| LOCATION    | S/B Resource Parkway |     |    | N/B Resource Parkway |     |    | W/B Pacific Drive |    |    | E/B Pacific Drive |    |    | Hourly Total | 15-min Total |
|-------------|----------------------|-----|----|----------------------|-----|----|-------------------|----|----|-------------------|----|----|--------------|--------------|
| TIME        | 1                    | 2   | 3  | 4                    | 5   | 6  | 7                 | 8  | 9  | 10                | 11 | 12 |              |              |
| 6:30-6:45   | 0                    | 1   | 0  | 0                    | 4   | 0  | 1                 | 0  | 2  | 0                 | 0  | 0  | 28           | 8            |
| 6:45-7:00   | 0                    | 1   | 0  | 0                    | 1   | 0  | 0                 | 2  | 0  | 0                 | 0  | 0  | 32           | 4            |
| 7:00-7:15   | 0                    | 0   | 0  | 1                    | 0   | 0  | 0                 | 0  | 1  | 0                 | 0  | 0  | 47           | 2            |
| 7:15-7:30   | 1                    | 0   | 1  | 0                    | 4   | 1  | 1                 | 3  | 2  | 0                 | 1  | 0  | 57           | 14           |
| 7:30-7:45   | 0                    | 0   | 0  | 0                    | 8   | 0  | 1                 | 2  | 1  | 0                 | 0  | 0  | 54           | 12           |
| 7:45-8:00   | 0                    | 0   | 0  | 2                    | 9   | 0  | 1                 | 1  | 5  | 1                 | 0  | 0  | 58           | 19           |
| 8:00-8:15   | 0                    | 0   | 2  | 2                    | 6   | 0  | 0                 | 0  | 0  | 0                 | 0  | 2  | 49           | 12           |
| 8:15-8:30   | 0                    | 1   | 0  | 0                    | 5   | 0  | 1                 | 0  | 3  | 0                 | 1  | 0  | 41           | 11           |
| 8:30-8:45   | 1                    | 2   | 1  | 0                    | 8   | 0  | 0                 | 0  | 2  | 1                 | 0  | 1  | 38           | 16           |
| 8:45-9:00   | 0                    | 0   | 5  | 1                    | 3   | 0  | 1                 | 0  | 0  | 0                 | 0  | 0  | 28           | 10           |
| 9:00-9:15   | 0                    | 0   | 0  | 0                    | 0   | 0  | 0                 | 2  | 1  | 0                 | 0  | 1  | 29           | 4            |
| 9:15-9:30   | 0                    | 1   | 0  | 0                    | 4   | 0  | 0                 | 0  | 2  | 0                 | 0  | 1  | 37           | 8            |
| 9:30-9:45   | 0                    | 1   | 1  | 0                    | 2   | 0  | 0                 | 0  | 0  | 2                 | 0  | 0  | 39           | 6            |
| 9:45-10:00  | 2                    | 1   | 0  | 0                    | 5   | 0  | 0                 | 0  | 2  | 0                 | 0  | 1  | 44           | 11           |
| 10:00-10:15 | 1                    | 2   | 2  | 1                    | 2   | 0  | 0                 | 2  | 1  | 1                 | 0  | 0  | 45           | 12           |
| 10:15-10:30 | 0                    | 0   | 2  | 1                    | 0   | 0  | 0                 | 1  | 2  | 1                 | 2  | 1  | 47           | 10           |
| 10:30-10:45 | 3                    | 2   | 2  | 1                    | 2   | 0  | 0                 | 0  | 1  | 0                 | 0  | 0  | 48           | 11           |
| 10:45-11:00 | 1                    | 2   | 0  | 1                    | 1   | 0  | 0                 | 1  | 3  | 1                 | 1  | 1  | 52           | 12           |
| 11:00-11:15 | 0                    | 3   | 1  | 1                    | 5   | 0  | 0                 | 2  | 0  | 1                 | 0  | 1  | 55           | 14           |
| 11:15-11:30 | 0                    | 3   | 1  | 0                    | 0   | 2  | 0                 | 0  | 2  | 0                 | 2  | 1  | 57           | 11           |
| 11:30-11:45 | 0                    | 2   | 0  | 0                    | 4   | 0  | 1                 | 0  | 4  | 1                 | 2  | 1  | 62           | 15           |
| 11:45-12:00 | 1                    | 3   | 1  | 0                    | 4   | 1  | 0                 | 0  | 0  | 0                 | 2  | 3  | 69           | 15           |
| 12:00-12:15 | 2                    | 3   | 0  | 1                    | 5   | 0  | 0                 | 1  | 2  | 0                 | 0  | 2  | 67           | 16           |
| 12:15-12:30 | 1                    | 3   | 1  | 2                    | 2   | 0  | 1                 | 2  | 0  | 1                 | 3  | 0  | 69           | 16           |
| 12:30-12:45 | 3                    | 10  | 1  | 1                    | 4   | 0  | 0                 | 0  | 0  | 1                 | 1  | 1  | 69           | 22           |
| 12:45-1:00  | 2                    | 4   | 1  | 0                    | 2   | 0  | 0                 | 3  | 0  | 0                 | 1  | 0  | 62           | 13           |
| 1:00-1:15   | 2                    | 1   | 0  | 2                    | 5   | 0  | 0                 | 2  | 4  | 0                 | 2  | 0  | 60           | 18           |
| 1:15-1:30   | 0                    | 5   | 0  | 0                    | 4   | 0  | 0                 | 1  | 2  | 0                 | 2  | 2  | 48           | 16           |
| 1:30-1:45   | 0                    | 4   | 0  | 1                    | 5   | 0  | 0                 | 1  | 3  | 0                 | 0  | 1  | 40           | 15           |
| 1:45-2:00   | 0                    | 1   | 0  | 1                    | 3   | 0  | 1                 | 0  | 0  | 2                 | 2  | 1  | 33           | 11           |
| 2:00-2:15   | 0                    | 1   | 0  | 1                    | 3   | 0  | 0                 | 1  | 0  | 0                 | 0  | 0  | 35           | 6            |
| 2:15-2:30   | 0                    | 3   | 0  | 0                    | 1   | 1  | 0                 | 0  | 0  | 1                 | 0  | 2  | 41           | 8            |
| 2:30-2:45   | 0                    | 4   | 1  | 1                    | 1   | 0  | 0                 | 0  | 1  | 0                 | 0  | 0  | 38           | 8            |
| 2:45-3:00   | 1                    | 1   | 2  | 0                    | 2   | 1  | 1                 | 2  | 0  | 0                 | 2  | 1  | 38           | 13           |
| 3:00-3:15   | 2                    | 3   | 0  | 0                    | 3   | 0  | 0                 | 0  | 1  | 0                 | 1  | 2  | 35           | 12           |
| 3:15-3:30   | 0                    | 2   | 1  | 0                    | 0   | 0  | 0                 | 0  | 0  | 0                 | 1  | 1  | 41           | 5            |
| 3:30-3:45   | 0                    | 0   | 0  | 1                    | 0   | 0  | 0                 | 2  | 1  | 2                 | 1  | 1  | 42           | 8            |
| 3:45-4:00   | 2                    | 2   | 1  | 1                    | 1   | 1  | 0                 | 0  | 0  | 1                 | 0  | 1  | 45           | 10           |
| 4:00-4:15   | 1                    | 9   | 2  | 0                    | 3   | 0  | 0                 | 0  | 0  | 1                 | 0  | 2  | 55           | 18           |
| 4:15-4:30   | 1                    | 2   | 0  | 0                    | 0   | 0  | 1                 | 0  | 0  | 1                 | 0  | 1  | 63           | 6            |
| 4:30-4:45   | 1                    | 3   | 0  | 0                    | 0   | 1  | 1                 | 0  | 0  | 1                 | 2  | 2  | 75           | 11           |
| 4:45-5:00   | 3                    | 9   | 0  | 1                    | 1   | 0  | 0                 | 1  | 1  | 0                 | 1  | 3  | 79           | 20           |
| 5:00-5:15   | 3                    | 11  | 2  | 1                    | 0   | 1  | 0                 | 1  | 0  | 0                 | 2  | 5  | 80           | 26           |
| 5:15-5:30   | 3                    | 4   | 0  | 0                    | 2   | 0  | 0                 | 1  | 1  | 4                 | 2  | 1  | 73           | 18           |
| 5:30-5:45   | 2                    | 6   | 2  | 1                    | 2   | 0  | 0                 | 0  | 0  | 0                 | 0  | 2  | 74           | 15           |
| 5:45-6:00   | 4                    | 5   | 1  | 1                    | 6   | 0  | 1                 | 2  | 0  | 0                 | 1  | 0  |              | 21           |
| 6:00-6:15   | 1                    | 11  | 0  | 2                    | 0   | 1  | 0                 | 0  | 0  | 1                 | 1  | 2  |              | 19           |
| 6:15-6:30   | 0                    | 5   | 0  | 2                    | 2   | 1  | 0                 | 1  | 0  | 2                 | 3  | 3  |              | 19           |
| TOTAL       | 44                   | 137 | 34 | 31                   | 134 | 11 | 13                | 37 | 50 | 27                | 39 | 50 |              |              |
| AM PK HR    | 1                    | 3   | 3  | 4                    | 28  | 0  | 2                 | 1  | 10 | 2                 | 1  | 3  | 7:45-8:45    |              |
| MID PK HR   | 7                    | 19  | 3  | 4                    | 15  | 1  | 1                 | 3  | 2  | 2                 | 6  | 6  | 11:45-12:45  |              |
| PM PK HR    | 12                   | 26  | 5  | 3                    | 10  | 1  | 1                 | 4  | 1  | 4                 | 5  | 8  | 5:00-6:00    |              |

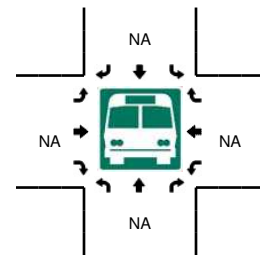
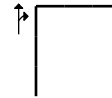
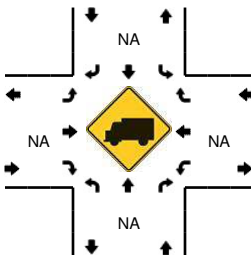
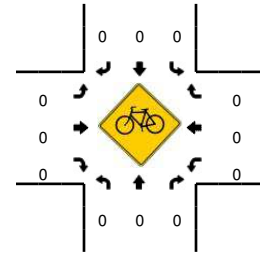
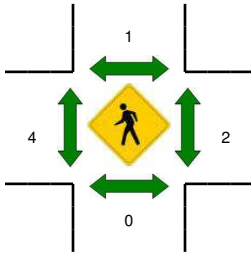
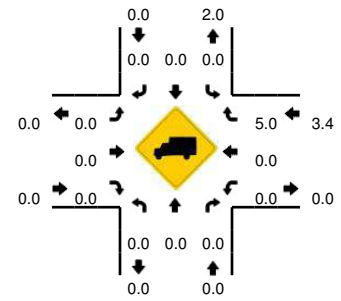
|            |      |      |      |      |      |      |      |      |      |      |      |      |      |               |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|
| AM PK PHF  | 0.25 | 0.38 | 0.38 | 0.50 | 0.78 |      | 0.50 | 0.25 | 0.50 | 0.50 | 0.25 | 0.38 | 0.76 | I/S PHF (AM)  |
| MID PK PHF | 0.88 | 0.48 | 0.75 | 0.50 | 0.75 | 0.25 | 0.25 | 0.38 | 0.25 | 0.50 | 0.50 | 0.50 | 0.78 | I/S PHF (MID) |
| PM PK PHF  | 0.75 | 0.59 | 0.63 | 0.75 | 0.42 | 0.25 | 0.25 | 0.50 | 0.25 | 0.25 | 0.63 | 0.40 | 0.77 | I/S PHF (PM)  |

**LOCATION:** Resource Pkwy -- Terrapin St  
**CITY/STATE:** Franklin, TN

**QC JOB #:** 13867215  
**DATE:** Thu, Aug 11 2016



**Peak-Hour: 7:15 AM -- 8:15 AM**  
**Peak 15-Min: 7:45 AM -- 8:00 AM**

[illegible]

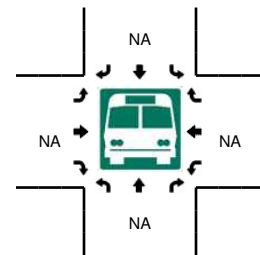
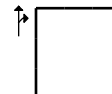
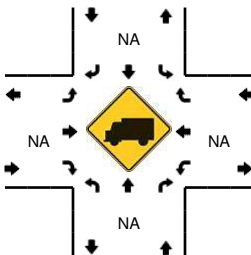
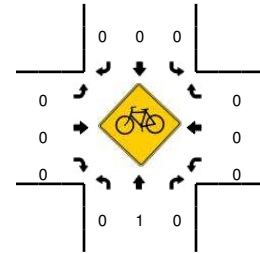
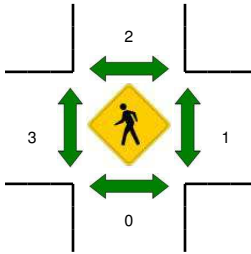
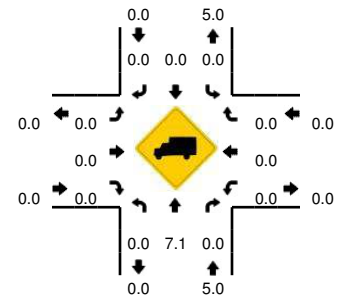
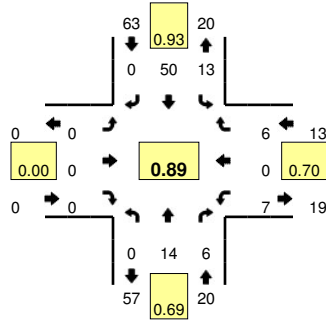
Comments:



**LOCATION:** Resource Pkwy -- Terrapin St  
**CITY/STATE:** Franklin, TN

**QC JOB #:** 13867216  
**DATE:** Thu, Aug 11 2016

**Peak-Hour: 4:45 PM -- 5:45 PM**  
**Peak 15-Min: 5:30 PM -- 5:45 PM**



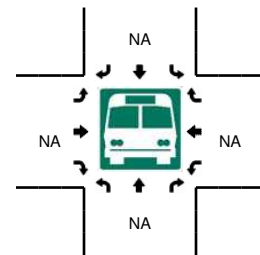
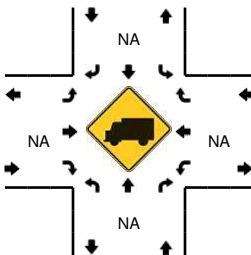
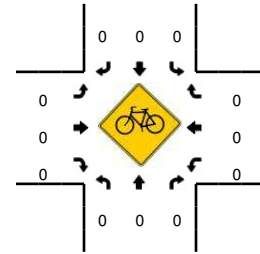
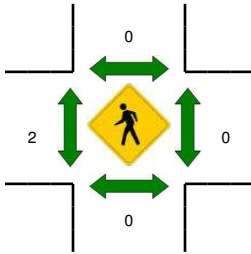
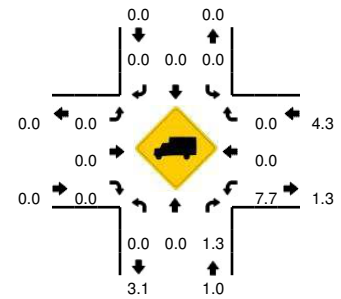
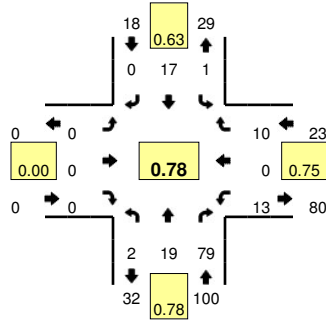
| 15-Min Count Period Beginning At | Resource Pkwy (Northbound) |      |       |   | Resource Pkwy (Southbound) |      |       |   | Terrapin St (Eastbound) |      |       |   | Terrapin St (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|-------------------------|------|-------|---|-------------------------|------|-------|---|-------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                    | Thru | Right | U | Left                    | Thru | Right | U |       |               |
| 4:00 PM                          | 0                          | 7    | 2     | 0 | 0                          | 7    | 0     | 0 | 0                       | 0    | 0     | 0 | 1                       | 0    | 2     | 0 | 19    |               |
| 4:15 PM                          | 0                          | 2    | 2     | 0 | 3                          | 8    | 0     | 0 | 0                       | 0    | 0     | 0 | 1                       | 0    | 0     | 0 | 16    |               |
| 4:30 PM                          | 0                          | 5    | 0     | 0 | 3                          | 5    | 0     | 0 | 0                       | 0    | 0     | 0 | 1                       | 0    | 3     | 0 | 17    |               |
| 4:45 PM                          | 0                          | 1    | 2     | 0 | 3                          | 11   | 0     | 0 | 0                       | 0    | 0     | 0 | 3                       | 0    | 2     | 0 | 22    | 74            |
| 5:00 PM                          | 0                          | 7    | 0     | 0 | 4                          | 11   | 0     | 0 | 0                       | 0    | 0     | 0 | 2                       | 0    | 1     | 0 | 25    | 80            |
| 5:15 PM                          | 0                          | 2    | 1     | 0 | 2                          | 15   | 0     | 0 | 0                       | 0    | 0     | 0 | 1                       | 0    | 1     | 0 | 22    | 86            |
| 5:30 PM                          | 0                          | 4    | 3     | 0 | 4                          | 13   | 0     | 0 | 0                       | 0    | 0     | 0 | 1                       | 0    | 2     | 0 | 27    | 96            |
| 5:45 PM                          | 0                          | 5    | 0     | 0 | 1                          | 9    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 2     | 0 | 17    | 91            |
| 6:00 PM                          | 0                          | 5    | 2     | 0 | 1                          | 6    | 0     | 0 | 0                       | 0    | 0     | 0 | 3                       | 0    | 2     | 0 | 19    | 85            |
| 6:15 PM                          | 0                          | 2    | 2     | 0 | 2                          | 6    | 0     | 0 | 0                       | 0    | 0     | 0 | 1                       | 0    | 2     | 0 | 15    | 78            |
| 6:30 PM                          | 0                          | 6    | 3     | 0 | 1                          | 6    | 0     | 0 | 0                       | 0    | 0     | 0 | 1                       | 0    | 1     | 0 | 18    | 69            |
| 6:45 PM                          | 0                          | 1    | 4     | 0 | 2                          | 3    | 0     | 1 | 0                       | 0    | 0     | 0 | 2                       | 0    | 0     | 0 | 13    | 65            |
|                                  |                            |      |       |   |                            |      |       |   |                         |      |       |   |                         |      |       |   |       |               |
| Peak 15-Min Flowrates            | Northbound                 |      |       |   | Southbound                 |      |       |   | Eastbound               |      |       |   | Westbound               |      |       |   | Total |               |
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                    | Thru | Right | U | Left                    | Thru | Right | U |       |               |
| All Vehicles                     | 0                          | 16   | 12    | 0 | 16                         | 52   | 0     | 0 | 0                       | 0    | 0     | 0 | 4                       | 0    | 8     | 0 | 108   |               |
| Heavy Trucks                     | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 4    | 0     | 0 | 0                       | 8    | 0     | 0 | 0                       | 0    | 0     | 0 | 12    |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |               |
| Railroad                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |               |
| Stopped Buses                    | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |               |

**Comments:**

**LOCATION:** Resource Pkwy -- Lemon Grass Dr  
**CITY/STATE:** Franklin, TN

**QC JOB #:** 13867217  
**DATE:** Thu, Aug 11 2016

**Peak-Hour: 7:30 AM -- 8:30 AM**  
**Peak 15-Min: 7:45 AM -- 8:00 AM**

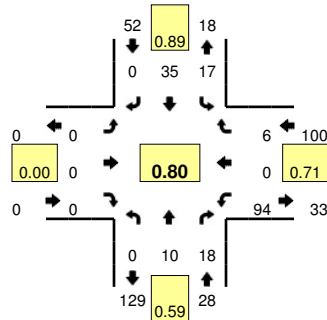


| 15-Min Count Period Beginning At | Resource Pkwy (Northbound) |      |       |   | Resource Pkwy (Southbound) |      |       |   | Lemon Grass Dr (Eastbound) |      |       |   | Lemon Grass Dr (Westbound) |      |       |   | Total        | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|----------------------------|------|-------|---|----------------------------|------|-------|---|--------------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                       | Thru | Right | U |              |               |
| 6:00 AM                          | 0                          | 1    | 1     | 0 | 0                          | 1    | 0     | 0 | 0                          | 0    | 0     | 0 | 2                          | 0    | 2     | 0 | 7            |               |
| 6:15 AM                          | 0                          | 0    | 0     | 0 | 1                          | 3    | 0     | 0 | 0                          | 0    | 0     | 0 | 1                          | 0    | 0     | 0 | 5            |               |
| 6:30 AM                          | 0                          | 2    | 2     | 0 | 0                          | 2    | 0     | 0 | 0                          | 0    | 0     | 0 | 4                          | 0    | 3     | 0 | 13           |               |
| 6:45 AM                          | 0                          | 1    | 3     | 0 | 0                          | 8    | 0     | 0 | 0                          | 0    | 0     | 0 | 1                          | 0    | 2     | 0 | 15           | 40            |
| 7:00 AM                          | 0                          | 3    | 8     | 0 | 1                          | 5    | 0     | 0 | 0                          | 0    | 0     | 0 | 2                          | 0    | 4     | 0 | 23           | 56            |
| 7:15 AM                          | 0                          | 3    | 19    | 0 | 0                          | 3    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                          | 0    | 2     | 0 | 27           | 78            |
| 7:30 AM                          | 0                          | 3    | 20    | 2 | 0                          | 2    | 0     | 0 | 0                          | 0    | 0     | 0 | 7                          | 0    | 1     | 0 | 35           | 100           |
| 7:45 AM                          | 0                          | 7    | 25    | 0 | 0                          | 5    | 0     | 0 | 0                          | 0    | 0     | 0 | 1                          | 0    | 7     | 0 | 45           | 130           |
| 8:00 AM                          | 0                          | 5    | 16    | 0 | 1                          | 5    | 0     | 0 | 0                          | 0    | 0     | 0 | 3                          | 0    | 1     | 0 | 31           | 138           |
| 8:15 AM                          | 0                          | 4    | 18    | 0 | 0                          | 5    | 0     | 0 | 0                          | 0    | 0     | 0 | 2                          | 0    | 1     | 0 | 30           | 141           |
| 8:30 AM                          | 0                          | 3    | 9     | 0 | 0                          | 4    | 0     | 0 | 0                          | 0    | 0     | 0 | 2                          | 0    | 3     | 0 | 21           | 127           |
| 8:45 AM                          | 0                          | 3    | 8     | 0 | 2                          | 1    | 0     | 1 | 0                          | 0    | 0     | 0 | 4                          | 0    | 0     | 0 | 19           | 101           |
| <b>Peak 15-Min Flowrates</b>     | <b>Northbound</b>          |      |       |   | <b>Southbound</b>          |      |       |   | <b>Eastbound</b>           |      |       |   | <b>Westbound</b>           |      |       |   | <b>Total</b> |               |
| All Vehicles                     | 0                          | 28   | 100   | 0 | 0                          | 20   | 0     | 0 | 0                          | 0    | 0     | 0 | 4                          | 0    | 28    | 0 | 180          |               |
| Heavy Trucks                     | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0            |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                          | 4    | 0     | 0 | 0                          | 0    | 0     | 0 | 4            |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0            |               |
| Railroad                         |                            |      |       |   |                            |      |       |   |                            |      |       |   |                            |      |       |   |              |               |
| Stopped Buses                    |                            |      |       |   |                            |      |       |   |                            |      |       |   |                            |      |       |   |              |               |

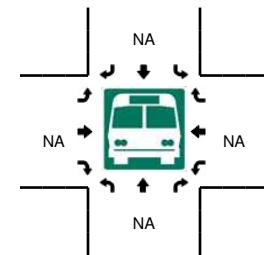
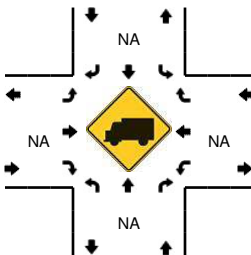
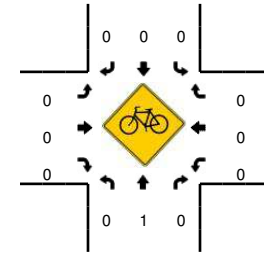
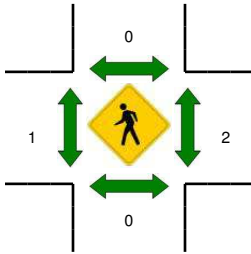
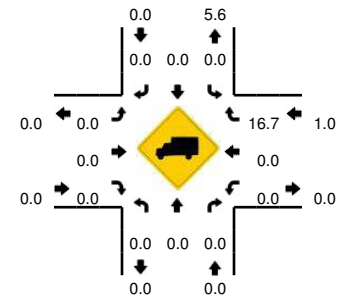
Comments:

**LOCATION:** Resource Pkwy -- Lemon Grass Dr  
**CITY/STATE:** Franklin, TN

**QC JOB #:** 13867218  
**DATE:** Thu, Aug 11 2016



**Peak-Hour: 4:30 PM -- 5:30 PM**  
**Peak 15-Min: 5:00 PM -- 5:15 PM**

[illegible]

Comments:

**APPENDIX C  
CAPACITY ANALYSES**

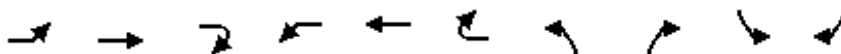


## **EXISTING CONDITIONS**

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

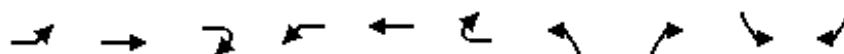


| Lane Group                 | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)       | 480   | 321   | 117   | 125   | 511   | 329   | 614   | 485   | 400   | 372   |
| Future Volume (vph)        | 480   | 321   | 117   | 125   | 511   | 329   | 614   | 485   | 400   | 372   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 370   |       |       | 495   |       |       | 0     |       | 0     |       |
| Storage Lanes              | 2     |       |       | 1     |       |       | 2     |       | 2     |       |
| Taper Length (ft)          | 25    |       |       | 25    |       |       | 25    |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 0.97  | 1.00  | 0.97  | 0.88  |
| Frt                        |       |       | 0.850 |       |       | 0.850 |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (prot)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Flt Permitted              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (perm)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Right Turn on Red          |       |       | Yes   |       |       | Yes   |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       | 182   |       |       | 329   |       | 405   |       | 165   |
| Link Speed (mph)           |       | 30    |       |       | 30    |       |       |       |       |       |
| Link Distance (ft)         |       | 826   |       |       | 1211  |       |       |       |       |       |
| Travel Time (s)            |       | 18.8  |       |       | 27.5  |       |       |       |       |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 480   | 321   | 117   | 125   | 511   | 329   | 614   | 485   | 400   | 372   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 480   | 321   | 117   | 125   | 511   | 329   | 614   | 485   | 400   | 372   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Right | Left  | Left  | Right | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    |       |       | 24    |       |       |       |       |       |
| Link Offset(ft)            |       | 0     |       |       | 0     |       |       |       |       |       |
| Crosswalk Width(ft)        |       | 16    |       |       | 16    |       |       |       |       |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |       |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    |       | 9     | 15    |       | 9     | 15    | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 1     | 1     | 2     | 1     | 1     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Right | Left  | Thru  | Right | Left  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 20    | 20    | 100   | 20    | 20    | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 20    | 20    | 6     | 20    | 20    | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    |       |       | 94    |       |       |       |       |       |
| Detector 2 Size(ft)        |       | 6     |       |       | 6     |       |       |       |       |       |
| Detector 2 Type            |       | Cl+Ex |       |       | Cl+Ex |       |       |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   |       |       | 0.0   |       |       |       |       |       |
| Turn Type                  | Prot  | NA    | Free  | Prot  | NA    | Perm  | Perm  | Free  | Perm  | Prot  |
| Protected Phases           | 1     | 6     |       | 5     | 2     |       |       |       |       | 1     |
| Permitted Phases           |       |       | Free  |       |       | 2     | 3     | Free  | 7     |       |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

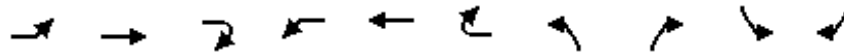


| Lane Group              | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     |       | 5     | 2     | 2     | 3     |       | 7     | 1     |
| Switch Phase            |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)     | 8.0   | 12.0  |       | 8.0   | 12.0  | 12.0  | 12.0  |       | 12.0  | 8.0   |
| Minimum Split (s)       | 15.0  | 27.0  |       | 25.0  | 27.0  | 27.0  | 27.0  |       | 27.0  | 15.0  |
| Total Split (s)         | 45.0  | 65.0  |       | 31.0  | 51.0  | 51.0  | 54.0  |       | 54.0  | 45.0  |
| Total Split (%)         | 30.0% | 43.3% |       | 20.7% | 34.0% | 34.0% | 36.0% |       | 36.0% | 30.0% |
| Maximum Green (s)       | 38.0  | 58.0  |       | 24.0  | 44.0  | 44.0  | 47.0  |       | 47.0  | 38.0  |
| Yellow Time (s)         | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   |
| All-Red Time (s)        | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     | 7.0   | 7.0   |       | 7.0   | 7.0   | 7.0   | 7.0   |       | 7.0   | 7.0   |
| Lead/Lag                | Lead  | Lag   |       | Lead  | Lag   | Lag   |       |       |       | Lead  |
| Lead-Lag Optimize?      |       |       |       |       |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min |       | None  | C-Min | C-Min | None  |       | None  | None  |
| Walk Time (s)           |       | 7.0   |       |       | 7.0   | 7.0   | 7.0   |       | 7.0   |       |
| Flash Dont Walk (s)     |       | 13.0  |       |       | 13.0  | 13.0  | 13.0  |       | 13.0  |       |
| Pedestrian Calls (#/hr) |       | 5     |       |       | 5     | 5     | 5     |       | 5     |       |
| Act Effect Green (s)    | 27.1  | 80.5  | 150.0 | 15.9  | 69.3  | 69.3  | 32.6  | 150.0 | 32.6  | 27.1  |
| Actuated g/C Ratio      | 0.18  | 0.54  | 1.00  | 0.11  | 0.46  | 0.46  | 0.22  | 1.00  | 0.22  | 0.18  |
| v/c Ratio               | 0.77  | 0.17  | 0.07  | 0.67  | 0.31  | 0.36  | 0.82  | 0.31  | 0.54  | 0.58  |
| Control Delay           | 59.9  | 19.0  | 0.1   | 73.5  | 17.7  | 5.5   | 66.5  | 0.5   | 54.2  | 33.8  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 59.9  | 19.0  | 0.1   | 73.5  | 17.7  | 5.5   | 66.5  | 0.5   | 54.2  | 33.8  |
| LOS                     | E     | B     | A     | E     | B     | A     | E     | A     | D     | C     |
| Approach Delay          |       | 38.0  |       |       | 20.8  |       |       |       |       |       |
| Approach LOS            |       | D     |       |       | C     |       |       |       |       |       |
| 90th %ile Green (s)     | 33.8  | 67.5  |       | 21.7  | 55.4  | 55.4  | 39.8  |       | 39.8  | 33.8  |
| 90th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Gap   |       | Hold  | Gap   |
| 70th %ile Green (s)     | 29.6  | 75.4  |       | 18.3  | 64.1  | 64.1  | 35.3  |       | 35.3  | 29.6  |
| 70th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Gap   |       | Hold  | Gap   |
| 50th %ile Green (s)     | 27.2  | 80.6  |       | 15.9  | 69.3  | 69.3  | 32.5  |       | 32.5  | 27.2  |
| 50th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Gap   |       | Hold  | Gap   |
| 30th %ile Green (s)     | 24.8  | 85.8  |       | 13.5  | 74.5  | 74.5  | 29.7  |       | 29.7  | 24.8  |
| 30th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Gap   |       | Hold  | Gap   |
| 10th %ile Green (s)     | 20.3  | 93.4  |       | 10.0  | 83.1  | 83.1  | 25.6  |       | 25.6  | 20.3  |
| 10th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Gap   |       | Hold  | Gap   |
| Stops (vph)             | 450   | 175   | 0     | 117   | 192   | 81    | 572   | 0     | 344   | 186   |
| Fuel Used(gal)          | 11    | 4     | 1     | 4     | 8     | 4     | 15    | 3     | 9     | 6     |
| CO Emissions (g/hr)     | 799   | 299   | 53    | 259   | 540   | 274   | 1055  | 203   | 611   | 409   |
| NOx Emissions (g/hr)    | 155   | 58    | 10    | 50    | 105   | 53    | 205   | 40    | 119   | 80    |
| VOC Emissions (g/hr)    | 185   | 69    | 12    | 60    | 125   | 64    | 244   | 47    | 142   | 95    |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 237   | 76    | 0     | 97    | 115   | 83    | 298   | 0     | 180   | 105   |
| Queue Length 95th (ft)  | 323   | 206   | 0     | 224   | 97    | 60    | 397   | 0     | 250   | 189   |
| Internal Link Dist (ft) |       | 746   |       |       | 1131  |       |       |       |       |       |
| Turn Bay Length (ft)    | 370   |       |       | 495   |       |       |       |       |       |       |
| Base Capacity (vph)     | 869   | 1900  | 1583  | 283   | 1634  | 908   | 1075  | 1583  | 1075  | 829   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



| Lane Group            | EBL  | EBT  | EBR2 | WBL  | WBT  | WBR2 | NBL  | NBR2 | SBL  | SBR2 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.55 | 0.17 | 0.07 | 0.44 | 0.31 | 0.36 | 0.57 | 0.31 | 0.37 | 0.45 |

## Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 58 (39%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 34.7

Intersection LOS: C

Intersection Capacity Utilization Err%

ICU Level of Service H

Analysis Period (min) 60

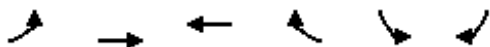
Splits and Phases: 1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

|      |        |      |
|------|--------|------|
|      |        |      |
| Ø1   | Ø2 (R) | Ø3   |
| 45 s | 51 s   | 54 s |
|      |        |      |
| Ø5   | Ø6 (R) | Ø7   |
| 31 s | 65 s   | 54 s |



Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

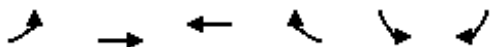
11/18/2016



| Lane Group                 | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ↰↰    | ↑↑    | ↑↑    | ↱     | ↰     | ↱↱    |
| Traffic Volume (vph)       | 268   | 990   | 975   | 53    | 2     | 14    |
| Future Volume (vph)        | 268   | 990   | 975   | 53    | 2     | 14    |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 285   |       |       | 115   | 445   | 0     |
| Storage Lanes              | 2     |       |       | 1     | 1     | 2     |
| Taper Length (ft)          | 25    |       |       |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 0.95  | 1.00  | 1.00  | 0.88  |
| Frt                        |       |       |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (prot)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Flt Permitted              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (perm)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Right Turn on Red          |       |       |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       |       | 26    |       | 14    |
| Link Speed (mph)           |       | 30    | 30    |       | 30    |       |
| Link Distance (ft)         |       | 1211  | 938   |       | 511   |       |
| Travel Time (s)            |       | 27.5  | 21.3  |       | 11.6  |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 268   | 990   | 975   | 53    | 2     | 14    |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 268   | 990   | 975   | 53    | 2     | 14    |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    | 24    |       | 12    |       |
| Link Offset(ft)            |       | 0     | 0     |       | 0     |       |
| Crosswalk Width(ft)        |       | 16    | 16    |       | 16    |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |
| Headway Factor             | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  |
| Turning Speed (mph)        | 15    |       |       | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 2     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Thru  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 100   | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 6     | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    | 94    |       |       |       |
| Detector 2 Size(ft)        |       | 6     | 6     |       |       |       |
| Detector 2 Type            |       | Cl+Ex | Cl+Ex |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   | 0.0   |       |       |       |
| Turn Type                  | Prot  | NA    | NA    | Prot  | Prot  | Prot  |
| Protected Phases           | 1     | 6     | 2     | 2     | 8     | 8     |
| Permitted Phases           |       |       |       |       |       |       |

Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

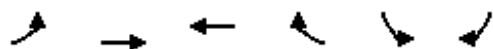
11/18/2016



| Lane Group              | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     | 2     | 2     | 8     | 8     |
| Switch Phase            |       |       |       |       |       |       |
| Minimum Initial (s)     | 7.0   | 20.0  | 20.0  | 20.0  | 8.0   | 8.0   |
| Minimum Split (s)       | 13.5  | 43.5  | 43.5  | 43.5  | 46.5  | 46.5  |
| Total Split (s)         | 29.0  | 103.5 | 74.5  | 74.5  | 46.5  | 46.5  |
| Total Split (%)         | 19.3% | 69.0% | 49.7% | 49.7% | 31.0% | 31.0% |
| Maximum Green (s)       | 23.5  | 98.0  | 69.0  | 69.0  | 41.0  | 41.0  |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)        | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   |
| Lead/Lag                | Lead  |       | Lag   | Lag   |       |       |
| Lead-Lag Optimize?      |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min | C-Min | C-Min | None  | None  |
| Walk Time (s)           |       | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Flash Dont Walk (s)     |       | 18.0  | 18.0  | 18.0  | 34.0  | 34.0  |
| Pedestrian Calls (#/hr) |       | 3     | 3     | 3     | 3     | 3     |
| Act Effect Green (s)    | 18.2  | 132.0 | 106.1 | 106.1 | 14.6  | 14.6  |
| Actuated g/C Ratio      | 0.12  | 0.88  | 0.71  | 0.71  | 0.10  | 0.10  |
| v/c Ratio               | 0.71  | 0.35  | 0.43  | 0.05  | 0.01  | 0.05  |
| Control Delay           | 77.6  | 3.9   | 7.8   | 2.5   | 51.5  | 20.6  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 77.6  | 3.9   | 7.8   | 2.5   | 51.5  | 20.6  |
| LOS                     | E     | A     | A     | A     | D     | C     |
| Approach Delay          |       | 19.6  | 7.5   |       | 24.4  |       |
| Approach LOS            |       | B     | A     |       | C     |       |
| 90th %ile Green (s)     | 23.1  | 98.0  | 69.4  | 69.4  | 41.0  | 41.0  |
| 90th %ile Term Code     | Gap   | Coord | Coord | Coord | Ped   | Ped   |
| 70th %ile Green (s)     | 20.2  | 131.0 | 105.3 | 105.3 | 8.0   | 8.0   |
| 70th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| 50th %ile Green (s)     | 18.3  | 131.0 | 107.2 | 107.2 | 8.0   | 8.0   |
| 50th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| 30th %ile Green (s)     | 16.3  | 144.5 | 122.7 | 122.7 | 0.0   | 0.0   |
| 30th %ile Term Code     | Gap   | Coord | Coord | Coord | Skip  | Skip  |
| 10th %ile Green (s)     | 13.3  | 144.5 | 125.7 | 125.7 | 0.0   | 0.0   |
| 10th %ile Term Code     | Gap   | Coord | Coord | Coord | Skip  | Skip  |
| Stops (vph)             | 253   | 165   | 386   | 6     | 3     | 5     |
| Fuel Used(gal)          | 8     | 11    | 11    | 0     | 0     | 0     |
| CO Emissions (g/hr)     | 571   | 772   | 756   | 31    | 3     | 10    |
| NOx Emissions (g/hr)    | 111   | 150   | 147   | 6     | 1     | 2     |
| VOC Emissions (g/hr)    | 132   | 179   | 175   | 7     | 1     | 2     |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 131   | 24    | 184   | 2     | 2     | 0     |
| Queue Length 95th (ft)  | 204   | 374   | m90   | m1    | 9     | 12    |
| Internal Link Dist (ft) |       | 1131  | 858   |       | 431   |       |
| Turn Bay Length (ft)    | 285   |       |       | 115   | 445   |       |
| Base Capacity (vph)     | 484   | 2802  | 2252  | 1015  | 435   | 695   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     |

# Lanes, Volumes, Timings 2: McEwen /McEwen & Tower

11/18/2016



| Lane Group            | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|-----------------------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.55 | 0.35 | 0.43 | 0.05 | 0.00 | 0.02 |

## Intersection Summary

Area Type: CBD

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 54 (36%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 60

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: McEwen /McEwen & Tower



# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 668                                                                               | 193                                                                               | 117                                                                               | 103                                                                               | 650                                                                               | 268                                                                               | 171                                                                                 | 903                                                                                 | 55                                                                                  | 7                                                                                   | 98                                                                                  | 102                                                                                 |
| Future Volume (vph)        | 668                                                                               | 193                                                                               | 117                                                                               | 103                                                                               | 650                                                                               | 268                                                                               | 171                                                                                 | 903                                                                                 | 55                                                                                  | 7                                                                                   | 98                                                                                  | 102                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 117                                                                               |                                                                                   |                                                                                   | 105                                                                               |                                                                                     |                                                                                     | 109                                                                                 |                                                                                     |                                                                                     | 65                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 938                                                                               |                                                                                   |                                                                                   | 1960                                                                              |                                                                                   |                                                                                     | 1936                                                                                |                                                                                     |                                                                                     | 857                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                     | 44.0                                                                                |                                                                                     |                                                                                     | 14.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 668                                                                               | 193                                                                               | 117                                                                               | 103                                                                               | 650                                                                               | 268                                                                               | 171                                                                                 | 903                                                                                 | 55                                                                                  | 7                                                                                   | 98                                                                                  | 102                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 668                                                                               | 193                                                                               | 117                                                                               | 103                                                                               | 650                                                                               | 268                                                                               | 171                                                                                 | 903                                                                                 | 55                                                                                  | 7                                                                                   | 98                                                                                  | 102                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | custom                                                                              | Prot                                                                                | NA                                                                                  | custom                                                                              |
| Protected Phases           | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases           |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |



# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase          | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 13.0                                                                              | 6.0                                                                               | 4.0                                                                               | 13.0                                                                              | 6.0                                                                               | 6.0                                                                                 | 13.0                                                                                | 4.0                                                                                 | 6.0                                                                                 | 13.0                                                                                | 6.0                                                                                 |
| Minimum Split (s)       | 13.0                                                                              | 52.0                                                                              | 12.5                                                                              | 10.0                                                                              | 52.0                                                                              | 13.0                                                                              | 12.5                                                                                | 52.0                                                                                | 10.0                                                                                | 13.0                                                                                | 52.0                                                                                | 13.0                                                                                |
| Total Split (s)         | 32.0                                                                              | 70.2                                                                              | 13.8                                                                              | 14.0                                                                              | 52.2                                                                              | 13.0                                                                              | 13.8                                                                                | 52.8                                                                                | 14.0                                                                                | 13.0                                                                                | 52.0                                                                                | 32.0                                                                                |
| Total Split (%)         | 21.3%                                                                             | 46.8%                                                                             | 9.2%                                                                              | 9.3%                                                                              | 34.8%                                                                             | 8.7%                                                                              | 9.2%                                                                                | 35.2%                                                                               | 9.3%                                                                                | 8.7%                                                                                | 34.7%                                                                               | 21.3%                                                                               |
| Maximum Green (s)       | 26.0                                                                              | 64.2                                                                              | 7.8                                                                               | 8.5                                                                               | 46.2                                                                              | 7.0                                                                               | 7.8                                                                                 | 46.8                                                                                | 8.5                                                                                 | 7.0                                                                                 | 46.0                                                                                | 26.0                                                                                |
| Yellow Time (s)         | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 5.5                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Max                                                                               | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                     | 37.0                                                                                |                                                                                     |                                                                                     | 37.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                     | 5                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |
| Act Effect Green (s)    | 29.5                                                                              | 67.6                                                                              | 81.4                                                                              | 8.5                                                                               | 46.2                                                                              | 58.5                                                                              | 7.8                                                                                 | 44.0                                                                                | 57.1                                                                                | 6.3                                                                                 | 42.5                                                                                | 79.5                                                                                |
| Actuated g/C Ratio      | 0.20                                                                              | 0.45                                                                              | 0.54                                                                              | 0.06                                                                              | 0.31                                                                              | 0.39                                                                              | 0.05                                                                                | 0.29                                                                                | 0.38                                                                                | 0.04                                                                                | 0.28                                                                                | 0.53                                                                                |
| v/c Ratio               | 0.99                                                                              | 0.12                                                                              | 0.13                                                                              | 0.53                                                                              | 0.60                                                                              | 0.39                                                                              | 0.96                                                                                | 0.87                                                                                | 0.08                                                                                | 0.05                                                                                | 0.10                                                                                | 0.12                                                                                |
| Control Delay           | 113.5                                                                             | 20.8                                                                              | 4.6                                                                               | 79.2                                                                              | 46.8                                                                              | 21.2                                                                              | 170.9                                                                               | 61.2                                                                                | 0.2                                                                                 | 77.7                                                                                | 35.2                                                                                | 6.5                                                                                 |
| Queue Delay             | 159.2                                                                             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 272.7                                                                             | 20.8                                                                              | 4.6                                                                               | 79.2                                                                              | 46.8                                                                              | 21.2                                                                              | 170.9                                                                               | 61.2                                                                                | 0.2                                                                                 | 77.7                                                                                | 35.2                                                                                | 6.5                                                                                 |
| LOS                     | F                                                                                 | C                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | F                                                                                   | E                                                                                   | A                                                                                   | E                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 190.9                                                                             |                                                                                   |                                                                                   | 43.3                                                                              |                                                                                   |                                                                                     | 74.8                                                                                |                                                                                     |                                                                                     | 22.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 26.0                                                                              | 64.2                                                                              | 7.8                                                                               | 8.5                                                                               | 46.2                                                                              | 6.8                                                                               | 7.8                                                                                 | 47.0                                                                                | 8.5                                                                                 | 6.8                                                                                 | 46.0                                                                                | 26.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Gap                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Gap                                                                                 | Hold                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 26.0                                                                              | 64.2                                                                              | 7.8                                                                               | 8.5                                                                               | 46.2                                                                              | 6.4                                                                               | 7.8                                                                                 | 47.4                                                                                | 8.5                                                                                 | 6.4                                                                                 | 46.0                                                                                | 26.0                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Gap                                                                               | Max                                                                                 | Max                                                                                 | Max                                                                                 | Gap                                                                                 | Hold                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 27.6                                                                              | 64.4                                                                              | 7.8                                                                               | 9.9                                                                               | 46.2                                                                              | 6.2                                                                               | 7.8                                                                                 | 46.0                                                                                | 9.9                                                                                 | 6.2                                                                                 | 44.4                                                                                | 27.6                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Gap                                                                               | Max                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 31.3                                                                              | 69.3                                                                              | 7.8                                                                               | 8.7                                                                               | 46.2                                                                              | 6.0                                                                               | 7.8                                                                                 | 42.5                                                                                | 8.7                                                                                 | 6.0                                                                                 | 40.7                                                                                | 31.3                                                                                |
| 30th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Min                                                                               | Max                                                                                 | Gap                                                                                 | Gap                                                                                 | Min                                                                                 | Hold                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 36.5                                                                              | 76.1                                                                              | 7.8                                                                               | 7.1                                                                               | 46.2                                                                              | 6.0                                                                               | 7.8                                                                                 | 37.3                                                                                | 7.1                                                                                 | 6.0                                                                                 | 35.5                                                                                | 36.5                                                                                |
| 10th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Min                                                                               | Max                                                                                 | Gap                                                                                 | Gap                                                                                 | Min                                                                                 | Hold                                                                                | MaxR                                                                                |
| Stops (vph)             | 500                                                                               | 85                                                                                | 17                                                                                | 98                                                                                | 539                                                                               | 117                                                                               | 151                                                                                 | 838                                                                                 | 0                                                                                   | 9                                                                                   | 59                                                                                  | 22                                                                                  |
| Fuel Used(gal)          | 23                                                                                | 3                                                                                 | 1                                                                                 | 4                                                                                 | 19                                                                                | 6                                                                                 | 9                                                                                   | 30                                                                                  | 1                                                                                   | 0                                                                                   | 2                                                                                   | 1                                                                                   |
| CO Emissions (g/hr)     | 1613                                                                              | 189                                                                               | 74                                                                                | 264                                                                               | 1335                                                                              | 412                                                                               | 655                                                                                 | 2063                                                                                | 58                                                                                  | 17                                                                                  | 129                                                                                 | 66                                                                                  |
| NOx Emissions (g/hr)    | 314                                                                               | 37                                                                                | 14                                                                                | 51                                                                                | 260                                                                               | 80                                                                                | 127                                                                                 | 401                                                                                 | 11                                                                                  | 3                                                                                   | 25                                                                                  | 13                                                                                  |
| VOC Emissions (g/hr)    | 374                                                                               | 44                                                                                | 17                                                                                | 61                                                                                | 309                                                                               | 96                                                                                | 152                                                                                 | 478                                                                                 | 13                                                                                  | 4                                                                                   | 30                                                                                  | 15                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 2                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | ~348                                                                              | 43                                                                                | 10                                                                                | 51                                                                                | 284                                                                               | 111                                                                               | 87                                                                                  | 434                                                                                 | 0                                                                                   | 3                                                                                   | 38                                                                                  | 25                                                                                  |
| Queue Length 95th (ft)  | #622                                                                              | 70                                                                                | 44                                                                                | 94                                                                                | 403                                                                               | 227                                                                               | #195                                                                                | #630                                                                                | 4                                                                                   | m14                                                                                 | 47                                                                                  | 16                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 858                                                                               |                                                                                   |                                                                                   | 1880                                                                              |                                                                                   |                                                                                     | 1856                                                                                |                                                                                     |                                                                                     | 777                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Base Capacity (vph)     | 674                                                                               | 1595                                                                              | 913                                                                               | 201                                                                               | 1090                                                                              | 688                                                                               | 178                                                                                 | 1108                                                                                | 672                                                                                 | 160                                                                                 | 1085                                                                                | 869                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |

# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Spillback Cap Reductn | 102                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio     | 1.17                                                                              | 0.12                                                                              | 0.13                                                                              | 0.51                                                                              | 0.60                                                                              | 0.39                                                                              | 0.96                                                                               | 0.81                                                                                | 0.08                                                                                | 0.04                                                                                | 0.09                                                                                | 0.12                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 8 (5%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 96.0

Intersection LOS: F

Intersection Capacity Utilization 77.0%

ICU Level of Service D

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Carothers/Carothers & McEwen

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1  |  Ø2 (R)  |  Ø3  |  Ø4  |
| 32 s                                                                                   | 52.2 s                                                                                     | 13 s                                                                                   | 52.8 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 14 s                                                                                   | 70.2 s                                                                                     | 13.8 s                                                                                 | 52 s                                                                                     |

# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (vph)              | 62                                                                                | 215                                                                               | 0                                                                                 | 0                                                                                 | 936                                                                               | 42                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 18                                                                                  | 0                                                                                   | 98                                                                                  |
| Future Volume (vph)               | 62                                                                                | 215                                                                               | 0                                                                                 | 0                                                                                 | 936                                                                               | 42                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 18                                                                                  | 0                                                                                   | 98                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected                     | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 3539                                                                              | 0                                                                                 | 0                                                                                 | 3518                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 1770                                                                                | 0                                                                                   | 1583                                                                                |
| Flt Permitted                     | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 3539                                                                              | 0                                                                                 | 0                                                                                 | 3518                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 1770                                                                                | 0                                                                                   | 1583                                                                                |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 1960                                                                              |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                    | 402                                                                                 |                                                                                     |                                                                                     | 456                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 10.4                                                                                |                                                                                     |
| Peak Hour Factor                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)                   | 62                                                                                | 215                                                                               | 0                                                                                 | 0                                                                                 | 936                                                                               | 42                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 18                                                                                  | 0                                                                                   | 98                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 62                                                                                | 215                                                                               | 0                                                                                 | 0                                                                                 | 978                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 18                                                                                  | 0                                                                                   | 98                                                                                  |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 36                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 44.0%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 60                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | ICU Level of Service A                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                            |  |  |  |  |  |   |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 8                                                                                 | 0                                                                                 | 3                                                                                 | 28                                                                                | 1                                                                                 | 14                                                                                 | 13                                                                                  | 1854                                                                                | 6                                                                                   | 3                                                                                   | 189                                                                                 | 17                                                                                  |
| Future Volume (vph)        | 8                                                                                 | 0                                                                                 | 3                                                                                 | 28                                                                                | 1                                                                                 | 14                                                                                 | 13                                                                                  | 1854                                                                                | 6                                                                                   | 3                                                                                   | 189                                                                                 | 17                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     |
| Storage Length (ft)        | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                 | 177                                                                                 |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                  | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                              |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 1752                                                                                | 3504                                                                                | 1567                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.624                                                                               |                                                                                     |                                                                                     | 0.065                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 1151                                                                                | 3504                                                                                | 1567                                                                                | 121                                                                                 | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 676                                                                               |                                                                                   |                                                                                   | 102                                                                                |                                                                                     |                                                                                     | 98                                                                                  |                                                                                     |                                                                                     | 98                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                    |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 881                                                                               |                                                                                   |                                                                                   | 890                                                                               |                                                                                    |                                                                                     | 857                                                                                 |                                                                                     |                                                                                     | 905                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                    |                                                                                     | 14.6                                                                                |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 8                                                                                 | 0                                                                                 | 3                                                                                 | 28                                                                                | 1                                                                                 | 14                                                                                 | 13                                                                                  | 1854                                                                                | 6                                                                                   | 3                                                                                   | 189                                                                                 | 17                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 8                                                                                 | 0                                                                                 | 3                                                                                 | 28                                                                                | 1                                                                                 | 14                                                                                 | 13                                                                                  | 1854                                                                                | 6                                                                                   | 3                                                                                   | 189                                                                                 | 17                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                              | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                    |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                  | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                  | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                              | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                 | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                 | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                    |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                    |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              |                                                                                   | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                               | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 |                                                                                    | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     |



Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 6                                                                                  |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                  | 6                                                                                   | 6                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                                | 20.0                                                                                | 20.0                                                                                | 6.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 42.0                                                                                | 42.0                                                                                | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                |
| Total Split (s)         | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 77.0                                                                                | 77.0                                                                                | 12.0                                                                                | 77.0                                                                                | 77.0                                                                                |
| Total Split (%)         | 8.3%                                                                              | 32.3%                                                                             | 32.3%                                                                             | 8.3%                                                                              | 32.3%                                                                             | 32.3%                                                                             | 8.0%                                                                               | 51.3%                                                                               | 51.3%                                                                               | 8.0%                                                                                | 51.3%                                                                               | 51.3%                                                                               |
| Maximum Green (s)       | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                | 71.0                                                                                | 71.0                                                                                | 6.5                                                                                 | 71.0                                                                                | 71.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | C-Min                                                                               | C-Min                                                                               | None                                                                                | C-Min                                                                               | C-Min                                                                               |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                    | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                    | 29.0                                                                                | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                | 10                                                                                |                                                                                   | 10                                                                                | 10                                                                                |                                                                                    | 10                                                                                  | 10                                                                                  |                                                                                     | 10                                                                                  | 10                                                                                  |
| Act Effect Green (s)    | 6.1                                                                               |                                                                                   | 22.0                                                                              | 6.9                                                                               | 24.6                                                                              | 24.6                                                                              | 116.4                                                                              | 117.0                                                                               | 117.0                                                                               | 115.0                                                                               | 114.5                                                                               | 114.5                                                                               |
| Actuated g/C Ratio      | 0.04                                                                              |                                                                                   | 0.15                                                                              | 0.05                                                                              | 0.16                                                                              | 0.16                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.77                                                                                | 0.76                                                                                | 0.76                                                                                |
| v/c Ratio               | 0.06                                                                              |                                                                                   | 0.00                                                                              | 0.35                                                                              | 0.00                                                                              | 0.04                                                                              | 0.01                                                                               | 0.68                                                                                | 0.00                                                                                | 0.02                                                                                | 0.07                                                                                | 0.01                                                                                |
| Control Delay           | 69.9                                                                              |                                                                                   | 0.0                                                                               | 81.4                                                                              | 38.0                                                                              | 0.2                                                                               | 4.5                                                                                | 10.9                                                                                | 0.0                                                                                 | 13.3                                                                                | 12.1                                                                                | 0.0                                                                                 |
| Queue Delay             | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 69.9                                                                              |                                                                                   | 0.0                                                                               | 81.4                                                                              | 38.0                                                                              | 0.2                                                                               | 4.5                                                                                | 11.0                                                                                | 0.0                                                                                 | 13.3                                                                                | 12.1                                                                                | 0.0                                                                                 |
| LOS                     | E                                                                                 |                                                                                   | A                                                                                 | F                                                                                 | D                                                                                 | A                                                                                 | A                                                                                  | B                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 54.0                                                                              |                                                                                   |                                                                                    | 10.9                                                                                |                                                                                     |                                                                                     | 11.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 6.6                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 43.4                                                                              | 43.4                                                                              | 6.5                                                                                | 71.5                                                                                | 71.5                                                                                | 6.0                                                                                 | 71.0                                                                                | 71.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                                | Coord                                                                               | Coord                                                                               | Min                                                                                 | Coord                                                                               | Coord                                                                               |
| 70th %ile Green (s)     | 0.0                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 55.5                                                                              | 55.5                                                                              | 6.3                                                                                | 83.0                                                                                | 83.0                                                                                | 0.0                                                                                 | 71.2                                                                                | 71.2                                                                                |
| 70th %ile Term Code     | Skip                                                                              | Ped                                                                               | Ped                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 50th %ile Green (s)     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 8.0                                                                               | 8.0                                                                               | 8.0                                                                               | 0.0                                                                                | 130.5                                                                               | 130.5                                                                               | 0.0                                                                                 | 130.5                                                                               | 130.5                                                                               |
| 50th %ile Term Code     | Skip                                                                              | Skip                                                                              | Skip                                                                              | Hold                                                                              | Min                                                                               | Min                                                                               | Skip                                                                               | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 30th %ile Green (s)     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 144.0                                                                               | 144.0                                                                               | 0.0                                                                                 | 144.0                                                                               | 144.0                                                                               |
| 30th %ile Term Code     | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                               | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 10th %ile Green (s)     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 144.0                                                                               | 144.0                                                                               | 0.0                                                                                 | 144.0                                                                               | 144.0                                                                               |
| 10th %ile Term Code     | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                               | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| Stops (vph)             | 10                                                                                |                                                                                   | 0                                                                                 | 28                                                                                | 1                                                                                 | 0                                                                                 | 1                                                                                  | 584                                                                                 | 0                                                                                   | 2                                                                                   | 58                                                                                  | 0                                                                                   |
| Fuel Used(gal)          | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 21                                                                                  | 0                                                                                   | 0                                                                                   | 2                                                                                   | 0                                                                                   |
| CO Emissions (g/hr)     | 16                                                                                |                                                                                   | 1                                                                                 | 57                                                                                | 1                                                                                 | 7                                                                                 | 7                                                                                  | 1443                                                                                | 2                                                                                   | 3                                                                                   | 148                                                                                 | 8                                                                                   |
| NOx Emissions (g/hr)    | 3                                                                                 |                                                                                   | 0                                                                                 | 11                                                                                | 0                                                                                 | 1                                                                                 | 1                                                                                  | 281                                                                                 | 0                                                                                   | 1                                                                                   | 29                                                                                  | 2                                                                                   |
| VOC Emissions (g/hr)    | 4                                                                                 |                                                                                   | 0                                                                                 | 13                                                                                | 0                                                                                 | 2                                                                                 | 2                                                                                  | 334                                                                                 | 1                                                                                   | 1                                                                                   | 34                                                                                  | 2                                                                                   |
| Dilemma Vehicles (#)    | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 49                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | 4                                                                                 |                                                                                   | 0                                                                                 | 27                                                                                | 1                                                                                 | 0                                                                                 | 1                                                                                  | 132                                                                                 | 0                                                                                   | 0                                                                                   | 10                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  | 15                                                                                |                                                                                   | 0                                                                                 | 70                                                                                | 6                                                                                 | 0                                                                                 | m2                                                                                 | m#1308                                                                              | m0                                                                                  | 7                                                                                   | 87                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 801                                                                               |                                                                                   |                                                                                   | 810                                                                               |                                                                                   |                                                                                    | 777                                                                                 |                                                                                     |                                                                                     | 825                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                | 177                                                                                |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Base Capacity (vph)     | 160                                                                               |                                                                                   | 936                                                                               | 84                                                                                | 566                                                                               | 551                                                                               | 919                                                                                | 2733                                                                                | 1244                                                                                | 164                                                                                 | 2702                                                                                | 1231                                                                                |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 95                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.05                                                                              |                                                                                   | 0.00                                                                              | 0.33                                                                              | 0.00                                                                              | 0.03                                                                              | 0.01                                                                               | 0.70                                                                                | 0.00                                                                                | 0.02                                                                                | 0.07                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 120 (80%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 12.0

Intersection LOS: B

Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 60

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carothers /Carothers & Tower/Pacific

|                                                                                        |                                                                                            |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1   |  Ø2 (R)   |  Ø3   |  Ø4   |
| 12 s                                                                                   | 77 s                                                                                       | 12.5 s                                                                                  | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 77 s                                                                                       | 12.5 s                                                                                  | 48.5 s                                                                                   |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

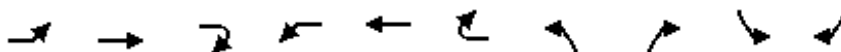
11/18/2016

|                                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                     |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)                    | 1                                                                                 | 0                                                                                 | 2                                                                                 | 9                                                                                 | 0                                                                                 | 63                                                                                | 2                                                                                   | 1938                                                                                | 1                                                                                   | 7                                                                                   | 213                                                                                 | 2                                                                                   |
| Future Volume (vph)                     | 1                                                                                 | 0                                                                                 | 2                                                                                 | 9                                                                                 | 0                                                                                 | 63                                                                                | 2                                                                                   | 1938                                                                                | 1                                                                                   | 7                                                                                   | 213                                                                                 | 2                                                                                   |
| Ideal Flow (vphpl)                      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                               | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     |
| Storage Length (ft)                     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 128                                                                                 | 480                                                                                 |                                                                                     | 93                                                                                  |
| Storage Lanes                           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)                       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                                     | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected                           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                       | 1770                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3504                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted                           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                       | 1770                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3504                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Link Speed (mph)                        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 40                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)                      | 762                                                                               |                                                                                   |                                                                                   | 773                                                                               |                                                                                   |                                                                                   | 905                                                                                 |                                                                                     |                                                                                     | 2004                                                                                |                                                                                     |                                                                                     |
| Travel Time (s)                         | 17.3                                                                              |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                   | 15.4                                                                                |                                                                                     |                                                                                     | 34.2                                                                                |                                                                                     |                                                                                     |
| Peak Hour Factor                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)                         | 1                                                                                 | 0                                                                                 | 2                                                                                 | 9                                                                                 | 0                                                                                 | 63                                                                                | 2                                                                                   | 1938                                                                                | 1                                                                                   | 7                                                                                   | 213                                                                                 | 2                                                                                   |
| Shared Lane Traffic (%)                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)                   | 1                                                                                 | 2                                                                                 | 0                                                                                 | 9                                                                                 | 0                                                                                 | 63                                                                                | 2                                                                                   | 1939                                                                                | 0                                                                                   | 7                                                                                   | 213                                                                                 | 2                                                                                   |
| Enter Blocked Intersection              | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                          | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                        | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)                         | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)                     | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)                     | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                            | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |                                                                                     |
| Intersection Summary                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                              | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type: Unsignalized              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization 70.8% |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| ICU Level of Service C                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min) 60                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



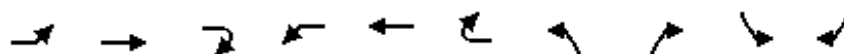
| Lane Group                 | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)       | 572   | 604   | 366   | 300   | 564   | 623   | 285   | 75    | 462   | 671   |
| Future Volume (vph)        | 572   | 604   | 366   | 300   | 564   | 623   | 285   | 75    | 462   | 671   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 370   |       |       | 495   |       |       | 0     |       | 0     |       |
| Storage Lanes              | 2     |       |       | 1     |       |       | 2     |       | 2     |       |
| Taper Length (ft)          | 25    |       |       | 25    |       |       | 25    |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 0.97  | 1.00  | 0.97  | 0.88  |
| Frt                        |       |       | 0.850 |       |       | 0.850 |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (prot)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Flt Permitted              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (perm)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Right Turn on Red          |       |       | Yes   |       |       | Yes   |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       | 366   |       |       | 616   |       | 245   |       | 284   |
| Link Speed (mph)           |       | 30    |       |       | 30    |       |       |       |       |       |
| Link Distance (ft)         |       | 826   |       |       | 1211  |       |       |       |       |       |
| Travel Time (s)            |       | 18.8  |       |       | 27.5  |       |       |       |       |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 572   | 604   | 366   | 300   | 564   | 623   | 285   | 75    | 462   | 671   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 572   | 604   | 366   | 300   | 564   | 623   | 285   | 75    | 462   | 671   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Right | Left  | Left  | Right | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    |       |       | 24    |       |       |       |       |       |
| Link Offset(ft)            |       | 0     |       |       | 0     |       |       |       |       |       |
| Crosswalk Width(ft)        |       | 16    |       |       | 16    |       |       |       |       |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |       |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    |       | 9     | 15    |       | 9     | 15    | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 1     | 1     | 2     | 1     | 1     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Right | Left  | Thru  | Right | Left  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 20    | 20    | 100   | 20    | 20    | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 20    | 20    | 6     | 20    | 20    | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    |       |       | 94    |       |       |       |       |       |
| Detector 2 Size(ft)        |       | 6     |       |       | 6     |       |       |       |       |       |
| Detector 2 Type            |       | Cl+Ex |       |       | Cl+Ex |       |       |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   |       |       | 0.0   |       |       |       |       |       |
| Turn Type                  | Prot  | NA    | Free  | Prot  | NA    | Perm  | Perm  | Free  | Perm  | Prot  |
| Protected Phases           | 1     | 6     |       | 5     | 2     |       |       |       |       | 1     |
| Permitted Phases           |       |       | Free  |       |       | 2     | 3     | Free  | 7     |       |



# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

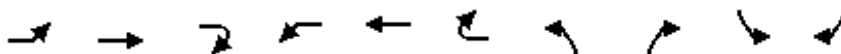


| Lane Group              | EBL   | EBT   | EBR2 | WBL   | WBT   | WBR2  | NBL   | NBR2 | SBL   | SBR2  |
|-------------------------|-------|-------|------|-------|-------|-------|-------|------|-------|-------|
| Detector Phase          | 1     | 6     |      | 5     | 2     | 2     | 3     |      | 7     | 1     |
| Switch Phase            |       |       |      |       |       |       |       |      |       |       |
| Minimum Initial (s)     | 8.0   | 12.0  |      | 8.0   | 12.0  | 12.0  | 12.0  |      | 12.0  | 8.0   |
| Minimum Split (s)       | 15.0  | 27.0  |      | 25.0  | 27.0  | 27.0  | 27.0  |      | 27.0  | 15.0  |
| Total Split (s)         | 23.0  | 28.0  |      | 25.0  | 30.0  | 30.0  | 27.0  |      | 27.0  | 23.0  |
| Total Split (%)         | 28.8% | 35.0% |      | 31.3% | 37.5% | 37.5% | 33.8% |      | 33.8% | 28.8% |
| Maximum Green (s)       | 16.0  | 21.0  |      | 18.0  | 23.0  | 23.0  | 20.0  |      | 20.0  | 16.0  |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   |      | 4.0   | 4.0   |
| All-Red Time (s)        | 3.0   | 3.0   |      | 3.0   | 3.0   | 3.0   | 3.0   |      | 3.0   | 3.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |
| Total Lost Time (s)     | 7.0   | 7.0   |      | 7.0   | 7.0   | 7.0   | 7.0   |      | 7.0   | 7.0   |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   | Lag   |       |      |       | Lead  |
| Lead-Lag Optimize?      |       |       |      |       |       |       |       |      |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   |      | 3.0   | 3.0   | 3.0   | 3.0   |      | 3.0   | 3.0   |
| Recall Mode             | None  | Min   |      | None  | Min   | Min   | None  |      | None  | None  |
| Walk Time (s)           |       | 7.0   |      |       | 7.0   | 7.0   | 7.0   |      | 7.0   |       |
| Flash Dont Walk (s)     |       | 13.0  |      |       | 13.0  | 13.0  | 13.0  |      | 13.0  |       |
| Pedestrian Calls (#/hr) |       | 5     |      |       | 5     | 5     | 5     |      | 5     |       |
| Act Effect Green (s)    | 15.5  | 19.6  | 72.0 | 15.9  | 20.0  | 20.0  | 15.4  | 72.0 | 15.4  | 15.5  |
| Actuated g/C Ratio      | 0.22  | 0.27  | 1.00 | 0.22  | 0.28  | 0.28  | 0.21  | 1.00 | 0.21  | 0.22  |
| v/c Ratio               | 0.78  | 0.63  | 0.23 | 0.77  | 0.57  | 0.70  | 0.39  | 0.05 | 0.63  | 0.82  |
| Control Delay           | 37.1  | 27.2  | 0.3  | 43.5  | 25.3  | 7.4   | 26.6  | 0.1  | 30.7  | 26.6  |
| Queue Delay             | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   |
| Total Delay             | 37.1  | 27.2  | 0.3  | 43.5  | 25.3  | 7.4   | 26.6  | 0.1  | 30.7  | 26.6  |
| LOS                     | D     | C     | A    | D     | C     | A     | C     | A    | C     | C     |
| Approach Delay          |       | 24.5  |      |       | 21.5  |       |       |      |       |       |
| Approach LOS            |       | C     |      |       | C     |       |       |      |       |       |
| 90th %ile Green (s)     | 16.0  | 21.0  |      | 18.0  | 23.0  | 23.0  | 20.0  |      | 20.0  | 16.0  |
| 90th %ile Term Code     | Max   | Max   |      | Max   | Max   | Max   | Ped   |      | Max   | Max   |
| 70th %ile Green (s)     | 16.0  | 21.0  |      | 18.0  | 23.0  | 23.0  | 17.1  |      | 17.1  | 16.0  |
| 70th %ile Term Code     | Max   | Max   |      | Max   | Max   | Max   | Hold  |      | Gap   | Max   |
| 50th %ile Green (s)     | 16.0  | 20.8  |      | 18.0  | 22.8  | 22.8  | 15.2  |      | 15.2  | 16.0  |
| 50th %ile Term Code     | Max   | Hold  |      | Max   | Gap   | Gap   | Hold  |      | Gap   | Max   |
| 30th %ile Green (s)     | 16.0  | 19.9  |      | 14.9  | 18.8  | 18.8  | 13.0  |      | 13.0  | 16.0  |
| 30th %ile Term Code     | Max   | Hold  |      | Gap   | Gap   | Gap   | Hold  |      | Gap   | Max   |
| 10th %ile Green (s)     | 13.0  | 15.2  |      | 11.0  | 13.2  | 13.2  | 12.0  |      | 12.0  | 13.0  |
| 10th %ile Term Code     | Gap   | Hold  |      | Gap   | Gap   | Gap   | Min   |      | Min   | Gap   |
| Stops (vph)             | 495   | 503   | 0    | 258   | 454   | 74    | 228   | 0    | 397   | 348   |
| Fuel Used(gal)          | 11    | 10    | 2    | 7     | 11    | 7     | 4     | 0    | 8     | 10    |
| CO Emissions (g/hr)     | 750   | 700   | 167  | 483   | 751   | 506   | 314   | 31   | 551   | 674   |
| NOx Emissions (g/hr)    | 146   | 136   | 32   | 94    | 146   | 98    | 61    | 6    | 107   | 131   |
| VOC Emissions (g/hr)    | 174   | 162   | 39   | 112   | 174   | 117   | 73    | 7    | 128   | 156   |
| Dilemma Vehicles (#)    | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    | 0     | 0     |
| Queue Length 50th (ft)  | 130   | 128   | 0    | 128   | 113   | 2     | 59    | 0    | 102   | 97    |
| Queue Length 95th (ft)  | #268  | 225   | 0    | #308  | 201   | #178  | 105   | 0    | 169   | #269  |
| Internal Link Dist (ft) |       | 746   |      |       | 1131  |       |       |      |       |       |
| Turn Bay Length (ft)    | 370   |       |      | 495   |       |       |       |      |       |       |
| Base Capacity (vph)     | 771   | 1043  | 1583 | 447   | 1143  | 928   | 964   | 1583 | 964   | 846   |
| Starvation Cap Reductn  | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0    | 0     | 0     |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



| Lane Group            | EBL  | EBT  | EBR2 | WBL  | WBT  | WBR2 | NBL  | NBR2 | SBL  | SBR2 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.74 | 0.58 | 0.23 | 0.67 | 0.49 | 0.67 | 0.30 | 0.05 | 0.48 | 0.79 |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 72

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 24.2

Intersection LOS: C

Intersection Capacity Utilization Err%

ICU Level of Service H

Analysis Period (min) 60

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 77.1

50th %ile Actuated Cycle: 75

30th %ile Actuated Cycle: 68.8

10th %ile Actuated Cycle: 59.2

# 95th percentile volume exceeds capacity, queue may be longer.

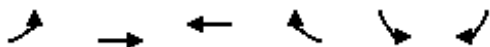
Queue shown is maximum after two cycles.

Splits and Phases: 1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

|                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |
| 23 s                                                                                   | 30 s                                                                                   | 27 s                                                                                     |
|  Ø5 |  Ø6 |  Ø7 |
| 25 s                                                                                   | 28 s                                                                                   | 27 s                                                                                     |

Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

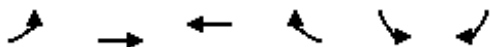
11/18/2016



| Lane Group                 | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ↑↑    | ↑↑    | ↑↑    | ↑     | ↓     | ↓↓    |
| Traffic Volume (vph)       | 27    | 1108  | 1167  | 0     | 106   | 308   |
| Future Volume (vph)        | 27    | 1108  | 1167  | 0     | 106   | 308   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 285   |       |       | 115   | 445   | 0     |
| Storage Lanes              | 2     |       |       | 1     | 1     | 2     |
| Taper Length (ft)          | 25    |       |       |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 0.95  | 1.00  | 1.00  | 0.88  |
| Frt                        |       |       |       |       |       | 0.850 |
| Flt Protected              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (prot)          | 3090  | 3185  | 3185  | 1676  | 1593  | 2508  |
| Flt Permitted              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (perm)          | 3090  | 3185  | 3185  | 1676  | 1593  | 2508  |
| Right Turn on Red          |       |       |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       |       |       |       | 308   |
| Link Speed (mph)           |       | 30    | 30    |       | 30    |       |
| Link Distance (ft)         |       | 1211  | 938   |       | 511   |       |
| Travel Time (s)            |       | 27.5  | 21.3  |       | 11.6  |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 27    | 1108  | 1167  | 0     | 106   | 308   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 27    | 1108  | 1167  | 0     | 106   | 308   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    | 24    |       | 12    |       |
| Link Offset(ft)            |       | 0     | 0     |       | 0     |       |
| Crosswalk Width(ft)        |       | 16    | 16    |       | 16    |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |
| Headway Factor             | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  |
| Turning Speed (mph)        | 15    |       |       | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 2     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Thru  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 100   | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 6     | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    | 94    |       |       |       |
| Detector 2 Size(ft)        |       | 6     | 6     |       |       |       |
| Detector 2 Type            |       | Cl+Ex | Cl+Ex |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   | 0.0   |       |       |       |
| Turn Type                  | Prot  | NA    | NA    | Prot  | Prot  | Prot  |
| Protected Phases           | 1     | 6     | 2     | 2     | 8     | 8     |
| Permitted Phases           |       |       |       |       |       |       |

Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

11/18/2016



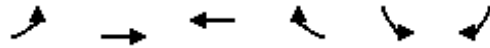
| Lane Group              | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     | 2     | 2     | 8     | 8     |
| Switch Phase            |       |       |       |       |       |       |
| Minimum Initial (s)     | 7.0   | 20.0  | 20.0  | 20.0  | 8.0   | 8.0   |
| Minimum Split (s)       | 13.5  | 43.5  | 43.5  | 43.5  | 46.5  | 46.5  |
| Total Split (s)         | 13.5  | 58.5  | 45.0  | 45.0  | 46.5  | 46.5  |
| Total Split (%)         | 12.9% | 55.7% | 42.9% | 42.9% | 44.3% | 44.3% |
| Maximum Green (s)       | 8.0   | 53.0  | 39.5  | 39.5  | 41.0  | 41.0  |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)        | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   |
| Lead/Lag                | Lead  |       | Lag   | Lag   |       |       |
| Lead-Lag Optimize?      |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| Recall Mode             | None  | Min   | Min   | Min   | None  | None  |
| Walk Time (s)           |       | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Flash Dont Walk (s)     |       | 18.0  | 18.0  | 18.0  | 34.0  | 34.0  |
| Pedestrian Calls (#/hr) |       | 3     | 3     | 3     | 3     | 3     |
| Act Effect Green (s)    | 7.8   | 39.5  | 35.6  |       | 14.1  | 14.1  |
| Actuated g/C Ratio      | 0.12  | 0.60  | 0.54  |       | 0.21  | 0.21  |
| v/c Ratio               | 0.07  | 0.58  | 0.68  |       | 0.31  | 0.39  |
| Control Delay           | 36.6  | 11.1  | 17.5  |       | 25.8  | 4.6   |
| Queue Delay             | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Delay             | 36.6  | 11.1  | 17.5  |       | 25.8  | 4.6   |
| LOS                     | D     | B     | B     |       | C     | A     |
| Approach Delay          |       | 11.8  | 17.5  |       | 10.0  |       |
| Approach LOS            |       | B     | B     |       | B     |       |
| 90th %ile Green (s)     | 7.6   | 53.0  | 39.9  | 39.9  | 41.0  | 41.0  |
| 90th %ile Term Code     | Gap   | Max   | Hold  | Hold  | Ped   | Ped   |
| 70th %ile Green (s)     | 7.0   | 52.0  | 39.5  | 39.5  | 11.7  | 11.7  |
| 70th %ile Term Code     | Min   | Hold  | Max   | Max   | Gap   | Gap   |
| 50th %ile Green (s)     | 0.0   | 37.6  | 37.6  | 37.6  | 10.1  | 10.1  |
| 50th %ile Term Code     | Skip  | Hold  | Gap   | Gap   | Gap   | Gap   |
| 30th %ile Green (s)     | 0.0   | 28.2  | 28.2  | 28.2  | 8.0   | 8.0   |
| 30th %ile Term Code     | Skip  | Hold  | Gap   | Gap   | Min   | Min   |
| 10th %ile Green (s)     | 0.0   | 24.3  | 24.3  | 24.3  | 8.0   | 8.0   |
| 10th %ile Term Code     | Skip  | Hold  | Gap   | Gap   | Min   | Min   |
| Stops (vph)             | 25    | 595   | 711   |       | 76    | 28    |
| Fuel Used(gal)          | 1     | 16    | 17    |       | 1     | 2     |
| CO Emissions (g/hr)     | 42    | 1137  | 1163  |       | 98    | 117   |
| NOx Emissions (g/hr)    | 8     | 221   | 226   |       | 19    | 23    |
| VOC Emissions (g/hr)    | 10    | 263   | 269   |       | 23    | 27    |
| Dilemma Vehicles (#)    | 0     | 0     | 0     |       | 0     | 0     |
| Queue Length 50th (ft)  | 4     | 94    | 101   |       | 34    | 0     |
| Queue Length 95th (ft)  | 25    | 436   | #657  |       | 95    | 41    |
| Internal Link Dist (ft) |       | 1131  | 858   |       | 431   |       |
| Turn Bay Length (ft)    | 285   |       |       |       | 445   |       |
| Base Capacity (vph)     | 416   | 2622  | 2121  |       | 1100  | 1827  |
| Starvation Cap Reductn  | 0     | 0     | 0     |       | 0     | 0     |



# Lanes, Volumes, Timings

## 2: McEwen /McEwen & Tower

11/18/2016



| Lane Group            | EBL  | EBT  | WBT  | WBR | SBL  | SBR  |
|-----------------------|------|------|------|-----|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    |     | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    |     | 0    | 0    |
| Reduced v/c Ratio     | 0.06 | 0.42 | 0.55 |     | 0.10 | 0.17 |

### Intersection Summary

Area Type: CBD  
 Cycle Length: 105  
 Actuated Cycle Length: 65.8  
 Natural Cycle: 105  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.68  
 Intersection Signal Delay: 14.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 57.0%  
 ICU Level of Service B  
 Analysis Period (min) 60  
 90th %ile Actuated Cycle: 105  
 70th %ile Actuated Cycle: 74.7  
 50th %ile Actuated Cycle: 58.7  
 30th %ile Actuated Cycle: 47.2  
 10th %ile Actuated Cycle: 43.3  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

### Splits and Phases: 2: McEwen /McEwen & Tower

|                                                                                        |                                                                                        |  |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--|
|  Ø1 |  Ø2 |  |
| 13.5 s                                                                                 | 45 s                                                                                   |  |
|  Ø6 |  Ø8 |  |
| 58.5 s                                                                                 | 46.5 s                                                                                 |  |

# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 111                                                                               | 620                                                                               | 431                                                                               | 64                                                                                | 277                                                                               | 5                                                                                 | 94                                                                                  | 172                                                                                 | 82                                                                                  | 207                                                                                 | 1134                                                                                | 749                                                                                 |
| Future Volume (vph)        | 111                                                                               | 620                                                                               | 431                                                                               | 64                                                                                | 277                                                                               | 5                                                                                 | 94                                                                                  | 172                                                                                 | 82                                                                                  | 207                                                                                 | 1134                                                                                | 749                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 71                                                                                |                                                                                   |                                                                                   | 71                                                                                |                                                                                     |                                                                                     | 82                                                                                  |                                                                                     |                                                                                     | 359                                                                                 |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 938                                                                               |                                                                                   |                                                                                   | 1960                                                                              |                                                                                   |                                                                                     | 1936                                                                                |                                                                                     |                                                                                     | 857                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                     | 44.0                                                                                |                                                                                     |                                                                                     | 14.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 111                                                                               | 620                                                                               | 431                                                                               | 64                                                                                | 277                                                                               | 5                                                                                 | 94                                                                                  | 172                                                                                 | 82                                                                                  | 207                                                                                 | 1134                                                                                | 749                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 111                                                                               | 620                                                                               | 431                                                                               | 64                                                                                | 277                                                                               | 5                                                                                 | 94                                                                                  | 172                                                                                 | 82                                                                                  | 207                                                                                 | 1134                                                                                | 749                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | custom                                                                              | Prot                                                                                | NA                                                                                  | custom                                                                              |
| Protected Phases           | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases           |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |

Lanes, Volumes, Timings  
3: Carothers/Carothers & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase          | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 13.0                                                                              | 6.0                                                                               | 4.0                                                                               | 13.0                                                                              | 6.0                                                                               | 6.0                                                                                | 13.0                                                                                | 4.0                                                                                 | 6.0                                                                                 | 13.0                                                                                | 6.0                                                                                 |
| Minimum Split (s)       | 13.0                                                                              | 52.0                                                                              | 12.5                                                                              | 10.0                                                                              | 52.0                                                                              | 13.0                                                                              | 12.5                                                                               | 52.0                                                                                | 10.0                                                                                | 13.0                                                                                | 52.0                                                                                | 13.0                                                                                |
| Total Split (s)         | 13.0                                                                              | 54.0                                                                              | 12.6                                                                              | 11.0                                                                              | 52.0                                                                              | 13.0                                                                              | 12.6                                                                               | 52.0                                                                                | 11.0                                                                                | 13.0                                                                                | 52.4                                                                                | 13.0                                                                                |
| Total Split (%)         | 10.0%                                                                             | 41.5%                                                                             | 9.7%                                                                              | 8.5%                                                                              | 40.0%                                                                             | 10.0%                                                                             | 9.7%                                                                               | 40.0%                                                                               | 8.5%                                                                                | 10.0%                                                                               | 40.3%                                                                               | 10.0%                                                                               |
| Maximum Green (s)       | 7.0                                                                               | 48.0                                                                              | 6.6                                                                               | 5.5                                                                               | 46.0                                                                              | 7.0                                                                               | 6.6                                                                                | 46.0                                                                                | 5.5                                                                                 | 7.0                                                                                 | 46.4                                                                                | 7.0                                                                                 |
| Yellow Time (s)         | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 5.5                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Max                                                                               | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                    | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 37.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                    | 5                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |
| Act Effect Green (s)    | 7.2                                                                               | 26.9                                                                              | 39.8                                                                              | 5.6                                                                               | 24.9                                                                              | 38.2                                                                              | 6.7                                                                                | 39.1                                                                                | 51.3                                                                                | 7.2                                                                                 | 39.5                                                                                | 52.4                                                                                |
| Actuated g/C Ratio      | 0.07                                                                              | 0.26                                                                              | 0.39                                                                              | 0.05                                                                              | 0.24                                                                              | 0.37                                                                              | 0.07                                                                               | 0.38                                                                                | 0.50                                                                                | 0.07                                                                                | 0.38                                                                                | 0.51                                                                                |
| v/c Ratio               | 0.46                                                                              | 0.67                                                                              | 0.66                                                                              | 0.34                                                                              | 0.32                                                                              | 0.01                                                                              | 0.42                                                                               | 0.13                                                                                | 0.10                                                                                | 0.87                                                                                | 0.84                                                                                | 0.76                                                                                |
| Control Delay           | 57.4                                                                              | 37.8                                                                              | 27.1                                                                              | 57.8                                                                              | 32.9                                                                              | 0.0                                                                               | 57.2                                                                               | 22.5                                                                                | 4.4                                                                                 | 92.6                                                                                | 36.5                                                                                | 17.3                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 57.4                                                                              | 37.8                                                                              | 27.1                                                                              | 57.8                                                                              | 32.9                                                                              | 0.0                                                                               | 57.2                                                                               | 22.5                                                                                | 4.4                                                                                 | 92.6                                                                                | 36.5                                                                                | 17.3                                                                                |
| LOS                     | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                 | C                                                                                 | A                                                                                 | E                                                                                  | C                                                                                   | A                                                                                   | F                                                                                   | D                                                                                   | B                                                                                   |
| Approach Delay          |                                                                                   | 35.7                                                                              |                                                                                   |                                                                                   | 37.1                                                                              |                                                                                   |                                                                                    | 27.6                                                                                |                                                                                     |                                                                                     | 35.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 7.0                                                                               | 48.0                                                                              | 6.6                                                                               | 5.5                                                                               | 46.0                                                                              | 7.0                                                                               | 6.6                                                                                | 46.0                                                                                | 5.5                                                                                 | 7.0                                                                                 | 46.4                                                                                | 7.0                                                                                 |
| 90th %ile Term Code     | MaxR                                                                              | Hold                                                                              | Max                                                                               | Max                                                                               | Ped                                                                               | Max                                                                               | Max                                                                                | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 70th %ile Green (s)     | 7.0                                                                               | 27.9                                                                              | 6.6                                                                               | 5.5                                                                               | 25.9                                                                              | 7.0                                                                               | 6.6                                                                                | 46.0                                                                                | 5.5                                                                                 | 7.0                                                                                 | 46.4                                                                                | 7.0                                                                                 |
| 70th %ile Term Code     | MaxR                                                                              | Gap                                                                               | Max                                                                               | Max                                                                               | Hold                                                                              | Max                                                                               | Max                                                                                | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 50th %ile Green (s)     | 7.0                                                                               | 24.4                                                                              | 6.6                                                                               | 5.5                                                                               | 22.4                                                                              | 7.0                                                                               | 6.6                                                                                | 39.8                                                                                | 5.5                                                                                 | 7.0                                                                                 | 40.2                                                                                | 7.0                                                                                 |
| 50th %ile Term Code     | MaxR                                                                              | Gap                                                                               | Max                                                                               | Max                                                                               | Hold                                                                              | Max                                                                               | Max                                                                                | Hold                                                                                | Max                                                                                 | Max                                                                                 | Gap                                                                                 | MaxR                                                                                |
| 30th %ile Green (s)     | 7.0                                                                               | 22.0                                                                              | 6.6                                                                               | 5.5                                                                               | 20.0                                                                              | 7.0                                                                               | 6.6                                                                                | 35.4                                                                                | 5.5                                                                                 | 7.0                                                                                 | 35.8                                                                                | 7.0                                                                                 |
| 30th %ile Term Code     | MaxR                                                                              | Gap                                                                               | Max                                                                               | Max                                                                               | Hold                                                                              | Max                                                                               | Max                                                                                | Hold                                                                                | Max                                                                                 | Max                                                                                 | Gap                                                                                 | MaxR                                                                                |
| 10th %ile Green (s)     | 7.0                                                                               | 16.8                                                                              | 6.5                                                                               | 5.5                                                                               | 14.8                                                                              | 7.0                                                                               | 6.5                                                                                | 28.4                                                                                | 5.5                                                                                 | 7.0                                                                                 | 28.9                                                                                | 7.0                                                                                 |
| 10th %ile Term Code     | MaxR                                                                              | Gap                                                                               | Gap                                                                               | Max                                                                               | Hold                                                                              | Max                                                                               | Gap                                                                                | Hold                                                                                | Max                                                                                 | Max                                                                                 | Gap                                                                                 | MaxR                                                                                |
| Stops (vph)             | 101                                                                               | 520                                                                               | 284                                                                               | 59                                                                                | 210                                                                               | 0                                                                                 | 84                                                                                 | 105                                                                                 | 9                                                                                   | 167                                                                                 | 950                                                                                 | 342                                                                                 |
| Fuel Used(gal)          | 3                                                                                 | 12                                                                                | 7                                                                                 | 2                                                                                 | 7                                                                                 | 0                                                                                 | 3                                                                                  | 4                                                                                   | 1                                                                                   | 7                                                                                   | 24                                                                                  | 10                                                                                  |
| CO Emissions (g/hr)     | 186                                                                               | 851                                                                               | 496                                                                               | 144                                                                               | 507                                                                               | 5                                                                                 | 208                                                                                | 277                                                                                 | 95                                                                                  | 471                                                                                 | 1702                                                                                | 724                                                                                 |
| NOx Emissions (g/hr)    | 36                                                                                | 166                                                                               | 97                                                                                | 28                                                                                | 99                                                                                | 1                                                                                 | 40                                                                                 | 54                                                                                  | 18                                                                                  | 92                                                                                  | 331                                                                                 | 141                                                                                 |
| VOC Emissions (g/hr)    | 43                                                                                | 197                                                                               | 115                                                                               | 33                                                                                | 117                                                                               | 1                                                                                 | 48                                                                                 | 64                                                                                  | 22                                                                                  | 109                                                                                 | 395                                                                                 | 168                                                                                 |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 47                                                                                  | 0                                                                                   |
| Queue Length 50th (ft)  | 36                                                                                | 191                                                                               | 193                                                                               | 20                                                                                | 78                                                                                | 0                                                                                 | 30                                                                                 | 35                                                                                  | 0                                                                                   | 68                                                                                  | 329                                                                                 | 185                                                                                 |
| Queue Length 95th (ft)  | #98                                                                               | 304                                                                               | 383                                                                               | 58                                                                                | 136                                                                               | 0                                                                                 | #81                                                                                | 88                                                                                  | 38                                                                                  | #215                                                                                | #732                                                                                | #751                                                                                |
| Internal Link Dist (ft) |                                                                                   | 858                                                                               |                                                                                   |                                                                                   | 1880                                                                              |                                                                                   |                                                                                    | 1856                                                                                |                                                                                     |                                                                                     | 777                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Base Capacity (vph)     | 239                                                                               | 1691                                                                              | 656                                                                               | 188                                                                               | 1621                                                                              | 632                                                                               | 225                                                                                | 1621                                                                                | 830                                                                                 | 239                                                                                 | 1635                                                                                | 982                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |

# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Spillback Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio     | 0.46                                                                              | 0.37                                                                              | 0.66                                                                              | 0.34                                                                              | 0.17                                                                              | 0.01                                                                              | 0.42                                                                               | 0.11                                                                                | 0.10                                                                                | 0.87                                                                                | 0.69                                                                                | 0.76                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 102.9

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 34.8

Intersection LOS: C

Intersection Capacity Utilization 77.2%

ICU Level of Service D

Analysis Period (min) 60

90th %ile Actuated Cycle: 130

70th %ile Actuated Cycle: 109.9

50th %ile Actuated Cycle: 100.2

30th %ile Actuated Cycle: 93.4

10th %ile Actuated Cycle: 81.2

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Carothers/Carothers & McEwen

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 13 s                                                                                   | 52 s                                                                                   | 13 s                                                                                   | 52 s                                                                                    |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 11 s                                                                                   | 54 s                                                                                   | 12.6 s                                                                                 | 52.4 s                                                                                  |



# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                        | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (vph)              | 87                                                                                | 815                                                                               | 0                                                                                 | 0                                                                                 | 363                                                                               | 13                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 74                                                                                  | 0                                                                                   | 68                                                                                  |
| Future Volume (vph)               | 87                                                                                | 815                                                                               | 0                                                                                 | 0                                                                                 | 363                                                                               | 13                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 74                                                                                  | 0                                                                                   | 68                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor                 | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected                     | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 3539                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 1770                                                                                | 0                                                                                   | 1583                                                                                |
| Flt Permitted                     | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 3539                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 1770                                                                                | 0                                                                                   | 1583                                                                                |
| Link Speed (mph)                  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)                |                                                                                   | 1960                                                                              |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                    | 402                                                                                 |                                                                                     |                                                                                     | 456                                                                                 |                                                                                     |
| Travel Time (s)                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 10.4                                                                                |                                                                                     |
| Peak Hour Factor                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)                   | 87                                                                                | 815                                                                               | 0                                                                                 | 0                                                                                 | 363                                                                               | 13                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 74                                                                                  | 0                                                                                   | 68                                                                                  |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)             | 87                                                                                | 815                                                                               | 0                                                                                 | 0                                                                                 | 376                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 74                                                                                  | 0                                                                                   | 68                                                                                  |
| Enter Blocked Intersection        | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                    | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                  |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 36                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)               |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                    | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)               | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                      |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 33.3%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 60                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| ICU Level of Service A            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 13                                                                                | 1                                                                                 | 22                                                                                | 10                                                                                | 0                                                                                 | 8                                                                                 | 2                                                                                   | 267                                                                                 | 29                                                                                  | 4                                                                                   | 1984                                                                                | 9                                                                                   |
| Future Volume (vph)        | 13                                                                                | 1                                                                                 | 22                                                                                | 10                                                                                | 0                                                                                 | 8                                                                                 | 2                                                                                   | 267                                                                                 | 29                                                                                  | 4                                                                                   | 1984                                                                                | 9                                                                                   |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     |
| Storage Length (ft)        | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                | 177                                                                                 |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3504                                                                                | 1567                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.080                                                                               |                                                                                     |                                                                                     | 0.587                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                              | 148                                                                                 | 3504                                                                                | 1567                                                                                | 1093                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                   | 523                                                                               |                                                                                     |                                                                                     | 128                                                                                 |                                                                                     |                                                                                     | 128                                                                                 |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 881                                                                               |                                                                                   |                                                                                   | 890                                                                               |                                                                                   |                                                                                     | 857                                                                                 |                                                                                     |                                                                                     | 905                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                   |                                                                                     | 14.6                                                                                |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 13                                                                                | 1                                                                                 | 22                                                                                | 10                                                                                | 0                                                                                 | 8                                                                                 | 2                                                                                   | 267                                                                                 | 29                                                                                  | 4                                                                                   | 1984                                                                                | 9                                                                                   |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 13                                                                                | 1                                                                                 | 22                                                                                | 10                                                                                | 0                                                                                 | 8                                                                                 | 2                                                                                   | 267                                                                                 | 29                                                                                  | 4                                                                                   | 1984                                                                                | 9                                                                                   |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              |                                                                                   | Perm                                                                              | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 6                                                                                  |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                  | 6                                                                                   | 6                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                                | 20.0                                                                                | 20.0                                                                                | 6.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 42.0                                                                                | 42.0                                                                                | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                |
| Total Split (s)         | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 42.0                                                                                | 42.0                                                                                | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                |
| Total Split (%)         | 10.9%                                                                             | 42.2%                                                                             | 42.2%                                                                             | 10.9%                                                                             | 42.2%                                                                             | 42.2%                                                                             | 10.4%                                                                              | 36.5%                                                                               | 36.5%                                                                               | 10.4%                                                                               | 36.5%                                                                               | 36.5%                                                                               |
| Maximum Green (s)       | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                | 36.0                                                                                | 36.0                                                                                | 6.5                                                                                 | 36.0                                                                                | 36.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                    | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                    | 29.0                                                                                | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                | 10                                                                                |                                                                                   | 10                                                                                | 10                                                                                |                                                                                    | 10                                                                                  | 10                                                                                  |                                                                                     | 10                                                                                  | 10                                                                                  |
| Act Effect Green (s)    | 6.6                                                                               | 12.8                                                                              | 12.8                                                                              | 6.6                                                                               |                                                                                   | 12.9                                                                              | 51.0                                                                               | 54.1                                                                                | 54.1                                                                                | 51.0                                                                                | 54.1                                                                                | 54.1                                                                                |
| Actuated g/C Ratio      | 0.10                                                                              | 0.19                                                                              | 0.19                                                                              | 0.10                                                                              |                                                                                   | 0.19                                                                              | 0.75                                                                               | 0.79                                                                                | 0.79                                                                                | 0.75                                                                                | 0.79                                                                                | 0.79                                                                                |
| v/c Ratio               | 0.04                                                                              | 0.00                                                                              | 0.05                                                                              | 0.06                                                                              |                                                                                   | 0.01                                                                              | 0.01                                                                               | 0.10                                                                                | 0.02                                                                                | 0.00                                                                                | 0.71                                                                                | 0.01                                                                                |
| Control Delay           | 36.8                                                                              | 22.0                                                                              | 0.3                                                                               | 37.6                                                                              |                                                                                   | 0.0                                                                               | 12.0                                                                               | 10.1                                                                                | 0.0                                                                                 | 11.5                                                                                | 15.3                                                                                | 0.0                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 36.8                                                                              | 22.0                                                                              | 0.3                                                                               | 37.6                                                                              |                                                                                   | 0.0                                                                               | 12.0                                                                               | 10.1                                                                                | 0.0                                                                                 | 11.5                                                                                | 15.3                                                                                | 0.0                                                                                 |
| LOS                     | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                 |                                                                                   | A                                                                                 | B                                                                                  | B                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 15.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 6.7                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 43.3                                                                              | 43.3                                                                              | 6.0                                                                                | 36.0                                                                                | 36.0                                                                                | 6.1                                                                                 | 36.1                                                                                | 36.1                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Min                                                                                | Ped                                                                                 | Ped                                                                                 | Gap                                                                                 | Hold                                                                                | Hold                                                                                |
| 70th %ile Green (s)     | 0.0                                                                               | 8.0                                                                               | 8.0                                                                               | 0.0                                                                               | 8.0                                                                               | 8.0                                                                               | 0.0                                                                                | 36.0                                                                                | 36.0                                                                                | 0.0                                                                                 | 36.0                                                                                | 36.0                                                                                |
| 70th %ile Term Code     | Skip                                                                              | Min                                                                               | Min                                                                               | Skip                                                                              | Hold                                                                              | Hold                                                                              | Skip                                                                               | Hold                                                                                | Hold                                                                                | Skip                                                                                | Max                                                                                 | Max                                                                                 |
| 50th %ile Green (s)     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 51.0                                                                                | 51.0                                                                                | 0.0                                                                                 | 51.0                                                                                | 51.0                                                                                |
| 50th %ile Term Code     | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                               | Dwell                                                                               | Dwell                                                                               | Skip                                                                                | Dwell                                                                               | Dwell                                                                               |
| 30th %ile Green (s)     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 51.0                                                                                | 51.0                                                                                | 0.0                                                                                 | 51.0                                                                                | 51.0                                                                                |
| 30th %ile Term Code     | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                               | Dwell                                                                               | Dwell                                                                               | Skip                                                                                | Dwell                                                                               | Dwell                                                                               |
| 10th %ile Green (s)     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 51.0                                                                                | 51.0                                                                                | 0.0                                                                                 | 51.0                                                                                | 51.0                                                                                |
| 10th %ile Term Code     | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                               | Dwell                                                                               | Dwell                                                                               | Skip                                                                                | Dwell                                                                               | Dwell                                                                               |
| Stops (vph)             | 14                                                                                | 2                                                                                 | 0                                                                                 | 12                                                                                |                                                                                   | 0                                                                                 | 1                                                                                  | 79                                                                                  | 0                                                                                   | 3                                                                                   | 554                                                                                 | 0                                                                                   |
| Fuel Used(gal)          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 3                                                                                   | 0                                                                                   | 0                                                                                   | 23                                                                                  | 0                                                                                   |
| CO Emissions (g/hr)     | 18                                                                                | 2                                                                                 | 11                                                                                | 15                                                                                |                                                                                   | 4                                                                                 | 2                                                                                  | 201                                                                                 | 12                                                                                  | 4                                                                                   | 1624                                                                                | 4                                                                                   |
| NOx Emissions (g/hr)    | 4                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  | 39                                                                                  | 2                                                                                   | 1                                                                                   | 316                                                                                 | 1                                                                                   |
| VOC Emissions (g/hr)    | 4                                                                                 | 0                                                                                 | 2                                                                                 | 3                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  | 47                                                                                  | 3                                                                                   | 1                                                                                   | 376                                                                                 | 1                                                                                   |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 8                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | 2                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Queue Length 95th (ft)  | 17                                                                                | 5                                                                                 | 0                                                                                 | 28                                                                                |                                                                                   | 0                                                                                 | 6                                                                                  | 125                                                                                 | 0                                                                                   | 9                                                                                   | #1486                                                                               | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 801                                                                               |                                                                                   |                                                                                   | 810                                                                               |                                                                                   |                                                                                    | 777                                                                                 |                                                                                     |                                                                                     | 825                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                | 177                                                                                |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Base Capacity (vph)     | 381                                                                               | 1271                                                                              | 1122                                                                              | 196                                                                               |                                                                                   | 1247                                                                              | 276                                                                                | 2777                                                                                | 1268                                                                                | 888                                                                                 | 2805                                                                                | 1281                                                                                |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.03                                                                              | 0.00                                                                              | 0.02                                                                              | 0.05                                                                              |                                                                                   | 0.01                                                                              | 0.01                                                                               | 0.10                                                                                | 0.02                                                                                | 0.00                                                                                | 0.71                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 68.2

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 14.4

Intersection LOS: B

Intersection Capacity Utilization 80.7%

ICU Level of Service D

Analysis Period (min) 60

90th %ile Actuated Cycle: 114.6

70th %ile Actuated Cycle: 55.5

50th %ile Actuated Cycle: 57

30th %ile Actuated Cycle: 57

10th %ile Actuated Cycle: 57

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Carothers /Carothers & Tower/Pacific

|                                                                                        |                                                                                        |                                                                                        |                                                                                        |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 12 s                                                                                   | 42 s                                                                                   | 12.5 s                                                                                 | 48.5 s                                                                                 |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 12 s                                                                                   | 42 s                                                                                   | 12.5 s                                                                                 | 48.5 s                                                                                 |



# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

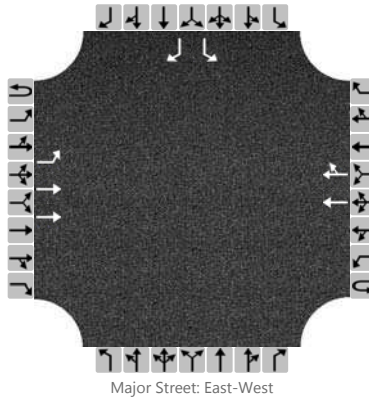
11/18/2016

|                                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                     |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (vph)                    | 0                                                                                 | 0                                                                                 | 3                                                                                 | 8                                                                                 | 0                                                                                 | 17                                                                                | 3                                                                                   | 312                                                                                 | 3                                                                                   | 64                                                                                  | 1951                                                                                | 0                                                                                   |
| Future Volume (vph)                     | 0                                                                                 | 0                                                                                 | 3                                                                                 | 8                                                                                 | 0                                                                                 | 17                                                                                | 3                                                                                   | 312                                                                                 | 3                                                                                   | 64                                                                                  | 1951                                                                                | 0                                                                                   |
| Ideal Flow (vphpl)                      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                               | 0%                                                                                |                                                                                   |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   | 2%                                                                                  |                                                                                     |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)                     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 128                                                                                 | 480                                                                                 |                                                                                     | 93                                                                                  |
| Storage Lanes                           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)                       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor                       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                                     | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.999                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected                           |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)                       | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3500                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1863                                                                                |
| Flt Permitted                           |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (perm)                       | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3500                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1863                                                                                |
| Link Speed (mph)                        | 30                                                                                |                                                                                   |                                                                                   |                                                                                   | 30                                                                                |                                                                                   | 40                                                                                  |                                                                                     |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)                      | 762                                                                               |                                                                                   |                                                                                   |                                                                                   | 773                                                                               |                                                                                   | 905                                                                                 |                                                                                     |                                                                                     |                                                                                     | 2004                                                                                |                                                                                     |
| Travel Time (s)                         | 17.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     | 34.2                                                                                |                                                                                     |
| Peak Hour Factor                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)                         | 0                                                                                 | 0                                                                                 | 3                                                                                 | 8                                                                                 | 0                                                                                 | 17                                                                                | 3                                                                                   | 312                                                                                 | 3                                                                                   | 64                                                                                  | 1951                                                                                | 0                                                                                   |
| Shared Lane Traffic (%)                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)                   | 0                                                                                 | 3                                                                                 | 0                                                                                 | 8                                                                                 | 0                                                                                 | 17                                                                                | 3                                                                                   | 315                                                                                 | 0                                                                                   | 64                                                                                  | 1951                                                                                | 0                                                                                   |
| Enter Blocked Intersection              | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment                          | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)                        | 12                                                                                |                                                                                   |                                                                                   |                                                                                   | 12                                                                                |                                                                                   | 12                                                                                  |                                                                                     |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)                         | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)                     | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)                     | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Sign Control                            | Stop                                                                              |                                                                                   |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                              | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Type: Unsignalized              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization 67.2% |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| ICU Level of Service C                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min) 60                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                        |
|--------------------------|--------------|----------------------------|------------------------|
| Analyst                  | FTG          | Intersection               | E. McEwen and Resource |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN           |
| Date Performed           | Nov 2016     | East/West Street           | E. McEwen Drive        |
| Analysis Year            | 2016         | North/South Street         | Resource Drive         |
| Time Analyzed            | AM Peak Hour | Peak Hour Factor           | 0.92                   |
| Intersection Orientation | East-West    | Analysis Time Period (hrs) | 0.25                   |
| Project Description      | 10765        |                            |                        |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |   | Westbound |   |     |    | Northbound |   |   |   | Southbound |    |    |    |
|-------------------------|-----------|----|-----|---|-----------|---|-----|----|------------|---|---|---|------------|----|----|----|
| Movement                | U         | L  | T   | R | U         | L | T   | R  | U          | L | T | R | U          | L  | T  | R  |
| Priority                | 1U        | 1  | 2   | 3 | 4U        | 4 | 5   | 6  |            | 7 | 8 | 9 |            | 10 | 11 | 12 |
| Number of Lanes         | 0         | 1  | 2   | 0 | 0         | 0 | 2   | 0  |            | 0 | 0 | 0 |            | 1  | 0  | 1  |
| Configuration           |           | L  | T   |   |           |   | T   | TR |            |   |   |   |            | L  |    | R  |
| Volume (veh/h)          |           | 62 | 215 |   |           |   | 936 | 42 |            |   |   |   |            | 18 |    | 98 |
| Percent Heavy Vehicles  |           | 0  |     |   |           |   |     |    |            |   |   |   |            | 0  |    | 0  |
| Proportion Time Blocked |           |    |     |   |           |   |     |    |            |   |   |   |            |    |    |    |
| Right Turn Channelized  | No        |    |     |   | No        |   |     |    | No         |   |   |   | No         |    |    |    |
| Median Type             | Left Only |    |     |   |           |   |     |    |            |   |   |   |            |    |    |    |
| Median Storage          | 1         |    |     |   |           |   |     |    |            |   |   |   |            |    |    |    |

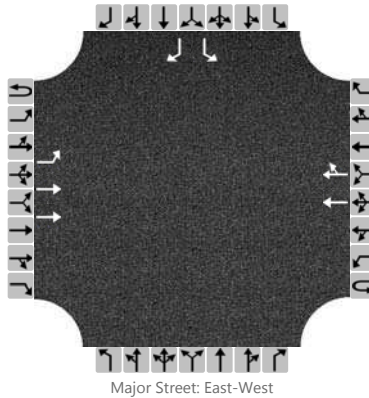
## Delay, Queue Length, and Level of Service

|                        |     |      |  |  |  |  |  |  |  |  |  |  |      |      |  |      |
|------------------------|-----|------|--|--|--|--|--|--|--|--|--|--|------|------|--|------|
| Flow Rate (veh/h)      |     | 67   |  |  |  |  |  |  |  |  |  |  |      | 20   |  | 107  |
| Capacity               |     | 663  |  |  |  |  |  |  |  |  |  |  |      | 228  |  | 497  |
| v/c Ratio              |     | 0.10 |  |  |  |  |  |  |  |  |  |  |      | 0.09 |  | 0.22 |
| 95% Queue Length       |     | 0.3  |  |  |  |  |  |  |  |  |  |  |      | 0.3  |  | 0.8  |
| Control Delay (s/veh)  |     | 11.0 |  |  |  |  |  |  |  |  |  |  |      | 22.3 |  | 14.2 |
| Level of Service (LOS) |     | B    |  |  |  |  |  |  |  |  |  |  |      | C    |  | B    |
| Approach Delay (s/veh) | 2.5 |      |  |  |  |  |  |  |  |  |  |  | 15.5 |      |  |      |
| Approach LOS           | A   |      |  |  |  |  |  |  |  |  |  |  | C    |      |  |      |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                        |
|--------------------------|--------------|----------------------------|------------------------|
| Analyst                  | FTG          | Intersection               | E. McEwen and Resource |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN           |
| Date Performed           | Nov 2016     | East/West Street           | E. McEwen Drive        |
| Analysis Year            | 2016         | North/South Street         | Resource Drive         |
| Time Analyzed            | PM Peak Hour | Peak Hour Factor           | 0.92                   |
| Intersection Orientation | East-West    | Analysis Time Period (hrs) | 0.25                   |
| Project Description      | 10765        |                            |                        |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |   | Westbound |   |     |    | Northbound |   |   |   | Southbound |    |    |    |
|-------------------------|-----------|----|-----|---|-----------|---|-----|----|------------|---|---|---|------------|----|----|----|
| Movement                | U         | L  | T   | R | U         | L | T   | R  | U          | L | T | R | U          | L  | T  | R  |
| Priority                | 1U        | 1  | 2   | 3 | 4U        | 4 | 5   | 6  |            | 7 | 8 | 9 |            | 10 | 11 | 12 |
| Number of Lanes         | 0         | 1  | 2   | 0 | 0         | 0 | 2   | 0  |            | 0 | 0 | 0 |            | 1  | 0  | 1  |
| Configuration           |           | L  | T   |   |           |   | T   | TR |            |   |   |   |            | L  |    | R  |
| Volume (veh/h)          |           | 87 | 815 |   |           |   | 363 | 13 |            |   |   |   |            | 74 |    | 68 |
| Percent Heavy Vehicles  |           | 0  |     |   |           |   |     |    |            |   |   |   |            | 0  |    | 0  |
| Proportion Time Blocked |           |    |     |   |           |   |     |    |            |   |   |   |            |    |    |    |
| Right Turn Channelized  | No        |    |     |   | No        |   |     |    | No         |   |   |   | No         |    |    |    |
| Median Type             | Left Only |    |     |   |           |   |     |    |            |   |   |   |            |    |    |    |
| Median Storage          | 1         |    |     |   |           |   |     |    |            |   |   |   |            |    |    |    |

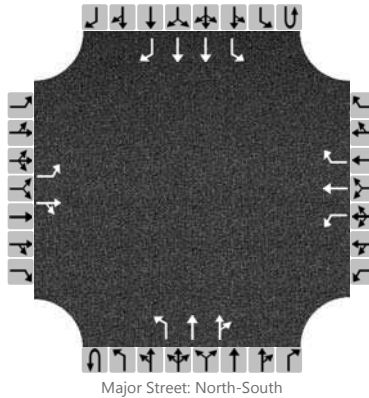
## Delay, Queue Length, and Level of Service

|                        |     |      |  |  |  |  |  |  |  |  |  |  |      |      |  |      |
|------------------------|-----|------|--|--|--|--|--|--|--|--|--|--|------|------|--|------|
| Flow Rate (veh/h)      |     | 95   |  |  |  |  |  |  |  |  |  |  |      | 80   |  | 74   |
| Capacity               |     | 1161 |  |  |  |  |  |  |  |  |  |  |      | 310  |  | 809  |
| v/c Ratio              |     | 0.08 |  |  |  |  |  |  |  |  |  |  |      | 0.26 |  | 0.09 |
| 95% Queue Length       |     | 0.3  |  |  |  |  |  |  |  |  |  |  |      | 1.0  |  | 0.3  |
| Control Delay (s/veh)  |     | 8.4  |  |  |  |  |  |  |  |  |  |  |      | 20.6 |  | 9.9  |
| Level of Service (LOS) |     | A    |  |  |  |  |  |  |  |  |  |  |      | C    |  | A    |
| Approach Delay (s/veh) | 0.8 |      |  |  |  |  |  |  |  |  |  |  | 15.5 |      |  |      |
| Approach LOS           | A   |      |  |  |  |  |  |  |  |  |  |  | C    |      |  |      |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                        |
|--------------------------|--------------|----------------------------|------------------------|
| Analyst                  | FTG          | Intersection               | Carothers and Resource |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN           |
| Date Performed           | Nov 2016     | East/West Street           | Resource Drive         |
| Analysis Year            | 2016         | North/South Street         | Carothers Parkway      |
| Time Analyzed            | AM Peak Hour | Peak Hour Factor           | 0.92                   |
| Intersection Orientation | North-South  | Analysis Time Period (hrs) | 0.25                   |
| Project Description      | 10765        |                            |                        |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |   |    | Northbound |   |      |    | Southbound |   |     |   |
|-------------------------|-----------|----|----|----|-----------|---|---|----|------------|---|------|----|------------|---|-----|---|
| Movement                | U         | L  | T  | R  | U         | L | T | R  | U          | L | T    | R  | U          | L | T   | R |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8 | 9  | 1U         | 1 | 2    | 3  | 4U         | 4 | 5   | 6 |
| Number of Lanes         |           | 1  | 1  | 0  |           | 1 | 1 | 1  | 0          | 1 | 2    | 0  | 0          | 1 | 2   | 1 |
| Configuration           |           | L  |    | TR |           | L | T | R  |            | L | T    | TR |            | L | T   | R |
| Volume (veh/h)          |           | 1  | 0  | 2  |           | 9 | 0 | 63 |            | 2 | 1938 | 1  |            | 7 | 213 | 2 |
| Percent Heavy Vehicles  |           | 0  | 0  | 0  |           | 0 | 0 | 0  |            | 0 |      |    |            | 0 |     |   |
| Proportion Time Blocked |           |    |    |    |           |   |   |    |            |   |      |    |            |   |     |   |
| Right Turn Channelized  | No        |    |    |    | No        |   |   |    | No         |   |      |    | No         |   |     |   |
| Median Type             | Left Only |    |    |    |           |   |   |    |            |   |      |    |            |   |     |   |
| Median Storage          | 1         |    |    |    |           |   |   |    |            |   |      |    |            |   |     |   |

## Delay, Queue Length, and Level of Service

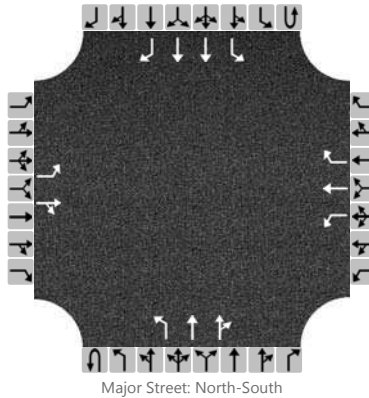
|                        |      |      |  |      |      |      |      |      |     |      |  |  |     |      |  |  |
|------------------------|------|------|--|------|------|------|------|------|-----|------|--|--|-----|------|--|--|
| Flow Rate (veh/h)      |      | 1    |  | 2    |      | 10   |      | 68   |     | 2    |  |  |     | 8    |  |  |
| Capacity               |      | 140  |  | 921  |      | 48   | 1668 | 226  |     | 1345 |  |  |     | 264  |  |  |
| v/c Ratio              |      | 0.01 |  | 0.00 |      | 0.21 |      | 0.30 |     | 0.00 |  |  |     | 0.03 |  |  |
| 95% Queue Length       |      | 0.0  |  | 0.0  |      | 0.7  |      | 1.2  |     | 0.0  |  |  |     | 0.1  |  |  |
| Control Delay (s/veh)  |      | 31.0 |  | 8.9  |      | 99.3 | 7.2  | 27.7 |     | 7.7  |  |  |     | 19.1 |  |  |
| Level of Service (LOS) |      | D    |  | A    |      | F    | A    | D    |     | A    |  |  |     | C    |  |  |
| Approach Delay (s/veh) | 16.3 |      |  |      | 36.9 |      |      |      | 0.0 |      |  |  | 0.6 |      |  |  |
| Approach LOS           | C    |      |  |      | E    |      |      |      | A   |      |  |  | A   |      |  |  |



# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                        |
|--------------------------|--------------|----------------------------|------------------------|
| Analyst                  | FTG          | Intersection               | Carothers and Resource |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN           |
| Date Performed           | Nov 2016     | East/West Street           | Resource Drive         |
| Analysis Year            | 2016         | North/South Street         | Carothers Parkway      |
| Time Analyzed            | PM Peak Hour | Peak Hour Factor           | 0.92                   |
| Intersection Orientation | North-South  | Analysis Time Period (hrs) | 0.25                   |
| Project Description      | 10765        |                            |                        |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |   |    | Northbound |   |     |    | Southbound |    |      |   |
|-------------------------|-----------|----|----|----|-----------|---|---|----|------------|---|-----|----|------------|----|------|---|
| Movement                | U         | L  | T  | R  | U         | L | T | R  | U          | L | T   | R  | U          | L  | T    | R |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8 | 9  | 1U         | 1 | 2   | 3  | 4U         | 4  | 5    | 6 |
| Number of Lanes         |           | 1  | 1  | 0  |           | 1 | 1 | 1  | 0          | 1 | 2   | 0  | 0          | 1  | 2    | 1 |
| Configuration           |           | L  |    | TR |           | L | T | R  |            | L | T   | TR |            | L  | T    | R |
| Volume (veh/h)          |           | 0  | 0  | 3  |           | 8 | 0 | 17 |            | 3 | 312 | 3  |            | 64 | 1951 | 0 |
| Percent Heavy Vehicles  |           | 0  | 0  | 0  |           | 0 | 0 | 0  |            | 0 |     |    |            | 0  |      |   |
| Proportion Time Blocked |           |    |    |    |           |   |   |    |            |   |     |    |            |    |      |   |
| Right Turn Channelized  | No        |    |    |    | No        |   |   |    | No         |   |     |    | No         |    |      |   |
| Median Type             | Left Only |    |    |    |           |   |   |    |            |   |     |    |            |    |      |   |
| Median Storage          | 1         |    |    |    |           |   |   |    |            |   |     |    |            |    |      |   |

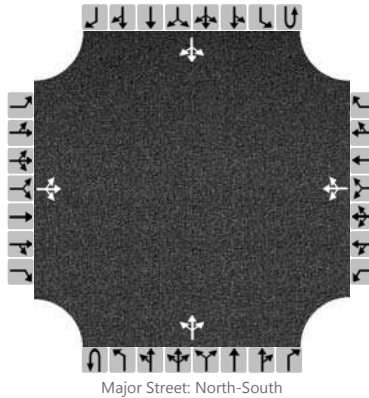
## Delay, Queue Length, and Level of Service

|                        |      |       |  |      |      |      |     |      |     |      |  |  |     |      |  |  |
|------------------------|------|-------|--|------|------|------|-----|------|-----|------|--|--|-----|------|--|--|
| Flow Rate (veh/h)      |      |       |  | 3    |      | 9    |     | 18   |     | 3    |  |  |     | 70   |  |  |
| Capacity               |      | 36    |  | 224  |      | 151  | 807 | 849  |     | 261  |  |  |     | 1228 |  |  |
| v/c Ratio              |      |       |  | 0.01 |      | 0.06 |     | 0.02 |     | 0.01 |  |  |     | 0.06 |  |  |
| 95% Queue Length       |      |       |  | 0.0  |      | 0.2  |     | 0.1  |     | 0.0  |  |  |     | 0.2  |  |  |
| Control Delay (s/veh)  |      | 104.5 |  | 21.3 |      | 30.4 | 9.5 | 9.3  |     | 19.0 |  |  |     | 8.1  |  |  |
| Level of Service (LOS) |      | F     |  | C    |      | D    | A   | A    |     | C    |  |  |     | A    |  |  |
| Approach Delay (s/veh) | 21.3 |       |  |      | 16.3 |      |     |      | 0.2 |      |  |  | 0.3 |      |  |  |
| Approach LOS           | C    |       |  |      | C    |      |     |      | A   |      |  |  | A   |      |  |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                  | Site Information           |                      |
|--------------------------|------------------|----------------------------|----------------------|
| Analyst                  | FTG              | Intersection               | Resource and Pacific |
| Agency/Co.               | FTG              | Jurisdiction               | Franklin, TN         |
| Date Performed           | Nov              | East/West Street           | Pacific Drive        |
| Analysis Year            | 2016             | North/South Street         | Resource Drive       |
| Time Analyzed            | AM Peak Hour     | Peak Hour Factor           | 0.92                 |
| Intersection Orientation | North-South      | Analysis Time Period (hrs) | 0.25                 |
| Project Description      | 10765 (Existing) |                            |                      |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |    | Westbound |   |     |    | Northbound |    |     |   | Southbound |   |     |    |
|-------------------------|-----------|----|-----|----|-----------|---|-----|----|------------|----|-----|---|------------|---|-----|----|
| Movement                | U         | L  | T   | R  | U         | L | T   | R  | U          | L  | T   | R | U          | L | T   | R  |
| Priority                |           | 10 | 11  | 12 |           | 7 | 8   | 9  | 1U         | 1  | 2   | 3 | 4U         | 4 | 5   | 6  |
| Number of Lanes         |           | 0  | 1   | 0  |           | 0 | 1   | 0  | 0          | 0  | 1   | 0 | 0          | 0 | 1   | 0  |
| Configuration           |           |    | LTR |    |           |   | LTR |    |            |    | LTR |   |            |   | LTR |    |
| Volume (veh/h)          |           | 2  | 4   | 3  |           | 5 | 11  | 10 |            | 21 | 28  | 0 |            | 1 | 3   | 11 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0  |           | 0 | 0   | 0  |            | 0  |     |   |            | 0 |     |    |
| Proportion Time Blocked |           |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |
| Right Turn Channelized  | No        |    |     |    | No        |   |     |    | No         |    |     |   | No         |   |     |    |
| Median Type             | Undivided |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |
| Median Storage          |           |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |

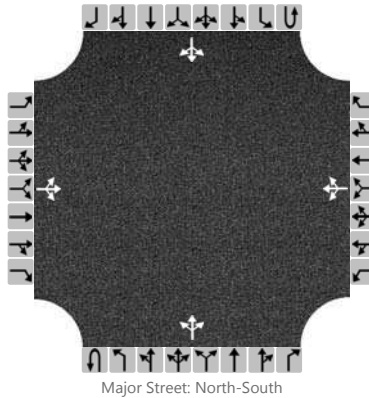
## Delay, Queue Length, and Level of Service

|                        |     |  |      |  |     |  |      |  |     |  |      |  |     |  |      |  |
|------------------------|-----|--|------|--|-----|--|------|--|-----|--|------|--|-----|--|------|--|
| Flow Rate (veh/h)      |     |  | 9    |  |     |  | 28   |  |     |  | 23   |  |     |  | 1    |  |
| Capacity               |     |  | 888  |  |     |  | 893  |  |     |  | 1616 |  |     |  | 1596 |  |
| v/c Ratio              |     |  | 0.01 |  |     |  | 0.03 |  |     |  | 0.01 |  |     |  | 0.00 |  |
| 95% Queue Length       |     |  | 0.0  |  |     |  | 0.1  |  |     |  | 0.0  |  |     |  | 0.0  |  |
| Control Delay (s/veh)  |     |  | 9.1  |  |     |  | 9.2  |  |     |  | 7.3  |  |     |  | 7.3  |  |
| Level of Service (LOS) |     |  | A    |  |     |  | A    |  |     |  | A    |  |     |  | A    |  |
| Approach Delay (s/veh) | 9.1 |  |      |  | 9.2 |  |      |  | 3.2 |  |      |  | 0.5 |  |      |  |
| Approach LOS           | A   |  |      |  | A   |  |      |  | A   |  |      |  | A   |  |      |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                  | Site Information           |                      |
|--------------------------|------------------|----------------------------|----------------------|
| Analyst                  | FTG              | Intersection               | Resource and Pacific |
| Agency/Co.               | FTG              | Jurisdiction               | Franklin, TN         |
| Date Performed           | Nov              | East/West Street           | Pacific Drive        |
| Analysis Year            | 2016             | North/South Street         | Resource Drive       |
| Time Analyzed            | PM Peak Hour     | Peak Hour Factor           | 0.92                 |
| Intersection Orientation | North-South      | Analysis Time Period (hrs) | 0.25                 |
| Project Description      | 10765 (Existing) |                            |                      |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |    | Westbound |   |     |   | Northbound |   |     |   | Southbound |    |     |   |
|-------------------------|-----------|----|-----|----|-----------|---|-----|---|------------|---|-----|---|------------|----|-----|---|
| Movement                | U         | L  | T   | R  | U         | L | T   | R | U          | L | T   | R | U          | L  | T   | R |
| Priority                |           | 10 | 11  | 12 |           | 7 | 8   | 9 | 1U         | 1 | 2   | 3 | 4U         | 4  | 5   | 6 |
| Number of Lanes         |           | 0  | 1   | 0  |           | 0 | 1   | 0 | 0          | 0 | 1   | 0 | 0          | 0  | 1   | 0 |
| Configuration           |           |    | LTR |    |           |   | LTR |   |            |   | LTR |   |            |    | LTR |   |
| Volume (veh/h)          |           | 4  | 4   | 26 |           | 6 | 4   | 1 |            | 9 | 10  | 1 |            | 12 | 26  | 5 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0  |           | 0 | 0   | 0 |            | 0 |     |   |            | 0  |     |   |
| Proportion Time Blocked |           |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |
| Right Turn Channelized  | No        |    |     |    | No        |   |     |   | No         |   |     |   | No         |    |     |   |
| Median Type             | Undivided |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |
| Median Storage          |           |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |

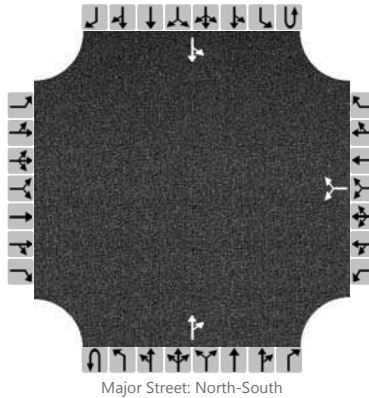
## Delay, Queue Length, and Level of Service

|                        |     |  |      |     |  |  |      |  |     |  |      |  |  |     |      |  |  |
|------------------------|-----|--|------|-----|--|--|------|--|-----|--|------|--|--|-----|------|--|--|
| Flow Rate (veh/h)      |     |  | 36   |     |  |  | 12   |  |     |  | 10   |  |  |     | 13   |  |  |
| Capacity               |     |  | 994  |     |  |  | 841  |  |     |  | 1592 |  |  |     | 1620 |  |  |
| v/c Ratio              |     |  | 0.04 |     |  |  | 0.01 |  |     |  | 0.01 |  |  |     | 0.01 |  |  |
| 95% Queue Length       |     |  | 0.1  |     |  |  | 0.0  |  |     |  | 0.0  |  |  |     | 0.0  |  |  |
| Control Delay (s/veh)  |     |  | 8.8  |     |  |  | 9.3  |  |     |  | 7.3  |  |  |     | 7.2  |  |  |
| Level of Service (LOS) |     |  | A    |     |  |  | A    |  |     |  | A    |  |  |     | A    |  |  |
| Approach Delay (s/veh) | 8.8 |  |      | 9.3 |  |  |      |  | 3.3 |  |      |  |  | 2.1 |      |  |  |
| Approach LOS           | A   |  |      | A   |  |  |      |  | A   |  |      |  |  | A   |      |  |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                  | Site Information           |                       |
|--------------------------|------------------|----------------------------|-----------------------|
| Analyst                  | FTG              | Intersection               | Resource and Terrapin |
| Agency/Co.               | FTG              | Jurisdiction               | Franklin, TN          |
| Date Performed           | Nov              | East/West Street           | Terrapin St           |
| Analysis Year            | 2016             | North/South Street         | Resource Drive        |
| Time Analyzed            | AM Peak Hour     | Peak Hour Factor           | 0.92                  |
| Intersection Orientation | North-South      | Analysis Time Period (hrs) | 0.25                  |
| Project Description      | 10765 (Existing) |                            |                       |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |    |    | Northbound |   |    |    | Southbound |    |   |   |
|-------------------------|-----------|----|----|----|-----------|---|----|----|------------|---|----|----|------------|----|---|---|
| Movement                | U         | L  | T  | R  | U         | L | T  | R  | U          | L | T  | R  | U          | L  | T | R |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8  | 9  | 1U         | 1 | 2  | 3  | 4U         | 4  | 5 | 6 |
| Number of Lanes         |           | 0  | 0  | 0  |           | 0 | 0  | 0  | 0          | 0 | 1  | 0  | 0          | 0  | 1 | 0 |
| Configuration           |           |    |    |    |           |   | LR |    |            |   |    | TR |            | LT |   |   |
| Volume (veh/h)          |           |    |    |    |           | 9 |    | 20 |            |   | 29 | 2  |            | 2  | 9 |   |
| Percent Heavy Vehicles  |           |    |    |    |           | 0 |    | 0  |            |   |    |    |            | 0  |   |   |
| Proportion Time Blocked |           |    |    |    |           |   |    |    |            |   |    |    |            |    |   |   |
| Right Turn Channelized  | No        |    |    |    | No        |   |    |    | No         |   |    |    | No         |    |   |   |
| Median Type             | Undivided |    |    |    |           |   |    |    |            |   |    |    |            |    |   |   |
| Median Storage          |           |    |    |    |           |   |    |    |            |   |    |    |            |    |   |   |

## Delay, Queue Length, and Level of Service

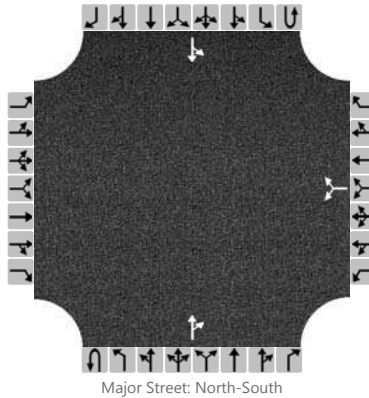
|                        |  |  |  |  |     |      |  |  |  |  |  |  |     |      |  |  |
|------------------------|--|--|--|--|-----|------|--|--|--|--|--|--|-----|------|--|--|
| Flow Rate (veh/h)      |  |  |  |  |     | 32   |  |  |  |  |  |  |     | 12   |  |  |
| Capacity               |  |  |  |  |     | 1017 |  |  |  |  |  |  |     | 1591 |  |  |
| v/c Ratio              |  |  |  |  |     | 0.03 |  |  |  |  |  |  |     | 0.01 |  |  |
| 95% Queue Length       |  |  |  |  |     | 0.1  |  |  |  |  |  |  |     | 0.0  |  |  |
| Control Delay (s/veh)  |  |  |  |  |     | 8.7  |  |  |  |  |  |  |     | 7.3  |  |  |
| Level of Service (LOS) |  |  |  |  |     | A    |  |  |  |  |  |  |     | A    |  |  |
| Approach Delay (s/veh) |  |  |  |  | 8.7 |      |  |  |  |  |  |  | 1.2 |      |  |  |
| Approach LOS           |  |  |  |  | A   |      |  |  |  |  |  |  | A   |      |  |  |



# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                  | Site Information           |                       |
|--------------------------|------------------|----------------------------|-----------------------|
| Analyst                  | FTG              | Intersection               | Resource and Terrapin |
| Agency/Co.               | FTG              | Jurisdiction               | Franklin, TN          |
| Date Performed           | Nov              | East/West Street           | Terrapin St           |
| Analysis Year            | 2016             | North/South Street         | Resource Drive        |
| Time Analyzed            | PM Peak Hour     | Peak Hour Factor           | 0.92                  |
| Intersection Orientation | North-South      | Analysis Time Period (hrs) | 0.25                  |
| Project Description      | 10765 (Existing) |                            |                       |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |    |   | Northbound |   |    |    | Southbound |    |    |   |
|-------------------------|-----------|----|----|----|-----------|---|----|---|------------|---|----|----|------------|----|----|---|
| Movement                | U         | L  | T  | R  | U         | L | T  | R | U          | L | T  | R  | U          | L  | T  | R |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8  | 9 | 1U         | 1 | 2  | 3  | 4U         | 4  | 5  | 6 |
| Number of Lanes         |           | 0  | 0  | 0  |           | 0 | 0  | 0 | 0          | 0 | 1  | 0  | 0          | 0  | 1  | 0 |
| Configuration           |           |    |    |    |           |   | LR |   |            |   |    | TR |            | LT |    |   |
| Volume (veh/h)          |           |    |    |    |           | 7 |    | 6 |            |   | 14 | 6  |            | 13 | 45 |   |
| Percent Heavy Vehicles  |           |    |    |    |           | 0 |    | 0 |            |   |    |    |            | 0  |    |   |
| Proportion Time Blocked |           |    |    |    |           |   |    |   |            |   |    |    |            |    |    |   |
| Right Turn Channelized  | No        |    |    |    | No        |   |    |   | No         |   |    |    | No         |    |    |   |
| Median Type             | Undivided |    |    |    |           |   |    |   |            |   |    |    |            |    |    |   |
| Median Storage          |           |    |    |    |           |   |    |   |            |   |    |    |            |    |    |   |

## Delay, Queue Length, and Level of Service

|                        |  |  |  |  |     |  |      |  |  |  |  |  |     |      |  |  |
|------------------------|--|--|--|--|-----|--|------|--|--|--|--|--|-----|------|--|--|
| Flow Rate (veh/h)      |  |  |  |  |     |  | 15   |  |  |  |  |  |     | 63   |  |  |
| Capacity               |  |  |  |  |     |  | 962  |  |  |  |  |  |     | 1607 |  |  |
| v/c Ratio              |  |  |  |  |     |  | 0.02 |  |  |  |  |  |     | 0.04 |  |  |
| 95% Queue Length       |  |  |  |  |     |  | 0.0  |  |  |  |  |  |     | 0.0  |  |  |
| Control Delay (s/veh)  |  |  |  |  |     |  | 8.8  |  |  |  |  |  |     | 7.3  |  |  |
| Level of Service (LOS) |  |  |  |  |     |  | A    |  |  |  |  |  |     | A    |  |  |
| Approach Delay (s/veh) |  |  |  |  | 8.8 |  |      |  |  |  |  |  | 1.7 |      |  |  |
| Approach LOS           |  |  |  |  | A   |  |      |  |  |  |  |  | A   |      |  |  |

Phone:  
E-Mail:

Fax:

# ROUNABOUT ANALYSIS

Analyst: FTG  
Agency/Co.: FTG  
Date Performed: Nov 2016  
Analysis Time Period: AM Peak Hour  
Intersection: Resource and Lemon Grass  
Jurisdiction: Franklin, TN  
Units: U. S. Customary  
Analysis Year: 2016 (Existing)  
Project ID: 10765  
East/West Street: Resource Drive  
North/South Street: Lemon Grass Drive

## Volume Adjustments and Site Characteristics

|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|-------------------|---------------|------|------|---------------|------|------|---------------|------|------|---------------|------|------|
|                   | L             | T    | R    | L             | T    | R    | L             | T    | R    | L             | T    | R    |
| Volume            | 0             | 18   |      |               | 20   | 80   |               |      |      | 12            |      | 11   |
| U-Turn Vol        | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| % Thrus Left Lane |               |      |      |               |      |      |               |      |      |               |      |      |
|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|                   | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      |
| Lane Assn.        | LT            |      |      | TR            |      |      | LR            |      |      | LR            |      |      |
| RT Bypass         | None          |      |      | None          |      |      | None          |      |      | None          |      |      |
| PHF               | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 |
| %HV               | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| NumPeds           | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| U-Turn PHF        | 1.00          |      |      | 1.00          |      |      | 1.00          |      |      | 1.00          |      |      |
| U-Turn %HV        | 3             |      |      | 3             |      |      | 3             |      |      | 3             |      |      |
| Flow Rate         | 0             | 20   | 0    | 0             | 22   | 87   | 0             | 0    | 0    | 13            | 0    | 12   |
| No. Lanes         | 0             | 1    | 0    | 0             | 1    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| Cnfl. Lanes       | 1             |      |      | 1             |      |      | 1             |      |      | 1             |      |      |
| Duration, T       | 0.25 hrs.     |      |      |               |      |      |               |      |      |               |      |      |

## Critical and Follow-Up Headway Adjustment

|            |        |            |  |        |            |  |        |            |  |        |            |  |
|------------|--------|------------|--|--------|------------|--|--------|------------|--|--------|------------|--|
|            |        | Eastbound  |  |        | Westbound  |  |        | Northbound |  |        | Southbound |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 5.1929     |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Eastbound  |  |        | Westbound  |  |        | Westbound  |  |        | 2.6087     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  | 2.6087 | 3.1858     |  | 3.1858 | 3.1858     |  | 2.6087 | 2.6087     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 2.6087     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  | 2.6087 | 3.1858     |  | 3.1858 | 3.1858     |  | 2.6087 | 2.6087     |  |

## Flow Computations

|            |           |  |           |  |            |  |            |  |
|------------|-----------|--|-----------|--|------------|--|------------|--|
|            | Eastbound |  | Westbound |  | Northbound |  | Southbound |  |
| Circ. Flow | 13        |  | 0         |  | 33         |  | 22         |  |
| Exit. Flow | 33        |  | 34        |  | 87         |  | 0          |  |

## Capacity and Level of Service

Eastbound Westbound Northbound Southbound

|                    | Left | Right | BP | Left | Right | BP | Left             | Right | BP | Left | Right | BP |
|--------------------|------|-------|----|------|-------|----|------------------|-------|----|------|-------|----|
| Entry Flow         |      | 20    |    |      | 109   |    |                  | 0     |    |      | 25    |    |
| Entry Cap.         |      | 1115  |    |      | 1130  |    |                  | 0     |    |      | 1106  |    |
| Volume (vph)       |      | 20    |    |      | 109   |    |                  |       |    |      | 25    |    |
| Cap. (vph)         |      | 1115  |    |      | 1130  |    |                  | 0     |    |      | 1106  |    |
| v/c Ratio          |      | 0.02  |    |      | 0.10  |    |                  |       |    |      | 0.02  |    |
| Critical Lane      |      | *     |    |      | *     |    |                  |       |    |      | *     |    |
| Lane Delay         |      | 3.4   |    |      | 4.0   |    |                  |       |    |      | 3.4   |    |
| Lane LOS           |      | A     |    |      | A     |    |                  | F     |    |      | A     |    |
| 95 % Queue         |      | 0.1   |    |      | 0.3   |    |                  |       |    |      | 0.1   |    |
| Approach:          |      |       |    |      |       |    |                  |       |    |      |       |    |
| Delay              |      | 3.38  |    |      | 4.01  |    |                  |       |    |      | 3.44  |    |
| LOS                |      | A     |    |      | A     |    |                  |       |    |      | A     |    |
| Intersection Delay |      | 3.83  |    |      |       |    | Intersection LOS | A     |    |      |       |    |

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Phone:  
E-Mail:

Fax:

# ROUNABOUT ANALYSIS

Analyst: FTG  
Agency/Co.: FTG  
Date Performed: Nov 2016  
Analysis Time Period: PM Peak Hour  
Intersection: Resource and Lemon Grass  
Jurisdiction: Franklin, TN  
Units: U. S. Customary  
Analysis Year: 2016 (Existing)  
Project ID: 10765  
East/West Street: Resource Drive  
North/South Street: Lemon Grass Drive

## Volume Adjustments and Site Characteristics

|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|-------------------|---------------|------|------|---------------|------|------|---------------|------|------|---------------|------|------|
|                   | L             | T    | R    | L             | T    | R    | L             | T    | R    | L             | T    | R    |
| Volume            | 13            | 39   |      |               | 10   | 22   |               |      |      | 90            |      | 10   |
| U-Turn Vol        | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| % Thrus Left Lane |               |      |      |               |      |      |               |      |      |               |      |      |
|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|                   | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      |
| Lane Assn.        | LT            |      |      | TR            |      |      | LR            |      |      | LR            |      |      |
| RT Bypass         | None          |      |      | None          |      |      | None          |      |      | None          |      |      |
| PHF               | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 |
| %HV               | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| NumPeds           | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| U-Turn PHF        | 1.00          |      |      | 1.00          |      |      | 1.00          |      |      | 1.00          |      |      |
| U-Turn %HV        | 3             |      |      | 3             |      |      | 3             |      |      | 3             |      |      |
| Flow Rate         | 14            | 42   | 0    | 0             | 11   | 24   | 0             | 0    | 0    | 98            | 0    | 11   |
| No. Lanes         | 0             | 1    | 0    | 0             | 1    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| Cnfl. Lanes       | 1             |      |      | 1             |      |      | 1             |      |      | 1             |      |      |
| Duration, T       | 0.25 hrs.     |      |      |               |      |      |               |      |      |               |      |      |

## Critical and Follow-Up Headway Adjustment

|            |        |            |  |        |            |  |        |            |  |        |            |  |
|------------|--------|------------|--|--------|------------|--|--------|------------|--|--------|------------|--|
|            |        | Eastbound  |  |        | Westbound  |  |        | Northbound |  |        | Southbound |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | Southbound |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Eastbound  |  |        | Westbound  |  |        | Westbound  |  |        | Westbound  |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  | 2.6087 | 3.1858     |  | 3.1858 | 3.1858     |  | 2.6087 | 2.6087     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | Southbound |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  | 2.6087 | 3.1858     |  | 3.1858 | 3.1858     |  | 2.6087 | 2.6087     |  |

## Flow Computations

|            |           |  |           |  |            |  |            |  |
|------------|-----------|--|-----------|--|------------|--|------------|--|
|            | Eastbound |  | Westbound |  | Northbound |  | Southbound |  |
| Circ. Flow | 98        |  | 14        |  | 154        |  | 11         |  |
| Exit. Flow | 140       |  | 22        |  | 38         |  | 0          |  |

## Capacity and Level of Service

Eastbound Westbound Northbound Southbound



|                    | Left | Right | BP | Left | Right | BP | Left             | Right | BP | Left | Right | BP |
|--------------------|------|-------|----|------|-------|----|------------------|-------|----|------|-------|----|
| Entry Flow         |      | 57    |    |      | 35    |    |                  | 0     |    |      | 109   |    |
| Entry Cap.         |      | 1025  |    |      | 1114  |    |                  | 0     |    |      | 1118  |    |
| Volume (vph)       |      | 57    |    |      | 35    |    |                  |       |    |      | 109   |    |
| Cap. (vph)         |      | 1025  |    |      | 1114  |    |                  | 0     |    |      | 1118  |    |
| v/c Ratio          |      | 0.06  |    |      | 0.03  |    |                  |       |    |      | 0.10  |    |
| Critical Lane      |      | *     |    |      | *     |    |                  |       |    |      | *     |    |
| Lane Delay         |      | 4.0   |    |      | 3.5   |    |                  |       |    |      | 4.1   |    |
| Lane LOS           |      | A     |    |      | A     |    |                  | F     |    |      | A     |    |
| 95 % Queue         |      | 0.2   |    |      | 0.1   |    |                  |       |    |      | 0.3   |    |
| Approach:          |      |       |    |      |       |    |                  |       |    |      |       |    |
| Delay              |      | 4.00  |    |      | 3.49  |    |                  |       |    |      | 4.06  |    |
| LOS                |      | A     |    |      | A     |    |                  |       |    |      | A     |    |
| Intersection Delay |      | 3.94  |    |      |       |    | Intersection LOS |       | A  |      |       |    |

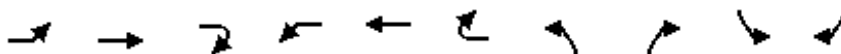
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## **BACKGROUND CONDITIONS**

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

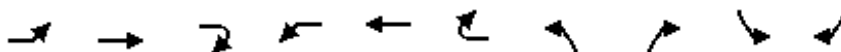


| Lane Group                 | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ↔↔    | ↑↑    | ↗     | ↖     | ↑↑    | ↗     | ↔↔    | ↗     | ↔↔    | ↗↗    |
| Traffic Volume (vph)       | 480   | 804   | 117   | 164   | 686   | 437   | 614   | 937   | 684   | 372   |
| Future Volume (vph)        | 480   | 804   | 117   | 164   | 686   | 437   | 614   | 937   | 684   | 372   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 370   |       |       | 495   |       |       | 0     |       | 0     |       |
| Storage Lanes              | 2     |       |       | 1     |       |       | 2     |       | 2     |       |
| Taper Length (ft)          | 25    |       |       | 25    |       |       | 25    |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 0.97  | 1.00  | 0.97  | 0.88  |
| Frt                        |       |       | 0.850 |       |       | 0.850 |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (prot)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Flt Permitted              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (perm)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Right Turn on Red          |       |       | Yes   |       |       | Yes   |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       | 182   |       |       | 437   |       | 287   |       | 122   |
| Link Speed (mph)           |       | 30    |       |       | 30    |       |       |       |       |       |
| Link Distance (ft)         |       | 826   |       |       | 1211  |       |       |       |       |       |
| Travel Time (s)            |       | 18.8  |       |       | 27.5  |       |       |       |       |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 480   | 804   | 117   | 164   | 686   | 437   | 614   | 937   | 684   | 372   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 480   | 804   | 117   | 164   | 686   | 437   | 614   | 937   | 684   | 372   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Right | Left  | Left  | Right | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    |       |       | 24    |       |       |       |       |       |
| Link Offset(ft)            |       | 0     |       |       | 0     |       |       |       |       |       |
| Crosswalk Width(ft)        |       | 16    |       |       | 16    |       |       |       |       |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |       |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    |       | 9     | 15    |       | 9     | 15    | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 1     | 1     | 2     | 1     | 1     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Right | Left  | Thru  | Right | Left  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 20    | 20    | 100   | 20    | 20    | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 20    | 20    | 6     | 20    | 20    | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    |       |       | 94    |       |       |       |       |       |
| Detector 2 Size(ft)        |       | 6     |       |       | 6     |       |       |       |       |       |
| Detector 2 Type            |       | Cl+Ex |       |       | Cl+Ex |       |       |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   |       |       | 0.0   |       |       |       |       |       |
| Turn Type                  | Prot  | NA    | Free  | Prot  | NA    | Perm  | Perm  | Free  | Perm  | Prot  |
| Protected Phases           | 1     | 6     |       | 5     | 2     |       |       |       |       | 1     |
| Permitted Phases           |       |       | Free  |       |       | 2     | 3     | Free  | 7     |       |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



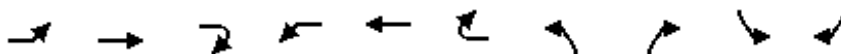
| Lane Group              | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     |       | 5     | 2     | 2     | 3     |       | 7     | 1     |
| Switch Phase            |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)     | 8.0   | 12.0  |       | 8.0   | 12.0  | 12.0  | 12.0  |       | 12.0  | 8.0   |
| Minimum Split (s)       | 15.0  | 27.0  |       | 25.0  | 27.0  | 27.0  | 27.0  |       | 27.0  | 15.0  |
| Total Split (s)         | 42.0  | 62.0  |       | 34.0  | 54.0  | 54.0  | 54.0  |       | 54.0  | 42.0  |
| Total Split (%)         | 28.0% | 41.3% |       | 22.7% | 36.0% | 36.0% | 36.0% |       | 36.0% | 28.0% |
| Maximum Green (s)       | 35.0  | 55.0  |       | 27.0  | 47.0  | 47.0  | 47.0  |       | 47.0  | 35.0  |
| Yellow Time (s)         | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   |
| All-Red Time (s)        | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     | 7.0   | 7.0   |       | 7.0   | 7.0   | 7.0   | 7.0   |       | 7.0   | 7.0   |
| Lead/Lag                | Lead  | Lag   |       | Lead  | Lag   | Lag   |       |       |       | Lead  |
| Lead-Lag Optimize?      |       |       |       |       |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min |       | None  | C-Min | C-Min | None  |       | None  | None  |
| Walk Time (s)           |       | 7.0   |       |       | 7.0   | 7.0   | 7.0   |       | 7.0   |       |
| Flash Dont Walk (s)     |       | 13.0  |       |       | 13.0  | 13.0  | 13.0  |       | 13.0  |       |
| Pedestrian Calls (#/hr) |       | 5     |       |       | 5     | 5     | 5     |       | 5     |       |
| Act Effect Green (s)    | 27.0  | 74.1  | 150.0 | 19.2  | 66.3  | 66.3  | 35.7  | 150.0 | 35.7  | 27.0  |
| Actuated g/C Ratio      | 0.18  | 0.49  | 1.00  | 0.13  | 0.44  | 0.44  | 0.24  | 1.00  | 0.24  | 0.18  |
| v/c Ratio               | 0.78  | 0.46  | 0.07  | 0.73  | 0.44  | 0.46  | 0.75  | 0.59  | 0.84  | 0.62  |
| Control Delay           | 67.9  | 23.2  | 0.1   | 106.4 | 11.0  | 2.2   | 59.1  | 1.6   | 64.9  | 41.7  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 67.9  | 23.2  | 0.1   | 106.4 | 11.0  | 2.2   | 59.1  | 1.6   | 64.9  | 41.7  |
| LOS                     | E     | C     | A     | F     | B     | A     | E     | A     | E     | D     |
| Approach Delay          |       | 36.6  |       |       | 20.2  |       |       |       |       |       |
| Approach LOS            |       | D     |       |       | C     |       |       |       |       |       |
| 90th %ile Green (s)     | 33.6  | 60.2  |       | 25.8  | 52.4  | 52.4  | 43.0  |       | 43.0  | 33.6  |
| 90th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| 70th %ile Green (s)     | 29.4  | 68.0  |       | 21.9  | 60.5  | 60.5  | 39.1  |       | 39.1  | 29.4  |
| 70th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| 50th %ile Green (s)     | 27.1  | 74.3  |       | 19.2  | 66.4  | 66.4  | 35.5  |       | 35.5  | 27.1  |
| 50th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| 30th %ile Green (s)     | 24.7  | 80.0  |       | 16.4  | 71.7  | 71.7  | 32.6  |       | 32.6  | 24.7  |
| 30th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| 10th %ile Green (s)     | 20.3  | 88.2  |       | 12.5  | 80.4  | 80.4  | 28.3  |       | 28.3  | 20.3  |
| 10th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| Stops (vph)             | 452   | 468   | 0     | 165   | 220   | 61    | 556   | 0     | 635   | 229   |
| Fuel Used(gal)          | 12    | 12    | 1     | 6     | 9     | 5     | 14    | 6     | 17    | 7     |
| CO Emissions (g/hr)     | 854   | 808   | 53    | 420   | 645   | 325   | 984   | 408   | 1168  | 467   |
| NOx Emissions (g/hr)    | 166   | 157   | 10    | 82    | 126   | 63    | 192   | 79    | 227   | 91    |
| VOC Emissions (g/hr)    | 198   | 187   | 12    | 97    | 150   | 75    | 228   | 95    | 271   | 108   |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 235   | 273   | 0     | 170   | 50    | 0     | 290   | 0     | 331   | 130   |
| Queue Length 95th (ft)  | 342   | 256   | 0     | m252  | 100   | 0     | 386   | 0     | 437   | 214   |
| Internal Link Dist (ft) |       | 746   |       |       | 1131  |       |       |       |       |       |
| Turn Bay Length (ft)    | 370   |       |       | 495   |       |       |       |       |       |       |
| Base Capacity (vph)     | 801   | 1749  | 1583  | 318   | 1563  | 943   | 1075  | 1583  | 1075  | 743   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |



# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



| Lane Group            | EBL  | EBT  | EBR2 | WBL  | WBT  | WBR2 | NBL  | NBR2 | SBL  | SBR2 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.60 | 0.46 | 0.07 | 0.52 | 0.44 | 0.46 | 0.57 | 0.59 | 0.64 | 0.50 |

## Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 88 (59%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 33.0

Intersection LOS: C

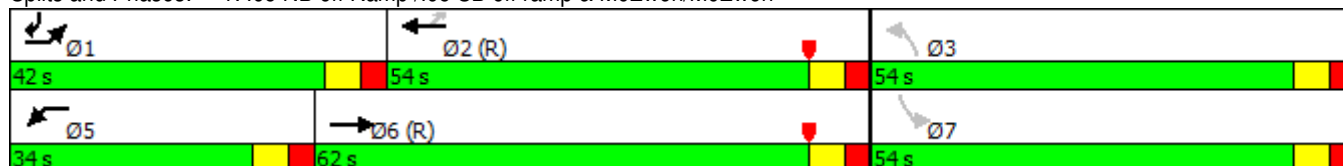
Intersection Capacity Utilization Err%

ICU Level of Service H

Analysis Period (min) 60

m Volume for 95th percentile queue is metered by upstream signal.

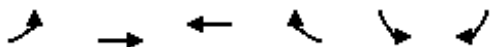
Splits and Phases: 1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen



# Lanes, Volumes, Timings

## 2: McEwen /McEwen & Tower

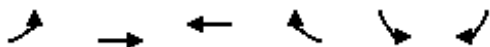
11/18/2016



| Lane Group                 | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ↰↰    | ↑↑    | ↑↑    | ↱     | ↱     | ↱↱    |
| Traffic Volume (vph)       | 632   | 1845  | 1213  | 114   | 19    | 98    |
| Future Volume (vph)        | 632   | 1845  | 1213  | 114   | 19    | 98    |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 285   |       |       | 115   | 445   | 0     |
| Storage Lanes              | 2     |       |       | 1     | 1     | 2     |
| Taper Length (ft)          | 25    |       |       |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 0.95  | 1.00  | 1.00  | 0.88  |
| Frt                        |       |       |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (prot)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Flt Permitted              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (perm)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Right Turn on Red          |       |       |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       |       | 40    |       | 98    |
| Link Speed (mph)           |       | 30    | 30    |       | 30    |       |
| Link Distance (ft)         |       | 1211  | 938   |       | 511   |       |
| Travel Time (s)            |       | 27.5  | 21.3  |       | 11.6  |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 632   | 1845  | 1213  | 114   | 19    | 98    |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 632   | 1845  | 1213  | 114   | 19    | 98    |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    | 24    |       | 12    |       |
| Link Offset(ft)            |       | 0     | 0     |       | 0     |       |
| Crosswalk Width(ft)        |       | 16    | 16    |       | 16    |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |
| Headway Factor             | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  |
| Turning Speed (mph)        | 15    |       |       | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 2     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Thru  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 100   | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 6     | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    | 94    |       |       |       |
| Detector 2 Size(ft)        |       | 6     | 6     |       |       |       |
| Detector 2 Type            |       | Cl+Ex | Cl+Ex |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   | 0.0   |       |       |       |
| Turn Type                  | Prot  | NA    | NA    | Prot  | Prot  | Prot  |
| Protected Phases           | 1     | 6     | 2     | 2     | 8     | 8     |
| Permitted Phases           |       |       |       |       |       |       |

Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

11/18/2016

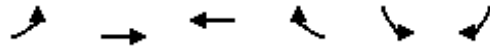


| Lane Group              | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     | 2     | 2     | 8     | 8     |
| Switch Phase            |       |       |       |       |       |       |
| Minimum Initial (s)     | 7.0   | 20.0  | 20.0  | 20.0  | 8.0   | 8.0   |
| Minimum Split (s)       | 13.5  | 43.5  | 43.5  | 43.5  | 46.5  | 46.5  |
| Total Split (s)         | 38.0  | 103.5 | 65.5  | 65.5  | 46.5  | 46.5  |
| Total Split (%)         | 25.3% | 69.0% | 43.7% | 43.7% | 31.0% | 31.0% |
| Maximum Green (s)       | 32.5  | 98.0  | 60.0  | 60.0  | 41.0  | 41.0  |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)        | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   |
| Lead/Lag                | Lead  |       | Lag   | Lag   |       |       |
| Lead-Lag Optimize?      |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min | C-Min | C-Min | None  | None  |
| Walk Time (s)           |       | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Flash Dont Walk (s)     |       | 18.0  | 18.0  | 18.0  | 34.0  | 34.0  |
| Pedestrian Calls (#/hr) |       | 3     | 3     | 3     | 3     | 3     |
| Act Effect Green (s)    | 35.1  | 124.4 | 83.8  | 83.8  | 14.6  | 14.6  |
| Actuated g/C Ratio      | 0.23  | 0.83  | 0.56  | 0.56  | 0.10  | 0.10  |
| v/c Ratio               | 0.88  | 0.70  | 0.68  | 0.14  | 0.12  | 0.29  |
| Control Delay           | 71.8  | 11.1  | 10.4  | 1.8   | 57.5  | 10.8  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 71.8  | 11.1  | 10.4  | 1.8   | 57.5  | 10.8  |
| LOS                     | E     | B     | B     | A     | E     | B     |
| Approach Delay          |       | 26.6  | 9.6   |       | 18.4  |       |
| Approach LOS            |       | C     | A     |       | B     |       |
| 90th %ile Green (s)     | 32.5  | 98.0  | 60.0  | 60.0  | 41.0  | 41.0  |
| 90th %ile Term Code     | Max   | Coord | Coord | Coord | Ped   | Ped   |
| 70th %ile Green (s)     | 39.4  | 130.8 | 85.9  | 85.9  | 8.2   | 8.2   |
| 70th %ile Term Code     | Gap   | Coord | Coord | Coord | Gap   | Gap   |
| 50th %ile Green (s)     | 37.6  | 131.0 | 87.9  | 87.9  | 8.0   | 8.0   |
| 50th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| 30th %ile Green (s)     | 35.0  | 131.0 | 90.5  | 90.5  | 8.0   | 8.0   |
| 30th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| 10th %ile Green (s)     | 30.8  | 131.0 | 94.7  | 94.7  | 8.0   | 8.0   |
| 10th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| Stops (vph)             | 557   | 627   | 413   | 13    | 18    | 14    |
| Fuel Used(gal)          | 18    | 25    | 14    | 1     | 0     | 1     |
| CO Emissions (g/hr)     | 1278  | 1751  | 958   | 66    | 28    | 48    |
| NOx Emissions (g/hr)    | 249   | 341   | 186   | 13    | 5     | 9     |
| VOC Emissions (g/hr)    | 296   | 406   | 222   | 15    | 6     | 11    |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 285   | 106   | 69    | 1     | 18    | 0     |
| Queue Length 95th (ft)  | #521  | #1213 | m#841 | m41   | 40    | 33    |
| Internal Link Dist (ft) |       | 1131  | 858   |       | 431   |       |
| Turn Bay Length (ft)    | 285   |       |       | 115   | 445   |       |
| Base Capacity (vph)     | 729   | 2640  | 1779  | 813   | 435   | 756   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     |

# Lanes, Volumes, Timings

## 2: McEwen /McEwen & Tower

11/18/2016



| Lane Group            | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|-----------------------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.87 | 0.70 | 0.68 | 0.14 | 0.04 | 0.13 |

### Intersection Summary

Area Type: CBD

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 62 (41%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 20.6

Intersection LOS: C

Intersection Capacity Utilization 77.7%

ICU Level of Service D

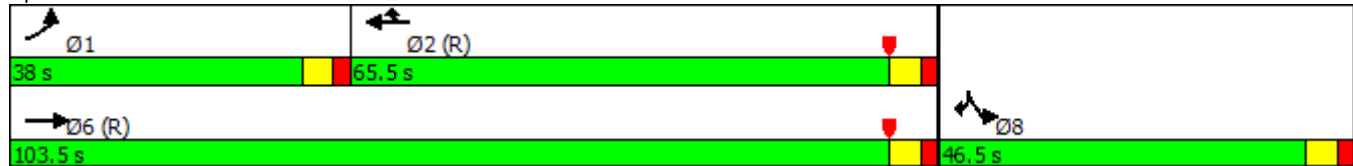
Analysis Period (min) 60

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: McEwen /McEwen & Tower





# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 871                                                                               | 633                                                                               | 346                                                                               | 104                                                                               | 816                                                                               | 367                                                                               | 234                                                                                 | 1016                                                                                | 64                                                                                  | 175                                                                                 | 267                                                                                 | 172                                                                                 |
| Future Volume (vph)        | 871                                                                               | 633                                                                               | 346                                                                               | 104                                                                               | 816                                                                               | 367                                                                               | 234                                                                                 | 1016                                                                                | 64                                                                                  | 175                                                                                 | 267                                                                                 | 172                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 313                                                                               |                                                                                   |                                                                                   | 105                                                                               |                                                                                     |                                                                                     | 109                                                                                 |                                                                                     |                                                                                     | 65                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 938                                                                               |                                                                                   |                                                                                   | 1960                                                                              |                                                                                   |                                                                                     | 1936                                                                                |                                                                                     |                                                                                     | 857                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                     | 44.0                                                                                |                                                                                     |                                                                                     | 14.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 871                                                                               | 633                                                                               | 346                                                                               | 104                                                                               | 816                                                                               | 367                                                                               | 234                                                                                 | 1016                                                                                | 64                                                                                  | 175                                                                                 | 267                                                                                 | 172                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 871                                                                               | 633                                                                               | 346                                                                               | 104                                                                               | 816                                                                               | 367                                                                               | 234                                                                                 | 1016                                                                                | 64                                                                                  | 175                                                                                 | 267                                                                                 | 172                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | custom                                                                              | Prot                                                                                | NA                                                                                  | custom                                                                              |
| Protected Phases           | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases           |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |

# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016



| Lane Group              | EBL    | EBT   | EBR   | WBL  | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|--------|-------|-------|------|-------|------|-------|-------|------|-------|-------|-------|
| Detector Phase          | 1      | 6     | 7     | 5    | 2     | 3    | 7     | 4     | 5    | 3     | 8     | 1     |
| Switch Phase            |        |       |       |      |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 6.0    | 13.0  | 6.0   | 4.0  | 13.0  | 6.0  | 6.0   | 13.0  | 4.0  | 6.0   | 13.0  | 6.0   |
| Minimum Split (s)       | 13.0   | 52.0  | 12.5  | 10.0 | 52.0  | 13.0 | 12.5  | 52.0  | 10.0 | 13.0  | 52.0  | 13.0  |
| Total Split (s)         | 30.0   | 69.0  | 15.0  | 14.0 | 53.0  | 14.0 | 15.0  | 53.0  | 14.0 | 14.0  | 52.0  | 30.0  |
| Total Split (%)         | 20.0%  | 46.0% | 10.0% | 9.3% | 35.3% | 9.3% | 10.0% | 35.3% | 9.3% | 9.3%  | 34.7% | 20.0% |
| Maximum Green (s)       | 24.0   | 63.0  | 9.0   | 8.5  | 47.0  | 8.0  | 9.0   | 47.0  | 8.5  | 8.0   | 46.0  | 24.0  |
| Yellow Time (s)         | 4.0    | 4.0   | 4.0   | 3.5  | 4.0   | 4.0  | 4.0   | 4.0   | 3.5  | 4.0   | 4.0   | 4.0   |
| All-Red Time (s)        | 2.0    | 2.0   | 2.0   | 2.0  | 2.0   | 2.0  | 2.0   | 2.0   | 2.0  | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0    | 0.0   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0    | 6.0   | 6.0   | 5.5  | 6.0   | 6.0  | 6.0   | 6.0   | 5.5  | 6.0   | 6.0   | 6.0   |
| Lead/Lag                | Lead   | Lag   | Lead  | Lead | Lag   | Lead | Lead  | Lag   | Lead | Lead  | Lag   | Lead  |
| Lead-Lag Optimize?      |        |       |       |      |       |      |       |       |      |       |       |       |
| Vehicle Extension (s)   | 3.0    | 3.0   | 3.0   | 3.0  | 3.0   | 3.0  | 3.0   | 3.0   | 3.0  | 3.0   | 3.0   | 3.0   |
| Recall Mode             | Max    | C-Max | None  | None | C-Max | None | None  | None  | None | None  | None  | Max   |
| Walk Time (s)           |        | 7.0   |       |      | 7.0   |      |       | 7.0   |      |       | 7.0   |       |
| Flash Dont Walk (s)     |        | 39.0  |       |      | 39.0  |      |       | 37.0  |      |       | 37.0  |       |
| Pedestrian Calls (#/hr) |        | 5     |       |      | 5     |      |       | 5     |      |       | 5     |       |
| Act Effect Green (s)    | 24.7   | 64.0  | 79.0  | 8.2  | 47.0  | 61.0 | 9.0   | 46.3  | 59.5 | 8.0   | 45.3  | 77.0  |
| Actuated g/C Ratio      | 0.16   | 0.43  | 0.53  | 0.05 | 0.31  | 0.41 | 0.06  | 0.31  | 0.40 | 0.05  | 0.30  | 0.51  |
| v/c Ratio               | 1.54   | 0.42  | 0.35  | 0.55 | 0.74  | 0.52 | 1.14  | 0.93  | 0.09 | 0.96  | 0.25  | 0.20  |
| Control Delay           | 1021.7 | 30.2  | 7.1   | 69.0 | 39.3  | 22.3 | 372.2 | 69.6  | 0.7  | 150.5 | 49.5  | 16.2  |
| Queue Delay             | 2.9    | 0.0   | 0.0   | 0.0  | 0.0   | 0.3  | 0.0   | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   |
| Total Delay             | 1024.6 | 30.2  | 7.1   | 69.0 | 39.3  | 22.6 | 372.2 | 69.6  | 0.7  | 150.5 | 49.5  | 16.2  |
| LOS                     | F      | C     | A     | E    | D     | C    | F     | E     | A    | F     | D     | B     |
| Approach Delay          |        | 494.1 |       |      | 37.0  |      |       | 120.1 |      |       | 69.0  |       |
| Approach LOS            |        | F     |       |      | D     |      |       | F     |      |       | E     |       |
| 90th %ile Green (s)     | 24.0   | 63.0  | 9.0   | 8.5  | 47.0  | 8.0  | 9.0   | 47.0  | 8.5  | 8.0   | 46.0  | 24.0  |
| 90th %ile Term Code     | MaxR   | Coord | Max   | Max  | Coord | Max  | Max   | Max   | Max  | Max   | Hold  | MaxR  |
| 70th %ile Green (s)     | 24.0   | 63.0  | 9.0   | 8.5  | 47.0  | 8.0  | 9.0   | 47.0  | 8.5  | 8.0   | 46.0  | 24.0  |
| 70th %ile Term Code     | MaxR   | Coord | Max   | Max  | Coord | Max  | Max   | Max   | Max  | Max   | Hold  | MaxR  |
| 50th %ile Green (s)     | 24.0   | 63.0  | 9.0   | 8.5  | 47.0  | 8.0  | 9.0   | 47.0  | 8.5  | 8.0   | 46.0  | 24.0  |
| 50th %ile Term Code     | MaxR   | Coord | Max   | Max  | Coord | Max  | Max   | Max   | Max  | Max   | Hold  | MaxR  |
| 30th %ile Green (s)     | 24.0   | 63.0  | 9.0   | 8.5  | 47.0  | 8.0  | 9.0   | 47.0  | 8.5  | 8.0   | 46.0  | 24.0  |
| 30th %ile Term Code     | MaxR   | Coord | Max   | Max  | Coord | Max  | Max   | Max   | Max  | Max   | Hold  | MaxR  |
| 10th %ile Green (s)     | 27.6   | 67.9  | 9.0   | 7.2  | 47.0  | 8.0  | 9.0   | 43.4  | 7.2  | 8.0   | 42.4  | 27.6  |
| 10th %ile Term Code     | MaxR   | Coord | Max   | Gap  | Coord | Max  | Max   | Gap   | Gap  | Max   | Hold  | MaxR  |
| Stops (vph)             | 815    | 382   | 65    | 101  | 589   | 273  | 206   | 939   | 1    | 156   | 232   | 81    |
| Fuel Used(gal)          | 192    | 11    | 3     | 4    | 22    | 9    | 22    | 35    | 1    | 8     | 7     | 2     |
| CO Emissions (g/hr)     | 13424  | 743   | 237   | 252  | 1556  | 614  | 1566  | 2440  | 69   | 553   | 456   | 165   |
| NOx Emissions (g/hr)    | 2612   | 145   | 46    | 49   | 303   | 119  | 305   | 475   | 13   | 108   | 89    | 32    |
| VOC Emissions (g/hr)    | 3111   | 172   | 55    | 58   | 361   | 142  | 363   | 566   | 16   | 128   | 106   | 38    |
| Dilemma Vehicles (#)    | 0      | 0     | 0     | 0    | 0     | 0    | 0     | 0     | 0    | 0     | 1     | 0     |
| Queue Length 50th (ft)  | ~627   | 160   | 45    | 52   | 265   | 152  | ~137  | 505   | 0    | 91    | 110   | 39    |
| Queue Length 95th (ft)  | #896   | 353   | m199  | m79  | 419   | m233 | #265  | #767  | 11   | #204  | 214   | 186   |
| Internal Link Dist (ft) |        | 858   |       |      | 1880  |      |       | 1856  |      |       | 777   |       |
| Turn Bay Length (ft)    | 205    |       | 205   | 218  |       | 97   | 300   |       | 300  | 280   |       | 310   |
| Base Capacity (vph)     | 565    | 1509  | 981   | 194  | 1108  | 706  | 205   | 1108  | 696  | 183   | 1085  | 844   |
| Starvation Cap Reductn  | 0      | 0     | 0     | 0    | 0     | 0    | 0     | 0     | 0    | 0     | 0     | 0     |

# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Spillback Cap Reductn | 134                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 63                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio     | 2.02                                                                              | 0.42                                                                              | 0.35                                                                              | 0.54                                                                              | 0.74                                                                              | 0.57                                                                              | 1.14                                                                               | 0.92                                                                                | 0.09                                                                                | 0.96                                                                                | 0.25                                                                                | 0.20                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 8 (5%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.54

Intersection Signal Delay: 229.4

Intersection LOS: F

Intersection Capacity Utilization 100.5%

ICU Level of Service G

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Carothers/Carothers & McEwen

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1  |  Ø2 (R)  |  Ø3  |  Ø4  |
| 30 s                                                                                   | 53 s                                                                                       | 14 s                                                                                   | 53 s                                                                                     |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 14 s                                                                                   | 69 s                                                                                       | 15 s                                                                                   | 52 s                                                                                     |

# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)       | 113                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1051                                                                              | 59                                                                                | 145                                                                                | 30                                                                                  | 21                                                                                  | 21                                                                                  | 85                                                                                  | 105                                                                                 |
| Future Volume (vph)        | 113                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1051                                                                              | 59                                                                                | 145                                                                                | 30                                                                                  | 21                                                                                  | 21                                                                                  | 85                                                                                  | 105                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Fr't                       |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.992                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     | 0.917                                                                               |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3511                                                                              | 0                                                                                 | 3433                                                                               | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1708                                                                                | 0                                                                                   |
| Flt Permitted              | 0.140                                                                             |                                                                                   |                                                                                   | 0.563                                                                             |                                                                                   |                                                                                   | 0.456                                                                              |                                                                                     |                                                                                     | 0.738                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 261                                                                               | 3539                                                                              | 1583                                                                              | 1049                                                                              | 3511                                                                              | 0                                                                                 | 1648                                                                               | 1863                                                                                | 1583                                                                                | 1375                                                                                | 1708                                                                                | 0                                                                                   |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 381                                                                               |                                                                                   | 9                                                                                 |                                                                                   |                                                                                    |                                                                                     | 73                                                                                  |                                                                                     | 75                                                                                  |                                                                                     |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 1960                                                                              |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                    | 402                                                                                 |                                                                                     |                                                                                     | 456                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 10.4                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 113                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1051                                                                              | 59                                                                                | 145                                                                                | 30                                                                                  | 21                                                                                  | 21                                                                                  | 85                                                                                  | 105                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 113                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1110                                                                              | 0                                                                                 | 145                                                                                | 30                                                                                  | 21                                                                                  | 21                                                                                  | 190                                                                                 | 0                                                                                   |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 36                                                                                |                                                                                   |                                                                                    | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |                                                                                     |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |                                                                                     |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |                                                                                     |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |                                                                                     |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | pm+ov                                                                             | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases           | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                  | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Permitted Phases           | 8                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase             | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                  | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Switch Phase               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)        | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |



Lanes, Volumes, Timings  
4: Ovation/Resource Parkway & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Minimum Split (s)       | 10.0                                                                              | 20.0                                                                              | 10.0                                                                              | 10.0                                                                              | 20.0                                                                              |                                                                                   | 10.0                                                                                | 20.0                                                                                | 10.0                                                                                | 10.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (s)         | 10.0                                                                              | 35.0                                                                              | 10.0                                                                              | 10.0                                                                              | 35.0                                                                              |                                                                                   | 10.0                                                                                | 20.0                                                                                | 10.0                                                                                | 10.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 13.3%                                                                             | 46.7%                                                                             | 13.3%                                                                             | 13.3%                                                                             | 46.7%                                                                             |                                                                                   | 13.3%                                                                               | 26.7%                                                                               | 13.3%                                                                               | 13.3%                                                                               | 26.7%                                                                               |                                                                                     |
| Maximum Green (s)       | 6.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 31.0                                                                              |                                                                                   | 6.0                                                                                 | 16.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |                                                                                   | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |                                                                                     |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |                                                                                   | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                                | Max                                                                                 | None                                                                                | None                                                                                | Max                                                                                 |                                                                                     |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                     | 10                                                                                  |                                                                                     |                                                                                     | 10                                                                                  |                                                                                     |
| Act Effect Green (s)    | 37.0                                                                              | 31.0                                                                              | 41.0                                                                              | 37.8                                                                              | 33.0                                                                              |                                                                                   | 24.4                                                                                | 22.0                                                                                | 32.0                                                                                | 21.8                                                                                | 16.0                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.49                                                                              | 0.41                                                                              | 0.55                                                                              | 0.50                                                                              | 0.44                                                                              |                                                                                   | 0.33                                                                                | 0.29                                                                                | 0.43                                                                                | 0.29                                                                                | 0.21                                                                                |                                                                                     |
| v/c Ratio               | 0.46                                                                              | 0.18                                                                              | 0.37                                                                              | 0.27                                                                              | 0.72                                                                              |                                                                                   | 0.21                                                                                | 0.05                                                                                | 0.03                                                                                | 0.05                                                                                | 0.45                                                                                |                                                                                     |
| Control Delay           | 14.4                                                                              | 15.5                                                                              | 9.7                                                                               | 10.0                                                                              | 21.0                                                                              |                                                                                   | 17.7                                                                                | 22.4                                                                                | 0.1                                                                                 | 16.8                                                                                | 19.4                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 14.4                                                                              | 15.5                                                                              | 9.7                                                                               | 10.0                                                                              | 21.0                                                                              |                                                                                   | 17.7                                                                                | 22.4                                                                                | 0.1                                                                                 | 16.8                                                                                | 19.4                                                                                |                                                                                     |
| LOS                     | B                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | C                                                                                 |                                                                                   | B                                                                                   | C                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 12.4                                                                              |                                                                                   |                                                                                   | 19.6                                                                              |                                                                                   |                                                                                     | 16.5                                                                                |                                                                                     |                                                                                     | 19.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 6.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 31.0                                                                              |                                                                                   | 6.0                                                                                 | 16.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 90th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 70th %ile Green (s)     | 6.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 31.0                                                                              |                                                                                   | 6.0                                                                                 | 16.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 70th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 50th %ile Green (s)     | 6.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 31.0                                                                              |                                                                                   | 6.0                                                                                 | 26.0                                                                                | 6.0                                                                                 | 0.0                                                                                 | 16.0                                                                                |                                                                                     |
| 50th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Skip                                                                                | MaxR                                                                                |                                                                                     |
| 30th %ile Green (s)     | 6.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 31.0                                                                              |                                                                                   | 6.0                                                                                 | 26.0                                                                                | 6.0                                                                                 | 0.0                                                                                 | 16.0                                                                                |                                                                                     |
| 30th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Skip                                                                                | MaxR                                                                                |                                                                                     |
| 10th %ile Green (s)     | 0.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 41.0                                                                              |                                                                                   | 6.0                                                                                 | 26.0                                                                                | 6.0                                                                                 | 0.0                                                                                 | 16.0                                                                                |                                                                                     |
| 10th %ile Term Code     | Skip                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Skip                                                                                | MaxR                                                                                |                                                                                     |
| Stops (vph)             | 70                                                                                | 216                                                                               | 209                                                                               | 78                                                                                | 875                                                                               |                                                                                   | 97                                                                                  | 25                                                                                  | 0                                                                                   | 17                                                                                  | 100                                                                                 |                                                                                     |
| Fuel Used(gal)          | 2                                                                                 | 6                                                                                 | 8                                                                                 | 1                                                                                 | 13                                                                                |                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |
| CO Emissions (g/hr)     | 171                                                                               | 429                                                                               | 540                                                                               | 83                                                                                | 879                                                                               |                                                                                   | 106                                                                                 | 26                                                                                  | 5                                                                                   | 17                                                                                  | 138                                                                                 |                                                                                     |
| NOx Emissions (g/hr)    | 33                                                                                | 83                                                                                | 105                                                                               | 16                                                                                | 171                                                                               |                                                                                   | 21                                                                                  | 5                                                                                   | 1                                                                                   | 3                                                                                   | 27                                                                                  |                                                                                     |
| VOC Emissions (g/hr)    | 40                                                                                | 99                                                                                | 125                                                                               | 19                                                                                | 204                                                                               |                                                                                   | 25                                                                                  | 6                                                                                   | 1                                                                                   | 4                                                                                   | 32                                                                                  |                                                                                     |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 39                                                                                | 64                                                                                | 139                                                                               | 34                                                                                | 223                                                                               |                                                                                   | 23                                                                                  | 9                                                                                   | 0                                                                                   | 6                                                                                   | 45                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | m67                                                                               | m92                                                                               | m257                                                                              | 71                                                                                | #373                                                                              |                                                                                   | 47                                                                                  | 36                                                                                  | 0                                                                                   | 23                                                                                  | 122                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 1880                                                                              |                                                                                   |                                                                                   | 265                                                                               |                                                                                   |                                                                                     | 322                                                                                 |                                                                                     |                                                                                     | 376                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 249                                                                               | 1462                                                                              | 1038                                                                              | 586                                                                               | 1549                                                                              |                                                                                   | 679                                                                                 | 546                                                                                 | 717                                                                                 | 434                                                                                 | 423                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.45                                                                              | 0.18                                                                              | 0.37                                                                              | 0.27                                                                              | 0.72                                                                              |                                                                                   | 0.21                                                                                | 0.05                                                                                | 0.03                                                                                | 0.05                                                                                | 0.45                                                                                |                                                                                     |

# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016

### Intersection Summary

Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 8 (11%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 17.1 Intersection LOS: B  
 Intersection Capacity Utilization 65.6% ICU Level of Service C  
 Analysis Period (min) 60  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Ovation/Resource Parkway & McEwen

|                                                                                      |                                                                                      |                                                                                      |                                                                                          |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 (R) |
| 10 s                                                                                 | 20 s                                                                                 | 10 s                                                                                 | 35 s                                                                                     |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 (R) |
| 10 s                                                                                 | 20 s                                                                                 | 10 s                                                                                 | 35 s                                                                                     |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                            |  |  |  |  |  |   |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 109                                                                               | 0                                                                                 | 53                                                                                | 28                                                                                | 1                                                                                 | 14                                                                                 | 195                                                                                 | 2086                                                                                | 6                                                                                   | 3                                                                                   | 545                                                                                 | 320                                                                                 |
| Future Volume (vph)        | 109                                                                               | 0                                                                                 | 53                                                                                | 28                                                                                | 1                                                                                 | 14                                                                                 | 195                                                                                 | 2086                                                                                | 6                                                                                   | 3                                                                                   | 545                                                                                 | 320                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     |
| Storage Length (ft)        | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                 | 177                                                                                 |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                  | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                              |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 1752                                                                                | 3504                                                                                | 1567                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.401                                                                               |                                                                                     |                                                                                     | 0.043                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 739                                                                                 | 3504                                                                                | 1567                                                                                | 80                                                                                  | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 316                                                                               |                                                                                   |                                                                                   | 102                                                                                |                                                                                     |                                                                                     | 98                                                                                  |                                                                                     |                                                                                     | 320                                                                                 |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                    |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 881                                                                               |                                                                                   |                                                                                   | 890                                                                               |                                                                                    |                                                                                     | 857                                                                                 |                                                                                     |                                                                                     | 905                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                    |                                                                                     | 14.6                                                                                |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 109                                                                               | 0                                                                                 | 53                                                                                | 28                                                                                | 1                                                                                 | 14                                                                                 | 195                                                                                 | 2086                                                                                | 6                                                                                   | 3                                                                                   | 545                                                                                 | 320                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 109                                                                               | 0                                                                                 | 53                                                                                | 28                                                                                | 1                                                                                 | 14                                                                                 | 195                                                                                 | 2086                                                                                | 6                                                                                   | 3                                                                                   | 545                                                                                 | 320                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                              | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                    |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                  | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                  | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                              | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                 | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                 | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                    |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                    |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              |                                                                                   | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                               | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 |                                                                                    | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 6                                                                                  |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                  | 6                                                                                   | 6                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                                | 20.0                                                                                | 20.0                                                                                | 6.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 42.0                                                                                | 42.0                                                                                | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                |
| Total Split (s)         | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 16.0                                                                               | 77.0                                                                                | 77.0                                                                                | 12.0                                                                                | 73.0                                                                                | 73.0                                                                                |
| Total Split (%)         | 8.3%                                                                              | 32.3%                                                                             | 32.3%                                                                             | 8.3%                                                                              | 32.3%                                                                             | 32.3%                                                                             | 10.7%                                                                              | 51.3%                                                                               | 51.3%                                                                               | 8.0%                                                                                | 48.7%                                                                               | 48.7%                                                                               |
| Maximum Green (s)       | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 10.5                                                                               | 71.0                                                                                | 71.0                                                                                | 6.5                                                                                 | 67.0                                                                                | 67.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | C-Min                                                                               | C-Min                                                                               | None                                                                                | C-Min                                                                               | C-Min                                                                               |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                    | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                    | 29.0                                                                                | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                | 10                                                                                |                                                                                   | 10                                                                                | 10                                                                                |                                                                                    | 10                                                                                  | 10                                                                                  |                                                                                     | 10                                                                                  | 10                                                                                  |
| Act Effect Green (s)    | 7.4                                                                               |                                                                                   | 22.0                                                                              | 6.7                                                                               | 22.0                                                                              | 22.0                                                                              | 109.3                                                                              | 106.7                                                                               | 106.7                                                                               | 101.1                                                                               | 94.6                                                                                | 94.6                                                                                |
| Actuated g/C Ratio      | 0.05                                                                              |                                                                                   | 0.15                                                                              | 0.04                                                                              | 0.15                                                                              | 0.15                                                                              | 0.73                                                                               | 0.71                                                                                | 0.71                                                                                | 0.67                                                                                | 0.63                                                                                | 0.63                                                                                |
| v/c Ratio               | 0.64                                                                              |                                                                                   | 0.11                                                                              | 0.35                                                                              | 0.00                                                                              | 0.04                                                                              | 0.33                                                                               | 0.84                                                                                | 0.01                                                                                | 0.02                                                                                | 0.24                                                                                | 0.29                                                                                |
| Control Delay           | 88.8                                                                              |                                                                                   | 0.4                                                                               | 82.5                                                                              | 41.0                                                                              | 0.3                                                                               | 4.3                                                                                | 16.1                                                                                | 0.0                                                                                 | 12.3                                                                                | 11.5                                                                                | 1.3                                                                                 |
| Queue Delay             | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 10.7                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 88.8                                                                              |                                                                                   | 0.4                                                                               | 82.5                                                                              | 41.0                                                                              | 0.3                                                                               | 4.3                                                                                | 26.9                                                                                | 0.0                                                                                 | 12.3                                                                                | 11.5                                                                                | 1.3                                                                                 |
| LOS                     | F                                                                                 |                                                                                   | A                                                                                 | F                                                                                 | D                                                                                 | A                                                                                 | A                                                                                  | C                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 54.7                                                                              |                                                                                   |                                                                                    | 24.9                                                                                |                                                                                     |                                                                                     | 7.8                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 10.5                                                                               | 71.5                                                                                | 71.5                                                                                | 6.0                                                                                 | 67.0                                                                                | 67.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                                | Coord                                                                               | Coord                                                                               | Min                                                                                 | Coord                                                                               | Coord                                                                               |
| 70th %ile Green (s)     | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 10.5                                                                               | 83.0                                                                                | 83.0                                                                                | 0.0                                                                                 | 67.0                                                                                | 67.0                                                                                |
| 70th %ile Term Code     | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 50th %ile Green (s)     | 7.0                                                                               | 8.0                                                                               | 8.0                                                                               | 7.0                                                                               | 8.0                                                                               | 8.0                                                                               | 9.4                                                                                | 118.0                                                                               | 118.0                                                                               | 0.0                                                                                 | 103.1                                                                               | 103.1                                                                               |
| 50th %ile Term Code     | Max                                                                               | Min                                                                               | Min                                                                               | Max                                                                               | Min                                                                               | Min                                                                               | Gap                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 30th %ile Green (s)     | 8.0                                                                               | 8.0                                                                               | 8.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 7.3                                                                                | 130.5                                                                               | 130.5                                                                               | 0.0                                                                                 | 117.7                                                                               | 117.7                                                                               |
| 30th %ile Term Code     | Hold                                                                              | Min                                                                               | Min                                                                               | Skip                                                                              | Skip                                                                              | Skip                                                                              | Gap                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 10th %ile Green (s)     | 8.0                                                                               | 8.0                                                                               | 8.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.7                                                                                | 130.5                                                                               | 130.5                                                                               | 0.0                                                                                 | 118.3                                                                               | 118.3                                                                               |
| 10th %ile Term Code     | Hold                                                                              | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Gap                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| Stops (vph)             | 103                                                                               |                                                                                   | 0                                                                                 | 28                                                                                | 2                                                                                 | 0                                                                                 | 38                                                                                 | 891                                                                                 | 0                                                                                   | 1                                                                                   | 139                                                                                 | 8                                                                                   |
| Fuel Used(gal)          | 3                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                  | 28                                                                                  | 0                                                                                   | 0                                                                                   | 6                                                                                   | 2                                                                                   |
| CO Emissions (g/hr)     | 230                                                                               |                                                                                   | 26                                                                                | 57                                                                                | 2                                                                                 | 7                                                                                 | 117                                                                                | 1938                                                                                | 2                                                                                   | 2                                                                                   | 412                                                                                 | 167                                                                                 |
| NOx Emissions (g/hr)    | 45                                                                                |                                                                                   | 5                                                                                 | 11                                                                                | 0                                                                                 | 1                                                                                 | 23                                                                                 | 377                                                                                 | 0                                                                                   | 0                                                                                   | 80                                                                                  | 32                                                                                  |
| VOC Emissions (g/hr)    | 53                                                                                |                                                                                   | 6                                                                                 | 13                                                                                | 0                                                                                 | 2                                                                                 | 27                                                                                 | 449                                                                                 | 1                                                                                   | 1                                                                                   | 95                                                                                  | 39                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 24                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | 55                                                                                |                                                                                   | 0                                                                                 | 27                                                                                | 1                                                                                 | 0                                                                                 | 9                                                                                  | 142                                                                                 | 0                                                                                   | 1                                                                                   | 76                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  | #118                                                                              |                                                                                   | 0                                                                                 | 70                                                                                | 6                                                                                 | 0                                                                                 | m58                                                                                | m#1216                                                                              | m0                                                                                  | m3                                                                                  | 112                                                                                 | 37                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 801                                                                               |                                                                                   |                                                                                   | 810                                                                               |                                                                                   |                                                                                    | 777                                                                                 |                                                                                     |                                                                                     | 825                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                | 177                                                                                |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Base Capacity (vph)     | 169                                                                               |                                                                                   | 679                                                                               | 82                                                                                | 534                                                                               | 526                                                                               | 609                                                                                | 2492                                                                                | 1143                                                                                | 127                                                                                 | 2232                                                                                | 1117                                                                                |



Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 375                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 182                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.64                                                                              |                                                                                   | 0.08                                                                              | 0.34                                                                              | 0.00                                                                              | 0.03                                                                              | 0.32                                                                               | 0.99                                                                                | 0.01                                                                                | 0.02                                                                                | 0.24                                                                                | 0.29                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 22.5

Intersection LOS: C

Intersection Capacity Utilization 86.6%

ICU Level of Service E

Analysis Period (min) 60

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carothers /Carothers & Tower/Pacific

|                                                                                        |                                                                                            |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1   |  Ø2 (R)   |  Ø3   |  Ø4   |
| 16 s                                                                                   | 73 s                                                                                       | 12.5 s                                                                                  | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 77 s                                                                                       | 12.5 s                                                                                  | 48.5 s                                                                                   |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 35                                                                                | 0                                                                                 | 52                                                                                | 9                                                                                 | 0                                                                                 | 93                                                                                | 123                                                                                 | 2150                                                                                | 1                                                                                   | 92                                                                                  | 822                                                                                 | 184                                                                                 |
| Future Volume (vph)        | 35                                                                                | 0                                                                                 | 52                                                                                | 9                                                                                 | 0                                                                                 | 93                                                                                | 123                                                                                 | 2150                                                                                | 1                                                                                   | 92                                                                                  | 822                                                                                 | 184                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 128                                                                                 | 480                                                                                 |                                                                                     | 93                                                                                  |
| Storage Lanes              | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3504                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.592                                                                             |                                                                                   |                                                                                   | 0.723                                                                             |                                                                                   |                                                                                   | 0.297                                                                               |                                                                                     |                                                                                     | 0.042                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 1103                                                                              | 1583                                                                              | 0                                                                                 | 1347                                                                              | 1863                                                                              | 1583                                                                              | 548                                                                                 | 3504                                                                                | 0                                                                                   | 78                                                                                  | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   | 249                                                                               |                                                                                   |                                                                                   |                                                                                   | 79                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 104                                                                                 |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     |                                                                                     | 40                                                                                  |
| Link Distance (ft)         |                                                                                   | 762                                                                               |                                                                                   |                                                                                   | 773                                                                               |                                                                                   |                                                                                     | 905                                                                                 |                                                                                     |                                                                                     |                                                                                     | 2004                                                                                |
| Travel Time (s)            |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     | 34.2                                                                                |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 35                                                                                | 0                                                                                 | 52                                                                                | 9                                                                                 | 0                                                                                 | 93                                                                                | 123                                                                                 | 2150                                                                                | 1                                                                                   | 92                                                                                  | 822                                                                                 | 184                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 35                                                                                | 52                                                                                | 0                                                                                 | 9                                                                                 | 0                                                                                 | 93                                                                                | 123                                                                                 | 2151                                                                                | 0                                                                                   | 92                                                                                  | 822                                                                                 | 184                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |                                                                                     | 12                                                                                  |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     | 16                                                                                  |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                |                                                                                     | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 |                                                                                     | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   |                                                                                     | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             |                                                                                   | pm+ov                                                                             | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 4                                                                                 | 6                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 6.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 15.0                                                                                |                                                                                     | 5.0                                                                                 | 15.0                                                                                | 5.0                                                                                 |
| Minimum Split (s)       | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 11.5                                                                              | 11.5                                                                                | 48.0                                                                                |                                                                                     | 11.5                                                                                | 48.0                                                                                | 12.0                                                                                |
| Total Split (s)         | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 11.5                                                                              | 15.2                                                                                | 78.0                                                                                |                                                                                     | 11.5                                                                                | 74.3                                                                                | 12.0                                                                                |
| Total Split (%)         | 8.0%                                                                              | 32.3%                                                                             |                                                                                   | 8.0%                                                                              | 32.3%                                                                             | 7.7%                                                                              | 10.1%                                                                               | 52.0%                                                                               |                                                                                     | 7.7%                                                                                | 49.5%                                                                               | 8.0%                                                                                |
| Maximum Green (s)       | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 6.0                                                                               | 9.7                                                                                 | 72.0                                                                                |                                                                                     | 6.0                                                                                 | 68.3                                                                                | 6.5                                                                                 |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 4.0                                                                                 |                                                                                     | 3.5                                                                                 | 4.0                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               |                                                                                   | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 |                                                                                     | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 6.0                                                                                 |                                                                                     | 5.5                                                                                 | 6.0                                                                                 | 5.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Max                                                                               |                                                                                     | None                                                                                | C-Max                                                                               | None                                                                                |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                     | 35.0                                                                                |                                                                                     |                                                                                     | 35.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                     | 10                                                                                  |                                                                                     |                                                                                     | 10                                                                                  |                                                                                     |
| Act Effect Green (s)    | 24.7                                                                              | 23.4                                                                              |                                                                                   | 23.2                                                                              |                                                                                   | 25.9                                                                              | 108.9                                                                               | 100.7                                                                               |                                                                                     | 106.5                                                                               | 99.5                                                                                | 111.9                                                                               |
| Actuated g/C Ratio      | 0.16                                                                              | 0.16                                                                              |                                                                                   | 0.15                                                                              |                                                                                   | 0.17                                                                              | 0.73                                                                                | 0.67                                                                                |                                                                                     | 0.71                                                                                | 0.66                                                                                | 0.75                                                                                |
| v/c Ratio               | 0.17                                                                              | 0.11                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.27                                                                              | 0.27                                                                                | 0.91                                                                                |                                                                                     | 0.72                                                                                | 0.35                                                                                | 0.15                                                                                |
| Control Delay           | 44.9                                                                              | 0.5                                                                               |                                                                                   | 38.0                                                                              |                                                                                   | 11.8                                                                              | 3.0                                                                                 | 16.1                                                                                |                                                                                     | 61.2                                                                                | 16.5                                                                                | 5.8                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.7                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 44.9                                                                              | 0.5                                                                               |                                                                                   | 38.0                                                                              |                                                                                   | 11.8                                                                              | 3.0                                                                                 | 16.7                                                                                |                                                                                     | 61.2                                                                                | 16.5                                                                                | 5.8                                                                                 |
| LOS                     | D                                                                                 | A                                                                                 |                                                                                   | D                                                                                 |                                                                                   | B                                                                                 | A                                                                                   | B                                                                                   |                                                                                     | E                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 18.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     | 18.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 6.0                                                                               | 9.7                                                                                 | 72.0                                                                                |                                                                                     | 6.0                                                                                 | 68.3                                                                                | 6.5                                                                                 |
| 90th %ile Term Code     | Max                                                                               | Ped                                                                               |                                                                                   | Max                                                                               | Ped                                                                               | Max                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Max                                                                                 | Coord                                                                               | Max                                                                                 |
| 70th %ile Green (s)     | 6.5                                                                               | 55.0                                                                              |                                                                                   | 0.0                                                                               | 43.0                                                                              | 6.0                                                                               | 9.7                                                                                 | 72.0                                                                                |                                                                                     | 6.0                                                                                 | 68.3                                                                                | 6.5                                                                                 |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Ped                                                                               | Max                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Max                                                                                 | Coord                                                                               | Max                                                                                 |
| 50th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 7.2                                                                               | 6.8                                                                                 | 119.3                                                                               |                                                                                     | 7.2                                                                                 | 119.7                                                                               | 6.5                                                                                 |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 30th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 6.9                                                                               | 6.4                                                                                 | 119.6                                                                               |                                                                                     | 6.9                                                                                 | 120.1                                                                               | 6.5                                                                                 |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 10th %ile Green (s)     | 6.0                                                                               | 6.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 6.5                                                                               | 6.0                                                                                 | 120.5                                                                               |                                                                                     | 6.5                                                                                 | 121.0                                                                               | 6.0                                                                                 |
| 10th %ile Term Code     | Hold                                                                              | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Hold                                                                                |
| Stops (vph)             | 27                                                                                | 0                                                                                 |                                                                                   | 8                                                                                 |                                                                                   | 18                                                                                | 8                                                                                   | 598                                                                                 |                                                                                     | 37                                                                                  | 373                                                                                 | 31                                                                                  |
| Fuel Used(gal)          | 1                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   | 26                                                                                  |                                                                                     | 3                                                                                   | 18                                                                                  | 3                                                                                   |
| CO Emissions (g/hr)     | 47                                                                                | 22                                                                                |                                                                                   | 12                                                                                |                                                                                   | 62                                                                                | 63                                                                                  | 1826                                                                                |                                                                                     | 193                                                                                 | 1230                                                                                | 211                                                                                 |
| NOx Emissions (g/hr)    | 9                                                                                 | 4                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 12                                                                                | 12                                                                                  | 355                                                                                 |                                                                                     | 38                                                                                  | 239                                                                                 | 41                                                                                  |
| VOC Emissions (g/hr)    | 11                                                                                | 5                                                                                 |                                                                                   | 3                                                                                 |                                                                                   | 14                                                                                | 15                                                                                  | 423                                                                                 |                                                                                     | 45                                                                                  | 285                                                                                 | 49                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                   | 17                                                                                  |                                                                                     | 0                                                                                   | 27                                                                                  | 0                                                                                   |
| Queue Length 50th (ft)  | 34                                                                                | 0                                                                                 |                                                                                   | 9                                                                                 |                                                                                   | 13                                                                                | 6                                                                                   | 64                                                                                  |                                                                                     | 24                                                                                  | 95                                                                                  | 7                                                                                   |
| Queue Length 95th (ft)  | 54                                                                                | 0                                                                                 |                                                                                   | 21                                                                                |                                                                                   | 61                                                                                | m10                                                                                 | #1787                                                                               |                                                                                     | #199                                                                                | 415                                                                                 | 96                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 682                                                                               |                                                                                   |                                                                                   | 693                                                                               |                                                                                   |                                                                                     | 825                                                                                 |                                                                                     |                                                                                     | 1924                                                                                |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 210                                                                                 |                                                                                     |                                                                                     | 480                                                                                 |                                                                                     | 93                                                                                  |
| Base Capacity (vph)     | 211                                                                               | 652                                                                               |                                                                                   | 230                                                                               |                                                                                   | 339                                                                               | 483                                                                                 | 2351                                                                                |                                                                                     | 128                                                                                 | 2347                                                                                | 1208                                                                                |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 41                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.17                                                                              | 0.08                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.27                                                                              | 0.25                                                                               | 0.93                                                                                |                                                                                     | 0.72                                                                                | 0.35                                                                                | 0.15                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 16 (11%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 16.8

Intersection LOS: B

Intersection Capacity Utilization 87.3%

ICU Level of Service E

Analysis Period (min) 60

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

### Splits and Phases: 6: Carothers/Carothers Parkway & Apartments/Resource

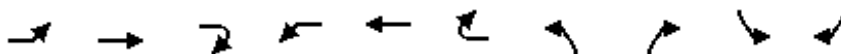
|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1   |  Ø2 (R)   |  Ø3   |  Ø4   |
| 15.2 s                                                                                 | 74.3 s                                                                                     | 12 s                                                                                   | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 11.5 s                                                                                 | 78 s                                                                                       | 12 s                                                                                   | 48.5 s                                                                                   |



# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

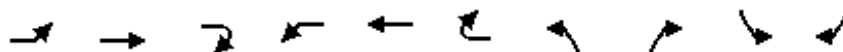


| Lane Group                 | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)       | 572   | 875   | 366   | 513   | 1162  | 1124  | 285   | 161   | 605   | 671   |
| Future Volume (vph)        | 572   | 875   | 366   | 513   | 1162  | 1124  | 285   | 161   | 605   | 671   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 370   |       |       | 495   |       |       | 0     |       | 0     |       |
| Storage Lanes              | 2     |       |       | 1     |       |       | 2     |       | 2     |       |
| Taper Length (ft)          | 25    |       |       | 25    |       |       | 25    |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 0.97  | 1.00  | 0.97  | 0.88  |
| Frt                        |       |       | 0.850 |       |       | 0.850 |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (prot)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Flt Permitted              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (perm)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Right Turn on Red          |       |       | Yes   |       |       | Yes   |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       | 210   |       |       | 523   |       | 182   |       | 131   |
| Link Speed (mph)           |       | 30    |       |       | 30    |       |       |       |       |       |
| Link Distance (ft)         |       | 826   |       |       | 1211  |       |       |       |       |       |
| Travel Time (s)            |       | 18.8  |       |       | 27.5  |       |       |       |       |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 572   | 875   | 366   | 513   | 1162  | 1124  | 285   | 161   | 605   | 671   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 572   | 875   | 366   | 513   | 1162  | 1124  | 285   | 161   | 605   | 671   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Right | Left  | Left  | Right | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    |       |       | 24    |       |       |       |       |       |
| Link Offset(ft)            |       | 0     |       |       | 0     |       |       |       |       |       |
| Crosswalk Width(ft)        |       | 16    |       |       | 16    |       |       |       |       |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |       |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    |       | 9     | 15    |       | 9     | 15    | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 1     | 1     | 2     | 1     | 1     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Right | Left  | Thru  | Right | Left  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 20    | 20    | 100   | 20    | 20    | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 20    | 20    | 6     | 20    | 20    | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    |       |       | 94    |       |       |       |       |       |
| Detector 2 Size(ft)        |       | 6     |       |       | 6     |       |       |       |       |       |
| Detector 2 Type            |       | Cl+Ex |       |       | Cl+Ex |       |       |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   |       |       | 0.0   |       |       |       |       |       |
| Turn Type                  | Prot  | NA    | Free  | Prot  | NA    | Perm  | Perm  | Free  | Perm  | Prot  |
| Protected Phases           | 1     | 6     |       | 5     | 2     |       |       |       |       | 1     |
| Permitted Phases           |       |       | Free  |       |       | 2     | 3     | Free  | 7     |       |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

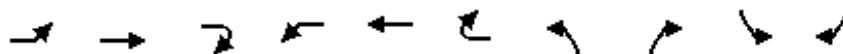


| Lane Group              | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     |       | 5     | 2     | 2     | 3     |       | 7     | 1     |
| Switch Phase            |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)     | 8.0   | 12.0  |       | 8.0   | 12.0  | 12.0  | 12.0  |       | 12.0  | 8.0   |
| Minimum Split (s)       | 15.0  | 27.0  |       | 25.0  | 27.0  | 27.0  | 27.0  |       | 27.0  | 15.0  |
| Total Split (s)         | 35.0  | 59.0  |       | 59.0  | 83.0  | 83.0  | 32.0  |       | 32.0  | 35.0  |
| Total Split (%)         | 23.3% | 39.3% |       | 39.3% | 55.3% | 55.3% | 21.3% |       | 21.3% | 23.3% |
| Maximum Green (s)       | 28.0  | 52.0  |       | 52.0  | 76.0  | 76.0  | 25.0  |       | 25.0  | 28.0  |
| Yellow Time (s)         | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   |
| All-Red Time (s)        | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     | 7.0   | 7.0   |       | 7.0   | 7.0   | 7.0   | 7.0   |       | 7.0   | 7.0   |
| Lead/Lag                | Lead  | Lag   |       | Lead  | Lag   | Lag   |       |       |       | Lead  |
| Lead-Lag Optimize?      |       |       |       |       |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min |       | None  | C-Min | C-Min | None  |       | None  | None  |
| Walk Time (s)           |       | 7.0   |       |       | 7.0   | 7.0   | 7.0   |       | 7.0   |       |
| Flash Dont Walk (s)     |       | 13.0  |       |       | 13.0  | 13.0  | 13.0  |       | 13.0  |       |
| Pedestrian Calls (#/hr) |       | 5     |       |       | 5     | 5     | 5     |       | 5     |       |
| Act Effect Green (s)    | 28.0  | 56.6  | 150.0 | 47.4  | 76.0  | 76.0  | 25.0  | 150.0 | 25.0  | 28.0  |
| Actuated g/C Ratio      | 0.19  | 0.38  | 1.00  | 0.32  | 0.51  | 0.51  | 0.17  | 1.00  | 0.17  | 0.19  |
| v/c Ratio               | 0.89  | 0.65  | 0.23  | 0.92  | 0.65  | 1.06  | 0.50  | 0.10  | 1.06  | 1.07  |
| Control Delay           | 79.2  | 42.2  | 0.3   | 45.0  | 25.2  | 137.9 | 60.3  | 0.1   | 203.5 | 208.6 |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 79.2  | 42.2  | 0.3   | 45.0  | 25.2  | 137.9 | 60.3  | 0.1   | 203.5 | 208.6 |
| LOS                     | E     | D     | A     | D     | C     | F     | E     | A     | F     | F     |
| Approach Delay          |       | 45.4  |       |       | 74.1  |       |       |       |       |       |
| Approach LOS            |       | D     |       |       | E     |       |       |       |       |       |
| 90th %ile Green (s)     | 28.0  | 52.0  |       | 52.0  | 76.0  | 76.0  | 25.0  |       | 25.0  | 28.0  |
| 90th %ile Term Code     | Max   | Coord |       | Max   | Coord | Coord | Hold  |       | Max   | Max   |
| 70th %ile Green (s)     | 28.0  | 52.0  |       | 52.0  | 76.0  | 76.0  | 25.0  |       | 25.0  | 28.0  |
| 70th %ile Term Code     | Max   | Coord |       | Max   | Coord | Coord | Hold  |       | Max   | Max   |
| 50th %ile Green (s)     | 28.0  | 54.5  |       | 49.5  | 76.0  | 76.0  | 25.0  |       | 25.0  | 28.0  |
| 50th %ile Term Code     | Max   | Coord |       | Gap   | Coord | Coord | Hold  |       | Max   | Max   |
| 30th %ile Green (s)     | 28.0  | 58.9  |       | 45.1  | 76.0  | 76.0  | 25.0  |       | 25.0  | 28.0  |
| 30th %ile Term Code     | Max   | Coord |       | Gap   | Coord | Coord | Hold  |       | Max   | Max   |
| 10th %ile Green (s)     | 28.0  | 65.8  |       | 38.2  | 76.0  | 76.0  | 25.0  |       | 25.0  | 28.0  |
| 10th %ile Term Code     | Max   | Coord |       | Gap   | Coord | Coord | Hold  |       | Max   | Max   |
| Stops (vph)             | 537   | 739   | 0     | 449   | 954   | 868   | 255   | 0     | 552   | 504   |
| Fuel Used(gal)          | 16    | 17    | 2     | 12    | 22    | 47    | 7     | 1     | 32    | 35    |
| CO Emissions (g/hr)     | 1109  | 1205  | 167   | 840   | 1552  | 3282  | 460   | 67    | 2222  | 2472  |
| NOx Emissions (g/hr)    | 216   | 234   | 32    | 163   | 302   | 639   | 90    | 13    | 432   | 481   |
| VOC Emissions (g/hr)    | 257   | 279   | 39    | 195   | 360   | 761   | 107   | 15    | 515   | 573   |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 286   | 404   | 0     | 429   | 510   | ~1055 | 132   | 0     | ~333  | ~350  |
| Queue Length 95th (ft)  | #471  | 501   | 0     | m384  | m474  | m#921 | 204   | 0     | #540  | #593  |
| Internal Link Dist (ft) |       | 746   |       |       | 1131  |       |       |       |       |       |
| Turn Bay Length (ft)    | 370   |       |       | 495   |       |       |       |       |       |       |
| Base Capacity (vph)     | 640   | 1336  | 1583  | 613   | 1793  | 1060  | 572   | 1583  | 572   | 626   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



| Lane Group            | EBL  | EBT  | EBR2 | WBL  | WBT  | WBR2 | NBL  | NBR2 | SBL  | SBR2 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 6    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.89 | 0.65 | 0.23 | 0.84 | 0.65 | 1.06 | 0.50 | 0.10 | 1.06 | 1.07 |

## Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 22 (15%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 90.0

Intersection LOS: F

Intersection Capacity Utilization Err%

ICU Level of Service H

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

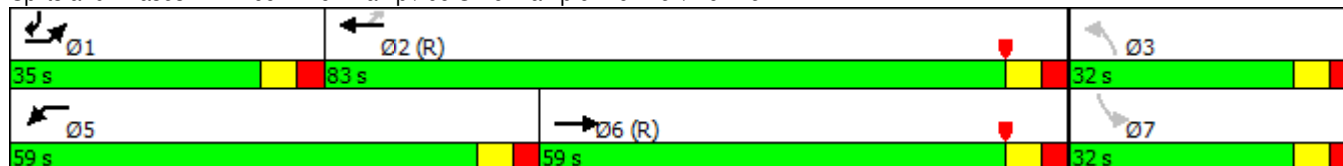
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

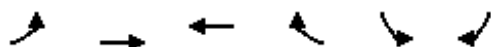
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen



Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

11/18/2016

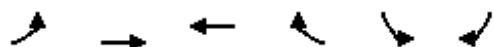


| Lane Group                 | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ↰↰    | ↑↑    | ↑↑    | ↱     | ↰     | ↱↱    |
| Traffic Volume (vph)       | 160   | 1475  | 2160  | 22    | 170   | 627   |
| Future Volume (vph)        | 160   | 1475  | 2160  | 22    | 170   | 627   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 285   |       |       | 115   | 445   | 0     |
| Storage Lanes              | 2     |       |       | 1     | 1     | 2     |
| Taper Length (ft)          | 25    |       |       |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 0.95  | 1.00  | 1.00  | 0.88  |
| Frt                        |       |       |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (prot)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Flt Permitted              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (perm)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Right Turn on Red          |       |       |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       |       | 6     |       | 175   |
| Link Speed (mph)           |       | 30    | 30    |       | 30    |       |
| Link Distance (ft)         |       | 1211  | 938   |       | 511   |       |
| Travel Time (s)            |       | 27.5  | 21.3  |       | 11.6  |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 160   | 1475  | 2160  | 22    | 170   | 627   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 160   | 1475  | 2160  | 22    | 170   | 627   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    | 24    |       | 12    |       |
| Link Offset(ft)            |       | 0     | 0     |       | 0     |       |
| Crosswalk Width(ft)        |       | 16    | 16    |       | 16    |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |
| Headway Factor             | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  |
| Turning Speed (mph)        | 15    |       |       | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 2     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Thru  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 100   | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 6     | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    | 94    |       |       |       |
| Detector 2 Size(ft)        |       | 6     | 6     |       |       |       |
| Detector 2 Type            |       | Cl+Ex | Cl+Ex |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   | 0.0   |       |       |       |
| Turn Type                  | Prot  | NA    | NA    | Prot  | Prot  | Prot  |
| Protected Phases           | 1     | 6     | 2     | 2     | 8     | 8     |
| Permitted Phases           |       |       |       |       |       |       |



Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

11/18/2016

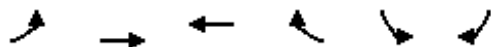


| Lane Group              | EBL   | EBT   | WBT    | WBR   | SBL   | SBR   |
|-------------------------|-------|-------|--------|-------|-------|-------|
| Detector Phase          | 1     | 6     | 2      | 2     | 8     | 8     |
| Switch Phase            |       |       |        |       |       |       |
| Minimum Initial (s)     | 7.0   | 20.0  | 20.0   | 20.0  | 8.0   | 8.0   |
| Minimum Split (s)       | 13.5  | 43.5  | 43.5   | 43.5  | 46.5  | 46.5  |
| Total Split (s)         | 13.5  | 103.5 | 90.0   | 90.0  | 46.5  | 46.5  |
| Total Split (%)         | 9.0%  | 69.0% | 60.0%  | 60.0% | 31.0% | 31.0% |
| Maximum Green (s)       | 8.0   | 98.0  | 84.5   | 84.5  | 41.0  | 41.0  |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5    | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)        | 2.0   | 2.0   | 2.0    | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.5   | 5.5   | 5.5    | 5.5   | 5.5   | 5.5   |
| Lead/Lag                | Lead  |       | Lag    | Lag   |       |       |
| Lead-Lag Optimize?      |       |       |        |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0    | 3.0   | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min | C-Min  | C-Min | None  | None  |
| Walk Time (s)           |       | 7.0   | 7.0    | 7.0   | 7.0   | 7.0   |
| Flash Dont Walk (s)     |       | 18.0  | 18.0   | 18.0  | 34.0  | 34.0  |
| Pedestrian Calls (#/hr) |       | 3     | 3      | 3     | 3     | 3     |
| Act Effect Green (s)    | 11.7  | 105.1 | 87.9   | 87.9  | 33.9  | 33.9  |
| Actuated g/C Ratio      | 0.08  | 0.70  | 0.59   | 0.59  | 0.23  | 0.23  |
| v/c Ratio               | 0.67  | 0.66  | 1.16   | 0.03  | 0.47  | 0.89  |
| Control Delay           | 83.5  | 6.9   | 309.8  | 10.4  | 53.7  | 59.1  |
| Queue Delay             | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.5   |
| Total Delay             | 83.5  | 6.9   | 309.8  | 10.4  | 53.7  | 59.6  |
| LOS                     | F     | A     | F      | B     | D     | E     |
| Approach Delay          |       | 14.4  | 306.8  |       | 58.3  |       |
| Approach LOS            |       | B     | F      |       | E     |       |
| 90th %ile Green (s)     | 8.0   | 98.0  | 84.5   | 84.5  | 41.0  | 41.0  |
| 90th %ile Term Code     | Max   | Coord | Coord  | Coord | Max   | Max   |
| 70th %ile Green (s)     | 10.1  | 100.1 | 84.5   | 84.5  | 38.9  | 38.9  |
| 70th %ile Term Code     | Max   | Coord | Coord  | Coord | Gap   | Gap   |
| 50th %ile Green (s)     | 13.9  | 103.9 | 84.5   | 84.5  | 35.1  | 35.1  |
| 50th %ile Term Code     | Max   | Coord | Coord  | Coord | Gap   | Gap   |
| 30th %ile Green (s)     | 13.9  | 108.7 | 89.3   | 89.3  | 30.3  | 30.3  |
| 30th %ile Term Code     | Gap   | Coord | Coord  | Coord | Gap   | Gap   |
| 10th %ile Green (s)     | 12.4  | 114.6 | 96.7   | 96.7  | 24.4  | 24.4  |
| 10th %ile Term Code     | Gap   | Coord | Coord  | Coord | Gap   | Gap   |
| Stops (vph)             | 127   | 848   | 1642   | 14    | 142   | 455   |
| Fuel Used(gal)          | 5     | 21    | 161    | 0     | 3     | 13    |
| CO Emissions (g/hr)     | 345   | 1445  | 11261  | 20    | 232   | 878   |
| NOx Emissions (g/hr)    | 67    | 281   | 2191   | 4     | 45    | 171   |
| VOC Emissions (g/hr)    | 80    | 335   | 2610   | 5     | 54    | 203   |
| Dilemma Vehicles (#)    | 0     | 0     | 0      | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 68    | 433   | ~1334  | 4     | 144   | 253   |
| Queue Length 95th (ft)  | m#134 | m517  | m#1156 | m4    | 238   | #411  |
| Internal Link Dist (ft) |       | 1131  | 858    |       | 431   |       |
| Turn Bay Length (ft)    | 285   |       |        | 115   | 445   |       |
| Base Capacity (vph)     | 240   | 2230  | 1866   | 837   | 435   | 812   |
| Starvation Cap Reductn  | 0     | 0     | 0      | 0     | 0     | 0     |

# Lanes, Volumes, Timings

## 2: McEwen /McEwen & Tower

11/18/2016



| Lane Group            | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|-----------------------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 4    | 0    | 0    | 27   |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.67 | 0.66 | 1.16 | 0.03 | 0.39 | 0.80 |

### Intersection Summary

Area Type: CBD

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 104 (69%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 160.2

Intersection LOS: F

Intersection Capacity Utilization 99.9%

ICU Level of Service F

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

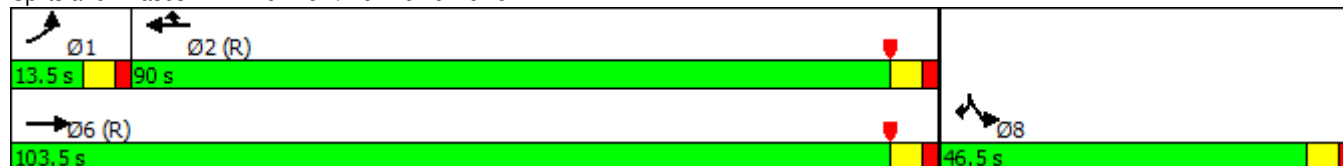
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: McEwen /McEwen & Tower



# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 181                                                                               | 872                                                                               | 540                                                                               | 72                                                                                | 749                                                                               | 188                                                                               | 364                                                                                 | 385                                                                                 | 84                                                                                  | 342                                                                                 | 1277                                                                                | 1022                                                                                |
| Future Volume (vph)        | 181                                                                               | 872                                                                               | 540                                                                               | 72                                                                                | 749                                                                               | 188                                                                               | 364                                                                                 | 385                                                                                 | 84                                                                                  | 342                                                                                 | 1277                                                                                | 1022                                                                                |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 62                                                                                |                                                                                   |                                                                                   | 105                                                                               |                                                                                     |                                                                                     | 109                                                                                 |                                                                                     |                                                                                     | 65                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 938                                                                               |                                                                                   |                                                                                   | 1960                                                                              |                                                                                   |                                                                                     | 1936                                                                                |                                                                                     |                                                                                     | 857                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                     | 44.0                                                                                |                                                                                     |                                                                                     | 14.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 181                                                                               | 872                                                                               | 540                                                                               | 72                                                                                | 749                                                                               | 188                                                                               | 364                                                                                 | 385                                                                                 | 84                                                                                  | 342                                                                                 | 1277                                                                                | 1022                                                                                |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 181                                                                               | 872                                                                               | 540                                                                               | 72                                                                                | 749                                                                               | 188                                                                               | 364                                                                                 | 385                                                                                 | 84                                                                                  | 342                                                                                 | 1277                                                                                | 1022                                                                                |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | custom                                                                              | Prot                                                                                | NA                                                                                  | custom                                                                              |
| Protected Phases           | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases           |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |

Lanes, Volumes, Timings  
3: Carothers/Carothers & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase          | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 13.0                                                                              | 6.0                                                                               | 4.0                                                                               | 13.0                                                                              | 6.0                                                                               | 6.0                                                                                 | 13.0                                                                                | 4.0                                                                                 | 6.0                                                                                 | 13.0                                                                                | 6.0                                                                                 |
| Minimum Split (s)       | 13.0                                                                              | 52.0                                                                              | 12.5                                                                              | 10.0                                                                              | 52.0                                                                              | 13.0                                                                              | 12.5                                                                                | 52.0                                                                                | 10.0                                                                                | 13.0                                                                                | 52.0                                                                                | 13.0                                                                                |
| Total Split (s)         | 24.0                                                                              | 66.0                                                                              | 19.0                                                                              | 12.0                                                                              | 54.0                                                                              | 20.0                                                                              | 19.0                                                                                | 52.0                                                                                | 12.0                                                                                | 20.0                                                                                | 53.0                                                                                | 24.0                                                                                |
| Total Split (%)         | 16.0%                                                                             | 44.0%                                                                             | 12.7%                                                                             | 8.0%                                                                              | 36.0%                                                                             | 13.3%                                                                             | 12.7%                                                                               | 34.7%                                                                               | 8.0%                                                                                | 13.3%                                                                               | 35.3%                                                                               | 16.0%                                                                               |
| Maximum Green (s)       | 18.0                                                                              | 60.0                                                                              | 13.0                                                                              | 6.5                                                                               | 48.0                                                                              | 14.0                                                                              | 13.0                                                                                | 46.0                                                                                | 6.5                                                                                 | 14.0                                                                                | 47.0                                                                                | 18.0                                                                                |
| Yellow Time (s)         | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 5.5                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Max                                                                               | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                     | 37.0                                                                                |                                                                                     |                                                                                     | 37.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                     | 5                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |
| Act Effect Green (s)    | 18.0                                                                              | 60.0                                                                              | 79.0                                                                              | 6.5                                                                               | 48.0                                                                              | 68.0                                                                              | 13.0                                                                                | 46.0                                                                                | 59.5                                                                                | 14.0                                                                                | 47.0                                                                                | 70.0                                                                                |
| Actuated g/C Ratio      | 0.12                                                                              | 0.40                                                                              | 0.53                                                                              | 0.04                                                                              | 0.32                                                                              | 0.45                                                                              | 0.09                                                                                | 0.31                                                                                | 0.40                                                                                | 0.09                                                                                | 0.31                                                                                | 0.47                                                                                |
| v/c Ratio               | 0.44                                                                              | 0.62                                                                              | 0.63                                                                              | 0.49                                                                              | 0.66                                                                              | 0.24                                                                              | 1.23                                                                                | 0.35                                                                                | 0.12                                                                                | 1.07                                                                                | 1.15                                                                                | 1.32                                                                                |
| Control Delay           | 64.4                                                                              | 19.5                                                                              | 19.3                                                                              | 74.5                                                                              | 41.8                                                                              | 13.7                                                                              | 490.9                                                                               | 41.6                                                                                | 2.5                                                                                 | 245.2                                                                               | 331.9                                                                               | 621.2                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 10.5                                                                              | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.7                                                                                 |
| Total Delay             | 64.4                                                                              | 19.5                                                                              | 19.3                                                                              | 74.5                                                                              | 52.3                                                                              | 13.7                                                                              | 490.9                                                                               | 41.6                                                                                | 2.5                                                                                 | 245.2                                                                               | 331.9                                                                               | 622.0                                                                               |
| LOS                     | E                                                                                 | B                                                                                 | B                                                                                 | E                                                                                 | D                                                                                 | B                                                                                 | F                                                                                   | D                                                                                   | A                                                                                   | F                                                                                   | F                                                                                   | F                                                                                   |
| Approach Delay          |                                                                                   | 24.5                                                                              |                                                                                   |                                                                                   | 46.7                                                                              |                                                                                   |                                                                                     | 234.0                                                                               |                                                                                     |                                                                                     | 432.9                                                                               |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 18.0                                                                              | 60.0                                                                              | 13.0                                                                              | 6.5                                                                               | 48.0                                                                              | 14.0                                                                              | 13.0                                                                                | 46.0                                                                                | 6.5                                                                                 | 14.0                                                                                | 47.0                                                                                | 18.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 70th %ile Green (s)     | 18.0                                                                              | 60.0                                                                              | 13.0                                                                              | 6.5                                                                               | 48.0                                                                              | 14.0                                                                              | 13.0                                                                                | 46.0                                                                                | 6.5                                                                                 | 14.0                                                                                | 47.0                                                                                | 18.0                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 50th %ile Green (s)     | 18.0                                                                              | 60.0                                                                              | 13.0                                                                              | 6.5                                                                               | 48.0                                                                              | 14.0                                                                              | 13.0                                                                                | 46.0                                                                                | 6.5                                                                                 | 14.0                                                                                | 47.0                                                                                | 18.0                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 30th %ile Green (s)     | 18.0                                                                              | 60.0                                                                              | 13.0                                                                              | 6.5                                                                               | 48.0                                                                              | 14.0                                                                              | 13.0                                                                                | 46.0                                                                                | 6.5                                                                                 | 14.0                                                                                | 47.0                                                                                | 18.0                                                                                |
| 30th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 10th %ile Green (s)     | 18.0                                                                              | 60.2                                                                              | 13.0                                                                              | 6.3                                                                               | 48.0                                                                              | 14.0                                                                              | 13.0                                                                                | 46.0                                                                                | 6.3                                                                                 | 14.0                                                                                | 47.0                                                                                | 18.0                                                                                |
| 10th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Gap                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| Stops (vph)             | 156                                                                               | 558                                                                               | 400                                                                               | 70                                                                                | 564                                                                               | 98                                                                                | 327                                                                                 | 293                                                                                 | 4                                                                                   | 308                                                                                 | 1172                                                                                | 891                                                                                 |
| Fuel Used(gal)          | 5                                                                                 | 13                                                                                | 8                                                                                 | 3                                                                                 | 21                                                                                | 4                                                                                 | 44                                                                                  | 11                                                                                  | 1                                                                                   | 22                                                                                  | 105                                                                                 | 144                                                                                 |
| CO Emissions (g/hr)     | 319                                                                               | 904                                                                               | 579                                                                               | 180                                                                               | 1464                                                                              | 275                                                                               | 3053                                                                                | 747                                                                                 | 93                                                                                  | 1544                                                                                | 7355                                                                                | 10062                                                                               |
| NOx Emissions (g/hr)    | 62                                                                                | 176                                                                               | 113                                                                               | 35                                                                                | 285                                                                               | 54                                                                                | 594                                                                                 | 145                                                                                 | 18                                                                                  | 300                                                                                 | 1431                                                                                | 1958                                                                                |
| VOC Emissions (g/hr)    | 74                                                                                | 209                                                                               | 134                                                                               | 42                                                                                | 339                                                                               | 64                                                                                | 708                                                                                 | 173                                                                                 | 22                                                                                  | 358                                                                                 | 1704                                                                                | 2332                                                                                |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 37                                                                                  | 0                                                                                   |
| Queue Length 50th (ft)  | 74                                                                                | 304                                                                               | 331                                                                               | 37                                                                                | 295                                                                               | 52                                                                                | ~225                                                                                | 154                                                                                 | 0                                                                                   | ~190                                                                                | ~771                                                                                | ~1259                                                                               |
| Queue Length 95th (ft)  | m125                                                                              | 370                                                                               | 666                                                                               | m58                                                                               | 426                                                                               | m99                                                                               | #386                                                                                | 230                                                                                 | 30                                                                                  | #345                                                                                | #1078                                                                               | #1790                                                                               |
| Internal Link Dist (ft) |                                                                                   | 858                                                                               |                                                                                   |                                                                                   | 1880                                                                              |                                                                                   |                                                                                     | 1856                                                                                |                                                                                     |                                                                                     | 777                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Base Capacity (vph)     | 411                                                                               | 1416                                                                              | 863                                                                               | 148                                                                               | 1132                                                                              | 775                                                                               | 297                                                                                 | 1085                                                                                | 693                                                                                 | 320                                                                                 | 1108                                                                                | 773                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |



# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Spillback Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 343                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 73                                                                                  |
| Storage Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio     | 0.44                                                                              | 0.62                                                                              | 0.63                                                                              | 0.49                                                                              | 0.95                                                                              | 0.24                                                                              | 1.23                                                                               | 0.35                                                                                | 0.12                                                                                | 1.07                                                                                | 1.15                                                                                | 1.46                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 108 (72%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.32

Intersection Signal Delay: 234.4

Intersection LOS: F

Intersection Capacity Utilization 109.4%

ICU Level of Service H

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Carothers/Carothers & McEwen

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1  |  Ø2 (R)  |  Ø3  |  Ø4  |
| 24 s                                                                                   | 54 s                                                                                       | 20 s                                                                                   | 52 s                                                                                     |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 66 s                                                                                       | 19 s                                                                                   | 53 s                                                                                     |

# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)       | 96                                                                                | 1029                                                                              | 181                                                                               | 101                                                                               | 379                                                                               | 16                                                                                | 603                                                                                 | 109                                                                                 | 86                                                                                  | 89                                                                                  | 59                                                                                  | 112                                                                                 |
| Future Volume (vph)        | 96                                                                                | 1029                                                                              | 181                                                                               | 101                                                                               | 379                                                                               | 16                                                                                | 603                                                                                 | 109                                                                                 | 86                                                                                  | 89                                                                                  | 59                                                                                  | 112                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     | 0.902                                                                               |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3518                                                                              | 0                                                                                 | 3433                                                                                | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1680                                                                                | 0                                                                                   |
| Flt Permitted              | 0.481                                                                             |                                                                                   |                                                                                   | 0.141                                                                             |                                                                                   |                                                                                   | 0.458                                                                               |                                                                                     |                                                                                     | 0.687                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 896                                                                               | 3539                                                                              | 1583                                                                              | 263                                                                               | 3518                                                                              | 0                                                                                 | 1655                                                                                | 1863                                                                                | 1583                                                                                | 1280                                                                                | 1680                                                                                | 0                                                                                   |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 181                                                                               |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     | 86                                                                                  |                                                                                     | 112                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 1960                                                                              |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                     | 402                                                                                 |                                                                                     |                                                                                     | 456                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                     | 9.1                                                                                 |                                                                                     |                                                                                     | 10.4                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 96                                                                                | 1029                                                                              | 181                                                                               | 101                                                                               | 379                                                                               | 16                                                                                | 603                                                                                 | 109                                                                                 | 86                                                                                  | 89                                                                                  | 59                                                                                  | 112                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 96                                                                                | 1029                                                                              | 181                                                                               | 101                                                                               | 395                                                                               | 0                                                                                 | 603                                                                                 | 109                                                                                 | 86                                                                                  | 89                                                                                  | 171                                                                                 | 0                                                                                   |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 36                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |                                                                                     |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |                                                                                     |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |                                                                                     |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |                                                                                     |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | pm+ov                                                                             | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases           | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                   | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Permitted Phases           | 8                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase             | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                   | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Switch Phase               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)        | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |

# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016



| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR | NBL   | NBT   | NBR   | SBL   | SBT   | SBR |
|-------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Minimum Split (s)       | 10.0  | 20.0  | 10.0  | 10.0  | 20.0  |     | 10.0  | 20.0  | 10.0  | 10.0  | 20.0  |     |
| Total Split (s)         | 10.0  | 32.0  | 13.0  | 10.0  | 32.0  |     | 13.0  | 23.0  | 10.0  | 10.0  | 20.0  |     |
| Total Split (%)         | 13.3% | 42.7% | 17.3% | 13.3% | 42.7% |     | 17.3% | 30.7% | 13.3% | 13.3% | 26.7% |     |
| Maximum Green (s)       | 6.0   | 28.0  | 9.0   | 6.0   | 28.0  |     | 9.0   | 19.0  | 6.0   | 6.0   | 16.0  |     |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |     | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |     |
| All-Red Time (s)        | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |     | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   |     |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |     | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |     |
| Total Lost Time (s)     | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |     | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |     |
| Lead/Lag                | Lead  | Lag   | Lead  | Lead  | Lag   |     | Lead  | Lag   | Lead  | Lead  | Lag   |     |
| Lead-Lag Optimize?      |       |       |       |       |       |     |       |       |       |       |       |     |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |     | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |     |
| Recall Mode             | None  | C-Max | None  | None  | C-Max |     | None  | Max   | None  | None  | Max   |     |
| Walk Time (s)           |       | 5.0   |       |       | 5.0   |     |       | 5.0   |       |       | 5.0   |     |
| Flash Dont Walk (s)     |       | 11.0  |       |       | 11.0  |     |       | 11.0  |       |       | 11.0  |     |
| Pedestrian Calls (#/hr) |       | 10    |       |       | 10    |     |       | 10    |       |       | 10    |     |
| Act Effect Green (s)    | 34.8  | 30.0  | 43.0  | 34.8  | 30.0  |     | 28.2  | 21.0  | 30.9  | 21.9  | 16.0  |     |
| Actuated g/C Ratio      | 0.46  | 0.40  | 0.57  | 0.46  | 0.40  |     | 0.38  | 0.28  | 0.41  | 0.29  | 0.21  |     |
| v/c Ratio               | 0.20  | 0.73  | 0.18  | 0.42  | 0.28  |     | 0.72  | 0.21  | 0.12  | 0.22  | 0.38  |     |
| Control Delay           | 7.0   | 17.1  | 1.6   | 15.5  | 16.4  |     | 23.6  | 23.4  | 4.3   | 16.7  | 12.9  |     |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |     | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |     |
| Total Delay             | 7.0   | 17.1  | 1.6   | 15.5  | 16.4  |     | 23.6  | 23.4  | 4.3   | 16.7  | 12.9  |     |
| LOS                     | A     | B     | A     | B     | B     |     | C     | C     | A     | B     | B     |     |
| Approach Delay          |       | 14.2  |       |       | 16.2  |     |       | 21.5  |       |       | 14.2  |     |
| Approach LOS            |       | B     |       |       | B     |     |       | C     |       |       | B     |     |
| 90th %ile Green (s)     | 6.0   | 28.0  | 9.0   | 6.0   | 28.0  |     | 9.0   | 19.0  | 6.0   | 6.0   | 16.0  |     |
| 90th %ile Term Code     | Max   | Coord | Max   | Max   | Coord |     | Max   | MaxR  | Max   | Max   | MaxR  |     |
| 70th %ile Green (s)     | 6.0   | 28.0  | 9.0   | 6.0   | 28.0  |     | 9.0   | 19.0  | 6.0   | 6.0   | 16.0  |     |
| 70th %ile Term Code     | Max   | Coord | Max   | Max   | Coord |     | Max   | MaxR  | Max   | Max   | MaxR  |     |
| 50th %ile Green (s)     | 6.0   | 28.0  | 9.0   | 6.0   | 28.0  |     | 9.0   | 19.0  | 6.0   | 6.0   | 16.0  |     |
| 50th %ile Term Code     | Max   | Coord | Max   | Max   | Coord |     | Max   | MaxR  | Max   | Max   | MaxR  |     |
| 30th %ile Green (s)     | 6.0   | 28.0  | 9.0   | 6.0   | 28.0  |     | 9.0   | 19.0  | 6.0   | 6.0   | 16.0  |     |
| 30th %ile Term Code     | Max   | Coord | Max   | Max   | Coord |     | Max   | MaxR  | Max   | Max   | MaxR  |     |
| 10th %ile Green (s)     | 0.0   | 38.0  | 9.0   | 0.0   | 38.0  |     | 9.0   | 29.0  | 0.0   | 0.0   | 16.0  |     |
| 10th %ile Term Code     | Skip  | Coord | Max   | Skip  | Coord |     | Max   | MaxR  | Skip  | Skip  | MaxR  |     |
| Stops (vph)             | 30    | 584   | 27    | 51    | 254   |     | 438   | 83    | 14    | 61    | 60    |     |
| Fuel Used(gal)          | 2     | 23    | 3     | 1     | 4     |     | 7     | 1     | 0     | 1     | 1     |     |
| CO Emissions (g/hr)     | 124   | 1575  | 208   | 61    | 264   |     | 504   | 92    | 30    | 67    | 97    |     |
| NOx Emissions (g/hr)    | 24    | 306   | 40    | 12    | 51    |     | 98    | 18    | 6     | 13    | 19    |     |
| VOC Emissions (g/hr)    | 29    | 365   | 48    | 14    | 61    |     | 117   | 21    | 7     | 16    | 23    |     |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     |     | 0     | 0     | 0     | 0     | 0     |     |
| Queue Length 50th (ft)  | 25    | 296   | 5     | 23    | 65    |     | 104   | 40    | 0     | 26    | 23    |     |
| Queue Length 95th (ft)  | m42   | m376  | m16   | 53    | 112   |     | #186  | 90    | 32    | 62    | 89    |     |
| Internal Link Dist (ft) |       | 1880  |       |       | 265   |     |       | 322   |       |       | 376   |     |
| Turn Bay Length (ft)    |       |       |       |       |       |     |       |       |       |       |       |     |
| Base Capacity (vph)     | 485   | 1415  | 984   | 242   | 1411  |     | 835   | 521   | 704   | 414   | 446   |     |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     |     | 0     | 0     | 0     | 0     | 0     |     |
| Spillback Cap Reductn   | 0     | 0     | 0     | 0     | 0     |     | 0     | 0     | 0     | 0     | 0     |     |
| Storage Cap Reductn     | 0     | 0     | 0     | 0     | 0     |     | 0     | 0     | 0     | 0     | 0     |     |
| Reduced v/c Ratio       | 0.20  | 0.73  | 0.18  | 0.42  | 0.28  |     | 0.72  | 0.21  | 0.12  | 0.21  | 0.38  |     |

# Lanes, Volumes, Timings

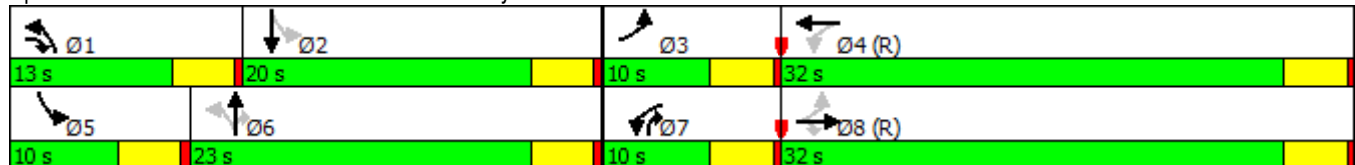
## 4: Ovation/Resource Parkway & McEwen

11/18/2016

### Intersection Summary

Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 16 (21%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 16.6 Intersection LOS: B  
 Intersection Capacity Utilization 74.6% ICU Level of Service D  
 Analysis Period (min) 60  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Ovation/Resource Parkway & McEwen





Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                            |  |  |  |  |  |   |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 395                                                                               | 1                                                                                 | 213                                                                               | 10                                                                                | 0                                                                                 | 8                                                                                  | 68                                                                                  | 667                                                                                 | 29                                                                                  | 4                                                                                   | 2343                                                                                | 120                                                                                 |
| Future Volume (vph)        | 395                                                                               | 1                                                                                 | 213                                                                               | 10                                                                                | 0                                                                                 | 8                                                                                  | 68                                                                                  | 667                                                                                 | 29                                                                                  | 4                                                                                   | 2343                                                                                | 120                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  | 0%                                                                                |                                                                                   |                                                                                   |                                                                                   | 0%                                                                                |                                                                                    |                                                                                     |                                                                                     | 2%                                                                                  |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)        | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                 | 177                                                                                 |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                  | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                              |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 1752                                                                                | 3504                                                                                | 1567                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.046                                                                               |                                                                                     |                                                                                     | 0.385                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 85                                                                                  | 3504                                                                                | 1567                                                                                | 717                                                                                 | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 183                                                                               |                                                                                   |                                                                                   | 204                                                                                |                                                                                     |                                                                                     | 105                                                                                 |                                                                                     |                                                                                     | 105                                                                                 |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                    |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 881                                                                               |                                                                                   |                                                                                   | 890                                                                               |                                                                                    |                                                                                     | 857                                                                                 |                                                                                     |                                                                                     | 905                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                    |                                                                                     | 14.6                                                                                |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 395                                                                               | 1                                                                                 | 213                                                                               | 10                                                                                | 0                                                                                 | 8                                                                                  | 68                                                                                  | 667                                                                                 | 29                                                                                  | 4                                                                                   | 2343                                                                                | 120                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 395                                                                               | 1                                                                                 | 213                                                                               | 10                                                                                | 0                                                                                 | 8                                                                                  | 68                                                                                  | 667                                                                                 | 29                                                                                  | 4                                                                                   | 2343                                                                                | 120                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                              | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                    |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                  | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                  | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                              | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                 | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                 | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                    |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                    |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              |                                                                                   | Perm                                                                               | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 |                                                                                    | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 6                                                                                  |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                  | 6                                                                                   | 6                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                                | 20.0                                                                                | 20.0                                                                                | 6.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 42.0                                                                                | 42.0                                                                                | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                |
| Total Split (s)         | 16.0                                                                              | 52.0                                                                              | 52.0                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 63.5                                                                                | 63.5                                                                                | 12.0                                                                                | 63.5                                                                                | 63.5                                                                                |
| Total Split (%)         | 11.4%                                                                             | 37.1%                                                                             | 37.1%                                                                             | 8.9%                                                                              | 34.6%                                                                             | 34.6%                                                                             | 8.6%                                                                               | 45.4%                                                                               | 45.4%                                                                               | 8.6%                                                                                | 45.4%                                                                               | 45.4%                                                                               |
| Maximum Green (s)       | 10.5                                                                              | 46.5                                                                              | 46.5                                                                              | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                | 57.5                                                                                | 57.5                                                                                | 6.5                                                                                 | 57.5                                                                                | 57.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | C-Min                                                                               | C-Min                                                                               | None                                                                                | C-Min                                                                               | C-Min                                                                               |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                    | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                    | 29.0                                                                                | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                | 10                                                                                |                                                                                   | 10                                                                                | 10                                                                                |                                                                                    | 10                                                                                  | 10                                                                                  |                                                                                     | 10                                                                                  | 10                                                                                  |
| Act Effect Green (s)    | 10.5                                                                              | 27.4                                                                              | 27.4                                                                              | 6.4                                                                               |                                                                                   | 22.0                                                                              | 98.1                                                                               | 96.3                                                                                | 96.3                                                                                | 94.4                                                                                | 89.1                                                                                | 89.1                                                                                |
| Actuated g/C Ratio      | 0.08                                                                              | 0.20                                                                              | 0.20                                                                              | 0.05                                                                              |                                                                                   | 0.16                                                                              | 0.70                                                                               | 0.69                                                                                | 0.69                                                                                | 0.67                                                                                | 0.64                                                                                | 0.64                                                                                |
| v/c Ratio               | 1.54                                                                              | 0.00                                                                              | 0.47                                                                              | 0.12                                                                              |                                                                                   | 0.02                                                                              | 0.51                                                                               | 0.28                                                                                | 0.03                                                                                | 0.01                                                                                | 1.04                                                                                | 0.11                                                                                |
| Control Delay           | 1027.2                                                                            | 31.0                                                                              | 10.8                                                                              | 67.4                                                                              |                                                                                   | 0.1                                                                               | 33.0                                                                               | 14.2                                                                                | 0.0                                                                                 | 7.5                                                                                 | 97.5                                                                                | 0.6                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 1027.2                                                                            | 31.0                                                                              | 10.8                                                                              | 67.4                                                                              |                                                                                   | 0.1                                                                               | 33.0                                                                               | 14.2                                                                                | 0.0                                                                                 | 7.5                                                                                 | 97.5                                                                                | 0.6                                                                                 |
| LOS                     | F                                                                                 | C                                                                                 | B                                                                                 | E                                                                                 |                                                                                   | A                                                                                 | C                                                                                  | B                                                                                   | A                                                                                   | A                                                                                   | F                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 670.1                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 15.4                                                                                |                                                                                     |                                                                                     | 92.6                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 10.5                                                                              | 46.5                                                                              | 46.5                                                                              | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                | 57.9                                                                                | 57.9                                                                                | 6.1                                                                                 | 57.5                                                                                | 57.5                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                                | Coord                                                                               | Coord                                                                               | Gap                                                                                 | Coord                                                                               | Coord                                                                               |
| 70th %ile Green (s)     | 10.5                                                                              | 59.0                                                                              | 59.0                                                                              | 0.0                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                | 69.5                                                                                | 69.5                                                                                | 0.0                                                                                 | 57.5                                                                                | 57.5                                                                                |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Ped                                                                               | Ped                                                                               | Max                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 50th %ile Green (s)     | 10.5                                                                              | 10.5                                                                              | 10.5                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.5                                                                                | 118.0                                                                               | 118.0                                                                               | 0.0                                                                                 | 106.0                                                                               | 106.0                                                                               |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Gap                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 30th %ile Green (s)     | 10.5                                                                              | 10.5                                                                              | 10.5                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 6.0                                                                                | 118.0                                                                               | 118.0                                                                               | 0.0                                                                                 | 106.5                                                                               | 106.5                                                                               |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Min                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 10th %ile Green (s)     | 10.5                                                                              | 10.5                                                                              | 10.5                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 118.0                                                                               | 118.0                                                                               | 0.0                                                                                 | 118.0                                                                               | 118.0                                                                               |
| 10th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                              | Skip                                                                               | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| Stops (vph)             | 376                                                                               | 1                                                                                 | 33                                                                                | 11                                                                                |                                                                                   | 0                                                                                 | 29                                                                                 | 272                                                                                 | 0                                                                                   | 0                                                                                   | 1009                                                                                | 3                                                                                   |
| Fuel Used(gal)          | 87                                                                                | 0                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  | 8                                                                                   | 0                                                                                   | 0                                                                                   | 69                                                                                  | 1                                                                                   |
| CO Emissions (g/hr)     | 6109                                                                              | 1                                                                                 | 148                                                                               | 19                                                                                |                                                                                   | 4                                                                                 | 79                                                                                 | 593                                                                                 | 12                                                                                  | 2                                                                                   | 4796                                                                                | 61                                                                                  |
| NOx Emissions (g/hr)    | 1189                                                                              | 0                                                                                 | 29                                                                                | 4                                                                                 |                                                                                   | 1                                                                                 | 15                                                                                 | 115                                                                                 | 2                                                                                   | 0                                                                                   | 933                                                                                 | 12                                                                                  |
| VOC Emissions (g/hr)    | 1416                                                                              | 0                                                                                 | 34                                                                                | 4                                                                                 |                                                                                   | 1                                                                                 | 18                                                                                 | 137                                                                                 | 3                                                                                   | 1                                                                                   | 1112                                                                                | 14                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 24                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | ~259                                                                              | 1                                                                                 | 26                                                                                | 9                                                                                 |                                                                                   | 0                                                                                 | 8                                                                                  | 47                                                                                  | 0                                                                                   | 0                                                                                   | 79                                                                                  | 1                                                                                   |
| Queue Length 95th (ft)  | #421                                                                              | 6                                                                                 | 107                                                                               | 32                                                                                |                                                                                   | 0                                                                                 | #115                                                                               | 327                                                                                 | 0                                                                                   | m1                                                                                  | m#1748                                                                              | m1                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 801                                                                               |                                                                                   |                                                                                   | 810                                                                               |                                                                                   |                                                                                    | 777                                                                                 |                                                                                     |                                                                                     | 825                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                | 177                                                                                |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Base Capacity (vph)     | 257                                                                               | 651                                                                               | 673                                                                               | 88                                                                                |                                                                                   | 627                                                                               | 136                                                                                | 2409                                                                                | 1110                                                                                | 534                                                                                 | 2252                                                                                | 1045                                                                                |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 1.54                                                                              | 0.00                                                                              | 0.32                                                                              | 0.11                                                                              |                                                                                   | 0.01                                                                              | 0.50                                                                               | 0.28                                                                                | 0.03                                                                                | 0.01                                                                                | 1.04                                                                                | 0.11                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 14 (10%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.54

Intersection Signal Delay: 168.2

Intersection LOS: F

Intersection Capacity Utilization 97.1%

ICU Level of Service F

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carothers /Carothers & Tower/Pacific

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 12 s                                                                                   | 63.5 s                                                                                     | 16 s                                                                                   | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 63.5 s                                                                                     | 12.5 s                                                                                 | 52 s                                                                                     |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 127                                                                               | 0                                                                                 | 194                                                                               | 8                                                                                 | 0                                                                                 | 126                                                                               | 47                                                                                  | 1050                                                                                | 3                                                                                   | 123                                                                                 | 2230                                                                                | 66                                                                                  |
| Future Volume (vph)        | 127                                                                               | 0                                                                                 | 194                                                                               | 8                                                                                 | 0                                                                                 | 126                                                                               | 47                                                                                  | 1050                                                                                | 3                                                                                   | 123                                                                                 | 2230                                                                                | 66                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 128                                                                                 | 480                                                                                 |                                                                                     | 93                                                                                  |
| Storage Lanes              | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3504                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.590                                                                             |                                                                                   |                                                                                   | 0.518                                                                             |                                                                                   |                                                                                   | 0.048                                                                               |                                                                                     |                                                                                     | 0.199                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 1099                                                                              | 1583                                                                              | 0                                                                                 | 965                                                                               | 1863                                                                              | 1583                                                                              | 89                                                                                  | 3504                                                                                | 0                                                                                   | 371                                                                                 | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   | 194                                                                               |                                                                                   |                                                                                   |                                                                                   | 84                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 62                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 762                                                                               |                                                                                   |                                                                                   | 773                                                                               |                                                                                   |                                                                                     | 905                                                                                 |                                                                                     |                                                                                     | 2004                                                                                |                                                                                     |
| Travel Time (s)            |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     | 34.2                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 127                                                                               | 0                                                                                 | 194                                                                               | 8                                                                                 | 0                                                                                 | 126                                                                               | 47                                                                                  | 1050                                                                                | 3                                                                                   | 123                                                                                 | 2230                                                                                | 66                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 127                                                                               | 194                                                                               | 0                                                                                 | 8                                                                                 | 0                                                                                 | 126                                                                               | 47                                                                                  | 1053                                                                                | 0                                                                                   | 123                                                                                 | 2230                                                                                | 66                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                |                                                                                     | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 |                                                                                     | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   |                                                                                     | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             |                                                                                   | pm+ov                                                                             | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |



# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 4                                                                                 | 6                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 6.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 15.0                                                                                |                                                                                     | 5.0                                                                                 | 15.0                                                                                | 5.0                                                                                 |
| Minimum Split (s)       | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 11.5                                                                              | 11.5                                                                                | 48.0                                                                                |                                                                                     | 11.5                                                                                | 48.0                                                                                | 12.0                                                                                |
| Total Split (s)         | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 18.2                                                                              | 11.5                                                                                | 61.3                                                                                |                                                                                     | 18.2                                                                                | 68.0                                                                                | 12.0                                                                                |
| Total Split (%)         | 8.6%                                                                              | 34.6%                                                                             |                                                                                   | 8.6%                                                                              | 34.6%                                                                             | 13.0%                                                                             | 8.2%                                                                                | 43.8%                                                                               |                                                                                     | 13.0%                                                                               | 48.6%                                                                               | 8.6%                                                                                |
| Maximum Green (s)       | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 12.7                                                                              | 6.0                                                                                 | 55.3                                                                                |                                                                                     | 12.7                                                                                | 62.0                                                                                | 6.5                                                                                 |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 4.0                                                                                 |                                                                                     | 3.5                                                                                 | 4.0                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               |                                                                                   | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 |                                                                                     | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 6.0                                                                                 |                                                                                     | 5.5                                                                                 | 6.0                                                                                 | 5.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Max                                                                               |                                                                                     | None                                                                                | C-Max                                                                               | None                                                                                |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                     | 35.0                                                                                |                                                                                     |                                                                                     | 35.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                     | 10                                                                                  |                                                                                     |                                                                                     | 10                                                                                  |                                                                                     |
| Act Effect Green (s)    | 24.8                                                                              | 23.5                                                                              |                                                                                   | 23.2                                                                              |                                                                                   | 28.5                                                                              | 94.3                                                                                | 88.0                                                                                |                                                                                     | 101.6                                                                               | 93.5                                                                                | 107.1                                                                               |
| Actuated g/C Ratio      | 0.18                                                                              | 0.17                                                                              |                                                                                   | 0.17                                                                              |                                                                                   | 0.20                                                                              | 0.67                                                                                | 0.63                                                                                |                                                                                     | 0.73                                                                                | 0.67                                                                                | 0.76                                                                                |
| v/c Ratio               | 0.56                                                                              | 0.45                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.32                                                                              | 0.36                                                                                | 0.48                                                                                |                                                                                     | 0.34                                                                                | 0.94                                                                                | 0.05                                                                                |
| Control Delay           | 55.5                                                                              | 7.9                                                                               |                                                                                   | 32.8                                                                              |                                                                                   | 14.8                                                                              | 31.7                                                                                | 17.5                                                                                |                                                                                     | 12.9                                                                                | 35.5                                                                                | 4.1                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 55.5                                                                              | 7.9                                                                               |                                                                                   | 32.8                                                                              |                                                                                   | 14.8                                                                              | 31.7                                                                                | 17.5                                                                                |                                                                                     | 12.9                                                                                | 35.5                                                                                | 4.1                                                                                 |
| LOS                     | E                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 | C                                                                                   | B                                                                                   |                                                                                     | B                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 26.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 18.1                                                                                |                                                                                     |                                                                                     | 33.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 12.7                                                                              | 6.0                                                                                 | 55.3                                                                                |                                                                                     | 12.7                                                                                | 62.0                                                                                | 6.5                                                                                 |
| 90th %ile Term Code     | Max                                                                               | Ped                                                                               |                                                                                   | Max                                                                               | Ped                                                                               | Max                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Max                                                                                 | Coord                                                                               | Max                                                                                 |
| 70th %ile Green (s)     | 6.5                                                                               | 55.0                                                                              |                                                                                   | 0.0                                                                               | 43.0                                                                              | 11.7                                                                              | 6.0                                                                                 | 56.3                                                                                |                                                                                     | 11.7                                                                                | 62.0                                                                                | 6.5                                                                                 |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Ped                                                                               | Gap                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 50th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 8.6                                                                               | 5.9                                                                                 | 107.9                                                                               |                                                                                     | 8.6                                                                                 | 110.6                                                                               | 6.5                                                                                 |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 30th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 6.4                                                                               | 5.7                                                                                 | 110.1                                                                               |                                                                                     | 6.4                                                                                 | 110.8                                                                               | 6.5                                                                                 |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 10th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 6.0                                                                               | 0.0                                                                                 | 110.5                                                                               |                                                                                     | 6.0                                                                                 | 122.0                                                                               | 6.5                                                                                 |
| 10th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Skip                                                                                | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| Stops (vph)             | 95                                                                                | 19                                                                                |                                                                                   | 7                                                                                 |                                                                                   | 32                                                                                | 34                                                                                  | 501                                                                                 |                                                                                     | 41                                                                                  | 1128                                                                                | 7                                                                                   |
| Fuel Used(gal)          | 3                                                                                 | 2                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   | 15                                                                                  |                                                                                     | 2                                                                                   | 57                                                                                  | 1                                                                                   |
| CO Emissions (g/hr)     | 190                                                                               | 110                                                                               |                                                                                   | 10                                                                                |                                                                                   | 92                                                                                | 65                                                                                  | 1058                                                                                |                                                                                     | 168                                                                                 | 4019                                                                                | 71                                                                                  |
| NOx Emissions (g/hr)    | 37                                                                                | 21                                                                                |                                                                                   | 2                                                                                 |                                                                                   | 18                                                                                | 13                                                                                  | 206                                                                                 |                                                                                     | 33                                                                                  | 782                                                                                 | 14                                                                                  |
| VOC Emissions (g/hr)    | 44                                                                                | 25                                                                                |                                                                                   | 2                                                                                 |                                                                                   | 21                                                                                | 15                                                                                  | 245                                                                                 |                                                                                     | 39                                                                                  | 931                                                                                 | 17                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                   | 24                                                                                  |                                                                                     | 0                                                                                   | 67                                                                                  | 0                                                                                   |
| Queue Length 50th (ft)  | ~162                                                                              | 0                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 38                                                                                | 5                                                                                   | 268                                                                                 |                                                                                     | 11                                                                                  | 516                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | 139                                                                               | 81                                                                                |                                                                                   | 18                                                                                |                                                                                   | 76                                                                                | m57                                                                                 | m286                                                                                |                                                                                     | 103                                                                                 | #1830                                                                               | 31                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 682                                                                               |                                                                                   |                                                                                   | 693                                                                               |                                                                                   |                                                                                     | 825                                                                                 |                                                                                     |                                                                                     | 1924                                                                                |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 210                                                                                 |                                                                                     |                                                                                     | 480                                                                                 |                                                                                     | 93                                                                                  |
| Base Capacity (vph)     | 225                                                                               | 644                                                                               |                                                                                   | 200                                                                               |                                                                                   | 427                                                                               | 131                                                                                 | 2203                                                                                |                                                                                     | 400                                                                                 | 2362                                                                                | 1225                                                                                |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.56                                                                              | 0.30                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.30                                                                              | 0.36                                                                               | 0.48                                                                                |                                                                                     | 0.31                                                                                | 0.94                                                                                | 0.05                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 93.7%

ICU Level of Service F

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

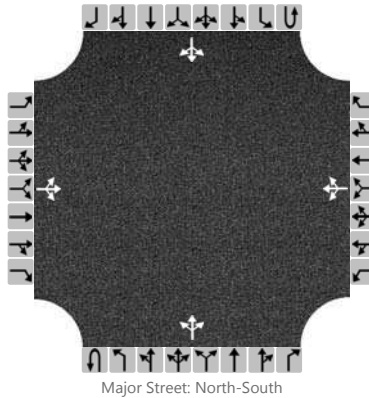
### Splits and Phases: 6: Carothers/Carothers Parkway & Apartments/Resource

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 11.5 s                                                                                 | 68 s                                                                                       | 12 s                                                                                   | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 18.2 s                                                                                 | 61.3 s                                                                                     | 12 s                                                                                   | 48.5 s                                                                                   |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                    | Site Information           |                      |
|--------------------------|--------------------|----------------------------|----------------------|
| Analyst                  | FTG                | Intersection               | Resource and Pacific |
| Agency/Co.               | FTG                | Jurisdiction               | Franklin, TN         |
| Date Performed           | Nov                | East/West Street           | Pacific Drive        |
| Analysis Year            | 2016               | North/South Street         | Resource Drive       |
| Time Analyzed            | AM Peak Hour       | Peak Hour Factor           | 0.92                 |
| Intersection Orientation | North-South        | Analysis Time Period (hrs) | 0.25                 |
| Project Description      | 10765 (Background) |                            |                      |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |    | Westbound |   |     |    | Northbound |    |     |   | Southbound |   |     |    |
|-------------------------|-----------|----|-----|----|-----------|---|-----|----|------------|----|-----|---|------------|---|-----|----|
| Movement                | U         | L  | T   | R  | U         | L | T   | R  | U          | L  | T   | R | U          | L | T   | R  |
| Priority                |           | 10 | 11  | 12 |           | 7 | 8   | 9  | 1U         | 1  | 2   | 3 | 4U         | 4 | 5   | 6  |
| Number of Lanes         |           | 0  | 1   | 0  |           | 0 | 1   | 0  | 0          | 0  | 1   | 0 | 0          | 0 | 1   | 0  |
| Configuration           |           |    | LTR |    |           |   | LTR |    |            |    | LTR |   |            |   | LTR |    |
| Volume (veh/h)          |           | 2  | 4   | 3  |           | 5 | 11  | 10 |            | 21 | 58  | 0 |            | 1 | 88  | 11 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0  |           | 0 | 0   | 0  |            | 0  |     |   |            | 0 |     |    |
| Proportion Time Blocked |           |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |
| Right Turn Channelized  | No        |    |     |    | No        |   |     |    | No         |    |     |   | No         |   |     |    |
| Median Type             | Undivided |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |
| Median Storage          |           |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |

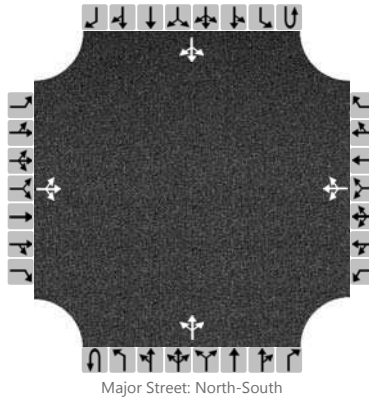
## Delay, Queue Length, and Level of Service

|                        |     |  |      |  |     |  |      |  |     |  |      |  |     |  |      |  |
|------------------------|-----|--|------|--|-----|--|------|--|-----|--|------|--|-----|--|------|--|
| Flow Rate (veh/h)      |     |  | 9    |  |     |  | 28   |  |     |  | 23   |  |     |  | 1    |  |
| Capacity               |     |  | 759  |  |     |  | 786  |  |     |  | 1495 |  |     |  | 1553 |  |
| v/c Ratio              |     |  | 0.01 |  |     |  | 0.04 |  |     |  | 0.02 |  |     |  | 0.00 |  |
| 95% Queue Length       |     |  | 0.0  |  |     |  | 0.1  |  |     |  | 0.0  |  |     |  | 0.0  |  |
| Control Delay (s/veh)  |     |  | 9.8  |  |     |  | 9.8  |  |     |  | 7.4  |  |     |  | 7.3  |  |
| Level of Service (LOS) |     |  | A    |  |     |  | A    |  |     |  | A    |  |     |  | A    |  |
| Approach Delay (s/veh) | 9.8 |  |      |  | 9.8 |  |      |  | 2.1 |  |      |  | 0.1 |  |      |  |
| Approach LOS           | A   |  |      |  | A   |  |      |  | A   |  |      |  | A   |  |      |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                    | Site Information           |                      |
|--------------------------|--------------------|----------------------------|----------------------|
| Analyst                  | FTG                | Intersection               | Resource and Pacific |
| Agency/Co.               | FTG                | Jurisdiction               | Franklin, TN         |
| Date Performed           | Nov                | East/West Street           | Pacific Drive        |
| Analysis Year            | 2016               | North/South Street         | Resource Drive       |
| Time Analyzed            | PM Peak Hour       | Peak Hour Factor           | 0.92                 |
| Intersection Orientation | North-South        | Analysis Time Period (hrs) | 0.25                 |
| Project Description      | 10765 (Background) |                            |                      |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |    | Westbound |   |     |   | Northbound |   |     |   | Southbound |    |     |   |
|-------------------------|-----------|----|-----|----|-----------|---|-----|---|------------|---|-----|---|------------|----|-----|---|
| Movement                | U         | L  | T   | R  | U         | L | T   | R | U          | L | T   | R | U          | L  | T   | R |
| Priority                |           | 10 | 11  | 12 |           | 7 | 8   | 9 | 1U         | 1 | 2   | 3 | 4U         | 4  | 5   | 6 |
| Number of Lanes         |           | 0  | 1   | 0  |           | 0 | 1   | 0 | 0          | 0 | 1   | 0 | 0          | 0  | 1   | 0 |
| Configuration           |           |    | LTR |    |           |   | LTR |   |            |   | LTR |   |            |    | LTR |   |
| Volume (veh/h)          |           | 4  | 4   | 26 |           | 6 | 4   | 1 |            | 9 | 119 | 1 |            | 12 | 85  | 5 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0  |           | 0 | 0   | 0 |            | 0 |     |   |            | 0  |     |   |
| Proportion Time Blocked |           |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |
| Right Turn Channelized  | No        |    |     |    | No        |   |     |   | No         |   |     |   | No         |    |     |   |
| Median Type             | Undivided |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |
| Median Storage          |           |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |

## Delay, Queue Length, and Level of Service

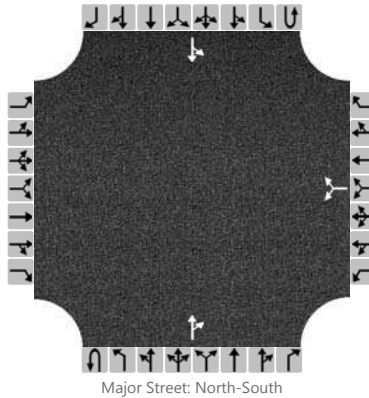
|                        |     |  |      |      |  |  |      |  |  |     |      |  |  |  |      |  |  |
|------------------------|-----|--|------|------|--|--|------|--|--|-----|------|--|--|--|------|--|--|
| Flow Rate (veh/h)      |     |  | 36   |      |  |  | 12   |  |  |     | 10   |  |  |  | 13   |  |  |
| Capacity               |     |  | 873  |      |  |  | 652  |  |  |     | 1509 |  |  |  | 1468 |  |  |
| v/c Ratio              |     |  | 0.04 |      |  |  | 0.02 |  |  |     | 0.01 |  |  |  | 0.01 |  |  |
| 95% Queue Length       |     |  | 0.1  |      |  |  | 0.1  |  |  |     | 0.0  |  |  |  | 0.0  |  |  |
| Control Delay (s/veh)  |     |  | 9.3  |      |  |  | 10.6 |  |  |     | 7.4  |  |  |  | 7.5  |  |  |
| Level of Service (LOS) |     |  | A    |      |  |  | B    |  |  |     | A    |  |  |  | A    |  |  |
| Approach Delay (s/veh) | 9.3 |  |      | 10.6 |  |  | 0.6  |  |  | 0.9 |      |  |  |  |      |  |  |
| Approach LOS           | A   |  |      | B    |  |  | A    |  |  | A   |      |  |  |  |      |  |  |



# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                    | Site Information           |                       |
|--------------------------|--------------------|----------------------------|-----------------------|
| Analyst                  | FTG                | Intersection               | Resource and Terrapin |
| Agency/Co.               | FTG                | Jurisdiction               | Franklin, TN          |
| Date Performed           | Nov                | East/West Street           | Terrapin St           |
| Analysis Year            | 2016               | North/South Street         | Resource Drive        |
| Time Analyzed            | AM Peak Hour       | Peak Hour Factor           | 0.92                  |
| Intersection Orientation | North-South        | Analysis Time Period (hrs) | 0.25                  |
| Project Description      | 10765 (Background) |                            |                       |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |    |    | Northbound |   |    |    | Southbound |    |    |   |
|-------------------------|-----------|----|----|----|-----------|---|----|----|------------|---|----|----|------------|----|----|---|
| Movement                | U         | L  | T  | R  | U         | L | T  | R  | U          | L | T  | R  | U          | L  | T  | R |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8  | 9  | 1U         | 1 | 2  | 3  | 4U         | 4  | 5  | 6 |
| Number of Lanes         |           | 0  | 0  | 0  |           | 0 | 0  | 0  | 0          | 0 | 1  | 0  | 0          | 0  | 1  | 0 |
| Configuration           |           |    |    |    |           |   | LR |    |            |   |    | TR |            | LT |    |   |
| Volume (veh/h)          |           |    |    |    |           | 9 |    | 20 |            |   | 59 | 2  |            | 2  | 94 |   |
| Percent Heavy Vehicles  |           |    |    |    |           | 0 |    | 0  |            |   |    |    |            | 0  |    |   |
| Proportion Time Blocked |           |    |    |    |           |   |    |    |            |   |    |    |            |    |    |   |
| Right Turn Channelized  | No        |    |    |    | No        |   |    |    | No         |   |    |    | No         |    |    |   |
| Median Type             | Undivided |    |    |    |           |   |    |    |            |   |    |    |            |    |    |   |
| Median Storage          |           |    |    |    |           |   |    |    |            |   |    |    |            |    |    |   |

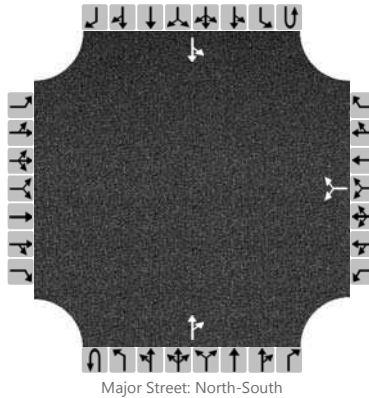
## Delay, Queue Length, and Level of Service

|                        |  |  |  |  |     |  |      |  |  |  |  |  |     |      |  |  |
|------------------------|--|--|--|--|-----|--|------|--|--|--|--|--|-----|------|--|--|
| Flow Rate (veh/h)      |  |  |  |  |     |  | 32   |  |  |  |  |  |     | 104  |  |  |
| Capacity               |  |  |  |  |     |  | 929  |  |  |  |  |  |     | 1549 |  |  |
| v/c Ratio              |  |  |  |  |     |  | 0.03 |  |  |  |  |  |     | 0.07 |  |  |
| 95% Queue Length       |  |  |  |  |     |  | 0.1  |  |  |  |  |  |     | 0.0  |  |  |
| Control Delay (s/veh)  |  |  |  |  |     |  | 9.0  |  |  |  |  |  |     | 7.3  |  |  |
| Level of Service (LOS) |  |  |  |  |     |  | A    |  |  |  |  |  |     | A    |  |  |
| Approach Delay (s/veh) |  |  |  |  | 9.0 |  |      |  |  |  |  |  | 0.2 |      |  |  |
| Approach LOS           |  |  |  |  | A   |  |      |  |  |  |  |  | A   |      |  |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |                    | Site Information           |                       |
|--------------------------|--------------------|----------------------------|-----------------------|
| Analyst                  | FTG                | Intersection               | Resource and Terrapin |
| Agency/Co.               | FTG                | Jurisdiction               | Franklin, TN          |
| Date Performed           | Nov                | East/West Street           | Terrapin St           |
| Analysis Year            | 2016               | North/South Street         | Resource Drive        |
| Time Analyzed            | PM Peak Hour       | Peak Hour Factor           | 0.92                  |
| Intersection Orientation | North-South        | Analysis Time Period (hrs) | 0.25                  |
| Project Description      | 10765 (Background) |                            |                       |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |    |   | Northbound |   |     |    | Southbound |    |     |   |
|-------------------------|-----------|----|----|----|-----------|---|----|---|------------|---|-----|----|------------|----|-----|---|
| Movement                | U         | L  | T  | R  | U         | L | T  | R | U          | L | T   | R  | U          | L  | T   | R |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8  | 9 | 1U         | 1 | 2   | 3  | 4U         | 4  | 5   | 6 |
| Number of Lanes         |           | 0  | 0  | 0  |           | 0 | 0  | 0 | 0          | 0 | 1   | 0  | 0          | 0  | 1   | 0 |
| Configuration           |           |    |    |    |           |   | LR |   |            |   |     | TR |            | LT |     |   |
| Volume (veh/h)          |           |    |    |    |           | 7 |    | 6 |            |   | 123 | 6  |            | 13 | 104 |   |
| Percent Heavy Vehicles  |           |    |    |    |           | 0 |    | 0 |            |   |     |    |            | 0  |     |   |
| Proportion Time Blocked |           |    |    |    |           |   |    |   |            |   |     |    |            |    |     |   |
| Right Turn Channelized  | No        |    |    |    | No        |   |    |   | No         |   |     |    | No         |    |     |   |
| Median Type             | Undivided |    |    |    |           |   |    |   |            |   |     |    |            |    |     |   |
| Median Storage          |           |    |    |    |           |   |    |   |            |   |     |    |            |    |     |   |

## Delay, Queue Length, and Level of Service

|                        |  |  |  |  |     |  |      |  |  |  |  |  |     |      |  |  |
|------------------------|--|--|--|--|-----|--|------|--|--|--|--|--|-----|------|--|--|
| Flow Rate (veh/h)      |  |  |  |  |     |  | 15   |  |  |  |  |  |     | 127  |  |  |
| Capacity               |  |  |  |  |     |  | 768  |  |  |  |  |  |     | 1455 |  |  |
| v/c Ratio              |  |  |  |  |     |  | 0.02 |  |  |  |  |  |     | 0.09 |  |  |
| 95% Queue Length       |  |  |  |  |     |  | 0.1  |  |  |  |  |  |     | 0.0  |  |  |
| Control Delay (s/veh)  |  |  |  |  |     |  | 9.8  |  |  |  |  |  |     | 7.5  |  |  |
| Level of Service (LOS) |  |  |  |  |     |  | A    |  |  |  |  |  |     | A    |  |  |
| Approach Delay (s/veh) |  |  |  |  | 9.8 |  |      |  |  |  |  |  | 0.9 |      |  |  |
| Approach LOS           |  |  |  |  | A   |  |      |  |  |  |  |  | A   |      |  |  |

Phone:  
E-Mail:

Fax:

# ROUNDBOUT ANALYSIS

Analyst: FTG  
Agency/Co.: FTG  
Date Performed: Nov 2016  
Analysis Time Period: AM Peak Hour  
Intersection: Resource and Lemon Grass  
Jurisdiction: Franklin, TN  
Units: U. S. Customary  
Analysis Year: 2016 (Background)  
Project ID: 10765  
East/West Street: Resource Drive  
North/South Street: Lemon Grass Drive

## Volume Adjustments and Site Characteristics

|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|-------------------|---------------|------|------|---------------|------|------|---------------|------|------|---------------|------|------|
|                   | L             | T    | R    | L             | T    | R    | L             | T    | R    | L             | T    | R    |
| Volume            | 0             | 103  |      | 50            | 148  |      |               |      |      | 22            |      | 11   |
| U-Turn Vol        | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| % Thrus Left Lane |               |      |      |               |      |      |               |      |      |               |      |      |
|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|                   | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      |
| Lane Assn.        | LT            |      |      | TR            |      |      |               |      |      | LR            |      |      |
| RT Bypass         | None          |      |      | None          |      |      | None          |      |      | None          |      |      |
| PHF               | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 |
| %HV               | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| NumPeds           | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| U-Turn PHF        | 0.92          |      |      | 0.92          |      |      | 0.92          |      |      | 0.92          |      |      |
| U-Turn %HV        | 3             |      |      | 3             |      |      | 3             |      |      | 3             |      |      |
| Flow Rate         | 0             | 112  | 0    | 0             | 54   | 161  | 0             | 0    | 0    | 24            | 0    | 12   |
| No. Lanes         | 0             | 1    | 0    | 0             | 1    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| Cnfl. Lanes       | 1             |      |      | 1             |      |      | 1             |      |      | 1             |      |      |
| Duration, T       | 0.25          | hrs. |      |               |      |      |               |      |      |               |      |      |

## Critical and Follow-Up Headway Adjustment

|            |        |            |  |        |            |  |        |            |  |        |            |  |
|------------|--------|------------|--|--------|------------|--|--------|------------|--|--------|------------|--|
|            |        | Eastbound  |  |        | Westbound  |  |        | Northbound |  |        | Southbound |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Northbound |  |        | Southbound |  |        | Eastbound  |  |        | Westbound  |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Eastbound  |  |        | Westbound  |  |        | Northbound |  |        | Southbound |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  | 3.1858 | 3.1858     |  | 3.1858 | 3.1858     |  | 3.1858 | 3.1858     |  |
|            |        | Northbound |  |        | Southbound |  |        | Eastbound  |  |        | Westbound  |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  | 3.1858 | 3.1858     |  | 3.1858 | 3.1858     |  | 3.1858 | 3.1858     |  |

## Flow Computations

|            |           |  |           |  |            |  |            |  |
|------------|-----------|--|-----------|--|------------|--|------------|--|
|            | Eastbound |  | Westbound |  | Northbound |  | Southbound |  |
| Circ. Flow | 24        |  | 0         |  | 136        |  | 54         |  |
| Exit. Flow | 136       |  | 66        |  | 161        |  | 0          |  |

## Capacity and Level of Service

Eastbound Westbound Northbound Southbound

|                    | Left | Right | BP | Left | Right | BP | Left             | Right | BP | Left | Right | BP |
|--------------------|------|-------|----|------|-------|----|------------------|-------|----|------|-------|----|
| Entry Flow         |      | 112   |    |      | 215   |    |                  | 25    |    |      | 36    |    |
| Entry Cap.         |      | 1103  |    |      | 1130  |    |                  | 0     |    |      | 1070  |    |
| Volume (vph)       |      | 112   |    |      | 215   |    |                  |       |    |      | 36    |    |
| Cap. (vph)         |      | 1103  |    |      | 1130  |    |                  | 0     |    |      | 1070  |    |
| v/c Ratio          |      | 0.10  |    |      | 0.19  |    |                  |       |    |      | 0.03  |    |
| Critical Lane      |      | *     |    |      | *     |    |                  |       |    |      | *     |    |
| Lane Delay         |      | 4.1   |    |      | 4.9   |    |                  |       |    |      | 3.6   |    |
| Lane LOS           |      | A     |    |      | A     |    |                  | F     |    |      | A     |    |
| 95 % Queue         |      | 0.3   |    |      | 0.7   |    |                  |       |    |      | 0.1   |    |
| Approach:          |      |       |    |      |       |    |                  |       |    |      |       |    |
| Delay              |      | 4.14  |    |      | 4.88  |    |                  |       |    |      | 3.65  |    |
| LOS                |      | A     |    |      | A     |    |                  |       |    |      | A     |    |
| Intersection Delay |      | 4.53  |    |      |       |    | Intersection LOS | A     |    |      |       |    |

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Phone:  
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# ROUNDBOUT ANALYSIS

Analyst: FTG  
Agency/Co.: FTG  
Date Performed: Nov 2016  
Analysis Time Period: PM Peak Hour  
Intersection: Resource and Lemon Grass  
Jurisdiction: Franklin, TN  
Units: U. S. Customary  
Analysis Year: 2016 (Background)  
Project ID: 10765  
East/West Street: Resource Drive  
North/South Street: Lemon Grass Drive

## Volume Adjustments and Site Characteristics

|                   | Eastbound |       |      | Westbound |       |      | Northbound |       |      | Southbound |       |      |
|-------------------|-----------|-------|------|-----------|-------|------|------------|-------|------|------------|-------|------|
|                   | L         | T     | R    | L         | T     | R    | L          | T     | R    | L          | T     | R    |
| Volume            | 13        | 98    |      |           | 119   | 34   |            |       |      | 149        |       | 10   |
| U-Turn Vol        | 0         |       |      | 0         |       |      | 0          |       |      | 0          |       |      |
| % Thrus Left Lane |           |       |      |           |       |      |            |       |      |            |       |      |
|                   | Eastbound |       |      | Westbound |       |      | Northbound |       |      | Southbound |       |      |
|                   | Left      | Right | BP   | Left      | Right | BP   | Left       | Right | BP   | Left       | Right | BP   |
| Lane Assn.        | LT        |       |      | TR        |       |      | LR         |       |      | LR         |       |      |
| RT Bypass         | None      |       |      | None      |       |      | None       |       |      | None       |       |      |
| PHF               | 0.92      | 0.92  | 0.92 | 0.92      | 0.92  | 0.92 | 0.92       | 0.92  | 0.92 | 0.92       | 0.92  | 0.92 |
| %HV               | 0         | 0     | 0    | 0         | 0     | 0    | 0          | 0     | 0    | 0          | 0     | 0    |
| NumPeds           | 0         |       |      | 0         |       |      | 0          |       |      | 0          |       |      |
| U-Turn PHF        | 0.92      |       |      | 0.92      |       |      | 0.92       |       |      | 0.92       |       |      |
| U-Turn %HV        | 3         |       |      | 3         |       |      | 3          |       |      | 3          |       |      |
| Flow Rate         | 14        | 107   | 0    | 0         | 129   | 37   | 0          | 0     | 0    | 162        | 0     | 11   |
| No. Lanes         | 0         | 1     | 0    | 0         | 1     | 0    | 0          | 0     | 0    | 0          | 0     | 0    |
| Cnfl. Lanes       | 1         |       |      | 1         |       |      | 1          |       |      | 1          |       |      |
| Duration, T       | 0.25 hrs. |       |      |           |       |      |            |       |      |            |       |      |

## Critical and Follow-Up Headway Adjustment

|            |        |            |  |        |            |  |        |            |  |        |            |  |
|------------|--------|------------|--|--------|------------|--|--------|------------|--|--------|------------|--|
|            |        | Eastbound  |  |        | Westbound  |  |        | Northbound |  |        | Southbound |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 5.1929     |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Eastbound  |  |        | Westbound  |  |        | Westbound  |  |        | 3.1858     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  |        | 3.1858     |  | 3.1858 | 3.1858     |  |        | 3.1858     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 3.1858     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  |        | 3.1858     |  | 3.1858 | 3.1858     |  |        | 3.1858     |  |

## Flow Computations

|            |           |  |           |  |            |  |            |  |
|------------|-----------|--|-----------|--|------------|--|------------|--|
|            | Eastbound |  | Westbound |  | Northbound |  | Southbound |  |
| Circ. Flow | 162       |  | 14        |  | 283        |  | 129        |  |
| Exit. Flow | 268       |  | 140       |  | 51         |  | 0          |  |

## Capacity and Level of Service

Eastbound Westbound Northbound Southbound

|                    | Left | Right | BP | Left | Right | BP | Left             | Right | BP | Left | Right | BP |
|--------------------|------|-------|----|------|-------|----|------------------|-------|----|------|-------|----|
| Entry Flow         |      | 121   |    |      | 166   |    |                  | 109   |    |      | 173   |    |
| Entry Cap.         |      | 961   |    |      | 1114  |    |                  | 0     |    |      | 993   |    |
| Volume (vph)       |      | 121   |    |      | 166   |    |                  |       |    |      | 173   |    |
| Cap. (vph)         |      | 961   |    |      | 1114  |    |                  | 0     |    |      | 993   |    |
| v/c Ratio          |      | 0.13  |    |      | 0.15  |    |                  |       |    |      | 0.17  |    |
| Critical Lane      |      | *     |    |      | *     |    |                  |       |    |      | *     |    |
| Lane Delay         |      | 4.9   |    |      | 4.5   |    |                  |       |    |      | 5.3   |    |
| Lane LOS           |      | A     |    |      | A     |    |                  | F     |    |      | A     |    |
| 95 % Queue         |      | 0.4   |    |      | 0.5   |    |                  |       |    |      | 0.6   |    |
| Approach:          |      |       |    |      |       |    |                  |       |    |      |       |    |
| Delay              |      | 4.91  |    |      | 4.54  |    |                  |       |    |      | 5.26  |    |
| LOS                |      | A     |    |      | A     |    |                  |       |    |      | A     |    |
| Intersection Delay |      | 4.91  |    |      |       |    | Intersection LOS | A     |    |      |       |    |

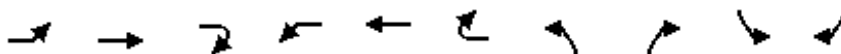
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**TOTAL PROJECTED CONDITIONS**

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



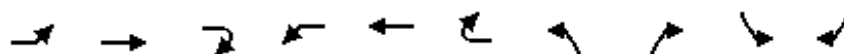
| Lane Group                 | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)       | 480   | 913   | 117   | 199   | 755   | 506   | 614   | 991   | 793   | 372   |
| Future Volume (vph)        | 480   | 913   | 117   | 199   | 755   | 506   | 614   | 991   | 793   | 372   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 370   |       |       | 495   |       |       | 0     |       | 0     |       |
| Storage Lanes              | 2     |       |       | 1     |       |       | 2     |       | 2     |       |
| Taper Length (ft)          | 25    |       |       | 25    |       |       | 25    |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 0.97  | 1.00  | 0.97  | 0.88  |
| Frt                        |       |       | 0.850 |       |       | 0.850 |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (prot)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Flt Permitted              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (perm)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Right Turn on Red          |       |       | Yes   |       |       | Yes   |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       | 131   |       |       | 506   |       | 270   |       | 119   |
| Link Speed (mph)           |       | 30    |       |       | 30    |       |       |       |       |       |
| Link Distance (ft)         |       | 826   |       |       | 1211  |       |       |       |       |       |
| Travel Time (s)            |       | 18.8  |       |       | 27.5  |       |       |       |       |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 480   | 913   | 117   | 199   | 755   | 506   | 614   | 991   | 793   | 372   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 480   | 913   | 117   | 199   | 755   | 506   | 614   | 991   | 793   | 372   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Right | Left  | Left  | Right | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    |       |       | 24    |       |       |       |       |       |
| Link Offset(ft)            |       | 0     |       |       | 0     |       |       |       |       |       |
| Crosswalk Width(ft)        |       | 16    |       |       | 16    |       |       |       |       |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |       |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    |       | 9     | 15    |       | 9     | 15    | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 1     | 1     | 2     | 1     | 1     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Right | Left  | Thru  | Right | Left  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 20    | 20    | 100   | 20    | 20    | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 20    | 20    | 6     | 20    | 20    | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    |       |       | 94    |       |       |       |       |       |
| Detector 2 Size(ft)        |       | 6     |       |       | 6     |       |       |       |       |       |
| Detector 2 Type            |       | Cl+Ex |       |       | Cl+Ex |       |       |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   |       |       | 0.0   |       |       |       |       |       |
| Turn Type                  | Prot  | NA    | Free  | Prot  | NA    | Perm  | Perm  | Free  | Perm  | Prot  |
| Protected Phases           | 1     | 6     |       | 5     | 2     |       |       |       |       | 1     |
| Permitted Phases           |       |       | Free  |       |       | 2     | 3     | Free  | 7     |       |



# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

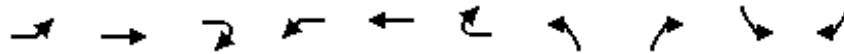


| Lane Group              | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     |       | 5     | 2     | 2     | 3     |       | 7     | 1     |
| Switch Phase            |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)     | 8.0   | 12.0  |       | 8.0   | 12.0  | 12.0  | 12.0  |       | 12.0  | 8.0   |
| Minimum Split (s)       | 15.0  | 27.0  |       | 25.0  | 27.0  | 27.0  | 27.0  |       | 27.0  | 15.0  |
| Total Split (s)         | 38.0  | 61.0  |       | 35.0  | 58.0  | 58.0  | 54.0  |       | 54.0  | 38.0  |
| Total Split (%)         | 25.3% | 40.7% |       | 23.3% | 38.7% | 38.7% | 36.0% |       | 36.0% | 25.3% |
| Maximum Green (s)       | 31.0  | 54.0  |       | 28.0  | 51.0  | 51.0  | 47.0  |       | 47.0  | 31.0  |
| Yellow Time (s)         | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   |
| All-Red Time (s)        | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     | 7.0   | 7.0   |       | 7.0   | 7.0   | 7.0   | 7.0   |       | 7.0   | 7.0   |
| Lead/Lag                | Lead  | Lag   |       | Lead  | Lag   | Lag   |       |       |       | Lead  |
| Lead-Lag Optimize?      |       |       |       |       |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min |       | None  | C-Min | C-Min | None  |       | None  | None  |
| Walk Time (s)           |       | 7.0   |       |       | 7.0   | 7.0   | 7.0   |       | 7.0   |       |
| Flash Dont Walk (s)     |       | 13.0  |       |       | 13.0  | 13.0  | 13.0  |       | 13.0  |       |
| Pedestrian Calls (#/hr) |       | 5     |       |       | 5     | 5     | 5     |       | 5     |       |
| Act Effect Green (s)    | 26.4  | 66.9  | 150.0 | 21.8  | 62.2  | 62.2  | 40.4  | 150.0 | 40.4  | 26.4  |
| Actuated g/C Ratio      | 0.18  | 0.45  | 1.00  | 0.15  | 0.41  | 0.41  | 0.27  | 1.00  | 0.27  | 0.18  |
| v/c Ratio               | 0.79  | 0.58  | 0.07  | 0.78  | 0.51  | 0.53  | 0.66  | 0.63  | 0.86  | 0.63  |
| Control Delay           | 70.3  | 30.0  | 0.1   | 95.2  | 22.3  | 3.6   | 52.2  | 1.9   | 63.0  | 43.1  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 70.3  | 30.0  | 0.1   | 95.2  | 22.3  | 3.6   | 52.2  | 1.9   | 63.0  | 43.1  |
| LOS                     | E     | C     | A     | F     | C     | A     | D     | A     | E     | D     |
| Approach Delay          |       | 40.5  |       |       | 25.7  |       |       |       |       |       |
| Approach LOS            |       | D     |       |       | C     |       |       |       |       |       |
| 90th %ile Green (s)     | 31.0  | 54.0  |       | 28.0  | 51.0  | 51.0  | 47.0  |       | 47.0  | 31.0  |
| 90th %ile Term Code     | Max   | Coord |       | Max   | Coord | Coord | Hold  |       | Max   | Max   |
| 70th %ile Green (s)     | 29.3  | 60.3  |       | 25.0  | 56.0  | 56.0  | 43.7  |       | 43.7  | 29.3  |
| 70th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| 50th %ile Green (s)     | 27.0  | 66.1  |       | 22.1  | 61.2  | 61.2  | 40.8  |       | 40.8  | 27.0  |
| 50th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| 30th %ile Green (s)     | 24.6  | 72.1  |       | 19.1  | 66.6  | 66.6  | 37.8  |       | 37.8  | 24.6  |
| 30th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| 10th %ile Green (s)     | 20.2  | 81.8  |       | 14.6  | 76.2  | 76.2  | 32.6  |       | 32.6  | 20.2  |
| 10th %ile Term Code     | Gap   | Coord |       | Gap   | Coord | Coord | Hold  |       | Gap   | Gap   |
| Stops (vph)             | 457   | 635   | 0     | 201   | 297   | 84    | 531   | 1     | 736   | 234   |
| Fuel Used(gal)          | 12    | 15    | 1     | 7     | 12    | 6     | 13    | 6     | 19    | 7     |
| CO Emissions (g/hr)     | 873   | 1046  | 53    | 479   | 852   | 392   | 914   | 435   | 1333  | 477   |
| NOx Emissions (g/hr)    | 170   | 204   | 10    | 93    | 166   | 76    | 178   | 85    | 259   | 93    |
| VOC Emissions (g/hr)    | 202   | 243   | 12    | 111   | 198   | 91    | 212   | 101   | 309   | 111   |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 235   | 357   | 0     | 206   | 105   | 33    | 276   | 0     | 380   | 131   |
| Queue Length 95th (ft)  | 344   | 365   | 0     | m262  | m182  | m100  | 370   | 0     | 504   | 221   |
| Internal Link Dist (ft) |       | 746   |       |       | 1131  |       |       |       |       |       |
| Turn Bay Length (ft)    | 370   |       |       | 495   |       |       |       |       |       |       |
| Base Capacity (vph)     | 709   | 1577  | 1583  | 330   | 1467  | 952   | 1075  | 1583  | 1075  | 670   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



| Lane Group            | EBL  | EBT  | EBR2 | WBL  | WBT  | WBR2 | NBL  | NBR2 | SBL  | SBR2 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.68 | 0.58 | 0.07 | 0.60 | 0.51 | 0.53 | 0.57 | 0.63 | 0.74 | 0.56 |

## Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 98 (65%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 34.6

Intersection LOS: C

Intersection Capacity Utilization Err%

ICU Level of Service H

Analysis Period (min) 60

m Volume for 95th percentile queue is metered by upstream signal.

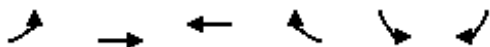
Splits and Phases: 1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

|                                                                                       |                                                                                           |                                                                                         |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1  |  Ø2 (R)  |  Ø3  |
| 38 s                                                                                  | 58 s                                                                                      | 54 s                                                                                    |
|  Ø5 |  Ø6 (R) |  Ø7 |
| 35 s                                                                                  | 61 s                                                                                      | 54 s                                                                                    |

# Lanes, Volumes, Timings

## 2: McEwen /McEwen & Tower

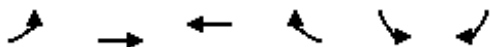
11/18/2016



| Lane Group                 | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ↔↔    | ↑↑    | ↑↑    | ↔     | ↔     | ↔↔    |
| Traffic Volume (vph)       | 632   | 2117  | 1386  | 114   | 19    | 98    |
| Future Volume (vph)        | 632   | 2117  | 1386  | 114   | 19    | 98    |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 285   |       |       | 115   | 445   | 0     |
| Storage Lanes              | 2     |       |       | 1     | 1     | 2     |
| Taper Length (ft)          | 25    |       |       |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 0.95  | 1.00  | 1.00  | 0.88  |
| Frt                        |       |       |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (prot)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Flt Permitted              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (perm)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Right Turn on Red          |       |       |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       |       | 36    |       | 98    |
| Link Speed (mph)           |       | 30    | 30    |       | 30    |       |
| Link Distance (ft)         |       | 1211  | 938   |       | 511   |       |
| Travel Time (s)            |       | 27.5  | 21.3  |       | 11.6  |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 632   | 2117  | 1386  | 114   | 19    | 98    |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 632   | 2117  | 1386  | 114   | 19    | 98    |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    | 24    |       | 12    |       |
| Link Offset(ft)            |       | 0     | 0     |       | 0     |       |
| Crosswalk Width(ft)        |       | 16    | 16    |       | 16    |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |
| Headway Factor             | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  |
| Turning Speed (mph)        | 15    |       |       | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 2     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Thru  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 100   | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 6     | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    | 94    |       |       |       |
| Detector 2 Size(ft)        |       | 6     | 6     |       |       |       |
| Detector 2 Type            |       | Cl+Ex | Cl+Ex |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   | 0.0   |       |       |       |
| Turn Type                  | Prot  | NA    | NA    | Prot  | Prot  | Prot  |
| Protected Phases           | 1     | 6     | 2     | 2     | 8     | 8     |
| Permitted Phases           |       |       |       |       |       |       |

Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

11/18/2016



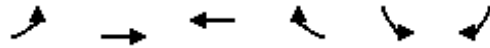
| Lane Group              | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     | 2     | 2     | 8     | 8     |
| Switch Phase            |       |       |       |       |       |       |
| Minimum Initial (s)     | 7.0   | 20.0  | 20.0  | 20.0  | 8.0   | 8.0   |
| Minimum Split (s)       | 13.5  | 43.5  | 43.5  | 43.5  | 46.5  | 46.5  |
| Total Split (s)         | 35.0  | 103.5 | 68.5  | 68.5  | 46.5  | 46.5  |
| Total Split (%)         | 23.3% | 69.0% | 45.7% | 45.7% | 31.0% | 31.0% |
| Maximum Green (s)       | 29.5  | 98.0  | 63.0  | 63.0  | 41.0  | 41.0  |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)        | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   |
| Lead/Lag                | Lead  |       | Lag   | Lag   |       |       |
| Lead-Lag Optimize?      |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min | C-Min | C-Min | None  | None  |
| Walk Time (s)           |       | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Flash Dont Walk (s)     |       | 18.0  | 18.0  | 18.0  | 34.0  | 34.0  |
| Pedestrian Calls (#/hr) |       | 3     | 3     | 3     | 3     | 3     |
| Act Effect Green (s)    | 37.6  | 124.4 | 81.3  | 81.3  | 14.6  | 14.6  |
| Actuated g/C Ratio      | 0.25  | 0.83  | 0.54  | 0.54  | 0.10  | 0.10  |
| v/c Ratio               | 0.82  | 0.80  | 0.80  | 0.14  | 0.12  | 0.29  |
| Control Delay           | 53.6  | 14.2  | 13.5  | 2.2   | 57.5  | 10.8  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 53.6  | 14.2  | 13.5  | 2.2   | 57.5  | 10.8  |
| LOS                     | D     | B     | B     | A     | E     | B     |
| Approach Delay          |       | 23.2  | 12.6  |       | 18.4  |       |
| Approach LOS            |       | C     | B     |       | B     |       |
| 90th %ile Green (s)     | 29.5  | 98.0  | 63.0  | 63.0  | 41.0  | 41.0  |
| 90th %ile Term Code     | Max   | Coord | Coord | Coord | Ped   | Ped   |
| 70th %ile Green (s)     | 39.9  | 130.8 | 85.4  | 85.4  | 8.2   | 8.2   |
| 70th %ile Term Code     | Gap   | Coord | Coord | Coord | Gap   | Gap   |
| 50th %ile Green (s)     | 39.3  | 131.0 | 86.2  | 86.2  | 8.0   | 8.0   |
| 50th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| 30th %ile Green (s)     | 39.1  | 131.0 | 86.4  | 86.4  | 8.0   | 8.0   |
| 30th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| 10th %ile Green (s)     | 40.2  | 131.0 | 85.3  | 85.3  | 8.0   | 8.0   |
| 10th %ile Term Code     | Gap   | Coord | Coord | Coord | Min   | Min   |
| Stops (vph)             | 506   | 1062  | 489   | 9     | 18    | 14    |
| Fuel Used(gal)          | 16    | 32    | 17    | 1     | 0     | 1     |
| CO Emissions (g/hr)     | 1095  | 2234  | 1163  | 65    | 28    | 48    |
| NOx Emissions (g/hr)    | 213   | 435   | 226   | 13    | 5     | 9     |
| VOC Emissions (g/hr)    | 254   | 518   | 270   | 15    | 6     | 11    |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 259   | 132   | 89    | 0     | 18    | 0     |
| Queue Length 95th (ft)  | #554  | #1536 | m#986 | m13   | 40    | 33    |
| Internal Link Dist (ft) |       | 1131  | 858   |       | 431   |       |
| Turn Bay Length (ft)    | 285   |       |       | 115   | 445   |       |
| Base Capacity (vph)     | 774   | 2640  | 1725  | 788   | 435   | 756   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     |



## Lanes, Volumes, Timings

### 2: McEwen /McEwen & Tower

11/18/2016



| Lane Group            | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|-----------------------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.82 | 0.80 | 0.80 | 0.14 | 0.04 | 0.13 |

#### Intersection Summary

Area Type: CBD

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 86 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 19.5

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

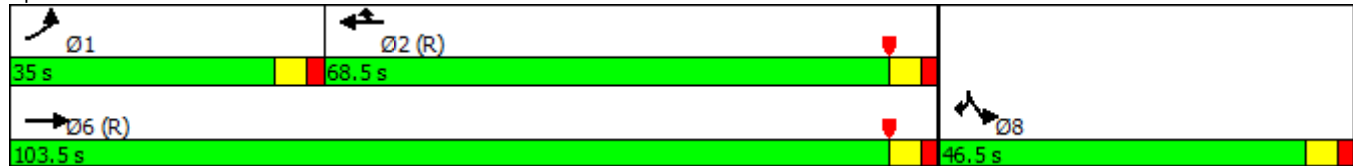
Analysis Period (min) 60

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: McEwen /McEwen & Tower



# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 1007                                                                              | 769                                                                               | 346                                                                               | 121                                                                               | 920                                                                               | 367                                                                               | 234                                                                                 | 1071                                                                                | 91                                                                                  | 175                                                                                 | 302                                                                                 | 241                                                                                 |
| Future Volume (vph)        | 1007                                                                              | 769                                                                               | 346                                                                               | 121                                                                               | 920                                                                               | 367                                                                               | 234                                                                                 | 1071                                                                                | 91                                                                                  | 175                                                                                 | 302                                                                                 | 241                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 266                                                                               |                                                                                   |                                                                                   | 105                                                                               |                                                                                     |                                                                                     | 109                                                                                 |                                                                                     |                                                                                     | 65                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 938                                                                               |                                                                                   |                                                                                   | 1960                                                                              |                                                                                   |                                                                                     | 1936                                                                                |                                                                                     |                                                                                     | 857                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                     | 44.0                                                                                |                                                                                     |                                                                                     | 14.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 1007                                                                              | 769                                                                               | 346                                                                               | 121                                                                               | 920                                                                               | 367                                                                               | 234                                                                                 | 1071                                                                                | 91                                                                                  | 175                                                                                 | 302                                                                                 | 241                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 1007                                                                              | 769                                                                               | 346                                                                               | 121                                                                               | 920                                                                               | 367                                                                               | 234                                                                                 | 1071                                                                                | 91                                                                                  | 175                                                                                 | 302                                                                                 | 241                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | custom                                                                              | Prot                                                                                | NA                                                                                  | custom                                                                              |
| Protected Phases           | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases           |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |

Lanes, Volumes, Timings  
3: Carothers/Carothers & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase          | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                  | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 13.0                                                                              | 6.0                                                                               | 4.0                                                                               | 13.0                                                                              | 6.0                                                                               | 6.0                                                                                | 13.0                                                                                | 4.0                                                                                 | 6.0                                                                                 | 13.0                                                                                | 6.0                                                                                 |
| Minimum Split (s)       | 13.0                                                                              | 52.0                                                                              | 12.5                                                                              | 10.0                                                                              | 52.0                                                                              | 13.0                                                                              | 12.5                                                                               | 52.0                                                                                | 10.0                                                                                | 13.0                                                                                | 52.0                                                                                | 13.0                                                                                |
| Total Split (s)         | 31.0                                                                              | 69.0                                                                              | 14.0                                                                              | 15.0                                                                              | 53.0                                                                              | 14.0                                                                              | 14.0                                                                               | 52.0                                                                                | 15.0                                                                                | 14.0                                                                                | 52.0                                                                                | 31.0                                                                                |
| Total Split (%)         | 20.7%                                                                             | 46.0%                                                                             | 9.3%                                                                              | 10.0%                                                                             | 35.3%                                                                             | 9.3%                                                                              | 9.3%                                                                               | 34.7%                                                                               | 10.0%                                                                               | 9.3%                                                                                | 34.7%                                                                               | 20.7%                                                                               |
| Maximum Green (s)       | 25.0                                                                              | 63.0                                                                              | 8.0                                                                               | 9.5                                                                               | 47.0                                                                              | 8.0                                                                               | 8.0                                                                                | 46.0                                                                                | 9.5                                                                                 | 8.0                                                                                 | 46.0                                                                                | 25.0                                                                                |
| Yellow Time (s)         | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 5.5                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Max                                                                               | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                    | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 37.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                    | 5                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |
| Act Effect Green (s)    | 25.0                                                                              | 63.4                                                                              | 77.4                                                                              | 9.1                                                                               | 47.0                                                                              | 61.0                                                                              | 8.0                                                                                | 46.0                                                                                | 61.1                                                                                | 8.0                                                                                 | 46.0                                                                                | 77.0                                                                                |
| Actuated g/C Ratio      | 0.17                                                                              | 0.42                                                                              | 0.52                                                                              | 0.06                                                                              | 0.31                                                                              | 0.41                                                                              | 0.05                                                                               | 0.31                                                                                | 0.41                                                                                | 0.05                                                                                | 0.31                                                                                | 0.51                                                                                |
| v/c Ratio               | 1.76                                                                              | 0.51                                                                              | 0.37                                                                              | 0.58                                                                              | 0.83                                                                              | 0.52                                                                              | 1.28                                                                               | 0.99                                                                                | 0.13                                                                                | 0.96                                                                                | 0.28                                                                                | 0.29                                                                                |
| Control Delay           | 1410.9                                                                            | 32.4                                                                              | 8.4                                                                               | 65.4                                                                              | 41.8                                                                              | 21.5                                                                              | 596.5                                                                              | 95.2                                                                                | 3.3                                                                                 | 165.9                                                                               | 40.3                                                                                | 15.8                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 1410.9                                                                            | 32.4                                                                              | 8.4                                                                               | 65.4                                                                              | 41.8                                                                              | 21.5                                                                              | 596.5                                                                              | 95.2                                                                                | 3.3                                                                                 | 165.9                                                                               | 40.3                                                                                | 15.8                                                                                |
| LOS                     | F                                                                                 | C                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | F                                                                                  | F                                                                                   | A                                                                                   | F                                                                                   | D                                                                                   | B                                                                                   |
| Approach Delay          |                                                                                   | 682.7                                                                             |                                                                                   |                                                                                   | 38.5                                                                              |                                                                                   |                                                                                    | 173.2                                                                               |                                                                                     |                                                                                     | 62.7                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 25.0                                                                              | 63.0                                                                              | 8.0                                                                               | 9.5                                                                               | 47.0                                                                              | 8.0                                                                               | 8.0                                                                                | 46.0                                                                                | 9.5                                                                                 | 8.0                                                                                 | 46.0                                                                                | 25.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Hold                                                                                | MaxR                                                                                |
| 70th %ile Green (s)     | 25.0                                                                              | 63.0                                                                              | 8.0                                                                               | 9.5                                                                               | 47.0                                                                              | 8.0                                                                               | 8.0                                                                                | 46.0                                                                                | 9.5                                                                                 | 8.0                                                                                 | 46.0                                                                                | 25.0                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Hold                                                                                | MaxR                                                                                |
| 50th %ile Green (s)     | 25.0                                                                              | 63.0                                                                              | 8.0                                                                               | 9.5                                                                               | 47.0                                                                              | 8.0                                                                               | 8.0                                                                                | 46.0                                                                                | 9.5                                                                                 | 8.0                                                                                 | 46.0                                                                                | 25.0                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | Hold                                                                                | MaxR                                                                                |
| 30th %ile Green (s)     | 25.0                                                                              | 63.1                                                                              | 8.0                                                                               | 9.4                                                                               | 47.0                                                                              | 8.0                                                                               | 8.0                                                                                | 46.0                                                                                | 9.4                                                                                 | 8.0                                                                                 | 46.0                                                                                | 25.0                                                                                |
| 30th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                | Max                                                                                 | Gap                                                                                 | Max                                                                                 | Hold                                                                                | MaxR                                                                                |
| 10th %ile Green (s)     | 25.0                                                                              | 64.8                                                                              | 8.0                                                                               | 7.7                                                                               | 47.0                                                                              | 8.0                                                                               | 8.0                                                                                | 46.0                                                                                | 7.7                                                                                 | 8.0                                                                                 | 46.0                                                                                | 25.0                                                                                |
| 10th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                | Max                                                                                 | Gap                                                                                 | Max                                                                                 | Hold                                                                                | MaxR                                                                                |
| Stops (vph)             | 972                                                                               | 477                                                                               | 67                                                                                | 116                                                                               | 701                                                                               | 299                                                                               | 209                                                                                | 981                                                                                 | 6                                                                                   | 156                                                                                 | 224                                                                                 | 97                                                                                  |
| Fuel Used(gal)          | 302                                                                               | 13                                                                                | 3                                                                                 | 4                                                                                 | 26                                                                                | 9                                                                                 | 33                                                                                 | 42                                                                                  | 1                                                                                   | 8                                                                                   | 6                                                                                   | 3                                                                                   |
| CO Emissions (g/hr)     | 21109                                                                             | 932                                                                               | 244                                                                               | 287                                                                               | 1800                                                                              | 620                                                                               | 2314                                                                               | 2959                                                                                | 103                                                                                 | 591                                                                                 | 450                                                                                 | 219                                                                                 |
| NOx Emissions (g/hr)    | 4107                                                                              | 181                                                                               | 47                                                                                | 56                                                                                | 350                                                                               | 121                                                                               | 450                                                                                | 576                                                                                 | 20                                                                                  | 115                                                                                 | 87                                                                                  | 43                                                                                  |
| VOC Emissions (g/hr)    | 4892                                                                              | 216                                                                               | 57                                                                                | 66                                                                                | 417                                                                               | 144                                                                               | 536                                                                                | 686                                                                                 | 24                                                                                  | 137                                                                                 | 104                                                                                 | 51                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 8                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | ~753                                                                              | 238                                                                               | 62                                                                                | 61                                                                                | 314                                                                               | 155                                                                               | ~148                                                                               | 550                                                                                 | 0                                                                                   | 89                                                                                  | 118                                                                                 | 93                                                                                  |
| Queue Length 95th (ft)  | m#1041                                                                            | m372                                                                              | m152                                                                              | m75                                                                               | m445                                                                              | m199                                                                              | #277                                                                               | #845                                                                                | 35                                                                                  | #198                                                                                | 181                                                                                 | 179                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 858                                                                               |                                                                                   |                                                                                   | 1880                                                                              |                                                                                   |                                                                                    | 1856                                                                                |                                                                                     |                                                                                     | 777                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Base Capacity (vph)     | 572                                                                               | 1495                                                                              | 945                                                                               | 217                                                                               | 1108                                                                              | 706                                                                               | 183                                                                                | 1085                                                                                | 713                                                                                 | 183                                                                                 | 1085                                                                                | 844                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |

# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Spillback Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio     | 1.76                                                                              | 0.51                                                                              | 0.37                                                                              | 0.56                                                                              | 0.83                                                                              | 0.52                                                                              | 1.28                                                                               | 0.99                                                                                | 0.13                                                                                | 0.96                                                                                | 0.28                                                                                | 0.29                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 38 (25%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.76

Intersection Signal Delay: 317.1

Intersection LOS: F

Intersection Capacity Utilization 108.8%

ICU Level of Service G

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Carothers/Carothers & McEwen

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1  |  Ø2 (R)  |  Ø3  |  Ø4  |
| 31 s                                                                                   | 53 s                                                                                       | 14 s                                                                                   | 52 s                                                                                     |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 15 s                                                                                   | 69 s                                                                                       | 14 s                                                                                   | 52 s                                                                                     |



# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)       | 276                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1051                                                                              | 114                                                                               | 145                                                                                 | 57                                                                                  | 21                                                                                  | 56                                                                                  | 102                                                                                 | 226                                                                                 |
| Future Volume (vph)        | 276                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1051                                                                              | 114                                                                               | 145                                                                                 | 57                                                                                  | 21                                                                                  | 56                                                                                  | 102                                                                                 | 226                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Fr't                       |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     | 0.897                                                                               |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3486                                                                              | 0                                                                                 | 3433                                                                                | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1671                                                                                | 0                                                                                   |
| Flt Permitted              | 0.136                                                                             |                                                                                   |                                                                                   | 0.587                                                                             |                                                                                   |                                                                                   | 0.248                                                                               |                                                                                     |                                                                                     | 0.720                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 253                                                                               | 3539                                                                              | 1583                                                                              | 1093                                                                              | 3486                                                                              | 0                                                                                 | 896                                                                                 | 1863                                                                                | 1583                                                                                | 1341                                                                                | 1671                                                                                | 0                                                                                   |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 381                                                                               |                                                                                   | 17                                                                                |                                                                                   |                                                                                     |                                                                                     | 73                                                                                  |                                                                                     | 135                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 1960                                                                              |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                     | 402                                                                                 |                                                                                     |                                                                                     | 456                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                     | 9.1                                                                                 |                                                                                     |                                                                                     | 10.4                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 276                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1051                                                                              | 114                                                                               | 145                                                                                 | 57                                                                                  | 21                                                                                  | 56                                                                                  | 102                                                                                 | 226                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 276                                                                               | 268                                                                               | 381                                                                               | 160                                                                               | 1165                                                                              | 0                                                                                 | 145                                                                                 | 57                                                                                  | 21                                                                                  | 56                                                                                  | 328                                                                                 | 0                                                                                   |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 36                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |                                                                                     |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |                                                                                     |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |                                                                                     |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |                                                                                     |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | pm+ov                                                                             | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases           | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                   | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Permitted Phases           | 8                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase             | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                   | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Switch Phase               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)        | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |

Lanes, Volumes, Timings  
4: Ovation/Resource Parkway & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Minimum Split (s)       | 10.0                                                                              | 20.0                                                                              | 10.0                                                                              | 10.0                                                                              | 20.0                                                                              |                                                                                   | 10.0                                                                                | 20.0                                                                                | 10.0                                                                                | 10.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (s)         | 13.0                                                                              | 35.0                                                                              | 10.0                                                                              | 10.0                                                                              | 32.0                                                                              |                                                                                   | 10.0                                                                                | 20.0                                                                                | 10.0                                                                                | 10.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 17.3%                                                                             | 46.7%                                                                             | 13.3%                                                                             | 13.3%                                                                             | 42.7%                                                                             |                                                                                   | 13.3%                                                                               | 26.7%                                                                               | 13.3%                                                                               | 13.3%                                                                               | 26.7%                                                                               |                                                                                     |
| Maximum Green (s)       | 9.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 28.0                                                                              |                                                                                   | 6.0                                                                                 | 16.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |                                                                                   | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |                                                                                     |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |                                                                                   | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                                | Max                                                                                 | None                                                                                | None                                                                                | Max                                                                                 |                                                                                     |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                     | 10                                                                                  |                                                                                     |                                                                                     | 10                                                                                  |                                                                                     |
| Act Effect Green (s)    | 40.0                                                                              | 31.0                                                                              | 41.0                                                                              | 34.0                                                                              | 28.0                                                                              |                                                                                   | 23.6                                                                                | 20.0                                                                                | 30.0                                                                                | 21.9                                                                                | 16.0                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.53                                                                              | 0.41                                                                              | 0.55                                                                              | 0.45                                                                              | 0.37                                                                              |                                                                                   | 0.31                                                                                | 0.27                                                                                | 0.40                                                                                | 0.29                                                                                | 0.21                                                                                |                                                                                     |
| v/c Ratio               | 0.87                                                                              | 0.18                                                                              | 0.37                                                                              | 0.29                                                                              | 0.89                                                                              |                                                                                   | 0.30                                                                                | 0.11                                                                                | 0.03                                                                                | 0.13                                                                                | 0.71                                                                                |                                                                                     |
| Control Delay           | 48.4                                                                              | 12.8                                                                              | 8.3                                                                               | 10.5                                                                              | 33.1                                                                              |                                                                                   | 18.6                                                                                | 24.1                                                                                | 0.1                                                                                 | 17.6                                                                                | 26.2                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 48.4                                                                              | 12.8                                                                              | 8.3                                                                               | 10.5                                                                              | 33.1                                                                              |                                                                                   | 18.6                                                                                | 24.1                                                                                | 0.1                                                                                 | 17.6                                                                                | 26.2                                                                                |                                                                                     |
| LOS                     | D                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 |                                                                                   | B                                                                                   | C                                                                                   | A                                                                                   | B                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 21.5                                                                              |                                                                                   |                                                                                   | 30.3                                                                              |                                                                                   |                                                                                     | 18.3                                                                                |                                                                                     |                                                                                     | 24.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 9.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 28.0                                                                              |                                                                                   | 6.0                                                                                 | 16.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 90th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 70th %ile Green (s)     | 9.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 28.0                                                                              |                                                                                   | 6.0                                                                                 | 16.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 70th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 50th %ile Green (s)     | 9.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 28.0                                                                              |                                                                                   | 6.0                                                                                 | 16.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 50th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 30th %ile Green (s)     | 9.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 28.0                                                                              |                                                                                   | 6.0                                                                                 | 26.0                                                                                | 6.0                                                                                 | 0.0                                                                                 | 16.0                                                                                |                                                                                     |
| 30th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Skip                                                                                | MaxR                                                                                |                                                                                     |
| 10th %ile Green (s)     | 9.0                                                                               | 31.0                                                                              | 6.0                                                                               | 6.0                                                                               | 28.0                                                                              |                                                                                   | 6.0                                                                                 | 26.0                                                                                | 6.0                                                                                 | 0.0                                                                                 | 16.0                                                                                |                                                                                     |
| 10th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Skip                                                                                | MaxR                                                                                |                                                                                     |
| Stops (vph)             | 200                                                                               | 197                                                                               | 226                                                                               | 86                                                                                | 994                                                                               |                                                                                   | 97                                                                                  | 46                                                                                  | 0                                                                                   | 39                                                                                  | 178                                                                                 |                                                                                     |
| Fuel Used(gal)          | 8                                                                                 | 6                                                                                 | 8                                                                                 | 1                                                                                 | 16                                                                                |                                                                                   | 2                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 4                                                                                   |                                                                                     |
| CO Emissions (g/hr)     | 562                                                                               | 411                                                                               | 539                                                                               | 87                                                                                | 1151                                                                              |                                                                                   | 108                                                                                 | 50                                                                                  | 5                                                                                   | 43                                                                                  | 272                                                                                 |                                                                                     |
| NOx Emissions (g/hr)    | 109                                                                               | 80                                                                                | 105                                                                               | 17                                                                                | 224                                                                               |                                                                                   | 21                                                                                  | 10                                                                                  | 1                                                                                   | 8                                                                                   | 53                                                                                  |                                                                                     |
| VOC Emissions (g/hr)    | 130                                                                               | 95                                                                                | 125                                                                               | 20                                                                                | 267                                                                               |                                                                                   | 25                                                                                  | 12                                                                                  | 1                                                                                   | 10                                                                                  | 63                                                                                  |                                                                                     |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 116                                                                               | 57                                                                                | 169                                                                               | 34                                                                                | 257                                                                               |                                                                                   | 23                                                                                  | 22                                                                                  | 0                                                                                   | 17                                                                                  | 81                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | m#290                                                                             | m70                                                                               | m243                                                                              | 71                                                                                | #466                                                                              |                                                                                   | 47                                                                                  | 57                                                                                  | 0                                                                                   | 46                                                                                  | #245                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 1880                                                                              |                                                                                   |                                                                                   | 265                                                                               |                                                                                   |                                                                                     | 322                                                                                 |                                                                                     |                                                                                     | 376                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 316                                                                               | 1462                                                                              | 1038                                                                              | 549                                                                               | 1312                                                                              |                                                                                   | 484                                                                                 | 496                                                                                 | 676                                                                                 | 427                                                                                 | 462                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.87                                                                              | 0.18                                                                              | 0.37                                                                              | 0.29                                                                              | 0.89                                                                              |                                                                                   | 0.30                                                                                | 0.11                                                                                | 0.03                                                                                | 0.13                                                                                | 0.71                                                                                |                                                                                     |

# Lanes, Volumes, Timings

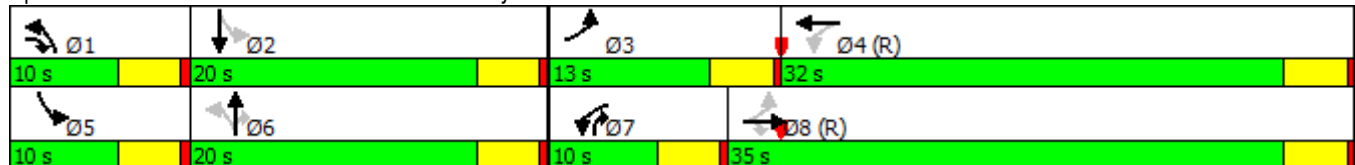
## 4: Ovation/Resource Parkway & McEwen

11/18/2016

### Intersection Summary

Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 40 (53%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 25.8 Intersection LOS: C  
 Intersection Capacity Utilization 84.7% ICU Level of Service E  
 Analysis Period (min) 60  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Ovation/Resource Parkway & McEwen



Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                            |  |  |  |  |  |   |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 109                                                                               | 0                                                                                 | 53                                                                                | 132                                                                               | 1                                                                                 | 48                                                                                 | 195                                                                                 | 2086                                                                                | 197                                                                                 | 58                                                                                  | 545                                                                                 | 320                                                                                 |
| Future Volume (vph)        | 109                                                                               | 0                                                                                 | 53                                                                                | 132                                                                               | 1                                                                                 | 48                                                                                 | 195                                                                                 | 2086                                                                                | 197                                                                                 | 58                                                                                  | 545                                                                                 | 320                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  | 0%                                                                                |                                                                                   |                                                                                   |                                                                                   | 0%                                                                                |                                                                                    |                                                                                     |                                                                                     | 2%                                                                                  |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)        | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                 | 177                                                                                 |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                  | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                              |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 1752                                                                                | 3504                                                                                | 1567                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.392                                                                               |                                                                                     |                                                                                     | 0.051                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 723                                                                                 | 3504                                                                                | 1567                                                                                | 95                                                                                  | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 252                                                                               |                                                                                   |                                                                                   | 152                                                                                |                                                                                     |                                                                                     | 105                                                                                 |                                                                                     |                                                                                     | 314                                                                                 |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                    |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 881                                                                               |                                                                                   |                                                                                   | 890                                                                               |                                                                                    |                                                                                     | 857                                                                                 |                                                                                     |                                                                                     | 905                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                    |                                                                                     | 14.6                                                                                |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 109                                                                               | 0                                                                                 | 53                                                                                | 132                                                                               | 1                                                                                 | 48                                                                                 | 195                                                                                 | 2086                                                                                | 197                                                                                 | 58                                                                                  | 545                                                                                 | 320                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 109                                                                               | 0                                                                                 | 53                                                                                | 132                                                                               | 1                                                                                 | 48                                                                                 | 195                                                                                 | 2086                                                                                | 197                                                                                 | 58                                                                                  | 545                                                                                 | 320                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                              | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                    |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                  | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                  | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                              | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                 | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                 | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                    |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                    |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              |                                                                                   | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                               | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 |                                                                                    | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     |



Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 6                                                                                  |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                  | 6                                                                                   | 6                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                                | 20.0                                                                                | 20.0                                                                                | 6.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                               | 42.0                                                                                | 42.0                                                                                | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                |
| Total Split (s)         | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 14.0                                                                              | 50.0                                                                              | 50.0                                                                              | 18.0                                                                               | 65.5                                                                                | 65.5                                                                                | 12.0                                                                                | 59.5                                                                                | 59.5                                                                                |
| Total Split (%)         | 8.9%                                                                              | 34.6%                                                                             | 34.6%                                                                             | 10.0%                                                                             | 35.7%                                                                             | 35.7%                                                                             | 12.9%                                                                              | 46.8%                                                                               | 46.8%                                                                               | 8.6%                                                                                | 42.5%                                                                               | 42.5%                                                                               |
| Maximum Green (s)       | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 8.5                                                                               | 44.5                                                                              | 44.5                                                                              | 12.5                                                                               | 59.5                                                                                | 59.5                                                                                | 6.5                                                                                 | 53.5                                                                                | 53.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | C-Min                                                                               | C-Min                                                                               | None                                                                                | C-Min                                                                               | C-Min                                                                               |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                    | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                    | 29.0                                                                                | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                | 10                                                                                |                                                                                   | 10                                                                                | 10                                                                                |                                                                                    | 10                                                                                  | 10                                                                                  |                                                                                     | 10                                                                                  | 10                                                                                  |
| Act Effect Green (s)    | 7.3                                                                               |                                                                                   | 22.0                                                                              | 8.5                                                                               | 23.2                                                                              | 23.2                                                                              | 94.6                                                                               | 85.6                                                                                | 85.6                                                                                | 86.6                                                                                | 79.7                                                                                | 79.7                                                                                |
| Actuated g/C Ratio      | 0.05                                                                              |                                                                                   | 0.16                                                                              | 0.06                                                                              | 0.17                                                                              | 0.17                                                                              | 0.68                                                                               | 0.61                                                                                | 0.61                                                                                | 0.62                                                                                | 0.57                                                                                | 0.57                                                                                |
| v/c Ratio               | 0.61                                                                              |                                                                                   | 0.11                                                                              | 1.23                                                                              | 0.00                                                                              | 0.12                                                                              | 0.35                                                                               | 0.97                                                                                | 0.20                                                                                | 0.43                                                                                | 0.27                                                                                | 0.31                                                                                |
| Control Delay           | 80.9                                                                              |                                                                                   | 0.5                                                                               | 547.7                                                                             | 35.0                                                                              | 0.6                                                                               | 13.8                                                                               | 49.3                                                                                | 9.8                                                                                 | 48.4                                                                                | 21.9                                                                                | 7.5                                                                                 |
| Queue Delay             | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 80.9                                                                              |                                                                                   | 0.5                                                                               | 547.7                                                                             | 35.0                                                                              | 0.6                                                                               | 13.8                                                                               | 49.3                                                                                | 9.8                                                                                 | 48.4                                                                                | 21.9                                                                                | 7.5                                                                                 |
| LOS                     | F                                                                                 |                                                                                   | A                                                                                 | F                                                                                 | C                                                                                 | A                                                                                 | B                                                                                  | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 399.8                                                                             |                                                                                   |                                                                                    | 43.4                                                                                |                                                                                     |                                                                                     | 18.6                                                                                |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 8.5                                                                               | 44.5                                                                              | 44.5                                                                              | 12.5                                                                               | 59.5                                                                                | 59.5                                                                                | 6.5                                                                                 | 53.5                                                                                | 53.5                                                                                |
| 90th %ile Term Code     | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                                | Coord                                                                               | Coord                                                                               | Max                                                                                 | Coord                                                                               | Coord                                                                               |
| 70th %ile Green (s)     | 7.0                                                                               | 43.0                                                                              | 43.0                                                                              | 8.5                                                                               | 44.5                                                                              | 44.5                                                                              | 12.5                                                                               | 59.5                                                                                | 59.5                                                                                | 6.5                                                                                 | 53.5                                                                                | 53.5                                                                                |
| 70th %ile Term Code     | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                                | Coord                                                                               | Coord                                                                               | Max                                                                                 | Coord                                                                               | Coord                                                                               |
| 50th %ile Green (s)     | 7.0                                                                               | 8.0                                                                               | 8.0                                                                               | 8.5                                                                               | 9.5                                                                               | 9.5                                                                               | 9.6                                                                                | 94.4                                                                                | 94.4                                                                                | 6.6                                                                                 | 91.4                                                                                | 91.4                                                                                |
| 50th %ile Term Code     | Max                                                                               | Min                                                                               | Min                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                                | Coord                                                                               | Coord                                                                               | Gap                                                                                 | Coord                                                                               | Coord                                                                               |
| 30th %ile Green (s)     | 7.0                                                                               | 8.0                                                                               | 8.0                                                                               | 8.5                                                                               | 9.5                                                                               | 9.5                                                                               | 8.7                                                                                | 94.8                                                                                | 94.8                                                                                | 6.2                                                                                 | 92.3                                                                                | 92.3                                                                                |
| 30th %ile Term Code     | Max                                                                               | Min                                                                               | Min                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                                | Coord                                                                               | Coord                                                                               | Gap                                                                                 | Coord                                                                               | Coord                                                                               |
| 10th %ile Green (s)     | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               | 6.7                                                                                | 120.0                                                                               | 120.0                                                                               | 0.0                                                                                 | 107.8                                                                               | 107.8                                                                               |
| 10th %ile Term Code     | Hold                                                                              | Skip                                                                              | Skip                                                                              | Max                                                                               | Skip                                                                              | Skip                                                                              | Gap                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| Stops (vph)             | 105                                                                               |                                                                                   | 0                                                                                 | 115                                                                               | 2                                                                                 | 0                                                                                 | 78                                                                                 | 1263                                                                                | 49                                                                                  | 38                                                                                  | 200                                                                                 | 41                                                                                  |
| Fuel Used(gal)          | 3                                                                                 |                                                                                   | 0                                                                                 | 16                                                                                | 0                                                                                 | 0                                                                                 | 2                                                                                  | 45                                                                                  | 2                                                                                   | 1                                                                                   | 7                                                                                   | 3                                                                                   |
| CO Emissions (g/hr)     | 218                                                                               |                                                                                   | 26                                                                                | 1137                                                                              | 2                                                                                 | 24                                                                                | 171                                                                                | 3180                                                                                | 141                                                                                 | 83                                                                                  | 516                                                                                 | 208                                                                                 |
| NOx Emissions (g/hr)    | 42                                                                                |                                                                                   | 5                                                                                 | 221                                                                               | 0                                                                                 | 5                                                                                 | 33                                                                                 | 619                                                                                 | 27                                                                                  | 16                                                                                  | 100                                                                                 | 40                                                                                  |
| VOC Emissions (g/hr)    | 51                                                                                |                                                                                   | 6                                                                                 | 264                                                                               | 0                                                                                 | 5                                                                                 | 40                                                                                 | 737                                                                                 | 33                                                                                  | 19                                                                                  | 120                                                                                 | 48                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 63                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | 51                                                                                |                                                                                   | 0                                                                                 | ~148                                                                              | 1                                                                                 | 0                                                                                 | 41                                                                                 | 746                                                                                 | 27                                                                                  | 11                                                                                  | 74                                                                                  | 2                                                                                   |
| Queue Length 95th (ft)  | #107                                                                              |                                                                                   | 0                                                                                 | #329                                                                              | 6                                                                                 | 0                                                                                 | 163                                                                                | #1713                                                                               | 130                                                                                 | #105                                                                                | 192                                                                                 | 142                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 801                                                                               |                                                                                   |                                                                                   | 810                                                                               |                                                                                   |                                                                                    | 777                                                                                 |                                                                                     |                                                                                     | 825                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                | 177                                                                                |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Base Capacity (vph)     | 178                                                                               |                                                                                   | 660                                                                               | 107                                                                               | 592                                                                               | 606                                                                               | 586                                                                                | 2143                                                                                | 999                                                                                 | 136                                                                                 | 2014                                                                                | 1036                                                                                |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.61                                                                              |                                                                                   | 0.08                                                                              | 1.23                                                                              | 0.00                                                                              | 0.08                                                                              | 0.33                                                                               | 0.97                                                                                | 0.20                                                                                | 0.43                                                                                | 0.27                                                                                | 0.31                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 120 (86%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 55.0

Intersection LOS: D

Intersection Capacity Utilization 90.8%

ICU Level of Service E

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Carothers /Carothers & Tower/Pacific

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1  |  Ø2 (R)  |  Ø3  |  Ø4  |
| 18 s                                                                                   | 59.5 s                                                                                     | 12.5 s                                                                                 | 50 s                                                                                     |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 65.5 s                                                                                     | 14 s                                                                                   | 48.5 s                                                                                   |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (vph)       | 35                                                                                | 0                                                                                 | 52                                                                                | 9                                                                                 | 0                                                                                 | 127                                                                               | 123                                                                                 | 2184                                                                                | 1                                                                                   | 147                                                                                 | 877                                                                                 | 184                                                                                 |
| Future Volume (vph)        | 35                                                                                | 0                                                                                 | 52                                                                                | 9                                                                                 | 0                                                                                 | 127                                                                               | 123                                                                                 | 2184                                                                                | 1                                                                                   | 147                                                                                 | 877                                                                                 | 184                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 128                                                                                 | 480                                                                                 |                                                                                     | 93                                                                                  |
| Storage Lanes              | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3504                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.592                                                                             |                                                                                   |                                                                                   | 0.723                                                                             |                                                                                   |                                                                                   | 0.286                                                                               |                                                                                     |                                                                                     | 0.047                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 1103                                                                              | 1583                                                                              | 0                                                                                 | 1347                                                                              | 1863                                                                              | 1583                                                                              | 527                                                                                 | 3504                                                                                | 0                                                                                   | 88                                                                                  | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   | 242                                                                               |                                                                                   |                                                                                   |                                                                                   | 92                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 97                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 762                                                                               |                                                                                   |                                                                                   | 773                                                                               |                                                                                   |                                                                                     | 905                                                                                 |                                                                                     |                                                                                     | 2004                                                                                |                                                                                     |
| Travel Time (s)            |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     | 34.2                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 35                                                                                | 0                                                                                 | 52                                                                                | 9                                                                                 | 0                                                                                 | 127                                                                               | 123                                                                                 | 2184                                                                                | 1                                                                                   | 147                                                                                 | 877                                                                                 | 184                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 35                                                                                | 52                                                                                | 0                                                                                 | 9                                                                                 | 0                                                                                 | 127                                                                               | 123                                                                                 | 2185                                                                                | 0                                                                                   | 147                                                                                 | 877                                                                                 | 184                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                |                                                                                     | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 |                                                                                     | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   |                                                                                     | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             |                                                                                   | pm+ov                                                                             | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 4                                                                                 | 6                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 6.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 15.0                                                                                |                                                                                     | 5.0                                                                                 | 15.0                                                                                | 5.0                                                                                 |
| Minimum Split (s)       | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 11.5                                                                              | 11.5                                                                                | 48.0                                                                                |                                                                                     | 11.5                                                                                | 48.0                                                                                | 12.0                                                                                |
| Total Split (s)         | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 11.5                                                                              | 15.6                                                                                | 68.0                                                                                |                                                                                     | 11.5                                                                                | 63.9                                                                                | 12.0                                                                                |
| Total Split (%)         | 8.6%                                                                              | 34.6%                                                                             |                                                                                   | 8.6%                                                                              | 34.6%                                                                             | 8.2%                                                                              | 11.1%                                                                               | 48.6%                                                                               |                                                                                     | 8.2%                                                                                | 45.6%                                                                               | 8.6%                                                                                |
| Maximum Green (s)       | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 6.0                                                                               | 10.1                                                                                | 62.0                                                                                |                                                                                     | 6.0                                                                                 | 57.9                                                                                | 6.5                                                                                 |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 4.0                                                                                 |                                                                                     | 3.5                                                                                 | 4.0                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               |                                                                                   | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 |                                                                                     | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 6.0                                                                                 |                                                                                     | 5.5                                                                                 | 6.0                                                                                 | 5.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Max                                                                               |                                                                                     | None                                                                                | C-Max                                                                               | None                                                                                |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                     | 35.0                                                                                |                                                                                     |                                                                                     | 35.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                     | 10                                                                                  |                                                                                     |                                                                                     | 10                                                                                  |                                                                                     |
| Act Effect Green (s)    | 24.7                                                                              | 23.4                                                                              |                                                                                   | 23.2                                                                              |                                                                                   | 30.7                                                                              | 94.3                                                                                | 85.9                                                                                |                                                                                     | 99.4                                                                                | 89.3                                                                                | 101.7                                                                               |
| Actuated g/C Ratio      | 0.18                                                                              | 0.17                                                                              |                                                                                   | 0.17                                                                              |                                                                                   | 0.22                                                                              | 0.67                                                                                | 0.61                                                                                |                                                                                     | 0.71                                                                                | 0.64                                                                                | 0.73                                                                                |
| v/c Ratio               | 0.16                                                                              | 0.11                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.30                                                                              | 0.29                                                                                | 1.02                                                                                |                                                                                     | 0.74                                                                                | 0.39                                                                                | 0.16                                                                                |
| Control Delay           | 39.8                                                                              | 0.5                                                                               |                                                                                   | 33.3                                                                              |                                                                                   | 13.2                                                                              | 3.1                                                                                 | 58.0                                                                                |                                                                                     | 57.7                                                                                | 18.3                                                                                | 6.7                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 39.8                                                                              | 0.5                                                                               |                                                                                   | 33.3                                                                              |                                                                                   | 13.2                                                                              | 3.1                                                                                 | 58.0                                                                                |                                                                                     | 57.7                                                                                | 18.3                                                                                | 6.7                                                                                 |
| LOS                     | D                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 | A                                                                                   | E                                                                                   |                                                                                     | E                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 16.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 55.0                                                                                |                                                                                     |                                                                                     | 21.3                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 6.0                                                                               | 10.1                                                                                | 62.0                                                                                |                                                                                     | 6.0                                                                                 | 57.9                                                                                | 6.5                                                                                 |
| 90th %ile Term Code     | Max                                                                               | Ped                                                                               |                                                                                   | Max                                                                               | Ped                                                                               | Max                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Max                                                                                 | Coord                                                                               | Max                                                                                 |
| 70th %ile Green (s)     | 6.5                                                                               | 55.0                                                                              |                                                                                   | 0.0                                                                               | 43.0                                                                              | 6.0                                                                               | 10.1                                                                                | 62.0                                                                                |                                                                                     | 6.0                                                                                 | 57.9                                                                                | 6.5                                                                                 |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Ped                                                                               | Max                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Max                                                                                 | Coord                                                                               | Max                                                                                 |
| 50th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 12.5                                                                              | 6.8                                                                                 | 104.0                                                                               |                                                                                     | 12.5                                                                                | 109.7                                                                               | 6.5                                                                                 |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 30th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 13.6                                                                              | 6.4                                                                                 | 102.9                                                                               |                                                                                     | 13.6                                                                                | 110.1                                                                               | 6.5                                                                                 |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 10th %ile Green (s)     | 6.0                                                                               | 6.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 18.5                                                                              | 6.0                                                                                 | 98.5                                                                                |                                                                                     | 18.5                                                                                | 111.0                                                                               | 6.0                                                                                 |
| 10th %ile Term Code     | Hold                                                                              | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Hold                                                                                |
| Stops (vph)             | 26                                                                                | 0                                                                                 |                                                                                   | 8                                                                                 |                                                                                   | 29                                                                                | 10                                                                                  | 558                                                                                 |                                                                                     | 52                                                                                  | 439                                                                                 | 36                                                                                  |
| Fuel Used(gal)          | 1                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   | 45                                                                                  |                                                                                     | 4                                                                                   | 20                                                                                  | 3                                                                                   |
| CO Emissions (g/hr)     | 44                                                                                | 22                                                                                |                                                                                   | 11                                                                                |                                                                                   | 88                                                                                | 65                                                                                  | 3123                                                                                |                                                                                     | 296                                                                                 | 1363                                                                                | 217                                                                                 |
| NOx Emissions (g/hr)    | 9                                                                                 | 4                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 17                                                                                | 13                                                                                  | 608                                                                                 |                                                                                     | 58                                                                                  | 265                                                                                 | 42                                                                                  |
| VOC Emissions (g/hr)    | 10                                                                                | 5                                                                                 |                                                                                   | 3                                                                                 |                                                                                   | 21                                                                                | 15                                                                                  | 724                                                                                 |                                                                                     | 69                                                                                  | 316                                                                                 | 50                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                   | 27                                                                                  |                                                                                     | 0                                                                                   | 31                                                                                  | 0                                                                                   |
| Queue Length 50th (ft)  | 32                                                                                | 0                                                                                 |                                                                                   | 8                                                                                 |                                                                                   | 30                                                                                | 6                                                                                   | 66                                                                                  |                                                                                     | 62                                                                                  | 103                                                                                 | 8                                                                                   |
| Queue Length 95th (ft)  | 48                                                                                | 0                                                                                 |                                                                                   | 19                                                                                |                                                                                   | 78                                                                                | m9 m#1478                                                                           |                                                                                     |                                                                                     | #330                                                                                | 458                                                                                 | 104                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 682                                                                               |                                                                                   |                                                                                   | 693                                                                               |                                                                                   |                                                                                     | 825                                                                                 |                                                                                     |                                                                                     | 1924                                                                                |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 210                                                                                 |                                                                                     |                                                                                     | 480                                                                                 |                                                                                     | 93                                                                                  |
| Base Capacity (vph)     | 226                                                                               | 676                                                                               |                                                                                   | 247                                                                               |                                                                                   | 419                                                                               | 451                                                                                 | 2149                                                                                |                                                                                     | 198                                                                                 | 2257                                                                                | 1177                                                                                |



# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.15                                                                              | 0.08                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.30                                                                              | 0.27                                                                               | 1.02                                                                                |                                                                                     | 0.74                                                                                | 0.39                                                                                | 0.16                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 136 (97%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 41.8

Intersection LOS: D

Intersection Capacity Utilization 91.3%

ICU Level of Service F

Analysis Period (min) 60

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

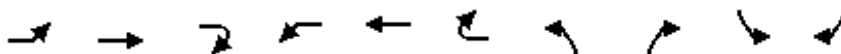
### Splits and Phases: 6: Carothers/Carothers Parkway & Apartments/Resource

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1  |  Ø2 (R)  |  Ø3  |  Ø4  |
| 15.6 s                                                                                 | 63.9 s                                                                                     | 12 s                                                                                   | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 11.5 s                                                                                 | 68 s                                                                                       | 12 s                                                                                   | 48.5 s                                                                                   |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

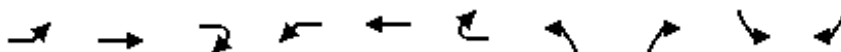


| Lane Group                 | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ←←    | →→    | →     | ←     | →→    | →     | ←←    | →     | ←←    | →→    |
| Traffic Volume (vph)       | 572   | 930   | 366   | 559   | 1252  | 1214  | 285   | 187   | 660   | 671   |
| Future Volume (vph)        | 572   | 930   | 366   | 559   | 1252  | 1214  | 285   | 187   | 660   | 671   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 370   |       |       | 495   |       |       | 0     |       | 0     |       |
| Storage Lanes              | 2     |       |       | 1     |       |       | 2     |       | 2     |       |
| Taper Length (ft)          | 25    |       |       | 25    |       |       | 25    |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 0.97  | 1.00  | 0.97  | 0.88  |
| Frt                        |       |       | 0.850 |       |       | 0.850 |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (prot)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Flt Permitted              | 0.950 |       |       | 0.950 |       |       | 0.950 |       | 0.950 |       |
| Satd. Flow (perm)          | 3433  | 3539  | 1583  | 1770  | 3539  | 1583  | 3433  | 1583  | 3433  | 2787  |
| Right Turn on Red          |       |       | Yes   |       |       | Yes   |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       | 198   |       |       | 542   |       | 187   |       | 131   |
| Link Speed (mph)           |       | 30    |       |       | 30    |       |       |       |       |       |
| Link Distance (ft)         |       | 826   |       |       | 1211  |       |       |       |       |       |
| Travel Time (s)            |       | 18.8  |       |       | 27.5  |       |       |       |       |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 572   | 930   | 366   | 559   | 1252  | 1214  | 285   | 187   | 660   | 671   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 572   | 930   | 366   | 559   | 1252  | 1214  | 285   | 187   | 660   | 671   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Right | Left  | Left  | Right | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    |       |       | 24    |       |       |       |       |       |
| Link Offset(ft)            |       | 0     |       |       | 0     |       |       |       |       |       |
| Crosswalk Width(ft)        |       | 16    |       |       | 16    |       |       |       |       |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |       |       |       |       |
| Headway Factor             | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Turning Speed (mph)        | 15    |       | 9     | 15    |       | 9     | 15    | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 1     | 1     | 2     | 1     | 1     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Right | Left  | Thru  | Right | Left  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 20    | 20    | 100   | 20    | 20    | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 20    | 20    | 6     | 20    | 20    | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    |       |       | 94    |       |       |       |       |       |
| Detector 2 Size(ft)        |       | 6     |       |       | 6     |       |       |       |       |       |
| Detector 2 Type            |       | Cl+Ex |       |       | Cl+Ex |       |       |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   |       |       | 0.0   |       |       |       |       |       |
| Turn Type                  | Prot  | NA    | Free  | Prot  | NA    | Perm  | Perm  | Free  | Perm  | Prot  |
| Protected Phases           | 1     | 6     |       | 5     | 2     |       |       |       |       | 1     |
| Permitted Phases           |       |       | Free  |       |       | 2     | 3     | Free  | 7     |       |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016

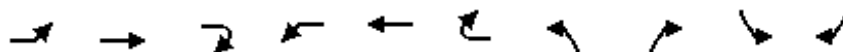


| Lane Group              | EBL   | EBT   | EBR2  | WBL   | WBT   | WBR2  | NBL   | NBR2  | SBL   | SBR2  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Detector Phase          | 1     | 6     |       | 5     | 2     | 2     | 3     |       | 7     | 1     |
| Switch Phase            |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)     | 8.0   | 12.0  |       | 8.0   | 12.0  | 12.0  | 12.0  |       | 12.0  | 8.0   |
| Minimum Split (s)       | 15.0  | 27.0  |       | 25.0  | 27.0  | 27.0  | 27.0  |       | 27.0  | 15.0  |
| Total Split (s)         | 34.0  | 57.0  |       | 60.0  | 83.0  | 83.0  | 33.0  |       | 33.0  | 34.0  |
| Total Split (%)         | 22.7% | 38.0% |       | 40.0% | 55.3% | 55.3% | 22.0% |       | 22.0% | 22.7% |
| Maximum Green (s)       | 27.0  | 50.0  |       | 53.0  | 76.0  | 76.0  | 26.0  |       | 26.0  | 27.0  |
| Yellow Time (s)         | 4.0   | 4.0   |       | 4.0   | 4.0   | 4.0   | 4.0   |       | 4.0   | 4.0   |
| All-Red Time (s)        | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     | 7.0   | 7.0   |       | 7.0   | 7.0   | 7.0   | 7.0   |       | 7.0   | 7.0   |
| Lead/Lag                | Lead  | Lag   |       | Lead  | Lag   | Lag   |       |       |       | Lead  |
| Lead-Lag Optimize?      |       |       |       |       |       |       |       |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   |       | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min |       | None  | C-Min | C-Min | None  |       | None  | None  |
| Walk Time (s)           |       | 7.0   |       |       | 7.0   | 7.0   | 7.0   |       | 7.0   |       |
| Flash Dont Walk (s)     |       | 13.0  |       |       | 13.0  | 13.0  | 13.0  |       | 13.0  |       |
| Pedestrian Calls (#/hr) |       | 5     |       |       | 5     | 5     | 5     |       | 5     |       |
| Act Effect Green (s)    | 27.0  | 52.7  | 150.0 | 50.3  | 76.0  | 76.0  | 26.0  | 150.0 | 26.0  | 27.0  |
| Actuated g/C Ratio      | 0.18  | 0.35  | 1.00  | 0.34  | 0.51  | 0.51  | 0.17  | 1.00  | 0.17  | 0.18  |
| v/c Ratio               | 0.93  | 0.75  | 0.23  | 0.94  | 0.70  | 1.14  | 0.48  | 0.12  | 1.11  | 1.10  |
| Control Delay           | 87.9  | 45.8  | 0.3   | 42.2  | 29.7  | 274.1 | 59.0  | 0.1   | 279.0 | 255.5 |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 87.9  | 45.8  | 0.3   | 42.2  | 29.7  | 274.1 | 59.0  | 0.1   | 279.0 | 255.5 |
| LOS                     | F     | D     | A     | D     | C     | F     | E     | A     | F     | F     |
| Approach Delay          |       | 49.7  |       |       | 130.1 |       |       |       |       |       |
| Approach LOS            |       | D     |       |       | F     |       |       |       |       |       |
| 90th %ile Green (s)     | 27.0  | 50.0  |       | 53.0  | 76.0  | 76.0  | 26.0  |       | 26.0  | 27.0  |
| 90th %ile Term Code     | Max   | Coord |       | Max   | Coord | Coord | Hold  |       | Max   | Max   |
| 70th %ile Green (s)     | 27.0  | 50.0  |       | 53.0  | 76.0  | 76.0  | 26.0  |       | 26.0  | 27.0  |
| 70th %ile Term Code     | Max   | Coord |       | Max   | Coord | Coord | Hold  |       | Max   | Max   |
| 50th %ile Green (s)     | 27.0  | 50.0  |       | 53.0  | 76.0  | 76.0  | 26.0  |       | 26.0  | 27.0  |
| 50th %ile Term Code     | Max   | Coord |       | Max   | Coord | Coord | Hold  |       | Max   | Max   |
| 30th %ile Green (s)     | 27.0  | 53.4  |       | 49.6  | 76.0  | 76.0  | 26.0  |       | 26.0  | 27.0  |
| 30th %ile Term Code     | Max   | Coord |       | Gap   | Coord | Coord | Hold  |       | Max   | Max   |
| 10th %ile Green (s)     | 27.0  | 60.2  |       | 42.8  | 76.0  | 76.0  | 26.0  |       | 26.0  | 27.0  |
| 10th %ile Term Code     | Max   | Coord |       | Gap   | Coord | Coord | Hold  |       | Max   | Max   |
| Stops (vph)             | 530   | 805   | 0     | 485   | 1091  | 933   | 252   | 0     | 602   | 503   |
| Fuel Used(gal)          | 17    | 19    | 2     | 13    | 25    | 84    | 6     | 1     | 45    | 42    |
| CO Emissions (g/hr)     | 1177  | 1335  | 167   | 892   | 1777  | 5897  | 454   | 77    | 3134  | 2919  |
| NOx Emissions (g/hr)    | 229   | 260   | 32    | 174   | 346   | 1147  | 88    | 15    | 610   | 568   |
| VOC Emissions (g/hr)    | 273   | 309   | 39    | 207   | 412   | 1367  | 105   | 18    | 726   | 676   |
| Dilemma Vehicles (#)    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 288   | 442   | 0     | 461   | 578   | ~1136 | 131   | 0     | ~378  | ~359  |
| Queue Length 95th (ft)  | #483  | 541   | 0     | m376  | m496  | m898  | 202   | 0     | #595  | #603  |
| Internal Link Dist (ft) |       | 746   |       |       | 1131  |       |       |       |       |       |
| Turn Bay Length (ft)    | 370   |       |       | 495   |       |       |       |       |       |       |
| Base Capacity (vph)     | 617   | 1243  | 1583  | 625   | 1793  | 1069  | 595   | 1583  | 595   | 609   |
| Starvation Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

# Lanes, Volumes, Timings

1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen

11/18/2016



| Lane Group            | EBL  | EBT  | EBR2 | WBL  | WBT  | WBR2 | NBL  | NBR2 | SBL  | SBR2 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 0    | 0    | 19   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.93 | 0.75 | 0.23 | 0.89 | 0.71 | 1.14 | 0.48 | 0.12 | 1.11 | 1.10 |

## Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 138 (92%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 128.3

Intersection LOS: F

Intersection Capacity Utilization Err%

ICU Level of Service H

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

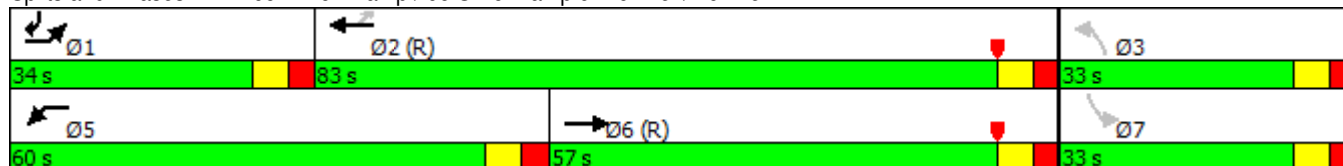
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

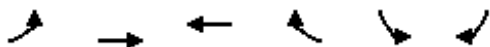
Splits and Phases: 1: I65 NB off Ramp /I65 SB off ramp & McEwen/McEwen





Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

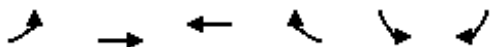
11/18/2016



| Lane Group                 | EBL   | EBT   | WBT   | WBR   | SBL   | SBR   |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Lane Configurations        | ↰↰    | ↑↑    | ↑↑    | ↱     | ↰     | ↱↱    |
| Traffic Volume (vph)       | 160   | 1611  | 2386  | 22    | 170   | 627   |
| Future Volume (vph)        | 160   | 1611  | 2386  | 22    | 170   | 627   |
| Ideal Flow (vphpl)         | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)        | 285   |       |       | 115   | 445   | 0     |
| Storage Lanes              | 2     |       |       | 1     | 1     | 2     |
| Taper Length (ft)          | 25    |       |       |       | 25    |       |
| Lane Util. Factor          | 0.97  | 0.95  | 0.95  | 1.00  | 1.00  | 0.88  |
| Frt                        |       |       |       | 0.850 |       | 0.850 |
| Flt Protected              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (prot)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Flt Permitted              | 0.950 |       |       |       | 0.950 |       |
| Satd. Flow (perm)          | 3090  | 3185  | 3185  | 1425  | 1593  | 2508  |
| Right Turn on Red          |       |       |       | Yes   |       | Yes   |
| Satd. Flow (RTOR)          |       |       |       | 5     |       | 171   |
| Link Speed (mph)           |       | 30    | 30    |       | 30    |       |
| Link Distance (ft)         |       | 1211  | 938   |       | 511   |       |
| Travel Time (s)            |       | 27.5  | 21.3  |       | 11.6  |       |
| Peak Hour Factor           | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Adj. Flow (vph)            | 160   | 1611  | 2386  | 22    | 170   | 627   |
| Shared Lane Traffic (%)    |       |       |       |       |       |       |
| Lane Group Flow (vph)      | 160   | 1611  | 2386  | 22    | 170   | 627   |
| Enter Blocked Intersection | No    | No    | No    | No    | No    | No    |
| Lane Alignment             | Left  | Left  | Left  | Right | Left  | Right |
| Median Width(ft)           |       | 24    | 24    |       | 12    |       |
| Link Offset(ft)            |       | 0     | 0     |       | 0     |       |
| Crosswalk Width(ft)        |       | 16    | 16    |       | 16    |       |
| Two way Left Turn Lane     |       |       |       |       |       |       |
| Headway Factor             | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  | 1.14  |
| Turning Speed (mph)        | 15    |       |       | 9     | 15    | 9     |
| Number of Detectors        | 1     | 2     | 2     | 1     | 1     | 1     |
| Detector Template          | Left  | Thru  | Thru  | Right | Left  | Right |
| Leading Detector (ft)      | 20    | 100   | 100   | 20    | 20    | 20    |
| Trailing Detector (ft)     | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     | 0     | 0     | 0     | 0     |
| Detector 1 Size(ft)        | 20    | 6     | 6     | 20    | 20    | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |       |       |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Detector 2 Position(ft)    |       | 94    | 94    |       |       |       |
| Detector 2 Size(ft)        |       | 6     | 6     |       |       |       |
| Detector 2 Type            |       | Cl+Ex | Cl+Ex |       |       |       |
| Detector 2 Channel         |       |       |       |       |       |       |
| Detector 2 Extend (s)      |       | 0.0   | 0.0   |       |       |       |
| Turn Type                  | Prot  | NA    | NA    | Prot  | Prot  | Prot  |
| Protected Phases           | 1     | 6     | 2     | 2     | 8     | 8     |
| Permitted Phases           |       |       |       |       |       |       |

Lanes, Volumes, Timings  
2: McEwen /McEwen & Tower

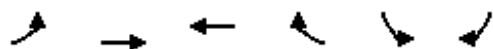
11/18/2016



| Lane Group              | EBL   | EBT   | WBT    | WBR   | SBL   | SBR   |
|-------------------------|-------|-------|--------|-------|-------|-------|
| Detector Phase          | 1     | 6     | 2      | 2     | 8     | 8     |
| Switch Phase            |       |       |        |       |       |       |
| Minimum Initial (s)     | 7.0   | 20.0  | 20.0   | 20.0  | 8.0   | 8.0   |
| Minimum Split (s)       | 13.5  | 43.5  | 43.5   | 43.5  | 46.5  | 46.5  |
| Total Split (s)         | 13.5  | 103.5 | 90.0   | 90.0  | 46.5  | 46.5  |
| Total Split (%)         | 9.0%  | 69.0% | 60.0%  | 60.0% | 31.0% | 31.0% |
| Maximum Green (s)       | 8.0   | 98.0  | 84.5   | 84.5  | 41.0  | 41.0  |
| Yellow Time (s)         | 3.5   | 3.5   | 3.5    | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)        | 2.0   | 2.0   | 2.0    | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.5   | 5.5   | 5.5    | 5.5   | 5.5   | 5.5   |
| Lead/Lag                | Lead  |       | Lag    | Lag   |       |       |
| Lead-Lag Optimize?      |       |       |        |       |       |       |
| Vehicle Extension (s)   | 3.0   | 3.0   | 3.0    | 3.0   | 3.0   | 3.0   |
| Recall Mode             | None  | C-Min | C-Min  | C-Min | None  | None  |
| Walk Time (s)           |       | 7.0   | 7.0    | 7.0   | 7.0   | 7.0   |
| Flash Dont Walk (s)     |       | 18.0  | 18.0   | 18.0  | 34.0  | 34.0  |
| Pedestrian Calls (#/hr) |       | 3     | 3      | 3     | 3     | 3     |
| Act Effect Green (s)    | 11.6  | 104.9 | 87.8   | 87.8  | 34.1  | 34.1  |
| Actuated g/C Ratio      | 0.08  | 0.70  | 0.59   | 0.59  | 0.23  | 0.23  |
| v/c Ratio               | 0.67  | 0.72  | 1.28   | 0.03  | 0.47  | 0.89  |
| Control Delay           | 92.8  | 4.5   | 534.2  | 14.0  | 53.5  | 59.5  |
| Queue Delay             | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 1.1   |
| Total Delay             | 92.8  | 4.5   | 534.2  | 14.0  | 53.5  | 60.6  |
| LOS                     | F     | A     | F      | B     | D     | E     |
| Approach Delay          |       | 12.5  | 529.5  |       | 59.0  |       |
| Approach LOS            |       | B     | F      |       | E     |       |
| 90th %ile Green (s)     | 8.0   | 98.0  | 84.5   | 84.5  | 41.0  | 41.0  |
| 90th %ile Term Code     | Max   | Coord | Coord  | Coord | Max   | Max   |
| 70th %ile Green (s)     | 9.9   | 99.9  | 84.5   | 84.5  | 39.1  | 39.1  |
| 70th %ile Term Code     | Max   | Coord | Coord  | Coord | Gap   | Gap   |
| 50th %ile Green (s)     | 13.7  | 103.7 | 84.5   | 84.5  | 35.3  | 35.3  |
| 50th %ile Term Code     | Max   | Coord | Coord  | Coord | Gap   | Gap   |
| 30th %ile Green (s)     | 13.9  | 108.4 | 89.0   | 89.0  | 30.6  | 30.6  |
| 30th %ile Term Code     | Gap   | Coord | Coord  | Coord | Gap   | Gap   |
| 10th %ile Green (s)     | 12.4  | 114.4 | 96.5   | 96.5  | 24.6  | 24.6  |
| 10th %ile Term Code     | Gap   | Coord | Coord  | Coord | Gap   | Gap   |
| Stops (vph)             | 133   | 514   | 2002   | 19    | 142   | 458   |
| Fuel Used(gal)          | 5     | 20    | 288    | 0     | 3     | 13    |
| CO Emissions (g/hr)     | 368   | 1365  | 20131  | 23    | 232   | 882   |
| NOx Emissions (g/hr)    | 72    | 266   | 3917   | 4     | 45    | 172   |
| VOC Emissions (g/hr)    | 85    | 316   | 4666   | 5     | 54    | 204   |
| Dilemma Vehicles (#)    | 0     | 0     | 0      | 0     | 0     | 0     |
| Queue Length 50th (ft)  | 73    | 37    | ~1582  | 4     | 144   | 255   |
| Queue Length 95th (ft)  | m#114 | m73   | m#1300 | m4    | 238   | #415  |
| Internal Link Dist (ft) |       | 1131  | 858    |       | 431   |       |
| Turn Bay Length (ft)    | 285   |       |        | 115   | 445   |       |
| Base Capacity (vph)     | 238   | 2226  | 1864   | 835   | 435   | 809   |
| Starvation Cap Reductn  | 0     | 0     | 0      | 0     | 0     | 0     |

# Lanes, Volumes, Timings 2: McEwen /McEwen & Tower

11/18/2016



| Lane Group            | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
|-----------------------|------|------|------|------|------|------|
| Spillback Cap Reductn | 0    | 0    | 4    | 0    | 0    | 50   |
| Storage Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio     | 0.67 | 0.72 | 1.28 | 0.03 | 0.39 | 0.83 |

## Intersection Summary

Area Type: CBD

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 66 (44%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.28

Intersection Signal Delay: 270.1

Intersection LOS: F

Intersection Capacity Utilization 106.8%

ICU Level of Service G

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: McEwen /McEwen & Tower



# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 249                                                                               | 940                                                                               | 540                                                                               | 95                                                                                | 886                                                                               | 188                                                                               | 364                                                                                 | 412                                                                                 | 98                                                                                  | 342                                                                                 | 1323                                                                                | 1111                                                                                |
| Future Volume (vph)        | 249                                                                               | 940                                                                               | 540                                                                               | 95                                                                                | 886                                                                               | 188                                                                               | 364                                                                                 | 412                                                                                 | 98                                                                                  | 342                                                                                 | 1323                                                                                | 1111                                                                                |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                              | 3539                                                                              | 1583                                                                              | 3433                                                                                | 3539                                                                                | 1583                                                                                | 3433                                                                                | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 62                                                                                |                                                                                   |                                                                                   | 105                                                                               |                                                                                     |                                                                                     | 109                                                                                 |                                                                                     |                                                                                     | 65                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 938                                                                               |                                                                                   |                                                                                   | 1960                                                                              |                                                                                   |                                                                                     | 1936                                                                                |                                                                                     |                                                                                     | 857                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                     | 44.0                                                                                |                                                                                     |                                                                                     | 14.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 249                                                                               | 940                                                                               | 540                                                                               | 95                                                                                | 886                                                                               | 188                                                                               | 364                                                                                 | 412                                                                                 | 98                                                                                  | 342                                                                                 | 1323                                                                                | 1111                                                                                |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 249                                                                               | 940                                                                               | 540                                                                               | 95                                                                                | 886                                                                               | 188                                                                               | 364                                                                                 | 412                                                                                 | 98                                                                                  | 342                                                                                 | 1323                                                                                | 1111                                                                                |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                              | NA                                                                                | pm+ov                                                                             | Prot                                                                                | NA                                                                                  | custom                                                                              | Prot                                                                                | NA                                                                                  | custom                                                                              |
| Protected Phases           | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Permitted Phases           |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |



# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Detector Phase          | 1                                                                                 | 6                                                                                 | 7                                                                                 | 5                                                                                 | 2                                                                                 | 3                                                                                 | 7                                                                                   | 4                                                                                   | 5                                                                                   | 3                                                                                   | 8                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 13.0                                                                              | 6.0                                                                               | 4.0                                                                               | 13.0                                                                              | 6.0                                                                               | 6.0                                                                                 | 13.0                                                                                | 4.0                                                                                 | 6.0                                                                                 | 13.0                                                                                | 6.0                                                                                 |
| Minimum Split (s)       | 13.0                                                                              | 52.0                                                                              | 12.5                                                                              | 10.0                                                                              | 52.0                                                                              | 13.0                                                                              | 12.5                                                                                | 52.0                                                                                | 10.0                                                                                | 13.0                                                                                | 52.0                                                                                | 13.0                                                                                |
| Total Split (s)         | 24.0                                                                              | 64.0                                                                              | 18.0                                                                              | 14.0                                                                              | 54.0                                                                              | 20.0                                                                              | 18.0                                                                                | 52.0                                                                                | 14.0                                                                                | 20.0                                                                                | 54.0                                                                                | 24.0                                                                                |
| Total Split (%)         | 16.0%                                                                             | 42.7%                                                                             | 12.0%                                                                             | 9.3%                                                                              | 36.0%                                                                             | 13.3%                                                                             | 12.0%                                                                               | 34.7%                                                                               | 9.3%                                                                                | 13.3%                                                                               | 36.0%                                                                               | 16.0%                                                                               |
| Maximum Green (s)       | 18.0                                                                              | 58.0                                                                              | 12.0                                                                              | 8.5                                                                               | 48.0                                                                              | 14.0                                                                              | 12.0                                                                                | 46.0                                                                                | 8.5                                                                                 | 14.0                                                                                | 48.0                                                                                | 18.0                                                                                |
| Yellow Time (s)         | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 5.5                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Max                                                                               | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | Max                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                              |                                                                                   |                                                                                     | 37.0                                                                                |                                                                                     |                                                                                     | 37.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                     | 5                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |                                                                                     |
| Act Effect Green (s)    | 18.0                                                                              | 58.3                                                                              | 76.3                                                                              | 8.2                                                                               | 48.0                                                                              | 68.0                                                                              | 12.0                                                                                | 46.0                                                                                | 62.2                                                                                | 14.0                                                                                | 48.0                                                                                | 70.0                                                                                |
| Actuated g/C Ratio      | 0.12                                                                              | 0.39                                                                              | 0.51                                                                              | 0.05                                                                              | 0.32                                                                              | 0.45                                                                              | 0.08                                                                                | 0.31                                                                                | 0.41                                                                                | 0.09                                                                                | 0.32                                                                                | 0.47                                                                                |
| v/c Ratio               | 0.61                                                                              | 0.68                                                                              | 0.65                                                                              | 0.51                                                                              | 0.78                                                                              | 0.24                                                                              | 1.33                                                                                | 0.38                                                                                | 0.14                                                                                | 1.07                                                                                | 1.17                                                                                | 1.44                                                                                |
| Control Delay           | 65.9                                                                              | 24.2                                                                              | 21.5                                                                              | 70.1                                                                              | 45.5                                                                              | 11.5                                                                              | 666.8                                                                               | 42.1                                                                                | 3.9                                                                                 | 245.2                                                                               | 359.0                                                                               | 825.1                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 5.2                                                                                 |
| Total Delay             | 65.9                                                                              | 24.2                                                                              | 21.5                                                                              | 70.1                                                                              | 49.8                                                                              | 11.5                                                                              | 666.8                                                                               | 42.1                                                                                | 3.9                                                                                 | 245.2                                                                               | 359.0                                                                               | 830.3                                                                               |
| LOS                     | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | D                                                                                 | B                                                                                 | F                                                                                   | D                                                                                   | A                                                                                   | F                                                                                   | F                                                                                   | F                                                                                   |
| Approach Delay          |                                                                                   | 29.3                                                                              |                                                                                   |                                                                                   | 45.3                                                                              |                                                                                   |                                                                                     | 298.0                                                                               |                                                                                     |                                                                                     | 533.6                                                                               |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 18.0                                                                              | 58.0                                                                              | 12.0                                                                              | 8.5                                                                               | 48.0                                                                              | 14.0                                                                              | 12.0                                                                                | 46.0                                                                                | 8.5                                                                                 | 14.0                                                                                | 48.0                                                                                | 18.0                                                                                |
| 90th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 70th %ile Green (s)     | 18.0                                                                              | 58.0                                                                              | 12.0                                                                              | 8.5                                                                               | 48.0                                                                              | 14.0                                                                              | 12.0                                                                                | 46.0                                                                                | 8.5                                                                                 | 14.0                                                                                | 48.0                                                                                | 18.0                                                                                |
| 70th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 50th %ile Green (s)     | 18.0                                                                              | 58.0                                                                              | 12.0                                                                              | 8.5                                                                               | 48.0                                                                              | 14.0                                                                              | 12.0                                                                                | 46.0                                                                                | 8.5                                                                                 | 14.0                                                                                | 48.0                                                                                | 18.0                                                                                |
| 50th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Max                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 30th %ile Green (s)     | 18.0                                                                              | 58.1                                                                              | 12.0                                                                              | 8.4                                                                               | 48.0                                                                              | 14.0                                                                              | 12.0                                                                                | 46.0                                                                                | 8.4                                                                                 | 14.0                                                                                | 48.0                                                                                | 18.0                                                                                |
| 30th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Gap                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| 10th %ile Green (s)     | 18.0                                                                              | 59.6                                                                              | 12.0                                                                              | 6.9                                                                               | 48.0                                                                              | 14.0                                                                              | 12.0                                                                                | 46.0                                                                                | 6.9                                                                                 | 14.0                                                                                | 48.0                                                                                | 18.0                                                                                |
| 10th %ile Term Code     | MaxR                                                                              | Coord                                                                             | Max                                                                               | Gap                                                                               | Coord                                                                             | Max                                                                               | Max                                                                                 | Hold                                                                                | Gap                                                                                 | Max                                                                                 | Max                                                                                 | MaxR                                                                                |
| Stops (vph)             | 225                                                                               | 633                                                                               | 416                                                                               | 90                                                                                | 706                                                                               | 69                                                                                | 330                                                                                 | 317                                                                                 | 8                                                                                   | 308                                                                                 | 1214                                                                                | 975                                                                                 |
| Fuel Used(gal)          | 6                                                                                 | 15                                                                                | 9                                                                                 | 3                                                                                 | 26                                                                                | 4                                                                                 | 57                                                                                  | 11                                                                                  | 2                                                                                   | 22                                                                                  | 116                                                                                 | 203                                                                                 |
| CO Emissions (g/hr)     | 448                                                                               | 1049                                                                              | 602                                                                               | 231                                                                               | 1793                                                                              | 258                                                                               | 3965                                                                                | 804                                                                                 | 112                                                                                 | 1544                                                                                | 8130                                                                                | 14166                                                                               |
| NOx Emissions (g/hr)    | 87                                                                                | 204                                                                               | 117                                                                               | 45                                                                                | 349                                                                               | 50                                                                                | 772                                                                                 | 156                                                                                 | 22                                                                                  | 300                                                                                 | 1582                                                                                | 2756                                                                                |
| VOC Emissions (g/hr)    | 104                                                                               | 243                                                                               | 139                                                                               | 54                                                                                | 415                                                                               | 60                                                                                | 919                                                                                 | 186                                                                                 | 26                                                                                  | 358                                                                                 | 1884                                                                                | 3283                                                                                |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 38                                                                                  | 0                                                                                   |
| Queue Length 50th (ft)  | 109                                                                               | 330                                                                               | 315                                                                               | 46                                                                                | 380                                                                               | 52                                                                                | ~237                                                                                | 166                                                                                 | 0                                                                                   | ~190                                                                                | ~807                                                                                | ~1442                                                                               |
| Queue Length 95th (ft)  | m165                                                                              | 460                                                                               | 712                                                                               | m68                                                                               | m480                                                                              | m86                                                                               | #397                                                                                | 246                                                                                 | 41                                                                                  | #345                                                                                | #1120                                                                               | #1995                                                                               |
| Internal Link Dist (ft) |                                                                                   | 858                                                                               |                                                                                   |                                                                                   | 1880                                                                              |                                                                                   |                                                                                     | 1856                                                                                |                                                                                     |                                                                                     | 777                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 205                                                                               |                                                                                   | 205                                                                               | 218                                                                               |                                                                                   | 97                                                                                | 300                                                                                 |                                                                                     | 300                                                                                 | 280                                                                                 |                                                                                     | 310                                                                                 |
| Base Capacity (vph)     | 411                                                                               | 1376                                                                              | 835                                                                               | 194                                                                               | 1132                                                                              | 775                                                                               | 274                                                                                 | 1085                                                                                | 723                                                                                 | 320                                                                                 | 1132                                                                                | 773                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |

# Lanes, Volumes, Timings

## 3: Carothers/Carothers & McEwen

11/18/2016

|                       |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group            | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Spillback Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 167                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 332                                                                                 |
| Storage Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio     | 0.61                                                                              | 0.68                                                                              | 0.65                                                                              | 0.49                                                                              | 0.92                                                                              | 0.24                                                                              | 1.33                                                                               | 0.38                                                                                | 0.14                                                                                | 1.07                                                                                | 1.17                                                                                | 2.52                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 78 (52%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.44

Intersection Signal Delay: 281.8

Intersection LOS: F

Intersection Capacity Utilization 118.7%

ICU Level of Service H

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

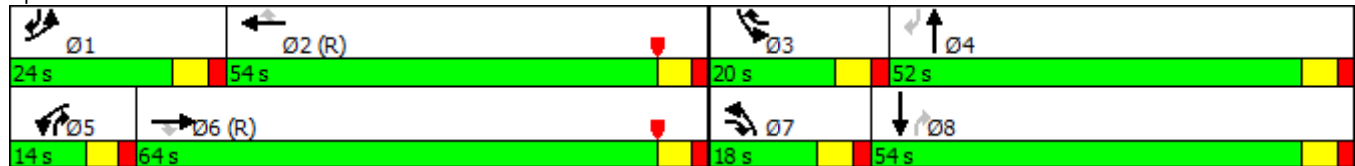
Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Carothers/Carothers & McEwen



# Lanes, Volumes, Timings

## 4: Ovation/Resource Parkway & McEwen

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)       | 178                                                                               | 1029                                                                              | 181                                                                               | 101                                                                               | 379                                                                               | 43                                                                                | 603                                                                                | 124                                                                                 | 86                                                                                  | 135                                                                                 | 81                                                                                  | 272                                                                                 |
| Future Volume (vph)        | 178                                                                               | 1029                                                                              | 181                                                                               | 101                                                                               | 379                                                                               | 43                                                                                | 603                                                                                | 124                                                                                 | 86                                                                                  | 135                                                                                 | 81                                                                                  | 272                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Util. Factor          | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Fr't                       |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     | 0.884                                                                               |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 3539                                                                              | 1583                                                                              | 1770                                                                              | 3486                                                                              | 0                                                                                 | 3433                                                                               | 1863                                                                                | 1583                                                                                | 1770                                                                                | 1647                                                                                | 0                                                                                   |
| Flt Permitted              | 0.386                                                                             |                                                                                   |                                                                                   | 0.171                                                                             |                                                                                   |                                                                                   | 0.192                                                                              |                                                                                     |                                                                                     | 0.677                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 719                                                                               | 3539                                                                              | 1583                                                                              | 319                                                                               | 3486                                                                              | 0                                                                                 | 694                                                                                | 1863                                                                                | 1583                                                                                | 1261                                                                                | 1647                                                                                | 0                                                                                   |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 181                                                                               |                                                                                   | 17                                                                                |                                                                                   |                                                                                    |                                                                                     | 86                                                                                  |                                                                                     | 205                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 1960                                                                              |                                                                                   |                                                                                   | 345                                                                               |                                                                                   |                                                                                    | 402                                                                                 |                                                                                     |                                                                                     | 456                                                                                 |                                                                                     |
| Travel Time (s)            |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 10.4                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 178                                                                               | 1029                                                                              | 181                                                                               | 101                                                                               | 379                                                                               | 43                                                                                | 603                                                                                | 124                                                                                 | 86                                                                                  | 135                                                                                 | 81                                                                                  | 272                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 178                                                                               | 1029                                                                              | 181                                                                               | 101                                                                               | 422                                                                               | 0                                                                                 | 603                                                                                | 124                                                                                 | 86                                                                                  | 135                                                                                 | 353                                                                                 | 0                                                                                   |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                               | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 36                                                                                |                                                                                   |                                                                                    | 24                                                                                  |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                 |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                  | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |                                                                                     |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                               | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |                                                                                     |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                 | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |                                                                                     |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                 | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |                                                                                     |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | pm+ov                                                                             | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases           | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                  | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Permitted Phases           | 8                                                                                 |                                                                                   | 8                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase             | 3                                                                                 | 8                                                                                 | 1                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 1                                                                                  | 6                                                                                   | 7                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     |
| Switch Phase               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)        | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |

Lanes, Volumes, Timings  
4: Ovation/Resource Parkway & McEwen

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Minimum Split (s)       | 10.0                                                                              | 20.0                                                                              | 10.0                                                                              | 10.0                                                                              | 20.0                                                                              |                                                                                   | 10.0                                                                                | 20.0                                                                                | 10.0                                                                                | 10.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (s)         | 12.0                                                                              | 30.0                                                                              | 15.0                                                                              | 10.0                                                                              | 28.0                                                                              |                                                                                   | 15.0                                                                                | 25.0                                                                                | 10.0                                                                                | 10.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 16.0%                                                                             | 40.0%                                                                             | 20.0%                                                                             | 13.3%                                                                             | 37.3%                                                                             |                                                                                   | 20.0%                                                                               | 33.3%                                                                               | 13.3%                                                                               | 13.3%                                                                               | 26.7%                                                                               |                                                                                     |
| Maximum Green (s)       | 8.0                                                                               | 26.0                                                                              | 11.0                                                                              | 6.0                                                                               | 24.0                                                                              |                                                                                   | 11.0                                                                                | 21.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               |                                                                                   | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |                                                                                     |
| All-Red Time (s)        | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               | 0.5                                                                               |                                                                                   | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 | 0.5                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | C-Max                                                                             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                                | Max                                                                                 | None                                                                                | None                                                                                | Max                                                                                 |                                                                                     |
| Walk Time (s)           |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                     | 10                                                                                  |                                                                                     |                                                                                     | 10                                                                                  |                                                                                     |
| Act Effect Green (s)    | 34.4                                                                              | 28.0                                                                              | 43.0                                                                              | 30.2                                                                              | 24.2                                                                              |                                                                                   | 31.0                                                                                | 23.0                                                                                | 32.9                                                                                | 22.0                                                                                | 16.0                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.46                                                                              | 0.37                                                                              | 0.57                                                                              | 0.40                                                                              | 0.32                                                                              |                                                                                   | 0.41                                                                                | 0.31                                                                                | 0.44                                                                                | 0.29                                                                                | 0.21                                                                                |                                                                                     |
| v/c Ratio               | 0.41                                                                              | 0.78                                                                              | 0.18                                                                              | 0.42                                                                              | 0.37                                                                              |                                                                                   | 0.88                                                                                | 0.22                                                                                | 0.12                                                                                | 0.33                                                                                | 0.69                                                                                |                                                                                     |
| Control Delay           | 10.5                                                                              | 20.4                                                                              | 2.1                                                                               | 16.7                                                                              | 19.9                                                                              |                                                                                   | 34.9                                                                                | 21.9                                                                                | 4.0                                                                                 | 17.4                                                                                | 19.7                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 10.5                                                                              | 20.4                                                                              | 2.1                                                                               | 16.7                                                                              | 19.9                                                                              |                                                                                   | 34.9                                                                                | 21.9                                                                                | 4.0                                                                                 | 17.4                                                                                | 19.7                                                                                |                                                                                     |
| LOS                     | B                                                                                 | C                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                   | C                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 16.8                                                                              |                                                                                   |                                                                                   | 19.3                                                                              |                                                                                   |                                                                                     | 29.6                                                                                |                                                                                     |                                                                                     | 19.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 8.0                                                                               | 26.0                                                                              | 11.0                                                                              | 6.0                                                                               | 24.0                                                                              |                                                                                   | 11.0                                                                                | 21.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 90th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 70th %ile Green (s)     | 8.0                                                                               | 26.0                                                                              | 11.0                                                                              | 6.0                                                                               | 24.0                                                                              |                                                                                   | 11.0                                                                                | 21.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 70th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 50th %ile Green (s)     | 8.0                                                                               | 26.0                                                                              | 11.0                                                                              | 6.0                                                                               | 24.0                                                                              |                                                                                   | 11.0                                                                                | 21.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 50th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 30th %ile Green (s)     | 8.0                                                                               | 26.0                                                                              | 11.0                                                                              | 6.0                                                                               | 24.0                                                                              |                                                                                   | 11.0                                                                                | 21.0                                                                                | 6.0                                                                                 | 6.0                                                                                 | 16.0                                                                                |                                                                                     |
| 30th %ile Term Code     | Max                                                                               | Coord                                                                             | Max                                                                               | Max                                                                               | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Max                                                                                 | Max                                                                                 | MaxR                                                                                |                                                                                     |
| 10th %ile Green (s)     | 6.8                                                                               | 36.0                                                                              | 11.0                                                                              | 0.0                                                                               | 25.2                                                                              |                                                                                   | 11.0                                                                                | 31.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 16.0                                                                                |                                                                                     |
| 10th %ile Term Code     | Gap                                                                               | Coord                                                                             | Max                                                                               | Skip                                                                              | Coord                                                                             |                                                                                   | Max                                                                                 | MaxR                                                                                | Skip                                                                                | Skip                                                                                | MaxR                                                                                |                                                                                     |
| Stops (vph)             | 80                                                                                | 704                                                                               | 33                                                                                | 57                                                                                | 299                                                                               |                                                                                   | 388                                                                                 | 93                                                                                  | 14                                                                                  | 96                                                                                  | 146                                                                                 |                                                                                     |
| Fuel Used(gal)          | 4                                                                                 | 24                                                                                | 3                                                                                 | 1                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 3                                                                                   |                                                                                     |
| CO Emissions (g/hr)     | 248                                                                               | 1670                                                                              | 211                                                                               | 65                                                                                | 315                                                                               |                                                                                   | 581                                                                                 | 102                                                                                 | 29                                                                                  | 104                                                                                 | 243                                                                                 |                                                                                     |
| NOx Emissions (g/hr)    | 48                                                                                | 325                                                                               | 41                                                                                | 13                                                                                | 61                                                                                |                                                                                   | 113                                                                                 | 20                                                                                  | 6                                                                                   | 20                                                                                  | 47                                                                                  |                                                                                     |
| VOC Emissions (g/hr)    | 57                                                                                | 387                                                                               | 49                                                                                | 15                                                                                | 73                                                                                |                                                                                   | 135                                                                                 | 24                                                                                  | 7                                                                                   | 24                                                                                  | 56                                                                                  |                                                                                     |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 48                                                                                | 267                                                                               | 21                                                                                | 25                                                                                | 75                                                                                |                                                                                   | 99                                                                                  | 44                                                                                  | 0                                                                                   | 39                                                                                  | 60                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | m97                                                                               | m363                                                                              | m39                                                                               | 57                                                                                | 128                                                                               |                                                                                   | #227                                                                                | 97                                                                                  | 30                                                                                  | 83                                                                                  | #224                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 1880                                                                              |                                                                                   |                                                                                   | 265                                                                               |                                                                                   |                                                                                     | 322                                                                                 |                                                                                     |                                                                                     | 376                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 442                                                                               | 1320                                                                              | 984                                                                               | 244                                                                               | 1138                                                                              |                                                                                   | 688                                                                                 | 571                                                                                 | 744                                                                                 | 410                                                                                 | 512                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.40                                                                              | 0.78                                                                              | 0.18                                                                              | 0.41                                                                              | 0.37                                                                              |                                                                                   | 0.88                                                                                | 0.22                                                                                | 0.12                                                                                | 0.33                                                                                | 0.69                                                                                |                                                                                     |



# Lanes, Volumes, Timings

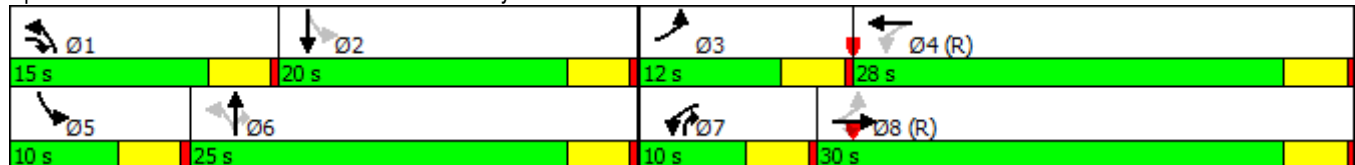
## 4: Ovation/Resource Parkway & McEwen

11/18/2016

### Intersection Summary

Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 70 (93%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 20.8 Intersection LOS: C  
 Intersection Capacity Utilization 85.6% ICU Level of Service E  
 Analysis Period (min) 60  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Ovation/Resource Parkway & McEwen



Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                            |  |  |  |  |  |   |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 395                                                                               | 1                                                                                 | 213                                                                               | 145                                                                               | 0                                                                                 | 54                                                                                 | 68                                                                                  | 667                                                                                 | 124                                                                                 | 31                                                                                  | 2343                                                                                | 120                                                                                 |
| Future Volume (vph)        | 395                                                                               | 1                                                                                 | 213                                                                               | 145                                                                               | 0                                                                                 | 54                                                                                 | 68                                                                                  | 667                                                                                 | 124                                                                                 | 31                                                                                  | 2343                                                                                | 120                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  | 0%                                                                                |                                                                                   |                                                                                   |                                                                                   | 0%                                                                                |                                                                                    |                                                                                     |                                                                                     | 2%                                                                                  |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)        | 84                                                                                |                                                                                   |                                                                                   | 78                                                                                | 106                                                                               |                                                                                    |                                                                                     | 77                                                                                  | 177                                                                                 | 100                                                                                 | 85                                                                                  | 144                                                                                 |
| Storage Lanes              | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                    |                                                                                     | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     | 0.850                                                                               |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 1752                                                                                | 3504                                                                                | 1567                                                                                | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.051                                                                               |                                                                                     |                                                                                     | 0.361                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 3433                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1863                                                                              | 1583                                                                               | 94                                                                                  | 3504                                                                                | 1567                                                                                | 672                                                                                 | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     | Yes                                                                                 |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 109                                                                               |                                                                                   |                                                                                   |                                                                                    | 199                                                                                 |                                                                                     | 105                                                                                 |                                                                                     | 105                                                                                 |                                                                                     |
| Link Speed (mph)           | 30                                                                                |                                                                                   |                                                                                   |                                                                                   | 30                                                                                |                                                                                    | 40                                                                                  |                                                                                     |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)         | 881                                                                               |                                                                                   |                                                                                   |                                                                                   | 890                                                                               |                                                                                    | 857                                                                                 |                                                                                     |                                                                                     |                                                                                     | 905                                                                                 |                                                                                     |
| Travel Time (s)            | 20.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                    | 14.6                                                                                |                                                                                     |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 395                                                                               | 1                                                                                 | 213                                                                               | 145                                                                               | 0                                                                                 | 54                                                                                 | 68                                                                                  | 667                                                                                 | 124                                                                                 | 31                                                                                  | 2343                                                                                | 120                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 395                                                                               | 1                                                                                 | 213                                                                               | 145                                                                               | 0                                                                                 | 54                                                                                 | 68                                                                                  | 667                                                                                 | 124                                                                                 | 31                                                                                  | 2343                                                                                | 120                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                              | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                |                                                                                    | 24                                                                                  |                                                                                     |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |
| Link Offset(ft)            | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                |                                                                                    | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                | 9                                                                                 |                                                                                   | 15                                                                                |                                                                                   |                                                                                    | 9                                                                                   | 15                                                                                  | 9                                                                                   |                                                                                     | 15                                                                                  | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 1                                                                                  | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              | Right                                                                              | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               | 20                                                                                 | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 | 20                                                                                 | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                |                                                                                    | 94                                                                                  |                                                                                     |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                    | Cl+Ex                                                                               |                                                                                     |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              |                                                                                   | Perm                                                                               | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   |                                                                                   | 7                                                                                 | 4                                                                                  | 1                                                                                   |                                                                                     | 6                                                                                   | 5                                                                                   |                                                                                     | 2                                                                                   |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 6                                                                                   |                                                                                     | 6                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 | 8                                                                                 | 7                                                                                 | 4                                                                                 | 4                                                                                 | 1                                                                                   | 6                                                                                   | 6                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                               | 8.0                                                                               | 8.0                                                                               | 6.0                                                                                 | 20.0                                                                                | 20.0                                                                                | 6.0                                                                                 | 20.0                                                                                | 20.0                                                                                |
| Minimum Split (s)       | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.5                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                | 12.0                                                                                | 42.0                                                                                | 42.0                                                                                |
| Total Split (s)         | 16.0                                                                              | 50.5                                                                              | 50.5                                                                              | 14.0                                                                              | 48.5                                                                              | 48.5                                                                              | 12.0                                                                                | 63.5                                                                                | 63.5                                                                                | 12.0                                                                                | 63.5                                                                                | 63.5                                                                                |
| Total Split (%)         | 11.4%                                                                             | 36.1%                                                                             | 36.1%                                                                             | 10.0%                                                                             | 34.6%                                                                             | 34.6%                                                                             | 8.6%                                                                                | 45.4%                                                                               | 45.4%                                                                               | 8.6%                                                                                | 45.4%                                                                               | 45.4%                                                                               |
| Maximum Green (s)       | 10.5                                                                              | 45.0                                                                              | 45.0                                                                              | 8.5                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                 | 57.5                                                                                | 57.5                                                                                | 6.5                                                                                 | 57.5                                                                                | 57.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 | 3.5                                                                                 | 4.0                                                                                 | 4.0                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 | 5.5                                                                                 | 6.0                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Min                                                                               | C-Min                                                                               | None                                                                                | C-Min                                                                               | C-Min                                                                               |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                   | 36.0                                                                              | 36.0                                                                              |                                                                                     | 29.0                                                                                | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                | 10                                                                                |                                                                                   | 10                                                                                | 10                                                                                |                                                                                     | 10                                                                                  | 10                                                                                  |                                                                                     | 10                                                                                  | 10                                                                                  |
| Act Effect Green (s)    | 12.8                                                                              | 25.0                                                                              | 25.0                                                                              | 8.5                                                                               |                                                                                   | 23.4                                                                              | 86.9                                                                                | 82.4                                                                                | 82.4                                                                                | 85.4                                                                                | 79.8                                                                                | 79.8                                                                                |
| Actuated g/C Ratio      | 0.09                                                                              | 0.18                                                                              | 0.18                                                                              | 0.06                                                                              |                                                                                   | 0.17                                                                              | 0.62                                                                                | 0.59                                                                                | 0.59                                                                                | 0.61                                                                                | 0.57                                                                                | 0.57                                                                                |
| v/c Ratio               | 1.26                                                                              | 0.00                                                                              | 0.57                                                                              | 1.36                                                                              |                                                                                   | 0.13                                                                              | 0.50                                                                                | 0.32                                                                                | 0.13                                                                                | 0.07                                                                                | 1.16                                                                                | 0.13                                                                                |
| Control Delay           | 543.9                                                                             | 34.0                                                                              | 28.3                                                                              | 745.1                                                                             |                                                                                   | 0.6                                                                               | 33.4                                                                                | 19.4                                                                                | 6.4                                                                                 | 2.3                                                                                 | 312.1                                                                               | 0.5                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 543.9                                                                             | 34.0                                                                              | 28.3                                                                              | 745.1                                                                             |                                                                                   | 0.6                                                                               | 33.4                                                                                | 19.4                                                                                | 6.4                                                                                 | 2.3                                                                                 | 312.1                                                                               | 0.5                                                                                 |
| LOS                     | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 |                                                                                   | A                                                                                 | C                                                                                   | B                                                                                   | A                                                                                   | A                                                                                   | F                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 362.7                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 18.6                                                                                |                                                                                     |                                                                                     | 293.2                                                                               |                                                                                     |
| Approach LOS            |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 10.5                                                                              | 45.0                                                                              | 45.0                                                                              | 8.5                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                 | 57.5                                                                                | 57.5                                                                                | 6.5                                                                                 | 57.5                                                                                | 57.5                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                                 | Coord                                                                               | Coord                                                                               | Max                                                                                 | Coord                                                                               | Coord                                                                               |
| 70th %ile Green (s)     | 10.5                                                                              | 45.0                                                                              | 45.0                                                                              | 8.5                                                                               | 43.0                                                                              | 43.0                                                                              | 6.5                                                                                 | 57.5                                                                                | 57.5                                                                                | 6.5                                                                                 | 57.5                                                                                | 57.5                                                                                |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Max                                                                               | Ped                                                                               | Ped                                                                               | Max                                                                                 | Coord                                                                               | Coord                                                                               | Max                                                                                 | Coord                                                                               | Coord                                                                               |
| 50th %ile Green (s)     | 10.5                                                                              | 15.3                                                                              | 15.3                                                                              | 8.5                                                                               | 13.3                                                                              | 13.3                                                                              | 7.1                                                                                 | 87.5                                                                                | 87.5                                                                                | 6.2                                                                                 | 86.6                                                                                | 86.6                                                                                |
| 50th %ile Term Code     | Max                                                                               | Gap                                                                               | Gap                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                                 | Coord                                                                               | Coord                                                                               | Gap                                                                                 | Coord                                                                               | Coord                                                                               |
| 30th %ile Green (s)     | 10.5                                                                              | 11.6                                                                              | 11.6                                                                              | 8.5                                                                               | 9.6                                                                               | 9.6                                                                               | 6.4                                                                                 | 102.9                                                                               | 102.9                                                                               | 0.0                                                                                 | 91.0                                                                                | 91.0                                                                                |
| 30th %ile Term Code     | Max                                                                               | Gap                                                                               | Gap                                                                               | Max                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                                 | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| 10th %ile Green (s)     | 22.0                                                                              | 8.0                                                                               | 8.0                                                                               | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 106.5                                                                               | 106.5                                                                               | 0.0                                                                                 | 106.5                                                                               | 106.5                                                                               |
| 10th %ile Term Code     | Hold                                                                              | Min                                                                               | Min                                                                               | Max                                                                               | Skip                                                                              | Skip                                                                              | Skip                                                                                | Coord                                                                               | Coord                                                                               | Skip                                                                                | Coord                                                                               | Coord                                                                               |
| Stops (vph)             | 311                                                                               | 2                                                                                 | 89                                                                                | 130                                                                               |                                                                                   | 0                                                                                 | 33                                                                                  | 349                                                                                 | 18                                                                                  | 3                                                                                   | 1624                                                                                | 5                                                                                   |
| Fuel Used(gal)          | 48                                                                                | 0                                                                                 | 3                                                                                 | 24                                                                                |                                                                                   | 0                                                                                 | 1                                                                                   | 10                                                                                  | 1                                                                                   | 0                                                                                   | 174                                                                                 | 1                                                                                   |
| CO Emissions (g/hr)     | 3367                                                                              | 2                                                                                 | 223                                                                               | 1658                                                                              |                                                                                   | 27                                                                                | 83                                                                                  | 695                                                                                 | 74                                                                                  | 17                                                                                  | 12188                                                                               | 62                                                                                  |
| NOx Emissions (g/hr)    | 655                                                                               | 0                                                                                 | 43                                                                                | 323                                                                               |                                                                                   | 5                                                                                 | 16                                                                                  | 135                                                                                 | 14                                                                                  | 3                                                                                   | 2371                                                                                | 12                                                                                  |
| VOC Emissions (g/hr)    | 780                                                                               | 0                                                                                 | 52                                                                                | 384                                                                               |                                                                                   | 6                                                                                 | 19                                                                                  | 161                                                                                 | 17                                                                                  | 4                                                                                   | 2825                                                                                | 14                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                   | 24                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Queue Length 50th (ft)  | ~259                                                                              | 1                                                                                 | 94                                                                                | ~172                                                                              |                                                                                   | 0                                                                                 | 17                                                                                  | 140                                                                                 | 6                                                                                   | 2                                                                                   | ~1243                                                                               | 10                                                                                  |
| Queue Length 95th (ft)  | #421                                                                              | 6                                                                                 | 172                                                                               | #361                                                                              |                                                                                   | 0                                                                                 | #108                                                                                | 329                                                                                 | 64                                                                                  | m2                                                                                  | m#1721                                                                              | m1                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 801                                                                               |                                                                                   |                                                                                   | 810                                                                               |                                                                                   |                                                                                     | 777                                                                                 |                                                                                     |                                                                                     | 825                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 84                                                                                |                                                                                   | 78                                                                                | 106                                                                               |                                                                                   | 77                                                                                | 177                                                                                 |                                                                                     | 100                                                                                 | 85                                                                                  |                                                                                     | 144                                                                                 |
| Base Capacity (vph)     | 313                                                                               | 598                                                                               | 582                                                                               | 107                                                                               |                                                                                   | 624                                                                               | 136                                                                                 | 2062                                                                                | 965                                                                                 | 461                                                                                 | 2017                                                                                | 947                                                                                 |

Lanes, Volumes, Timings  
5: Carothers /Carothers & Tower/Pacific

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 1.26                                                                              | 0.00                                                                              | 0.37                                                                              | 1.36                                                                              |                                                                                   | 0.09                                                                              | 0.50                                                                               | 0.32                                                                                | 0.13                                                                                | 0.07                                                                                | 1.16                                                                                | 0.13                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 16 (11%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 258.7

Intersection LOS: F

Intersection Capacity Utilization 100.2%

ICU Level of Service G

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Carothers /Carothers & Tower/Pacific

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 12 s                                                                                   | 63.5 s                                                                                     | 16 s                                                                                   | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 63.5 s                                                                                     | 14 s                                                                                   | 50.5 s                                                                                   |



# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations        |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 127                                                                               | 0                                                                                 | 194                                                                               | 8                                                                                 | 0                                                                                 | 172                                                                               | 47                                                                                  | 1096                                                                                | 3                                                                                   | 150                                                                                 | 2257                                                                                | 66                                                                                  |
| Future Volume (vph)        | 127                                                                               | 0                                                                                 | 194                                                                               | 8                                                                                 | 0                                                                                 | 172                                                                               | 47                                                                                  | 1096                                                                                | 3                                                                                   | 150                                                                                 | 2257                                                                                | 66                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Grade (%)                  |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 2%                                                                                  |                                                                                     |                                                                                     | 0%                                                                                  |                                                                                     |
| Storage Length (ft)        | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 128                                                                                 | 480                                                                                 |                                                                                     | 93                                                                                  |
| Storage Lanes              | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)          | 1770                                                                              | 1583                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1752                                                                                | 3504                                                                                | 0                                                                                   | 1770                                                                                | 3539                                                                                | 1583                                                                                |
| Flt Permitted              | 0.590                                                                             |                                                                                   |                                                                                   | 0.518                                                                             |                                                                                   |                                                                                   | 0.048                                                                               |                                                                                     |                                                                                     | 0.181                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)          | 1099                                                                              | 1583                                                                              | 0                                                                                 | 965                                                                               | 1863                                                                              | 1583                                                                              | 89                                                                                  | 3504                                                                                | 0                                                                                   | 337                                                                                 | 3539                                                                                | 1583                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)          |                                                                                   | 192                                                                               |                                                                                   |                                                                                   |                                                                                   | 82                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 62                                                                                  |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Link Distance (ft)         |                                                                                   | 762                                                                               |                                                                                   |                                                                                   | 773                                                                               |                                                                                   |                                                                                     | 905                                                                                 |                                                                                     |                                                                                     | 2004                                                                                |                                                                                     |
| Travel Time (s)            |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     | 34.2                                                                                |                                                                                     |
| Peak Hour Factor           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj. Flow (vph)            | 127                                                                               | 0                                                                                 | 194                                                                               | 8                                                                                 | 0                                                                                 | 172                                                                               | 47                                                                                  | 1096                                                                                | 3                                                                                   | 150                                                                                 | 2257                                                                                | 66                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 127                                                                               | 194                                                                               | 0                                                                                 | 8                                                                                 | 0                                                                                 | 172                                                                               | 47                                                                                  | 1099                                                                                | 0                                                                                   | 150                                                                                 | 2257                                                                                | 66                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.01                                                                                | 1.01                                                                                | 1.01                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   |
| Number of Detectors        | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                                | Thru                                                                                |                                                                                     | Left                                                                                | Thru                                                                                | Right                                                                               |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                  | 100                                                                                 |                                                                                     | 20                                                                                  | 100                                                                                 | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                  | 6                                                                                   |                                                                                     | 20                                                                                  | 6                                                                                   | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             |                                                                                   | pm+ov                                                                             | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               |
| Protected Phases           | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Permitted Phases        | 8                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   | 4                                                                                 | 6                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     | 2                                                                                   |
| Detector Phase          | 3                                                                                 | 8                                                                                 |                                                                                   | 7                                                                                 | 4                                                                                 | 5                                                                                 | 1                                                                                   | 6                                                                                   |                                                                                     | 5                                                                                   | 2                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 6.0                                                                               | 5.0                                                                               | 5.0                                                                                 | 15.0                                                                                |                                                                                     | 5.0                                                                                 | 15.0                                                                                | 5.0                                                                                 |
| Minimum Split (s)       | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 11.5                                                                              | 11.5                                                                                | 48.0                                                                                |                                                                                     | 11.5                                                                                | 48.0                                                                                | 12.0                                                                                |
| Total Split (s)         | 12.0                                                                              | 48.5                                                                              |                                                                                   | 12.0                                                                              | 48.5                                                                              | 16.4                                                                              | 11.5                                                                                | 63.1                                                                                |                                                                                     | 16.4                                                                                | 68.0                                                                                | 12.0                                                                                |
| Total Split (%)         | 8.6%                                                                              | 34.6%                                                                             |                                                                                   | 8.6%                                                                              | 34.6%                                                                             | 11.7%                                                                             | 8.2%                                                                                | 45.1%                                                                               |                                                                                     | 11.7%                                                                               | 48.6%                                                                               | 8.6%                                                                                |
| Maximum Green (s)       | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 10.9                                                                              | 6.0                                                                                 | 57.1                                                                                |                                                                                     | 10.9                                                                                | 62.0                                                                                | 6.5                                                                                 |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 3.5                                                                               | 3.5                                                                                 | 4.0                                                                                 |                                                                                     | 3.5                                                                                 | 4.0                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 2.0                                                                               | 2.0                                                                               |                                                                                   | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                                 | 2.0                                                                                 |                                                                                     | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 5.5                                                                               | 5.5                                                                               |                                                                                   | 5.5                                                                               | 5.5                                                                               | 5.5                                                                               | 5.5                                                                                 | 6.0                                                                                 |                                                                                     | 5.5                                                                                 | 6.0                                                                                 | 5.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                              | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 | Lead                                                                                |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Max                                                                               |                                                                                     | None                                                                                | C-Max                                                                               | None                                                                                |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                     | 35.0                                                                                |                                                                                     |                                                                                     | 35.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 10                                                                                |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                     | 10                                                                                  |                                                                                     |                                                                                     | 10                                                                                  |                                                                                     |
| Act Effect Green (s)    | 24.8                                                                              | 23.5                                                                              |                                                                                   | 23.2                                                                              |                                                                                   | 29.6                                                                              | 93.2                                                                                | 86.9                                                                                |                                                                                     | 102.6                                                                               | 93.5                                                                                | 107.1                                                                               |
| Actuated g/C Ratio      | 0.18                                                                              | 0.17                                                                              |                                                                                   | 0.17                                                                              |                                                                                   | 0.21                                                                              | 0.67                                                                                | 0.62                                                                                |                                                                                     | 0.73                                                                                | 0.67                                                                                | 0.76                                                                                |
| v/c Ratio               | 0.56                                                                              | 0.46                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.43                                                                              | 0.37                                                                                | 0.51                                                                                |                                                                                     | 0.43                                                                                | 0.96                                                                                | 0.05                                                                                |
| Control Delay           | 55.5                                                                              | 8.2                                                                               |                                                                                   | 32.8                                                                              |                                                                                   | 23.2                                                                              | 33.1                                                                                | 18.5                                                                                |                                                                                     | 14.1                                                                                | 38.0                                                                                | 4.1                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 55.5                                                                              | 8.2                                                                               |                                                                                   | 32.8                                                                              |                                                                                   | 23.2                                                                              | 33.1                                                                                | 18.5                                                                                |                                                                                     | 14.1                                                                                | 38.0                                                                                | 4.1                                                                                 |
| LOS                     | E                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   | C                                                                                 | C                                                                                   | B                                                                                   |                                                                                     | B                                                                                   | D                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 26.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 19.1                                                                                |                                                                                     |                                                                                     | 35.6                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| 90th %ile Green (s)     | 6.5                                                                               | 43.0                                                                              |                                                                                   | 6.5                                                                               | 43.0                                                                              | 10.9                                                                              | 6.0                                                                                 | 57.1                                                                                |                                                                                     | 10.9                                                                                | 62.0                                                                                | 6.5                                                                                 |
| 90th %ile Term Code     | Max                                                                               | Ped                                                                               |                                                                                   | Max                                                                               | Ped                                                                               | Max                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Max                                                                                 | Coord                                                                               | Max                                                                                 |
| 70th %ile Green (s)     | 6.5                                                                               | 55.0                                                                              |                                                                                   | 0.0                                                                               | 43.0                                                                              | 10.9                                                                              | 6.0                                                                                 | 57.1                                                                                |                                                                                     | 10.9                                                                                | 62.0                                                                                | 6.5                                                                                 |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Ped                                                                               | Max                                                                               | Max                                                                                 | Coord                                                                               |                                                                                     | Max                                                                                 | Coord                                                                               | Max                                                                                 |
| 50th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 13.1                                                                              | 5.9                                                                                 | 103.4                                                                               |                                                                                     | 13.1                                                                                | 110.6                                                                               | 6.5                                                                                 |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 30th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 9.8                                                                               | 5.7                                                                                 | 106.7                                                                               |                                                                                     | 9.8                                                                                 | 110.8                                                                               | 6.5                                                                                 |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| 10th %ile Green (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 6.4                                                                               | 0.0                                                                                 | 110.1                                                                               |                                                                                     | 6.4                                                                                 | 122.0                                                                               | 6.5                                                                                 |
| 10th %ile Term Code     | Max                                                                               | Hold                                                                              |                                                                                   | Skip                                                                              | Skip                                                                              | Gap                                                                               | Skip                                                                                | Coord                                                                               |                                                                                     | Gap                                                                                 | Coord                                                                               | Max                                                                                 |
| Stops (vph)             | 95                                                                                | 19                                                                                |                                                                                   | 7                                                                                 |                                                                                   | 68                                                                                | 32                                                                                  | 473                                                                                 |                                                                                     | 50                                                                                  | 1146                                                                                | 7                                                                                   |
| Fuel Used(gal)          | 3                                                                                 | 2                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 | 1                                                                                   | 16                                                                                  |                                                                                     | 3                                                                                   | 59                                                                                  | 1                                                                                   |
| CO Emissions (g/hr)     | 190                                                                               | 111                                                                               |                                                                                   | 10                                                                                |                                                                                   | 156                                                                               | 64                                                                                  | 1085                                                                                |                                                                                     | 207                                                                                 | 4152                                                                                | 71                                                                                  |
| NOx Emissions (g/hr)    | 37                                                                                | 22                                                                                |                                                                                   | 2                                                                                 |                                                                                   | 30                                                                                | 13                                                                                  | 211                                                                                 |                                                                                     | 40                                                                                  | 808                                                                                 | 14                                                                                  |
| VOC Emissions (g/hr)    | 44                                                                                | 26                                                                                |                                                                                   | 2                                                                                 |                                                                                   | 36                                                                                | 15                                                                                  | 252                                                                                 |                                                                                     | 48                                                                                  | 962                                                                                 | 17                                                                                  |
| Dilemma Vehicles (#)    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                   | 50                                                                                  |                                                                                     | 0                                                                                   | 68                                                                                  | 0                                                                                   |
| Queue Length 50th (ft)  | ~162                                                                              | 2                                                                                 |                                                                                   | 7                                                                                 |                                                                                   | 81                                                                                | 4                                                                                   | 292                                                                                 |                                                                                     | 13                                                                                  | 533                                                                                 | 0                                                                                   |
| Queue Length 95th (ft)  | 139                                                                               | 83                                                                                |                                                                                   | 18                                                                                |                                                                                   | 121                                                                               | m64                                                                                 | m367                                                                                |                                                                                     | 123                                                                                 | #1858                                                                               | 31                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 682                                                                               |                                                                                   |                                                                                   | 693                                                                               |                                                                                   |                                                                                     | 825                                                                                 |                                                                                     |                                                                                     | 1924                                                                                |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 210                                                                                 |                                                                                     |                                                                                     | 480                                                                                 |                                                                                     | 93                                                                                  |
| Base Capacity (vph)     | 225                                                                               | 643                                                                               |                                                                                   | 200                                                                               |                                                                                   | 411                                                                               | 130                                                                                 | 2174                                                                                |                                                                                     | 363                                                                                 | 2362                                                                                | 1225                                                                                |

# Lanes, Volumes, Timings

## 6: Carothers/Carothers Parkway & Apartments/Resource

11/18/2016

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.56                                                                              | 0.30                                                                              |                                                                                   | 0.04                                                                              |                                                                                   | 0.42                                                                              | 0.36                                                                               | 0.51                                                                                |                                                                                     | 0.41                                                                                | 0.96                                                                                | 0.05                                                                                |

### Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 136 (97%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 29.8

Intersection LOS: C

Intersection Capacity Utilization 94.4%

ICU Level of Service F

Analysis Period (min) 60

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

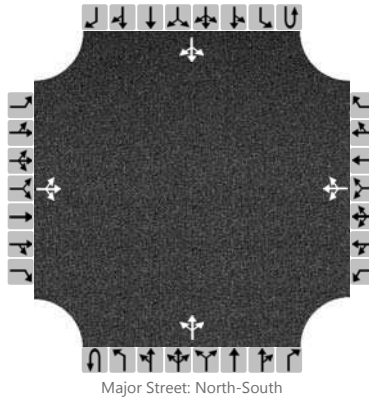
### Splits and Phases: 6: Carothers/Carothers Parkway & Apartments/Resource

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 11.5 s                                                                                 | 68 s                                                                                       | 12 s                                                                                   | 48.5 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 16.4 s                                                                                 | 63.1 s                                                                                     | 12 s                                                                                   | 48.5 s                                                                                   |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |               | Site Information           |                      |
|--------------------------|---------------|----------------------------|----------------------|
| Analyst                  | FTG           | Intersection               | Resource and Pacific |
| Agency/Co.               | FTG           | Jurisdiction               | Franklin, TN         |
| Date Performed           | Nov           | East/West Street           | Pacific Drive        |
| Analysis Year            | 2016          | North/South Street         | Resource Drive       |
| Time Analyzed            | AM Peak Hour  | Peak Hour Factor           | 0.92                 |
| Intersection Orientation | North-South   | Analysis Time Period (hrs) | 0.25                 |
| Project Description      | 10765 (Total) |                            |                      |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |     | Westbound |   |     |    | Northbound |     |     |   | Southbound |   |     |    |
|-------------------------|-----------|----|-----|-----|-----------|---|-----|----|------------|-----|-----|---|------------|---|-----|----|
| Movement                | U         | L  | T   | R   | U         | L | T   | R  | U          | L   | T   | R | U          | L | T   | R  |
| Priority                |           | 10 | 11  | 12  |           | 7 | 8   | 9  | 1U         | 1   | 2   | 3 | 4U         | 4 | 5   | 6  |
| Number of Lanes         |           | 0  | 1   | 0   |           | 0 | 1   | 0  | 0          | 0   | 1   | 0 | 0          | 0 | 1   | 0  |
| Configuration           |           |    | LTR |     |           |   | LTR |    |            |     | LTR |   |            |   | LTR |    |
| Volume (veh/h)          |           | 19 | 4   | 162 |           | 5 | 11  | 10 |            | 192 | 74  | 0 |            | 1 | 115 | 38 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0   |           | 0 | 0   | 0  |            | 0   |     |   |            | 0 |     |    |
| Proportion Time Blocked |           |    |     |     |           |   |     |    |            |     |     |   |            |   |     |    |
| Right Turn Channelized  | No        |    |     |     | No        |   |     |    | No         |     |     |   | No         |   |     |    |
| Median Type             | Undivided |    |     |     |           |   |     |    |            |     |     |   |            |   |     |    |
| Median Storage          |           |    |     |     |           |   |     |    |            |     |     |   |            |   |     |    |

## Delay, Queue Length, and Level of Service

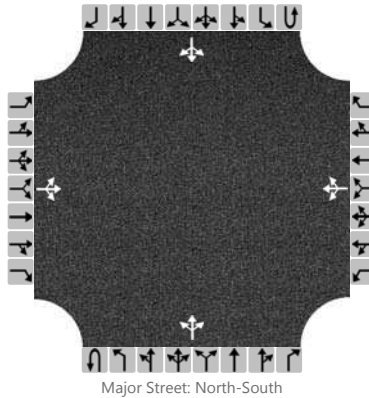
|                        |      |  |      |  |      |  |      |  |     |  |      |  |     |  |      |  |
|------------------------|------|--|------|--|------|--|------|--|-----|--|------|--|-----|--|------|--|
| Flow Rate (veh/h)      |      |  | 201  |  |      |  | 28   |  |     |  | 209  |  |     |  | 1    |  |
| Capacity               |      |  | 741  |  |      |  | 404  |  |     |  | 1425 |  |     |  | 1531 |  |
| v/c Ratio              |      |  | 0.27 |  |      |  | 0.07 |  |     |  | 0.15 |  |     |  | 0.00 |  |
| 95% Queue Length       |      |  | 1.1  |  |      |  | 0.2  |  |     |  | 0.5  |  |     |  | 0.0  |  |
| Control Delay (s/veh)  |      |  | 11.7 |  |      |  | 14.6 |  |     |  | 8.0  |  |     |  | 7.4  |  |
| Level of Service (LOS) |      |  | B    |  |      |  | B    |  |     |  | A    |  |     |  | A    |  |
| Approach Delay (s/veh) | 11.7 |  |      |  | 14.6 |  |      |  | 6.1 |  |      |  | 0.0 |  |      |  |
| Approach LOS           | B    |  |      |  | B    |  |      |  | A   |  |      |  | A   |  |      |  |



# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |               | Site Information           |                      |
|--------------------------|---------------|----------------------------|----------------------|
| Analyst                  | FTG           | Intersection               | Resource and Pacific |
| Agency/Co.               | FTG           | Jurisdiction               | Franklin, TN         |
| Date Performed           | Nov           | East/West Street           | Pacific Drive        |
| Analysis Year            | 2016          | North/South Street         | Resource Drive       |
| Time Analyzed            | PM Peak Hour  | Peak Hour Factor           | 0.92                 |
| Intersection Orientation | North-South   | Analysis Time Period (hrs) | 0.25                 |
| Project Description      | 10765 (Total) |                            |                      |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |     | Westbound |   |     |   | Northbound |     |     |   | Southbound |    |     |    |
|-------------------------|-----------|----|-----|-----|-----------|---|-----|---|------------|-----|-----|---|------------|----|-----|----|
| Movement                | U         | L  | T   | R   | U         | L | T   | R | U          | L   | T   | R | U          | L  | T   | R  |
| Priority                |           | 10 | 11  | 12  |           | 7 | 8   | 9 | 1U         | 1   | 2   | 3 | 4U         | 4  | 5   | 6  |
| Number of Lanes         |           | 0  | 1   | 0   |           | 0 | 1   | 0 | 0          | 0   | 1   | 0 | 0          | 0  | 1   | 0  |
| Configuration           |           |    | LTR |     |           |   | LTR |   |            |     | LTR |   |            |    | LTR |    |
| Volume (veh/h)          |           | 26 | 4   | 190 |           | 6 | 4   | 1 |            | 125 | 140 | 1 |            | 12 | 99  | 19 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0   |           | 0 | 0   | 0 |            | 0   |     |   |            | 0  |     |    |
| Proportion Time Blocked |           |    |     |     |           |   |     |   |            |     |     |   |            |    |     |    |
| Right Turn Channelized  | No        |    |     |     | No        |   |     |   | No         |     |     |   | No         |    |     |    |
| Median Type             | Undivided |    |     |     |           |   |     |   |            |     |     |   |            |    |     |    |
| Median Storage          |           |    |     |     |           |   |     |   |            |     |     |   |            |    |     |    |

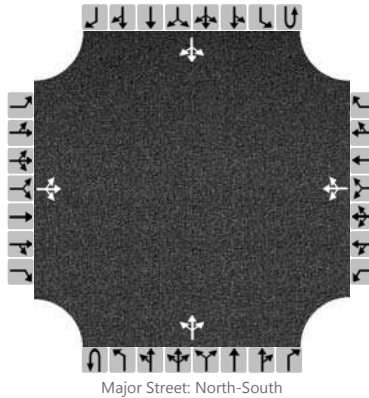
## Delay, Queue Length, and Level of Service

|                        |      |  |      |  |      |  |      |  |     |  |      |  |     |  |      |  |
|------------------------|------|--|------|--|------|--|------|--|-----|--|------|--|-----|--|------|--|
| Flow Rate (veh/h)      |      |  | 239  |  |      |  | 12   |  |     |  | 136  |  |     |  | 13   |  |
| Capacity               |      |  | 792  |  |      |  | 314  |  |     |  | 1469 |  |     |  | 1440 |  |
| v/c Ratio              |      |  | 0.30 |  |      |  | 0.04 |  |     |  | 0.09 |  |     |  | 0.01 |  |
| 95% Queue Length       |      |  | 1.3  |  |      |  | 0.1  |  |     |  | 0.3  |  |     |  | 0.0  |  |
| Control Delay (s/veh)  |      |  | 11.5 |  |      |  | 16.9 |  |     |  | 7.7  |  |     |  | 7.5  |  |
| Level of Service (LOS) |      |  | B    |  |      |  | C    |  |     |  | A    |  |     |  | A    |  |
| Approach Delay (s/veh) | 11.5 |  |      |  | 16.9 |  |      |  | 4.0 |  |      |  | 0.8 |  |      |  |
| Approach LOS           | B    |  |      |  | C    |  |      |  | A   |  |      |  | A   |  |      |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |               | Site Information           |                       |
|--------------------------|---------------|----------------------------|-----------------------|
| Analyst                  | FTG           | Intersection               | Resource and Terrapin |
| Agency/Co.               | FTG           | Jurisdiction               | Franklin, TN          |
| Date Performed           | Nov           | East/West Street           | Terrapin St           |
| Analysis Year            | 2016          | North/South Street         | Resource Drive        |
| Time Analyzed            | AM Peak Hour  | Peak Hour Factor           | 0.92                  |
| Intersection Orientation | North-South   | Analysis Time Period (hrs) | 0.25                  |
| Project Description      | 10765 (Total) |                            |                       |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |    | Westbound |   |     |    | Northbound |    |     |   | Southbound |   |     |    |
|-------------------------|-----------|----|-----|----|-----------|---|-----|----|------------|----|-----|---|------------|---|-----|----|
| Movement                | U         | L  | T   | R  | U         | L | T   | R  | U          | L  | T   | R | U          | L | T   | R  |
| Priority                |           | 10 | 11  | 12 |           | 7 | 8   | 9  | 1U         | 1  | 2   | 3 | 4U         | 4 | 5   | 6  |
| Number of Lanes         |           | 0  | 1   | 0  |           | 0 | 1   | 0  | 0          | 0  | 1   | 0 | 0          | 0 | 1   | 0  |
| Configuration           |           |    | LTR |    |           |   | LTR |    |            |    | LTR |   |            |   | LTR |    |
| Volume (veh/h)          |           | 7  | 0   | 10 |           | 9 | 0   | 20 |            | 16 | 295 | 2 |            | 2 | 294 | 11 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0  |           | 0 | 0   | 0  |            | 0  |     |   |            | 0 |     |    |
| Proportion Time Blocked |           |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |
| Right Turn Channelized  | No        |    |     |    | No        |   |     |    | No         |    |     |   | No         |   |     |    |
| Median Type             | Undivided |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |
| Median Storage          |           |    |     |    |           |   |     |    |            |    |     |   |            |   |     |    |

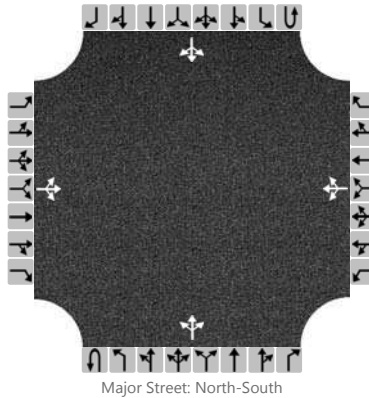
## Delay, Queue Length, and Level of Service

|                        |      |  |      |      |  |  |      |  |  |     |      |  |  |  |      |  |  |
|------------------------|------|--|------|------|--|--|------|--|--|-----|------|--|--|--|------|--|--|
| Flow Rate (veh/h)      |      |  | 19   |      |  |  | 32   |  |  |     | 17   |  |  |  | 2    |  |  |
| Capacity               |      |  | 492  |      |  |  | 543  |  |  |     | 1239 |  |  |  | 1248 |  |  |
| v/c Ratio              |      |  | 0.04 |      |  |  | 0.06 |  |  |     | 0.01 |  |  |  | 0.00 |  |  |
| 95% Queue Length       |      |  | 0.1  |      |  |  | 0.2  |  |  |     | 0.0  |  |  |  | 0.0  |  |  |
| Control Delay (s/veh)  |      |  | 12.6 |      |  |  | 12.0 |  |  |     | 7.9  |  |  |  | 7.9  |  |  |
| Level of Service (LOS) |      |  | B    |      |  |  | B    |  |  |     | A    |  |  |  | A    |  |  |
| Approach Delay (s/veh) | 12.6 |  |      | 12.0 |  |  | 0.5  |  |  | 0.1 |      |  |  |  |      |  |  |
| Approach LOS           | B    |  |      | B    |  |  | A    |  |  | A   |      |  |  |  |      |  |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |               | Site Information           |                       |
|--------------------------|---------------|----------------------------|-----------------------|
| Analyst                  | FTG           | Intersection               | Resource and Terrapin |
| Agency/Co.               | FTG           | Jurisdiction               | Franklin, TN          |
| Date Performed           | Nov           | East/West Street           | Terrapin St           |
| Analysis Year            | 2016          | North/South Street         | Resource Drive        |
| Time Analyzed            | PM Peak Hour  | Peak Hour Factor           | 0.92                  |
| Intersection Orientation | North-South   | Analysis Time Period (hrs) | 0.25                  |
| Project Description      | 10765 (Total) |                            |                       |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |     |    | Westbound |   |     |   | Northbound |   |     |   | Southbound |    |     |   |
|-------------------------|-----------|----|-----|----|-----------|---|-----|---|------------|---|-----|---|------------|----|-----|---|
| Movement                | U         | L  | T   | R  | U         | L | T   | R | U          | L | T   | R | U          | L  | T   | R |
| Priority                |           | 10 | 11  | 12 |           | 7 | 8   | 9 | 1U         | 1 | 2   | 3 | 4U         | 4  | 5   | 6 |
| Number of Lanes         |           | 0  | 1   | 0  |           | 0 | 1   | 0 | 0          | 0 | 1   | 0 | 0          | 0  | 1   | 0 |
| Configuration           |           |    | LTR |    |           |   | LTR |   |            |   | LTR |   |            |    | LTR |   |
| Volume (veh/h)          |           | 9  | 0   | 14 |           | 7 | 0   | 6 |            | 8 | 270 | 6 |            | 13 | 322 | 7 |
| Percent Heavy Vehicles  |           | 0  | 0   | 0  |           | 0 | 0   | 0 |            | 0 |     |   |            | 0  |     |   |
| Proportion Time Blocked |           |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |
| Right Turn Channelized  | No        |    |     |    | No        |   |     |   | No         |   |     |   | No         |    |     |   |
| Median Type             | Undivided |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |
| Median Storage          |           |    |     |    |           |   |     |   |            |   |     |   |            |    |     |   |

## Delay, Queue Length, and Level of Service

|                        |      |  |      |      |  |  |      |  |  |      |  |  |  |      |  |  |
|------------------------|------|--|------|------|--|--|------|--|--|------|--|--|--|------|--|--|
| Flow Rate (veh/h)      |      |  | 25   |      |  |  | 15   |  |  | 9    |  |  |  | 14   |  |  |
| Capacity               |      |  | 496  |      |  |  | 457  |  |  | 1212 |  |  |  | 1273 |  |  |
| v/c Ratio              |      |  | 0.05 |      |  |  | 0.03 |  |  | 0.01 |  |  |  | 0.01 |  |  |
| 95% Queue Length       |      |  | 0.2  |      |  |  | 0.1  |  |  | 0.0  |  |  |  | 0.0  |  |  |
| Control Delay (s/veh)  |      |  | 12.6 |      |  |  | 13.1 |  |  | 8.0  |  |  |  | 7.9  |  |  |
| Level of Service (LOS) |      |  | B    |      |  |  | B    |  |  | A    |  |  |  | A    |  |  |
| Approach Delay (s/veh) | 12.6 |  |      | 13.1 |  |  | 0.3  |  |  | 0.4  |  |  |  |      |  |  |
| Approach LOS           | B    |  |      | B    |  |  | A    |  |  | A    |  |  |  |      |  |  |

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# ROUNDBOUT ANALYSIS

Analyst: FTG  
Agency/Co.: FTG  
Date Performed: Nov 2016  
Analysis Time Period: AM Peak Hour  
Intersection: Resource and Lemon Grass  
Jurisdiction: Franklin, TN  
Units: U. S. Customary  
Analysis Year: 2016 (Total)  
Project ID: 10765  
East/West Street: Resource Drive  
North/South Street: Lemon Grass Drive

## Volume Adjustments and Site Characteristics

|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|-------------------|---------------|------|------|---------------|------|------|---------------|------|------|---------------|------|------|
|                   | L             | T    | R    | L             | T    | R    | L             | T    | R    | L             | T    | R    |
| Volume            | 0             | 276  | 37   | 45            | 250  | 148  | 52            | 0    | 0    | 22            | 0    | 11   |
| U-Turn Vol        | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| % Thrus Left Lane |               |      |      |               |      |      |               |      |      |               |      |      |
|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|                   | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      |
| Lane Assn.        | LTR           |      |      | LTR           |      |      | LTR           |      |      | LTR           |      |      |
| RT Bypass         | None          |      |      | None          |      |      | None          |      |      | None          |      |      |
| PHF               | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 |
| %HV               | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| NumPeds           | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| U-Turn PHF        | 0.92          |      |      | 0.92          |      |      | 0.92          |      |      | 0.92          |      |      |
| U-Turn %HV        | 3             |      |      | 3             |      |      | 3             |      |      | 3             |      |      |
| Flow Rate         | 0             | 300  | 40   | 49            | 272  | 161  | 57            | 0    | 0    | 24            | 0    | 12   |
| No. Lanes         | 0             | 1    | 0    | 0             | 1    | 0    | 0             | 1    | 0    | 0             | 1    | 0    |
| Cnfl. Lanes       | 1             |      |      | 1             |      |      | 1             |      |      | 1             |      |      |
| Duration, T       | 0.25 hrs.     |      |      |               |      |      |               |      |      |               |      |      |

## Critical and Follow-Up Headway Adjustment

|            |        |            |  |        |            |  |        |            |  |        |            |  |
|------------|--------|------------|--|--------|------------|--|--------|------------|--|--------|------------|--|
|            |        | Eastbound  |  |        | Westbound  |  |        | Northbound |  |        | Southbound |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 5.1929     |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Eastbound  |  |        | Westbound  |  |        | Westbound  |  |        | 3.1858     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  |        | 3.1858     |  | 3.1858 | 3.1858     |  |        | 3.1858     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 3.1858     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  |        | 3.1858     |  | 3.1858 | 3.1858     |  |        | 3.1858     |  |

## Flow Computations

|            |           |  |           |  |            |  |            |  |
|------------|-----------|--|-----------|--|------------|--|------------|--|
|            | Eastbound |  | Westbound |  | Northbound |  | Southbound |  |
| Circ. Flow | 73        |  | 57        |  | 324        |  | 378        |  |
| Exit. Flow | 324       |  | 340       |  | 161        |  | 89         |  |

## Capacity and Level of Service

Eastbound Westbound Northbound Southbound



|                    | Left | Right | BP | Left | Right | BP | Left         | Right | BP | Left | Right | BP |
|--------------------|------|-------|----|------|-------|----|--------------|-------|----|------|-------|----|
| Entry Flow         |      | 340   |    |      | 482   |    |              | 57    |    |      | 36    |    |
| Entry Cap.         |      | 1051  |    |      | 1068  |    |              | 817   |    |      | 775   |    |
| Volume (vph)       |      | 340   |    |      | 482   |    |              | 57    |    |      | 36    |    |
| Cap. (vph)         |      | 1051  |    |      | 1068  |    |              | 817   |    |      | 775   |    |
| v/c Ratio          |      | 0.32  |    |      | 0.45  |    |              | 0.07  |    |      | 0.05  |    |
| Critical Lane      |      | *     |    |      | *     |    |              | *     |    |      | *     |    |
| Lane Delay         |      | 6.7   |    |      | 8.4   |    |              | 5.1   |    |      | 5.1   |    |
| Lane LOS           |      | A     |    |      | A     |    |              | A     |    |      | A     |    |
| 95 % Queue         |      | 1.4   |    |      | 2.4   |    |              | 0.2   |    |      | 0.1   |    |
| Approach:          |      |       |    |      |       |    |              |       |    |      |       |    |
| Delay              |      | 6.67  |    |      | 8.37  |    |              | 5.09  |    |      | 5.10  |    |
| LOS                |      | A     |    |      | A     |    |              | A     |    |      | A     |    |
| Intersection Delay |      | 7.41  |    |      |       |    | Intersection | LOS   |    | A    |       |    |

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# ROUNDAABOUT ANALYSIS

Analyst: FTG  
Agency/Co.: FTG  
Date Performed: Nov 2016  
Analysis Time Period: PM Peak Hour  
Intersection: Resource and Lemon Grass  
Jurisdiction: Franklin, TN  
Units: U. S. Customary  
Analysis Year: 2016 (Total)  
Project ID: 10765  
East/West Street: Resource Drive  
North/South Street: Lemon Grass Drive

## Volume Adjustments and Site Characteristics

|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|-------------------|---------------|------|------|---------------|------|------|---------------|------|------|---------------|------|------|
|                   | L             | T    | R    | L             | T    | R    | L             | T    | R    | L             | T    | R    |
| Volume            | 13            | 303  | 27   | 14            | 229  | 34   | 45            | 0    | 23   | 149           | 0    | 10   |
| U-Turn Vol        | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| % Thrus Left Lane |               |      |      |               |      |      |               |      |      |               |      |      |
|                   | Eastbound     |      |      | Westbound     |      |      | Northbound    |      |      | Southbound    |      |      |
|                   | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      | Left Right BP |      |      |
| Lane Assn.        | LTR           |      |      | LTR           |      |      | LTR           |      |      | LTR           |      |      |
| RT Bypass         | None          |      |      | None          |      |      | None          |      |      | None          |      |      |
| PHF               | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 | 0.92          | 0.92 | 0.92 |
| %HV               | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    | 0             | 0    | 0    |
| NumPeds           | 0             |      |      | 0             |      |      | 0             |      |      | 0             |      |      |
| U-Turn PHF        | 0.92          |      |      | 0.92          |      |      | 0.92          |      |      | 0.92          |      |      |
| U-Turn %HV        | 3             |      |      | 3             |      |      | 3             |      |      | 3             |      |      |
| Flow Rate         | 14            | 329  | 29   | 15            | 249  | 37   | 49            | 0    | 25   | 162           | 0    | 11   |
| No. Lanes         | 0             | 1    | 0    | 0             | 1    | 0    | 0             | 1    | 0    | 0             | 1    | 0    |
| Cnfl. Lanes       | 1             |      |      | 1             |      |      | 1             |      |      | 1             |      |      |
| Duration, T       | 0.25          | hrs. |      |               |      |      |               |      |      |               |      |      |

## Critical and Follow-Up Headway Adjustment

|            |        |            |  |        |            |  |        |            |  |        |            |  |
|------------|--------|------------|--|--------|------------|--|--------|------------|--|--------|------------|--|
|            |        | Eastbound  |  |        | Westbound  |  |        | Northbound |  |        | Southbound |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 5.1929     |  |
| Crit. Hdwy | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  | 5.1929 | 5.1929     |  |
|            |        | Eastbound  |  |        | Westbound  |  |        | Westbound  |  |        | 3.1858     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  |        | 3.1858     |  | 3.1858 | 3.1858     |  |        | 3.1858     |  |
|            |        | Northbound |  |        | Southbound |  |        | Southbound |  |        | 3.1858     |  |
| Flup. Hdwy | 3.1858 | 3.1858     |  |        | 3.1858     |  | 3.1858 | 3.1858     |  |        | 3.1858     |  |

## Flow Computations

|            |           |  |           |  |            |  |            |  |
|------------|-----------|--|-----------|--|------------|--|------------|--|
|            | Eastbound |  | Westbound |  | Northbound |  | Southbound |  |
| Circ. Flow | 177       |  | 63        |  | 505        |  | 313        |  |
| Exit. Flow | 516       |  | 309       |  | 51         |  | 45         |  |

## Capacity and Level of Service

Eastbound Westbound Northbound Southbound

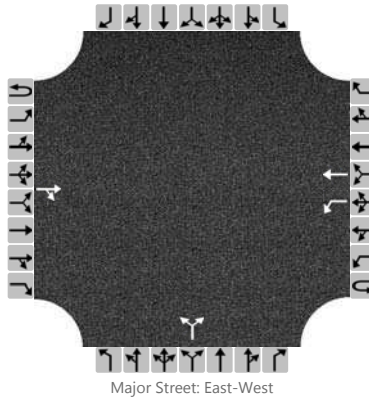
|                    | Left | Right | BP | Left | Right | BP | Left         | Right | BP | Left | Right | BP |
|--------------------|------|-------|----|------|-------|----|--------------|-------|----|------|-------|----|
| Entry Flow         |      | 373   |    |      | 301   |    |              | 74    |    |      | 173   |    |
| Entry Cap.         |      | 947   |    |      | 1061  |    |              | 682   |    |      | 826   |    |
| Volume (vph)       |      | 373   |    |      | 301   |    |              | 74    |    |      | 173   |    |
| Cap. (vph)         |      | 947   |    |      | 1061  |    |              | 682   |    |      | 826   |    |
| v/c Ratio          |      | 0.39  |    |      | 0.28  |    |              | 0.11  |    |      | 0.21  |    |
| Critical Lane      |      | *     |    |      | *     |    |              | *     |    |      | *     |    |
| Lane Delay         |      | 8.2   |    |      | 6.1   |    |              | 6.5   |    |      | 6.6   |    |
| Lane LOS           |      | A     |    |      | A     |    |              | A     |    |      | A     |    |
| 95 % Queue         |      | 1.9   |    |      | 1.2   |    |              | 0.4   |    |      | 0.8   |    |
| Approach:          |      |       |    |      |       |    |              |       |    |      |       |    |
| Delay              |      | 8.22  |    |      | 6.15  |    |              | 6.46  |    |      | 6.56  |    |
| LOS                |      | A     |    |      | A     |    |              | A     |    |      | A     |    |
| Intersection Delay |      | 7.09  |    |      |       |    | Intersection | LOS   | A  |      |       |    |

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# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                        |
|--------------------------|--------------|----------------------------|------------------------|
| Analyst                  | FTG          | Intersection               | Pacific and W. Project |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN           |
| Date Performed           | Nov 2016     | East/West Street           | Pacific Drive          |
| Analysis Year            | 2016         | North/South Street         | Western Project Drive  |
| Time Analyzed            | AM Peak Hour | Peak Hour Factor           | 0.80                   |
| Intersection Orientation | East-West    | Analysis Time Period (hrs) | 0.25                   |
| Project Description      | 10765        |                            |                        |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |   |     |    | Westbound |   |     |   | Northbound |    |    |   | Southbound |    |    |    |
|-------------------------|-----------|---|-----|----|-----------|---|-----|---|------------|----|----|---|------------|----|----|----|
| Movement                | U         | L | T   | R  | U         | L | T   | R | U          | L  | T  | R | U          | L  | T  | R  |
| Priority                | 1U        | 1 | 2   | 3  | 4U        | 4 | 5   | 6 |            | 7  | 8  | 9 |            | 10 | 11 | 12 |
| Number of Lanes         | 0         | 0 | 1   | 0  | 0         | 1 | 1   | 0 |            | 0  | 0  | 0 |            | 0  | 0  | 0  |
| Configuration           |           |   |     | TR |           | L | T   |   |            |    | LR |   |            |    |    |    |
| Volume (veh/h)          |           |   | 228 | 27 |           | 0 | 164 |   |            | 17 |    | 0 |            |    |    |    |
| Percent Heavy Vehicles  |           |   |     |    |           | 0 |     |   |            | 0  |    | 0 |            |    |    |    |
| Proportion Time Blocked |           |   |     |    |           |   |     |   |            |    |    |   |            |    |    |    |
| Right Turn Channelized  | No        |   |     |    | No        |   |     |   | No         |    |    |   | No         |    |    |    |
| Median Type             | Undivided |   |     |    |           |   |     |   |            |    |    |   |            |    |    |    |
| Median Storage          |           |   |     |    |           |   |     |   |            |    |    |   |            |    |    |    |

## Delay, Queue Length, and Level of Service

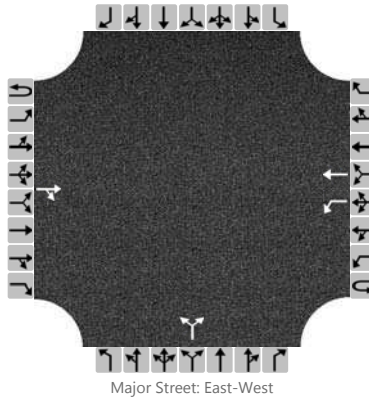
|                        |  |  |  |  |  |      |  |  |      |  |      |  |  |  |  |  |
|------------------------|--|--|--|--|--|------|--|--|------|--|------|--|--|--|--|--|
| Flow Rate (veh/h)      |  |  |  |  |  |      |  |  |      |  | 21   |  |  |  |  |  |
| Capacity               |  |  |  |  |  | 1253 |  |  |      |  | 529  |  |  |  |  |  |
| v/c Ratio              |  |  |  |  |  |      |  |  |      |  | 0.04 |  |  |  |  |  |
| 95% Queue Length       |  |  |  |  |  |      |  |  |      |  | 0.1  |  |  |  |  |  |
| Control Delay (s/veh)  |  |  |  |  |  | 7.9  |  |  |      |  | 12.1 |  |  |  |  |  |
| Level of Service (LOS) |  |  |  |  |  | A    |  |  |      |  | B    |  |  |  |  |  |
| Approach Delay (s/veh) |  |  |  |  |  |      |  |  | 12.1 |  |      |  |  |  |  |  |
| Approach LOS           |  |  |  |  |  |      |  |  | B    |  |      |  |  |  |  |  |



# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                        |
|--------------------------|--------------|----------------------------|------------------------|
| Analyst                  | FTG          | Intersection               | Pacific and W. Project |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN           |
| Date Performed           | Nov 2016     | East/West Street           | Pacific Drive          |
| Analysis Year            | 2016         | North/South Street         | Western Project Drive  |
| Time Analyzed            | PM Peak Hour | Peak Hour Factor           | 0.80                   |
| Intersection Orientation | East-West    | Analysis Time Period (hrs) | 0.25                   |
| Project Description      | 10765        |                            |                        |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |   |     |    | Westbound |   |     |   | Northbound |    |    |   | Southbound |    |    |    |
|-------------------------|-----------|---|-----|----|-----------|---|-----|---|------------|----|----|---|------------|----|----|----|
| Movement                | U         | L | T   | R  | U         | L | T   | R | U          | L  | T  | R | U          | L  | T  | R  |
| Priority                | 1U        | 1 | 2   | 3  | 4U        | 4 | 5   | 6 |            | 7  | 8  | 9 |            | 10 | 11 | 12 |
| Number of Lanes         | 0         | 0 | 1   | 0  | 0         | 1 | 1   | 0 |            | 0  | 0  | 0 |            | 0  | 0  | 0  |
| Configuration           |           |   |     | TR |           | L | T   |   |            |    | LR |   |            |    |    |    |
| Volume (veh/h)          |           |   | 143 | 13 |           | 0 | 176 |   |            | 23 |    | 0 |            |    |    |    |
| Percent Heavy Vehicles  |           |   |     |    |           | 0 |     |   |            | 0  |    | 0 |            |    |    |    |
| Proportion Time Blocked |           |   |     |    |           |   |     |   |            |    |    |   |            |    |    |    |
| Right Turn Channelized  | No        |   |     |    | No        |   |     |   | No         |    |    |   | No         |    |    |    |
| Median Type             | Undivided |   |     |    |           |   |     |   |            |    |    |   |            |    |    |    |
| Median Storage          |           |   |     |    |           |   |     |   |            |    |    |   |            |    |    |    |

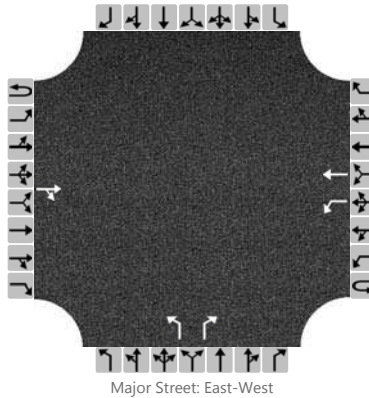
## Delay, Queue Length, and Level of Service

|                        |  |  |  |  |  |      |  |  |      |  |      |  |  |  |  |  |
|------------------------|--|--|--|--|--|------|--|--|------|--|------|--|--|--|--|--|
| Flow Rate (veh/h)      |  |  |  |  |  |      |  |  |      |  | 29   |  |  |  |  |  |
| Capacity               |  |  |  |  |  | 1390 |  |  |      |  | 604  |  |  |  |  |  |
| v/c Ratio              |  |  |  |  |  |      |  |  |      |  | 0.05 |  |  |  |  |  |
| 95% Queue Length       |  |  |  |  |  |      |  |  |      |  | 0.2  |  |  |  |  |  |
| Control Delay (s/veh)  |  |  |  |  |  | 7.6  |  |  |      |  | 11.3 |  |  |  |  |  |
| Level of Service (LOS) |  |  |  |  |  | A    |  |  |      |  | B    |  |  |  |  |  |
| Approach Delay (s/veh) |  |  |  |  |  |      |  |  | 11.3 |  |      |  |  |  |  |  |
| Approach LOS           |  |  |  |  |  |      |  |  | B    |  |      |  |  |  |  |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                    |
|--------------------------|--------------|----------------------------|--------------------|
| Analyst                  | FTG          | Intersection               | Pacific and Garage |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN       |
| Date Performed           | Nov 2016     | East/West Street           | Pacific Drive      |
| Analysis Year            | 2016         | North/South Street         | Garage Access      |
| Time Analyzed            | AM Peak Hour | Peak Hour Factor           | 0.80               |
| Intersection Orientation | East-West    | Analysis Time Period (hrs) | 0.25               |
| Project Description      | 10765        |                            |                    |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |   |    |     | Westbound |     |    |   | Northbound |    |   |     | Southbound |    |    |    |
|-------------------------|-----------|---|----|-----|-----------|-----|----|---|------------|----|---|-----|------------|----|----|----|
| Movement                | U         | L | T  | R   | U         | L   | T  | R | U          | L  | T | R   | U          | L  | T  | R  |
| Priority                | 1U        | 1 | 2  | 3   | 4U        | 4   | 5  | 6 |            | 7  | 8 | 9   |            | 10 | 11 | 12 |
| Number of Lanes         | 0         | 0 | 1  | 0   | 0         | 1   | 1  | 0 |            | 1  | 0 | 1   |            | 0  | 0  | 0  |
| Configuration           |           |   |    | TR  |           | L   | T  |   |            | L  |   | R   |            |    |    |    |
| Volume (veh/h)          |           |   | 64 | 164 |           | 163 | 78 |   |            | 86 |   | 121 |            |    |    |    |
| Percent Heavy Vehicles  |           |   |    |     |           | 0   |    |   |            | 0  |   | 0   |            |    |    |    |
| Proportion Time Blocked |           |   |    |     |           |     |    |   |            |    |   |     |            |    |    |    |
| Right Turn Channelized  | No        |   |    |     | No        |     |    |   | No         |    |   |     | No         |    |    |    |
| Median Type             | Undivided |   |    |     |           |     |    |   |            |    |   |     |            |    |    |    |
| Median Storage          |           |   |    |     |           |     |    |   |            |    |   |     |            |    |    |    |

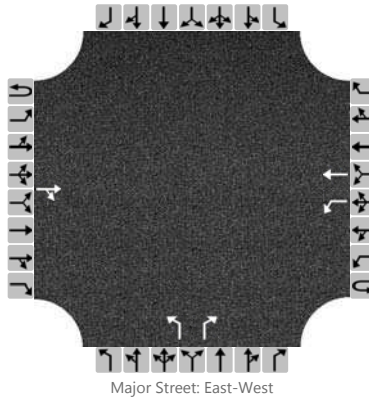
## Delay, Queue Length, and Level of Service

|                        |  |  |  |  |  |      |  |  |  |      |  |      |  |  |  |  |
|------------------------|--|--|--|--|--|------|--|--|--|------|--|------|--|--|--|--|
| Flow Rate (veh/h)      |  |  |  |  |  | 204  |  |  |  | 108  |  | 151  |  |  |  |  |
| Capacity               |  |  |  |  |  | 1289 |  |  |  | 350  |  | 866  |  |  |  |  |
| v/c Ratio              |  |  |  |  |  | 0.16 |  |  |  | 0.31 |  | 0.17 |  |  |  |  |
| 95% Queue Length       |  |  |  |  |  | 0.6  |  |  |  | 1.3  |  | 0.6  |  |  |  |  |
| Control Delay (s/veh)  |  |  |  |  |  | 8.3  |  |  |  | 19.8 |  | 10.0 |  |  |  |  |
| Level of Service (LOS) |  |  |  |  |  | A    |  |  |  | C    |  | B    |  |  |  |  |
| Approach Delay (s/veh) |  |  |  |  |  | 5.6  |  |  |  | 14.1 |  |      |  |  |  |  |
| Approach LOS           |  |  |  |  |  | A    |  |  |  | B    |  |      |  |  |  |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |              | Site Information           |                    |
|--------------------------|--------------|----------------------------|--------------------|
| Analyst                  | FTG          | Intersection               | Pacific and Garage |
| Agency/Co.               | FTG          | Jurisdiction               | Franklin, TN       |
| Date Performed           | Nov 2016     | East/West Street           | Pacific Drive      |
| Analysis Year            | 2016         | North/South Street         | Garage Access      |
| Time Analyzed            | PM Peak Hour | Peak Hour Factor           | 0.80               |
| Intersection Orientation | East-West    | Analysis Time Period (hrs) | 0.25               |
| Project Description      | 10765        |                            |                    |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |   |    |    | Westbound |    |    |   | Northbound |     |   |     | Southbound |    |    |    |
|-------------------------|-----------|---|----|----|-----------|----|----|---|------------|-----|---|-----|------------|----|----|----|
| Movement                | U         | L | T  | R  | U         | L  | T  | R | U          | L   | T | R   | U          | L  | T  | R  |
| Priority                | 1U        | 1 | 2  | 3  | 4U        | 4  | 5  | 6 |            | 7   | 8 | 9   |            | 10 | 11 | 12 |
| Number of Lanes         | 0         | 0 | 1  | 0  | 0         | 1  | 1  | 0 |            | 1   | 0 | 1   |            | 0  | 0  | 0  |
| Configuration           |           |   |    | TR |           | L  | T  |   |            | L   |   | R   |            |    |    |    |
| Volume (veh/h)          |           |   | 61 | 82 |           | 84 | 64 |   |            | 112 |   | 159 |            |    |    |    |
| Percent Heavy Vehicles  |           |   |    |    |           | 0  |    |   |            | 0   |   | 0   |            |    |    |    |
| Proportion Time Blocked |           |   |    |    |           |    |    |   |            |     |   |     |            |    |    |    |
| Right Turn Channelized  | No        |   |    |    | No        |    |    |   | No         |     |   |     | No         |    |    |    |
| Median Type             | Undivided |   |    |    |           |    |    |   |            |     |   |     |            |    |    |    |
| Median Storage          |           |   |    |    |           |    |    |   |            |     |   |     |            |    |    |    |

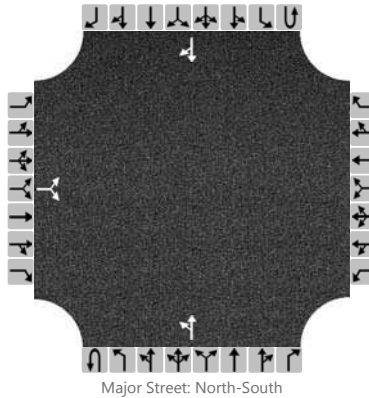
## Delay, Queue Length, and Level of Service

|                        |  |  |  |  |     |      |  |  |      |  |      |  |      |  |  |  |
|------------------------|--|--|--|--|-----|------|--|--|------|--|------|--|------|--|--|--|
| Flow Rate (veh/h)      |  |  |  |  |     | 105  |  |  |      |  | 140  |  | 199  |  |  |  |
| Capacity               |  |  |  |  |     | 1410 |  |  |      |  | 552  |  | 929  |  |  |  |
| v/c Ratio              |  |  |  |  |     | 0.07 |  |  |      |  | 0.25 |  | 0.21 |  |  |  |
| 95% Queue Length       |  |  |  |  |     | 0.2  |  |  |      |  | 1.0  |  | 0.8  |  |  |  |
| Control Delay (s/veh)  |  |  |  |  |     | 7.8  |  |  |      |  | 13.7 |  | 9.9  |  |  |  |
| Level of Service (LOS) |  |  |  |  |     | A    |  |  |      |  | B    |  | A    |  |  |  |
| Approach Delay (s/veh) |  |  |  |  | 4.4 |      |  |  | 11.5 |  |      |  |      |  |  |  |
| Approach LOS           |  |  |  |  | A   |      |  |  | B    |  |      |  |      |  |  |  |

# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |               | Site Information           |                          |
|--------------------------|---------------|----------------------------|--------------------------|
| Analyst                  | FTG           | Intersection               | Resource and Project Dwy |
| Agency/Co.               | FTG           | Jurisdiction               | Franklin, TN             |
| Date Performed           | Nov           | East/West Street           | Project Driveway         |
| Analysis Year            | 2016          | North/South Street         | Resource Drive           |
| Time Analyzed            | AM Peak Hour  | Peak Hour Factor           | 0.92                     |
| Intersection Orientation | North-South   | Analysis Time Period (hrs) | 0.25                     |
| Project Description      | 10765 (Total) |                            |                          |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |   |   | Northbound |    |     |   | Southbound |   |     |    |
|-------------------------|-----------|----|----|----|-----------|---|---|---|------------|----|-----|---|------------|---|-----|----|
| Movement                | U         | L  | T  | R  | U         | L | T | R | U          | L  | T   | R | U          | L | T   | R  |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8 | 9 | 1U         | 1  | 2   | 3 | 4U         | 4 | 5   | 6  |
| Number of Lanes         |           | 0  | 0  | 0  |           | 0 | 0 | 0 | 0          | 0  | 1   | 0 | 0          | 0 | 1   | 0  |
| Configuration           |           |    | LR |    |           |   |   |   |            | LT |     |   |            |   |     | TR |
| Volume (veh/h)          |           | 10 |    | 41 |           |   |   |   |            | 66 | 256 |   |            |   | 266 | 16 |
| Percent Heavy Vehicles  |           | 0  |    | 0  |           |   |   |   |            | 0  |     |   |            |   |     |    |
| Proportion Time Blocked |           |    |    |    |           |   |   |   |            |    |     |   |            |   |     |    |
| Right Turn Channelized  | No        |    |    |    | No        |   |   |   | No         |    |     |   | No         |   |     |    |
| Median Type             | Undivided |    |    |    |           |   |   |   |            |    |     |   |            |   |     |    |
| Median Storage          |           |    |    |    |           |   |   |   |            |    |     |   |            |   |     |    |

## Delay, Queue Length, and Level of Service

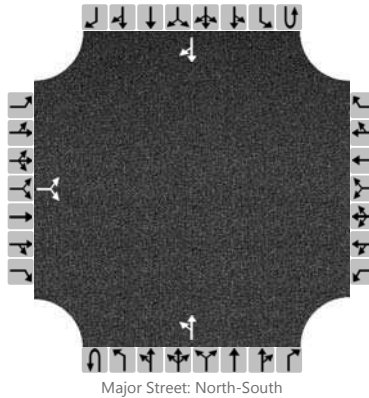
|                        |      |  |      |  |  |  |  |  |     |      |  |  |  |  |  |  |
|------------------------|------|--|------|--|--|--|--|--|-----|------|--|--|--|--|--|--|
| Flow Rate (veh/h)      |      |  | 56   |  |  |  |  |  |     | 350  |  |  |  |  |  |  |
| Capacity               |      |  | 597  |  |  |  |  |  |     | 1266 |  |  |  |  |  |  |
| v/c Ratio              |      |  | 0.09 |  |  |  |  |  |     | 0.28 |  |  |  |  |  |  |
| 95% Queue Length       |      |  | 0.3  |  |  |  |  |  |     | 0.2  |  |  |  |  |  |  |
| Control Delay (s/veh)  |      |  | 11.7 |  |  |  |  |  |     | 8.0  |  |  |  |  |  |  |
| Level of Service (LOS) |      |  | B    |  |  |  |  |  |     | A    |  |  |  |  |  |  |
| Approach Delay (s/veh) | 11.7 |  |      |  |  |  |  |  | 2.1 |      |  |  |  |  |  |  |
| Approach LOS           | B    |  |      |  |  |  |  |  | A   |      |  |  |  |  |  |  |



# HCS 2010 Two-Way Stop Control Summary Report

| General Information      |               | Site Information           |                          |
|--------------------------|---------------|----------------------------|--------------------------|
| Analyst                  | FTG           | Intersection               | Resource and Project Dwy |
| Agency/Co.               | FTG           | Jurisdiction               | Franklin, TN             |
| Date Performed           | Nov           | East/West Street           | Project Driveway         |
| Analysis Year            | 2016          | North/South Street         | Resource Drive           |
| Time Analyzed            | PM Peak Hour  | Peak Hour Factor           | 0.92                     |
| Intersection Orientation | North-South   | Analysis Time Period (hrs) | 0.25                     |
| Project Description      | 10765 (Total) |                            |                          |

## Lanes



## Vehicle Volumes and Adjustments

| Approach                | Eastbound |    |    |    | Westbound |   |   |   | Northbound |    |     |   | Southbound |   |     |    |
|-------------------------|-----------|----|----|----|-----------|---|---|---|------------|----|-----|---|------------|---|-----|----|
| Movement                | U         | L  | T  | R  | U         | L | T | R | U          | L  | T   | R | U          | L | T   | R  |
| Priority                |           | 10 | 11 | 12 |           | 7 | 8 | 9 | 1U         | 1  | 2   | 3 | 4U         | 4 | 5   | 6  |
| Number of Lanes         |           | 0  | 0  | 0  |           | 0 | 0 | 0 | 0          | 0  | 1   | 0 | 0          | 0 | 1   | 0  |
| Configuration           |           |    | LR |    |           |   |   |   |            | LT |     |   |            |   |     | TR |
| Volume (veh/h)          |           | 14 |    | 55 |           |   |   |   |            | 33 | 252 |   |            |   | 287 | 8  |
| Percent Heavy Vehicles  |           | 0  |    | 0  |           |   |   |   |            | 0  |     |   |            |   |     |    |
| Proportion Time Blocked |           |    |    |    |           |   |   |   |            |    |     |   |            |   |     |    |
| Right Turn Channelized  | No        |    |    |    | No        |   |   |   | No         |    |     |   | No         |   |     |    |
| Median Type             | Undivided |    |    |    |           |   |   |   |            |    |     |   |            |   |     |    |
| Median Storage          |           |    |    |    |           |   |   |   |            |    |     |   |            |   |     |    |

## Delay, Queue Length, and Level of Service

|                        |      |  |      |  |  |  |  |  |     |      |  |  |  |  |  |  |
|------------------------|------|--|------|--|--|--|--|--|-----|------|--|--|--|--|--|--|
| Flow Rate (veh/h)      |      |  | 75   |  |  |  |  |  |     | 310  |  |  |  |  |  |  |
| Capacity               |      |  | 610  |  |  |  |  |  |     | 1250 |  |  |  |  |  |  |
| v/c Ratio              |      |  | 0.12 |  |  |  |  |  |     | 0.25 |  |  |  |  |  |  |
| 95% Queue Length       |      |  | 0.4  |  |  |  |  |  |     | 0.1  |  |  |  |  |  |  |
| Control Delay (s/veh)  |      |  | 11.7 |  |  |  |  |  |     | 8.0  |  |  |  |  |  |  |
| Level of Service (LOS) |      |  | B    |  |  |  |  |  |     | A    |  |  |  |  |  |  |
| Approach Delay (s/veh) | 11.7 |  |      |  |  |  |  |  | 1.2 |      |  |  |  |  |  |  |
| Approach LOS           | B    |  |      |  |  |  |  |  | A   |      |  |  |  |  |  |  |

**APPENDIX D  
TRIP GENERATION**

**TRIP GENERATION CALCULATIONS – Multi-Family**

The following calculations are based on the data compiled for ITE Land Use Code 220.

**Average Daily Traffic**

$$T = 6.65 (X)$$

$$T = 6.65 (325)$$

$$T = 2,162 \text{ vehicle-trips}$$

$$\text{Enter} = 0.50 (2,162) = 1,081 \text{ vehicles}$$

$$\text{Exit} = 0.50 (2,162) = 1,081 \text{ vehicles}$$

**A.M. traffic during peak hour of adjacent street**

$$T = 0.51 (X)$$

$$T = 0.51 (325)$$

$$T = 166 \text{ vehicle-trips}$$

$$\text{Enter} = 0.20 (166) = 33 \text{ vehicles}$$

$$\text{Exit} = 0.80 (166) = 133 \text{ vehicles}$$

**P.M. traffic during peak hour of adjacent street**

$$T = 0.62 (X)$$

$$T = 0.62 (325)$$

$$T = 202 \text{ vehicle-trips}$$

$$\text{Enter} = 0.65 (202) = 131 \text{ vehicles}$$

$$\text{Exit} = 0.35 (202) = 71 \text{ vehicles}$$

**TRIP GENERATION - Townhomes**

The following calculations are based on the data compiled for ITE Land Use Code 230.

**Average Daily Traffic**

$$\text{Ln}(T) = 0.87 \text{ Ln}(X) + 2.46$$

$$\text{Ln}(T) = 0.87 \text{ Ln}(15) + 2.46$$

$$T = 124 \text{ vehicles}$$

$$\text{Enter} = 0.50 (124) = 62 \text{ vehicles}$$

$$\text{Exit} = 0.50 (124) = 62 \text{ vehicles}$$

**AM traffic during peak hour of adjacent street**

$$\text{Ln}(T) = 0.80 \text{ Ln}(X) + 0.26$$

$$\text{Ln}(T) = 0.80 \text{ Ln}(15) + 0.26$$

$$T = 11 \text{ vehicles}$$

$$\text{Enter} = 0.17 (11) = 2 \text{ vehicles}$$

$$\text{Exit} = 0.83 (11) = 9 \text{ vehicles}$$

**PM traffic during peak hour of adjacent street**

$$\text{Ln}(T) = 0.82 \text{ Ln}(X) + 0.32$$

$$\text{Ln}(T) = 0.82 \text{ Ln}(15) + 0.32$$

$$T = 13 \text{ vehicles}$$

$$\text{Enter} = 0.67 (13) = 9 \text{ vehicles}$$

$$\text{Exit} = 0.33 (13) = 4 \text{ vehicles}$$



**TRIP GENERATION CALCULATIONS – Office**

The following calculations are based on the data compiled for ITE Land Use Code 710.

**Average Daily Traffic**

$$\ln(T) = 0.76 \ln(X) + 3.68$$

$$\ln(T) = 0.76 \ln(300.000) + 3.68$$

$$T = 3,026 \text{ vehicle-trips}$$

$$\text{Enter} = 0.50 (3,026) = 1,513 \text{ vehicles}$$

$$\text{Exit} = 0.50 (3,026) = 1,513 \text{ vehicles}$$

**A.M. traffic during peak hour of adjacent street**

$$\ln(T) = 0.80 \ln(X) + 1.57$$

$$\ln(T) = 0.80 \ln(300.000) + 1.57$$

$$T = 461 \text{ vehicle-trips}$$

$$\text{Enter} = 0.88 (461) = 405 \text{ vehicles}$$

$$\text{Exit} = 0.12 (461) = 55 \text{ vehicles}$$

**P.M. traffic during peak hour of adjacent street**

$$T = 1.12 (X) + 78.45$$

$$T = 1.12 (300.000) + 78.45$$

$$T = 414 \text{ vehicle-trips}$$

$$\text{Enter} = 0.17 (414) = 70 \text{ vehicles}$$

$$\text{Exit} = 0.83 (414) = 344 \text{ vehicles}$$

**TRIP GENERATION CALCULATIONS – Hotel**

The following calculations are based on the data compiled for ITE Land Use Code 310.

**Average Daily Traffic**

$$T = 8.92 (X)$$

$$T = 8.92 (200)$$

$$T = 1,784 \text{ vehicle-trips}$$

$$\text{Enter} = 0.50 (1,784) = 892 \text{ vehicles}$$

$$\text{Exit} = 0.50 (1,784) = 892 \text{ vehicles}$$

**AM traffic during peak hour of adjacent street**

$$T = 0.67 (X)$$

$$T = 0.67 (200)$$

$$T = 134 \text{ vehicle-trips}$$

$$\text{Enter} = 0.58 (134) = 78 \text{ vehicles}$$

$$\text{Exit} = 0.42 (134) = 56 \text{ vehicles}$$

**PM traffic during peak hour of adjacent street**

$$T = 0.70 (X)$$

$$T = 0.70 (200)$$

$$T = 140 \text{ vehicle-trips}$$

$$\text{Enter} = 0.49 (140) = 69 \text{ vehicles}$$

$$\text{Exit} = 0.51 (140) = 71 \text{ vehicles}$$

**TRIP GENERATION CALCULATIONS – Specialty Retail**

The following calculations are based on the data compiled for ITE Land Use Code 826.

**Average Daily Traffic**

$$T = 42.78 (X) + 37.66$$

$$T = 42.78 (50.000) + 37.66$$

$$T = 2,176 \text{ vehicle-trips}$$

$$\text{Enter} = 0.50 (2,176) = 1,088 \text{ vehicles}$$

$$\text{Exit} = 0.50 (2,176) = 1,088 \text{ vehicles}$$

**A.M. traffic during peak hour of adjacent street**

$$T = 6.84 (X)$$

$$T = 6.84 (50.000)$$

$$T = 342 \text{ vehicle-trips}$$

$$\text{Enter} = 0.48 (342) = 164 \text{ vehicles}$$

$$\text{Exit} = 0.52 (342) = 178 \text{ vehicles}$$

**P.M. traffic during peak hour of adjacent street**

$$T = 2.40 (X) + 21.48$$

$$T = 2.40 (50.000) + 21.48$$

$$T = 141 \text{ vehicle-trips}$$

$$\text{Enter} = 0.44 (141) = 62 \text{ vehicles}$$

$$\text{Exit} = 0.56 (141) = 79 \text{ vehicles}$$

| NCHRP 684 Internal Trip Capture Estimation Tool |                                       |  |  |               |        |
|-------------------------------------------------|---------------------------------------|--|--|---------------|--------|
| Project Name:                                   | Crescent Resource Centre              |  |  | Organization: | FTG    |
| Project Location:                               | E. McEwen Drive and Carothers Parkway |  |  | Performed By: | FTG    |
| Scenario Description:                           |                                       |  |  | Date:         | 19-Sep |
| Analysis Year:                                  |                                       |  |  | Checked By:   |        |
| Analysis Period:                                | AM Street Peak Hour                   |  |  | Date:         |        |

| Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate) |                                         |          |       |                                      |          |         |
|------------------------------------------------------------------------------|-----------------------------------------|----------|-------|--------------------------------------|----------|---------|
| Land Use                                                                     | Development Data (For Information Only) |          |       | Estimated Vehicle-Trips <sup>3</sup> |          |         |
|                                                                              | ITE LUCs <sup>1</sup>                   | Quantity | Units | Total                                | Entering | Exiting |
| Office                                                                       | 710                                     | 283,000  |       | 440                                  | 387      | 53      |
| Retail                                                                       | 826                                     | 16,500   |       | 113                                  | 54       | 59      |
| Restaurant                                                                   |                                         | 19,500   |       | 428                                  | 224      | 204     |
| Cinema/Entertainment                                                         |                                         |          |       | 0                                    |          |         |
| Residential                                                                  |                                         |          | 340   | 177                                  | 35       | 142     |
| Hotel                                                                        |                                         |          | 180   | 121                                  | 70       | 51      |
| All Other Land Uses <sup>2</sup>                                             |                                         |          |       | 0                                    |          |         |
|                                                                              |                                         |          |       | 1,279                                | 770      | 509     |

| Table 2-A: Mode Split and Vehicle Occupancy Estimates |                        |           |                 |                        |           |                 |
|-------------------------------------------------------|------------------------|-----------|-----------------|------------------------|-----------|-----------------|
| Land Use                                              | Entering Trips         |           |                 | Exiting Trips          |           |                 |
|                                                       | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized |
| Office                                                | 1.10                   | 2%        | 0%              | 1.10                   | 2%        | 0%              |
| Retail                                                | 1.50                   | 2%        | 0%              | 1.50                   | 2%        | 0%              |
| Restaurant                                            | 2.00                   | 2%        | 0%              | 2.00                   | 2%        | 0%              |
| Cinema/Entertainment                                  |                        |           |                 |                        |           |                 |
| Residential                                           | 1.10                   | 2%        | 0%              | 1.10                   | 2%        | 0%              |
| Hotel                                                 | 1.10                   | 2%        | 0%              | 1.10                   | 2%        | 0%              |
| All Other Land Uses <sup>2</sup>                      |                        |           |                 |                        |           |                 |

| Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance) |                  |        |            |                      |             |       |
|---------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                             | Destination (To) |        |            |                      |             |       |
|                                                                           | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                    |                  |        |            |                      |             |       |
| Retail                                                                    |                  |        |            |                      |             |       |
| Restaurant                                                                |                  |        |            |                      |             |       |
| Cinema/Entertainment                                                      |                  |        |            |                      |             |       |
| Residential                                                               |                  |        |            |                      |             |       |
| Hotel                                                                     |                  |        |            |                      |             |       |

| Table 4-A: Internal Person-Trip Origin-Destination Matrix* |                  |        |            |                      |             |       |
|------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                              | Destination (To) |        |            |                      |             |       |
|                                                            | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                     |                  | 16     | 37         | 0                    | 0           | 0     |
| Retail                                                     | 17               |        | 12         | 0                    | 1           | 0     |
| Restaurant                                                 | 60               | 6      |            | 0                    | 2           | 3     |
| Cinema/Entertainment                                       | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                | 3                | 2      | 31         | 0                    |             | 0     |
| Hotel                                                      | 13               | 3      | 5          | 0                    | 0           |       |

| Table 5-A: Computations Summary           |       |          |         |
|-------------------------------------------|-------|----------|---------|
|                                           | Total | Entering | Exiting |
| All Person-Trips                          | 1,838 | 1,071    | 767     |
| Internal Capture Percentage               | 23%   | 20%      | 28%     |
| External Vehicle-Trips <sup>5</sup>       | 954   | 607      | 347     |
| External Transit-Trips <sup>6</sup>       | 28    | 17       | 11      |
| External Non-Motorized Trips <sup>6</sup> | 0     | 0        | 0       |

| Table 6-A: Internal Trip Capture Percentages by Land Use |                |               |
|----------------------------------------------------------|----------------|---------------|
| Land Use                                                 | Entering Trips | Exiting Trips |
| Office                                                   | 22%            | 91%           |
| Retail                                                   | 33%            | 34%           |
| Restaurant                                               | 19%            | 17%           |
| Cinema/Entertainment                                     | N/A            | N/A           |
| Residential                                              | 8%             | 23%           |
| Hotel                                                    | 4%             | 38%           |

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

<sup>3</sup>Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

<sup>4</sup>Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

<sup>5</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

<sup>6</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1



|                         |                          |
|-------------------------|--------------------------|
| <b>Project Name:</b>    | Crescent Resource Centre |
| <b>Analysis Period:</b> | AM Street Peak Hour      |

| Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends |                               |               |               |                              |               |               |
|----------------------------------------------------------------|-------------------------------|---------------|---------------|------------------------------|---------------|---------------|
| Land Use                                                       | Table 7-A (D): Entering Trips |               |               | Table 7-A (O): Exiting Trips |               |               |
|                                                                | Veh. Occ.                     | Vehicle-Trips | Person-Trips* | Veh. Occ.                    | Vehicle-Trips | Person-Trips* |
| Office                                                         | 1.10                          | 387           | 426           | 1.10                         | 53            | 58            |
| Retail                                                         | 1.50                          | 54            | 81            | 1.50                         | 59            | 89            |
| Restaurant                                                     | 2.00                          | 224           | 448           | 2.00                         | 204           | 408           |
| Cinema/Entertainment                                           | 1.00                          | 0             | 0             | 1.00                         | 0             | 0             |
| Residential                                                    | 1.10                          | 35            | 39            | 1.10                         | 142           | 156           |
| Hotel                                                          | 1.10                          | 70            | 77            | 1.10                         | 51            | 56            |

| Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin) |                  |        |            |                      |             |       |
|------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                      | Destination (To) |        |            |                      |             |       |
|                                                                                    | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                             |                  | 16     | 37         | 0                    | 1           | 0     |
| Retail                                                                             | 26               |        | 12         | 0                    | 12          | 0     |
| Restaurant                                                                         | 126              | 57     |            | 0                    | 16          | 12    |
| Cinema/Entertainment                                                               | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                                        | 3                | 2      | 31         | 0                    |             | 0     |
| Hotel                                                                              | 42               | 8      | 5          | 0                    | 0           |       |

| Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination) |                  |        |            |                      |             |       |
|-----------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                           | Destination (To) |        |            |                      |             |       |
|                                                                                         | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                                  |                  | 26     | 103        | 0                    | 0           | 0     |
| Retail                                                                                  | 17               |        | 224        | 0                    | 1           | 0     |
| Restaurant                                                                              | 60               | 6      |            | 0                    | 2           | 3     |
| Cinema/Entertainment                                                                    | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                                             | 13               | 14     | 90         | 0                    |             | 0     |
| Hotel                                                                                   | 13               | 3      | 27         | 0                    | 0           |       |

| Table 9-A (D): Internal and External Trips Summary (Entering Trips) |                       |          |       |                         |                      |                            |
|---------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Destination Land Use                                                | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                     | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                              | 93                    | 333      | 426   | 296                     | 7                    | 0                          |
| Retail                                                              | 27                    | 54       | 81    | 35                      | 1                    | 0                          |
| Restaurant                                                          | 85                    | 363      | 448   | 178                     | 7                    | 0                          |
| Cinema/Entertainment                                                | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                         | 3                     | 36       | 39    | 32                      | 1                    | 0                          |
| Hotel                                                               | 3                     | 74       | 77    | 66                      | 1                    | 0                          |
| All Other Land Uses <sup>3</sup>                                    | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

| Table 9-A (O): Internal and External Trips Summary (Exiting Trips) |                       |          |       |                         |                      |                            |
|--------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Origin Land Use                                                    | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                    | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                             | 53                    | 5        | 58    | 5                       | 0                    | 0                          |
| Retail                                                             | 30                    | 59       | 89    | 39                      | 1                    | 0                          |
| Restaurant                                                         | 71                    | 337      | 408   | 165                     | 7                    | 0                          |
| Cinema/Entertainment                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                        | 36                    | 120      | 156   | 107                     | 2                    | 0                          |
| Hotel                                                              | 21                    | 35       | 56    | 31                      | 1                    | 0                          |
| All Other Land Uses <sup>3</sup>                                   | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

| NCHRP 684 Internal Trip Capture Estimation Tool |                                       |                      |       |  |  |
|-------------------------------------------------|---------------------------------------|----------------------|-------|--|--|
| <b>Project Name:</b>                            | Crescent Resource Centre              | <b>Organization:</b> | FTG   |  |  |
| <b>Project Location:</b>                        | E. McEwen Drive and Carothers Parkway | <b>Performed By:</b> | FTG   |  |  |
| <b>Scenario Description:</b>                    |                                       | <b>Date:</b>         | 4-Oct |  |  |
| <b>Analysis Year:</b>                           |                                       | <b>Checked By:</b>   |       |  |  |
| <b>Analysis Period:</b>                         | PM Street Peak Hour                   | <b>Date:</b>         |       |  |  |

| Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate) |                                         |          |       |                                      |          |         |
|------------------------------------------------------------------------------|-----------------------------------------|----------|-------|--------------------------------------|----------|---------|
| Land Use                                                                     | Development Data (For Information Only) |          |       | Estimated Vehicle-Trips <sup>3</sup> |          |         |
|                                                                              | ITE LUCs <sup>1</sup>                   | Quantity | Units | Total                                | Entering | Exiting |
| Office                                                                       | 710                                     | 283,000  |       | 395                                  | 67       | 328     |
| Retail                                                                       | 826                                     | 16,500   |       | 61                                   | 27       | 34      |
| Restaurant                                                                   |                                         | 19,500   |       | 336                                  | 185      | 151     |
| Cinema/Entertainment                                                         |                                         |          |       | 0                                    |          |         |
| Residential                                                                  |                                         |          | 340   | 215                                  | 140      | 75      |
| Hotel                                                                        |                                         |          | 180   | 126                                  | 62       | 64      |
| All Other Land Uses <sup>2</sup>                                             |                                         |          |       | 0                                    |          |         |
|                                                                              |                                         |          |       | 1,133                                | 481      | 652     |

| Table 2-P: Mode Split and Vehicle Occupancy Estimates |                        |           |                 |                        |           |                 |
|-------------------------------------------------------|------------------------|-----------|-----------------|------------------------|-----------|-----------------|
| Land Use                                              | Entering Trips         |           |                 | Exiting Trips          |           |                 |
|                                                       | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized | Veh. Occ. <sup>4</sup> | % Transit | % Non-Motorized |
| Office                                                |                        |           |                 |                        |           |                 |
| Retail                                                |                        |           |                 |                        |           |                 |
| Restaurant                                            |                        |           |                 |                        |           |                 |
| Cinema/Entertainment                                  |                        |           |                 |                        |           |                 |
| Residential                                           |                        |           |                 |                        |           |                 |
| Hotel                                                 |                        |           |                 |                        |           |                 |
| All Other Land Uses <sup>2</sup>                      |                        |           |                 |                        |           |                 |

| Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance) |                  |        |            |                      |             |       |
|---------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                             | Destination (To) |        |            |                      |             |       |
|                                                                           | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                    |                  |        |            |                      |             |       |
| Retail                                                                    |                  |        |            |                      |             |       |
| Restaurant                                                                |                  |        |            |                      |             |       |
| Cinema/Entertainment                                                      |                  |        |            |                      |             |       |
| Residential                                                               |                  |        |            |                      |             |       |
| Hotel                                                                     |                  |        |            |                      |             |       |

| Table 4-P: Internal Person-Trip Origin-Destination Matrix* |                  |        |            |                      |             |       |
|------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                              | Destination (To) |        |            |                      |             |       |
|                                                            | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                     |                  | 2      | 4          | 0                    | 6           | 0     |
| Retail                                                     | 1                |        | 10         | 0                    | 9           | 2     |
| Restaurant                                                 | 5                | 14     |            | 0                    | 22          | 11    |
| Cinema/Entertainment                                       | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                | 3                | 3      | 16         | 0                    |             | 2     |
| Hotel                                                      | 0                | 1      | 9          | 0                    | 0           |       |

| Table 5-P: Computations Summary           |       |          |         |
|-------------------------------------------|-------|----------|---------|
|                                           | Total | Entering | Exiting |
| All Person-Trips                          | 1,133 | 481      | 652     |
| Internal Capture Percentage               | 21%   | 25%      | 18%     |
| External Vehicle-Trips <sup>5</sup>       | 893   | 361      | 532     |
| External Transit-Trips <sup>6</sup>       | 0     | 0        | 0       |
| External Non-Motorized Trips <sup>6</sup> | 0     | 0        | 0       |

| Table 6-P: Internal Trip Capture Percentages by Land Use |                |               |
|----------------------------------------------------------|----------------|---------------|
| Land Use                                                 | Entering Trips | Exiting Trips |
| Office                                                   | 13%            | 4%            |
| Retail                                                   | 74%            | 65%           |
| Restaurant                                               | 21%            | 34%           |
| Cinema/Entertainment                                     | N/A            | N/A           |
| Residential                                              | 26%            | 32%           |
| Hotel                                                    | 24%            | 16%           |

|                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <sup>1</sup> Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.                                  |
| <sup>2</sup> Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.        |
| <sup>3</sup> Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i> ).                                          |
| <sup>4</sup> Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be |
| <sup>5</sup> Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.                                                     |
| <sup>6</sup> Person-Trips                                                                                                                                        |
| *Indicates computation that has been rounded to the nearest whole number.                                                                                        |
| Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1                                                                             |

|                         |                          |
|-------------------------|--------------------------|
| <b>Project Name:</b>    | Crescent Resource Centre |
| <b>Analysis Period:</b> | PM Street Peak Hour      |

| Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends |                               |               |               |                              |               |               |
|----------------------------------------------------------------|-------------------------------|---------------|---------------|------------------------------|---------------|---------------|
| Land Use                                                       | Table 7-P (D): Entering Trips |               |               | Table 7-P (O): Exiting Trips |               |               |
|                                                                | Veh. Occ.                     | Vehicle-Trips | Person-Trips* | Veh. Occ.                    | Vehicle-Trips | Person-Trips* |
| Office                                                         | 1.00                          | 67            | 67            | 1.00                         | 328           | 328           |
| Retail                                                         | 1.00                          | 27            | 27            | 1.00                         | 34            | 34            |
| Restaurant                                                     | 1.00                          | 185           | 185           | 1.00                         | 151           | 151           |
| Cinema/Entertainment                                           | 1.00                          | 0             | 0             | 1.00                         | 0             | 0             |
| Residential                                                    | 1.00                          | 140           | 140           | 1.00                         | 75            | 75            |
| Hotel                                                          | 1.00                          | 62            | 62            | 1.00                         | 64            | 64            |

| Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin) |                  |        |            |                      |             |       |
|------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                      | Destination (To) |        |            |                      |             |       |
|                                                                                    | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                             |                  | 66     | 13         | 0                    | 7           | 0     |
| Retail                                                                             | 1                |        | 10         | 1                    | 9           | 2     |
| Restaurant                                                                         | 5                | 62     |            | 12                   | 27          | 11    |
| Cinema/Entertainment                                                               | 0                | 0      | 0          |                      | 0           | 0     |
| Residential                                                                        | 3                | 32     | 16         | 0                    |             | 2     |
| Hotel                                                                              | 0                | 10     | 44         | 0                    | 1           |       |

| Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination) |                  |        |            |                      |             |       |
|-----------------------------------------------------------------------------------------|------------------|--------|------------|----------------------|-------------|-------|
| Origin (From)                                                                           | Destination (To) |        |            |                      |             |       |
|                                                                                         | Office           | Retail | Restaurant | Cinema/Entertainment | Residential | Hotel |
| Office                                                                                  |                  | 2      | 4          | 0                    | 6           | 0     |
| Retail                                                                                  | 21               |        | 54         | 0                    | 64          | 11    |
| Restaurant                                                                              | 20               | 14     |            | 0                    | 22          | 44    |
| Cinema/Entertainment                                                                    | 4                | 1      | 6          |                      | 6           | 1     |
| Residential                                                                             | 38               | 3      | 26         | 0                    |             | 7     |
| Hotel                                                                                   | 0                | 1      | 9          | 0                    | 0           |       |

| Table 9-P (D): Internal and External Trips Summary (Entering Trips) |                       |          |       |                         |                      |                            |
|---------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Destination Land Use                                                | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                     | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                              | 9                     | 58       | 67    | 58                      | 0                    | 0                          |
| Retail                                                              | 20                    | 7        | 27    | 7                       | 0                    | 0                          |
| Restaurant                                                          | 39                    | 146      | 185   | 146                     | 0                    | 0                          |
| Cinema/Entertainment                                                | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                         | 37                    | 103      | 140   | 103                     | 0                    | 0                          |
| Hotel                                                               | 15                    | 47       | 62    | 47                      | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                    | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

| Table 9-P (O): Internal and External Trips Summary (Exiting Trips) |                       |          |       |                         |                      |                            |
|--------------------------------------------------------------------|-----------------------|----------|-------|-------------------------|----------------------|----------------------------|
| Origin Land Use                                                    | Person-Trip Estimates |          |       | External Trips by Mode* |                      |                            |
|                                                                    | Internal              | External | Total | Vehicles <sup>1</sup>   | Transit <sup>2</sup> | Non-Motorized <sup>2</sup> |
| Office                                                             | 12                    | 316      | 328   | 316                     | 0                    | 0                          |
| Retail                                                             | 22                    | 12       | 34    | 12                      | 0                    | 0                          |
| Restaurant                                                         | 52                    | 99       | 151   | 99                      | 0                    | 0                          |
| Cinema/Entertainment                                               | 0                     | 0        | 0     | 0                       | 0                    | 0                          |
| Residential                                                        | 24                    | 51       | 75    | 51                      | 0                    | 0                          |
| Hotel                                                              | 10                    | 54       | 64    | 54                      | 0                    | 0                          |
| All Other Land Uses <sup>3</sup>                                   | 0                     | 0        | 0     | 0                       | 0                    | 0                          |

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.



DEVELOPMENT PLAN SUBMITTAL

**APEX VILLAGE**

**PUD DEVELOPMENT PLAN**

**SD-X (SPECIFIC DEVELOPMENT - MIXED USE)**

FRANKLIN, TENNESSEE

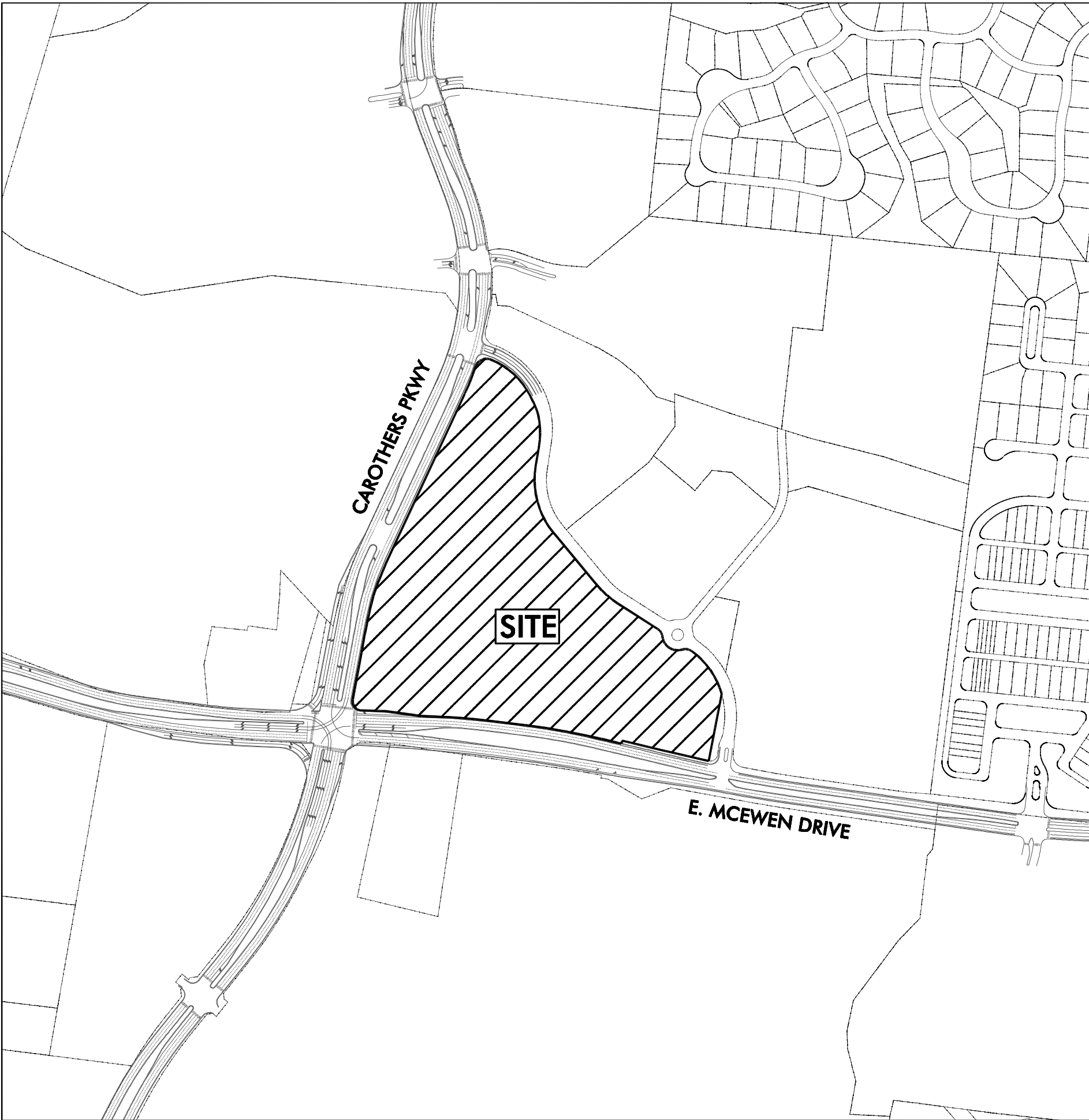
CITY OF FRANKLIN PROJECT NO. 6305

DECEMBER 12, 2016

REV. JANUARY 05, 2017

SITE DATA

|                                    |                                                                  |
|------------------------------------|------------------------------------------------------------------|
| SUBDIVISION/DEVELOPMENT:           | APEX VILLAGE                                                     |
| CITY OF FRANKLIN PROJECT NUMBER    | 6305                                                             |
| TAX MAP & PARCELS                  | MAP 62 - PARCELS 01417 & 01418                                   |
| ADDRESS                            | CAROTHERS PARKWAY                                                |
| CITY                               | FRANKLIN                                                         |
| COUNTY                             | WILLIAMSON                                                       |
| STATE                              | TENNESSEE                                                        |
| CIVIL DISTRICT                     | 8TH                                                              |
| EXISTING ZONING- CHARACTER OVERLAY | GENERAL COMMERCIAL DISTRICT - McEWEN CHARACTER AREA 4            |
| OTHER APPLICABLE OVERLAYS          | FLOODWAY FRINGE OVERLAY (FFO)<br>FLOODWAY OVERLAY DISTRICT (FWO) |
| APPLICABLE DEVELOPMENT STANDARDS   | CONVENTIONAL                                                     |
| ACREAGE OF SITE                    | +/- 23.61 ACRES                                                  |
| RESIDENTIAL DENSITY                | 14.61                                                            |
| COMMERCIAL SQUARE FOOTAGE          | 350,000                                                          |
| PROPOSED HOTEL KEYS                | 200                                                              |
| PROPOSED ZONING                    | SPECIFIC DEVELOPMENT<br>VARIETY (SD-X) 14.61, 350,000, 200       |
| OWNERS REPRESENTATIVE:             | CRESCENT COMMUNITIES, LLC.                                       |
| ADDRESS:                           | 205 POWELL AVENUE<br>BRENTWOOD, TN. 37027                        |
| PHONE NO.:                         | 615.312.8242                                                     |
| CONTACT NAME:                      | KHRIS PASCARELLA                                                 |
| E-MAIL ADDRESS:                    | kpascarella@PEARLSTREETPARTNERS.COM                              |
| APPLICANT:                         | EDGE PLANNING, LANDSCAPE ARCHITECTURE & URBAN DESIGN             |
| ADDRESS:                           | 210 12TH AVENUE SOUTH, SUITE 202 - NASHVILLE TN 37203            |
| PHONE NO.:                         | (615) 250-8154                                                   |
| FAX NO.:                           | (615) 250-8155                                                   |
| CONTACT:                           | JOHN HAAS - jhaas@edgela.com                                     |
| CIVIL ENGINEER:                    | KIMLEY-HORN                                                      |
| ADDRESS:                           | 214 OCEANSIDE DRIVE - NASHVILLE, TN 37204                        |
| PHONE NO.:                         | (615) 564-2876                                                   |
| CONTACT:                           | RYAN McMASTER - ryan.mcmaster@kimley-horn.com                    |



SITE LOCATION MAP

INDEX OF SHEETS

| SHEET # | TITLE                                     |
|---------|-------------------------------------------|
| C-0.0   | COVER SHEET                               |
| C-1.0   | OVERALL EXISTING CONDITIONS PLAN          |
| C-1.0A  | TREE PRESERVATION PLAN                    |
| C-2.0   | OVERALL DEVELOPMENT PLAN                  |
| C-3.0   | OVERALL GRADING, DRAINAGE, & UTILITY PLAN |
| C-4.0   | OVERALL ROW & ACCESS PLAN                 |
| A-1.0   | OFFICE, RETAIL & GARAGE ELEVATIONS        |
| A-2.0   | RETAIL, OFFICE & HOTEL ELEVATIONS         |
| A-3.0   | MULTI-FAMILY ELEVATIONS                   |
| A-4.0   | TOWNHOME ELEVATIONS                       |

APPLICANT IS REQUESTING THE FOLLOWING:

- SECTION 5.3.5 (3)(b) (ii) RESIDENTIAL DEVELOPMENT REQUIREMENT (DESIGN MODIFICATION)  
APPLICANT IS REQUESTING THAT MAXIMUM LENGTH OF ANY ATTACHED RESIDENTIAL BUILDING CAN BE GREATER THAN 200 FEET.
- SECTION 5.5.4 - DEDICATION OF PUBLIC LAND FOR PARKS AND GREENWAYS/BLEUWAYS (MODIFICATION OF STANDARDS)  
APPLICANT IS REQUESTING THAT THE REQUIREMENT FOR PARKLAND DEDICATION BY WAIVED IN LIEU OF A PRIVATELY HELD AND MAINTAINED OPEN SPACE WITH AN ALL ACCESS PUBLIC EASEMENT
- SECTION 5.10.4 (1) (iii) - CONNECTIVITY INDEX REQUIREMENT (MODIFICATION OF STANDARDS)  
APPLICANT IS REQUESTING THAT THE MINIMUM CONNECTIVITY INDEX SCORE OF 1.65 CANNOT BE ACHIEVED DUE TO THE TOPOGRAPHIC CONDITIONS AND NATURAL FEATURES OF THE SITE.

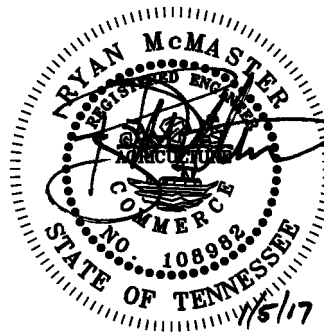
PREPARED FOR:

**CRESCENT COMMUNITIES, LLC.**

227 W. TRADE STREET, SUITE 1000

CHARLOTTE, NC. 28202

615.312.8242



**Kimley»Horn**

214 Oceanside Drive, Nashville, TN 37204  
Main: 615.564.2701 | www.kimley-horn.com  
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PREPARED BY:

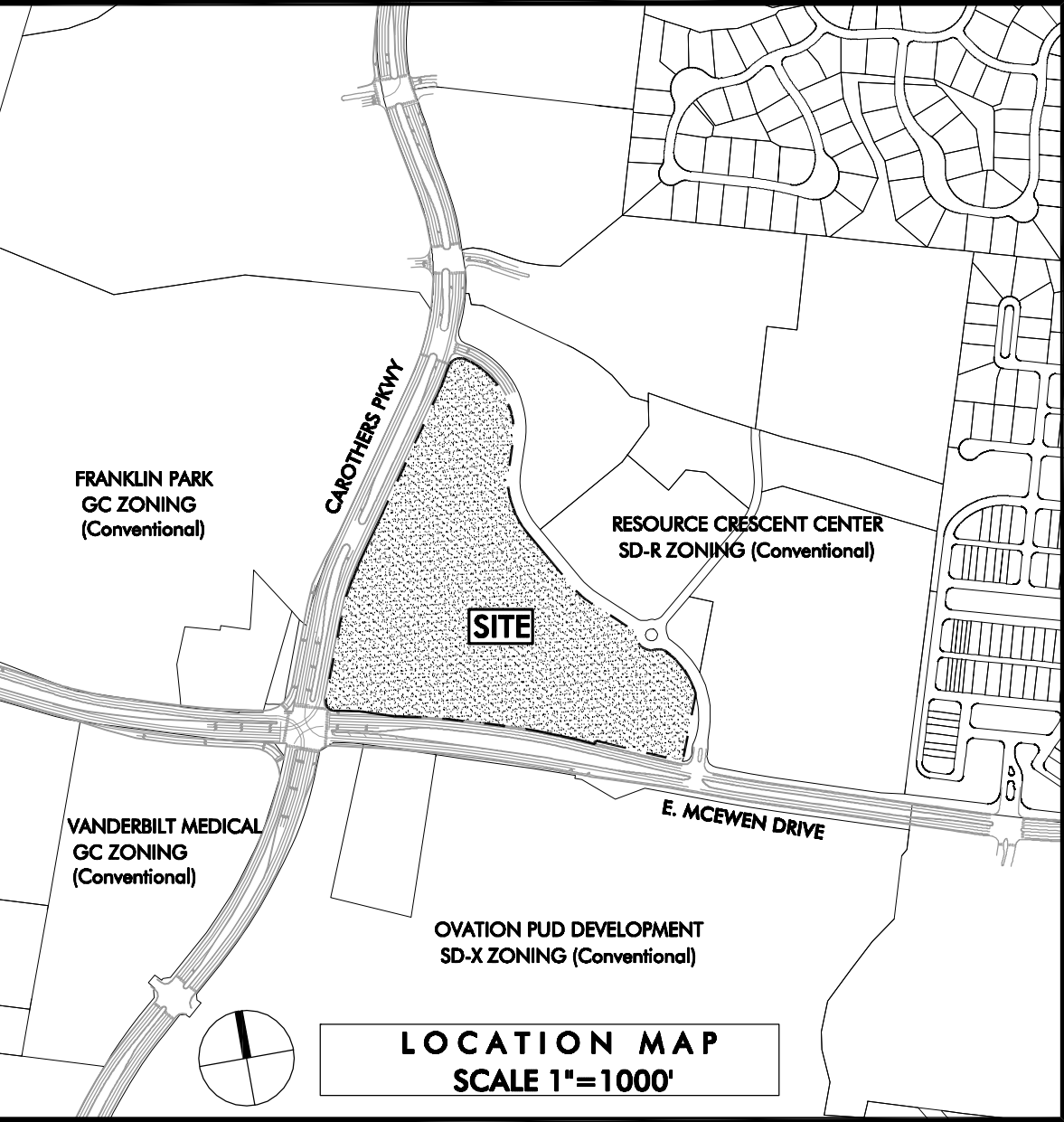
**EDGE**

210 12th Ave. South, Suite 202  
Nashville, Tennessee 37203  
P 615-250-8154 F 615-250-8155





| EXISTING SPECIMEN TREES |     |         |           |
|-------------------------|-----|---------|-----------|
| ID#                     | DIA | TREE    | CONDITION |
| 1                       | 24" | BODOCK  | POOR      |
| 2                       | 24" | OAK     | GOOD      |
| 3                       | 24" | MAPLE   | POOR      |
| 4                       | 24" | OAK     | FAIR      |
| 5                       | 30" | MAPLE   | FAIR      |
| 6                       | 30" | MAPLE   | FAIR      |
| 7                       | 24" | BODOCK  | POOR      |
| 8                       | 24" | BODOCK  | FAIR      |
| 9                       | 28" | MAPLE   | POOR      |
| 10                      | 24" | HACK    | POOR      |
| 11                      | 32" | BODOCK  | FAIR      |
| 12                      | 24" | HACK    | FAIR      |
| 13                      | 24" | MAPLE   | FAIR      |
| 14                      | N/A | N/A     | N/A       |
| 15                      | 24" | BODOCK  | POOR      |
| 16                      | 24" | BODOCK  | POOR      |
| 17                      | 24" | HACK    | POOR      |
| 18                      | 24" | BODOCK  | POOR      |
| 19                      | 30" | BODOCK  | FAIR      |
| 20                      | 36" | BODOCK  | FAIR      |
| 21                      | 25" | BODOCK  | FAIR      |
| 22                      | 28" | BODOCK  | FAIR      |
| 23                      | 28" | BODOCK  | FAIR      |
| 24                      | 30" | BODOCK  | POOR      |
| 25                      | 33" | BODOCK  | POOR      |
| 26                      | 24" | HACK    | GOOD      |
| 27                      | 24" | MAPLE   | FAIR      |
| 28                      | 24" | HACK    | POOR      |
| 29                      | 24" | HACK    | POOR      |
| 30                      | 36" | HACK    | POOR      |
| 31                      | 28" | OAK     | GOOD      |
| 32                      | 24" | OAK     | FAIR      |
| 33                      | 24" | OAK     | GOOD      |
| 34                      | 40" | HACK    | GOOD      |
| 35                      | 24" | OAK     | GOOD      |
| 36                      | 29" | OAK     | GOOD      |
| 37                      | 43" | HACK    | GOOD      |
| 38                      | 24" | OAK     | POOR      |
| 39                      | 32" | BODOCK  | POOR      |
| 40                      | 40" | OAK     | GOOD      |
| 41                      | 36" | BODOCK  | POOR      |
| 42                      | 36" | HACK    | POOR      |
| 43                      | 32" | HACK    | GOOD      |
| 44                      | 24" | HACK    | POOR      |
| 45                      | 24" | HACK    | FAIR      |
| 46                      | 24" | HACK    | FAIR      |
| 47                      | 28" | BODOCK  | POOR      |
| 48                      | 24" | OAK     | FAIR      |
| 49                      | 36" | LOCUST  | FAIR      |
| 50                      | 24" | HICKORY | FAIR      |
| 51                      | N/A | N/A     | N/A       |
| 52                      | 24" | LOCUST  | POOR      |
| 53                      | 24" | HACK    | POOR      |
| 54                      | 25" | BODOCK  | FAIR      |
| 55                      | 24" | HACK    | FAIR      |
| 56                      | 26" | BODOCK  | FAIR      |
| 57                      | 24" | BODOCK  | FAIR      |



| SITE DATA                                                       |                                                                  |
|-----------------------------------------------------------------|------------------------------------------------------------------|
| SUBDIVISION/DEVELOPMENT                                         | APEX VILLAGE                                                     |
| EXISTING ZONING                                                 | GC - GENERAL COMMERCIAL                                          |
| MAP & PARCEL NUMBER                                             | MAP 062, PARCELS 01417 & 01418                                   |
| ADDRESS                                                         | CAROTHERS PARKWAY                                                |
| PROPOSED ZONING                                                 | SD-X                                                             |
| CHARACTER AREA                                                  | MC EWEN                                                          |
| SPECIAL AREA                                                    | 4                                                                |
| OTHER APPLICABLE OVERLAYS                                       | FLOODWAY FRINGE OVERLAY (FFO)<br>FLOODWAY OVERLAY DISTRICT (FWO) |
| DEVELOPMENT STANDARD                                            | CONVENTIONAL                                                     |
| (MINERAL RIGHTS FOR THIS PROPERTY ARE HELD BY OWNER OF RECORD.) |                                                                  |
| ACREAGE OF SITE                                                 | +/- 23.61 ACRES                                                  |
| EXISTING TREE CANOPY                                            | +/- 7.48 ACRES (32% OF SITE)                                     |
| EXISTING TREE CANOPY TO PRESERVE                                | +/- 1.80 ACRES (24% OF EXISTING CANOPY)                          |

- NOTES:
- DEVELOPER TO RETAIN ALL MINERAL RIGHTS.
  - NO STRUCTURES CURRENTLY EXIST ON SITE
  - THERE ARE NO HISTORIC STRUCTURES WITHIN 500' OF THE SITE

| SITE GRADING AND DRAINAGE CHART |             |
|---------------------------------|-------------|
|                                 | DA-SITE     |
| TOTAL AREA                      | 23.61 ACRES |
| CURVE NUMBER                    | 64.54       |
| DISTURBED AREA                  | 14.24 ACRES |
| 5-YEAR STORM FLOW RATE          | 18.62 CFS   |
| 5-YEAR STORM FLOW RATE          | 38.08 CFS   |
| 10-YEAR STORM FLOW RATE         | 54.28 CFS   |
| 25-YEAR STORM FLOW RATE         | 75.75 CFS   |
| 50-YEAR STORM FLOW RATE         | 92.23 CFS   |
| 100-YEAR STORM FLOW RATE        | 108.95 CFS  |

**EX. COND. STORMWATER NARRATIVE**

EXISTING DRAINAGE PATTERNS ON THIS SITE ARE FROM RESOURCE PARKWAY SOUTH AND WEST TO THE CORNER OF CAROTHERS PARKWAY AND EAST MC EWEN DRIVE. STORMWATER WILL ENTER AN EXISTING 12" 30' CULVERT AND CONTINUE WEST UNDERNEATH CAROTHERS PARKWAY. THE MAJORITY OF THE SITE HAS TYPE B SOILS AND IS BOTH CLEAR AND WOODED IN PLACES.

THERE ARE TWO EXISTING DETENTION PONDS ON SITE THAT SERVE ADJACENT SITES WITH EVENTUAL OUTFALLS AT THE ABOVE MENTIONED CULVERT UNDERNEATH CAROTHERS PARKWAY.

- LEGEND
- EXISTING TREE CANOPY
  - EXISTING SLOPES
    - 14% - 19%
    - 20% AND GREATER
  - EXISTING SPECIMEN TREE

ENGINEERING PROVIDED BY:  
RYAN MCMASTER  
KIMLEY-HORN  
214 OCEANSIDE DRIVE  
NASHVILLE, TN, 37204  
(615) 564-2876  
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APPLICANT:  
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(615) 250-8154  
jhaas@edgela.com

DEVELOPER:  
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Main: 615-564-2701 | www.kimleyhorn.com  
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CONSULTANTS

SEAL

PROJECT TITLE

CLIENT

PROJECT NO. COF #6305  
Date 12/12/16  
Revisions  
1. PER CITY COMMENTS 01.05.17

Sheet Title

OVERALL EXISTING CONDITIONS PLAN

Sheet Number

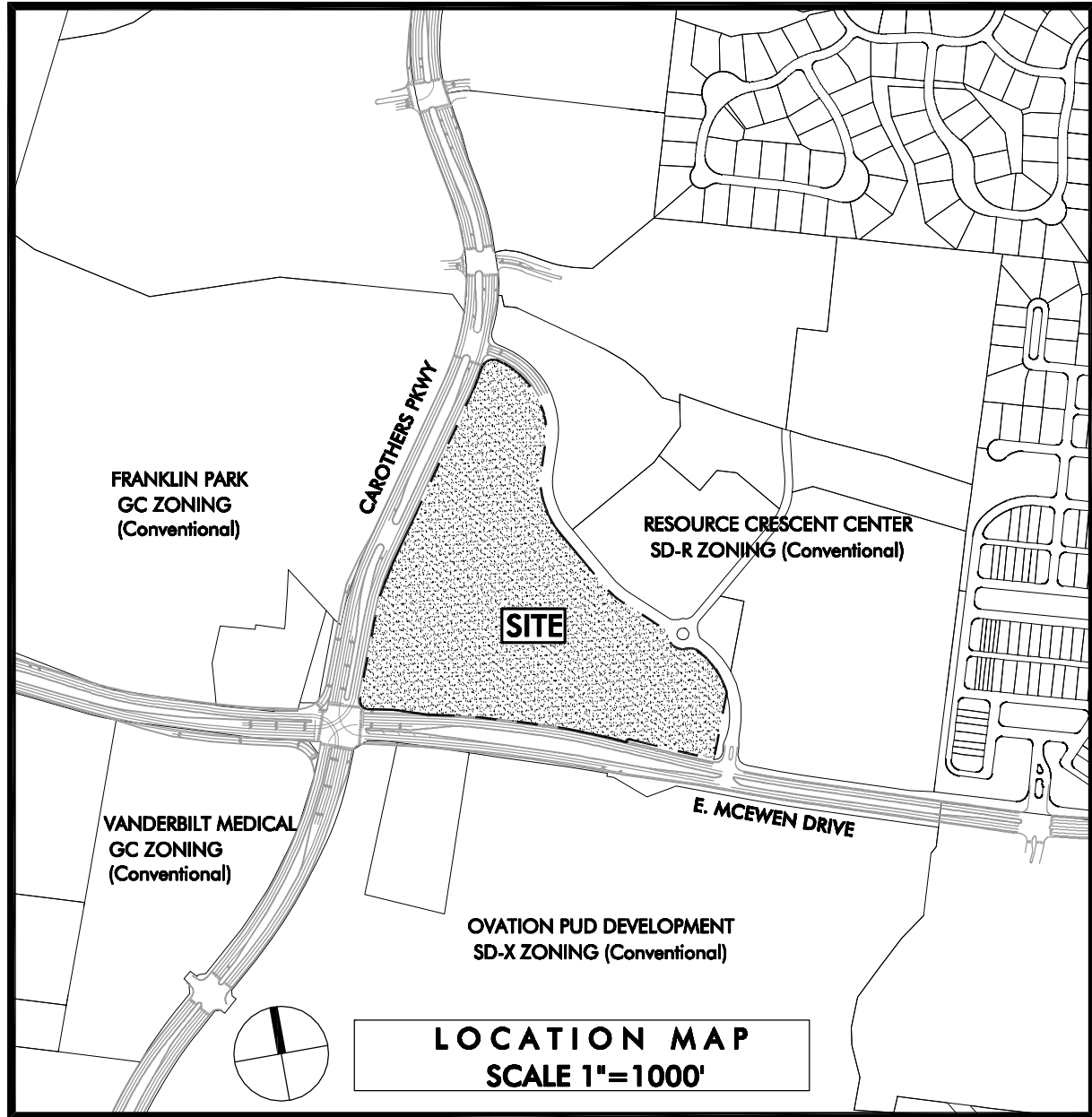
APEX VILLAGE  
PUD DEVELOPMENT PLAN  
C.O.F. #6305  
FRANKLIN, TN

C 1.0

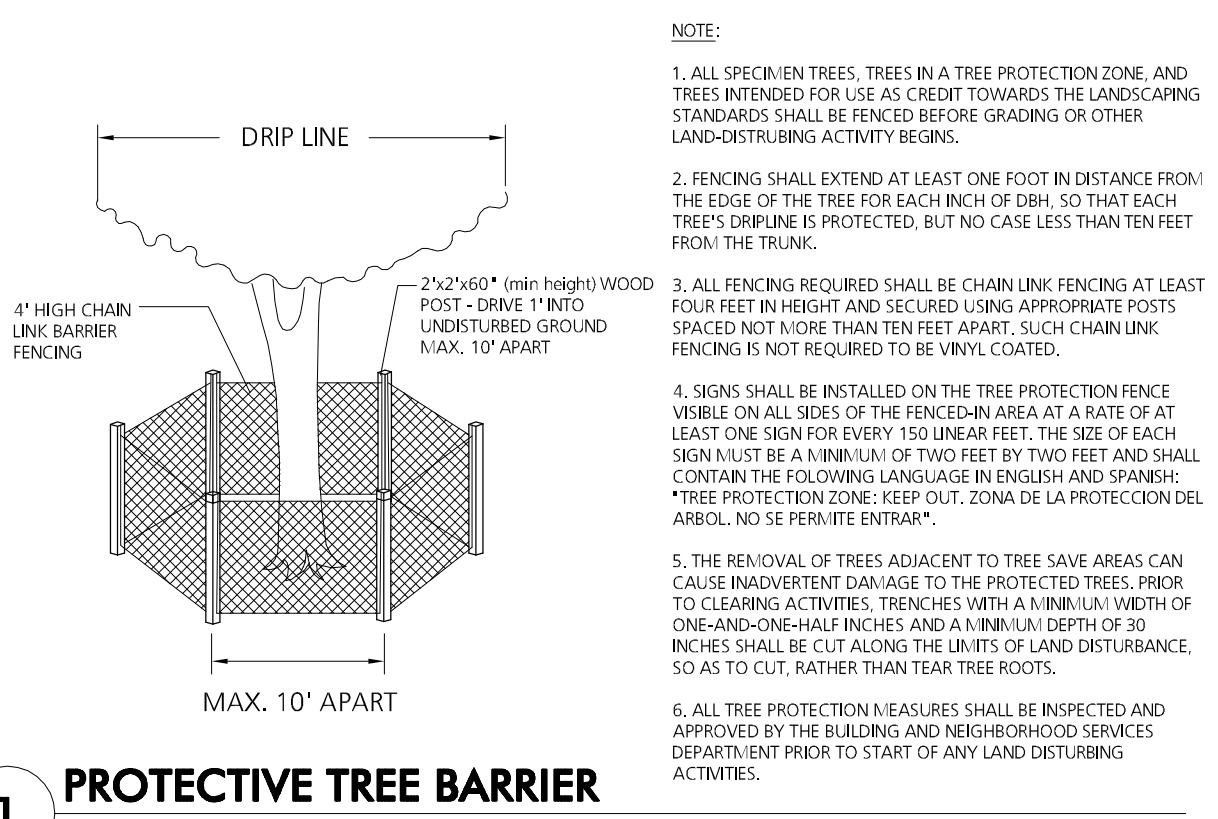




| EXISTING SPECIMEN TREES |     |         |           |
|-------------------------|-----|---------|-----------|
| ID#                     | DIA | TREE    | CONDITION |
| 1                       | 24" | BODOCK  | POOR      |
| 2                       | 24" | OAK     | GOOD      |
| 3                       | 24" | MAPLE   | POOR      |
| 4                       | 24" | OAK     | FAIR      |
| 5                       | 30" | MAPLE   | FAIR      |
| 6                       | 30" | MAPLE   | FAIR      |
| 7                       | 24" | BODOCK  | POOR      |
| 8                       | 24" | BODOCK  | FAIR      |
| 9                       | 28" | MAPLE   | POOR      |
| 10                      | 24" | HACK    | POOR      |
| 11                      | 32" | BODOCK  | FAIR      |
| 12                      | 24" | HACK    | FAIR      |
| 13                      | 24" | MAPLE   | FAIR      |
| 14                      | N/A | N/A     | N/A       |
| 15                      | 24" | BODOCK  | POOR      |
| 16                      | 24" | BODOCK  | POOR      |
| 17                      | 24" | HACK    | POOR      |
| 18                      | 24" | BODOCK  | POOR      |
| 19                      | 30" | BODOCK  | FAIR      |
| 20                      | 36" | BODOCK  | FAIR      |
| 21                      | 25" | BODOCK  | FAIR      |
| 22                      | 28" | BODOCK  | FAIR      |
| 23                      | 28" | BODOCK  | FAIR      |
| 24                      | 30" | BODOCK  | POOR      |
| 25                      | 33" | BODOCK  | POOR      |
| 26                      | 24" | HACK    | GOOD      |
| 27                      | 24" | MAPLE   | FAIR      |
| 28                      | 24" | HACK    | POOR      |
| 29                      | 24" | HACK    | POOR      |
| 30                      | 36" | HACK    | POOR      |
| 31                      | 28" | OAK     | GOOD      |
| 32                      | 24" | OAK     | FAIR      |
| 33                      | 24" | OAK     | GOOD      |
| 34                      | 40" | HACK    | GOOD      |
| 35                      | 24" | OAK     | GOOD      |
| 36                      | 29" | OAK     | GOOD      |
| 37                      | 43" | HACK    | GOOD      |
| 38                      | 24" | OAK     | POOR      |
| 39                      | 32" | BODOCK  | POOR      |
| 40                      | 40" | OAK     | GOOD      |
| 41                      | 36" | BODOCK  | POOR      |
| 42                      | 36" | HACK    | POOR      |
| 43                      | 32" | HACK    | GOOD      |
| 44                      | 24" | HACK    | POOR      |
| 45                      | 24" | HACK    | FAIR      |
| 46                      | 24" | HACK    | FAIR      |
| 47                      | 28" | BODOCK  | POOR      |
| 48                      | 24" | OAK     | FAIR      |
| 49                      | 36" | LOCUST  | FAIR      |
| 50                      | 24" | HICKORY | FAIR      |
| 51                      | N/A | N/A     | N/A       |
| 52                      | 24" | LOCUST  | POOR      |
| 53                      | 24" | HACK    | POOR      |
| 54                      | 25" | BODOCK  | FAIR      |
| 55                      | 24" | HACK    | FAIR      |
| 56                      | 36" | BODOCK  | FAIR      |
| 57                      | 24" | BODOCK  | FAIR      |



| SITE DATA                                                                                                             |                                                                  |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| SUBDIVISION/DEVELOPMENT                                                                                               | APEX VILLAGE                                                     |
| EXISTING ZONING                                                                                                       | GC - GENERAL COMMERCIAL                                          |
| MAP & PARCEL NUMBER                                                                                                   | MAP 062, PARCELS 01417 & 01418                                   |
| ADDRESS                                                                                                               | CAROTHERS PARKWAY                                                |
| PROPOSED ZONING                                                                                                       | SD-X                                                             |
| CHARACTER AREA                                                                                                        | MC EWEN                                                          |
| SPECIAL AREA                                                                                                          | 4                                                                |
| OTHER APPLICABLE OVERLAYS                                                                                             | FLOODWAY FRINGE OVERLAY (FFO)<br>FLOODWAY OVERLAY DISTRICT (FWO) |
| DEVELOPMENT STANDARD                                                                                                  | CONVENTIONAL                                                     |
| (MINERAL RIGHTS FOR THIS PROPERTY ARE HELD BY OWNER OF RECORD.)                                                       |                                                                  |
| ACREAGE OF SITE                                                                                                       | +/- 23.61 ACRES                                                  |
| EXISTING TREE CANOPY                                                                                                  | +/- 7.48 ACRES (32% OF SITE)                                     |
| MIN. AREA OF EXISTING TREE CANOPY TO PRESERVE                                                                         | +/- 1.80 ACRES (24% OF EXISTING CANOPY)                          |
| *AREA OF PRESERVED TREE CANOPY                                                                                        | +/- 1.35 ACRES (18% OF EXISTING CANOPY)                          |
| (*NOTE: APPLICANT SHALL RESOLVE ANY TREE CANOPY RETENTION ISSUES AT SITE PLAN SUBMITTAL WITH CITY OF FRANKLIN STAFF.) |                                                                  |



1 PROTECTIVE TREE BARRIER

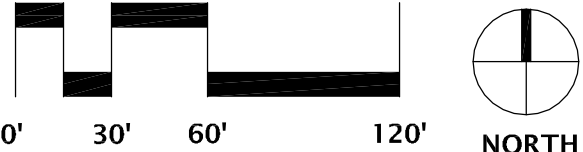
- NOTE:
1. ALL SPECIMEN TREES, TREES IN A TREE PROTECTION ZONE, AND TREES INTENDED FOR USE AS CREDIT TOWARDS THE LANDSCAPING STANDARDS SHALL BE FENCED BEFORE GRADING OR OTHER LAND-DESTRUCTIVE ACTIVITY BEGINS.
  2. FENCING SHALL EXTEND AT LEAST ONE FOOT IN DISTANCE FROM THE EDGE OF THE TREE FOR EACH INCH OF DBH, SO THAT EACH TREE'S SPRING IS PROTECTED, BUT NO CASE LESS THAN TWENTY FEET FROM THE TRUNK.
  3. ALL FENCING REQUIRED SHALL BE CHAIN LINK FENCING AT LEAST FOUR FEET IN HEIGHT AND SECURED USING APPROPRIATE POSTS SPACED NOT MORE THAN TEN FEET APART. SUCH CHAIN LINK FENCING IS NOT REQUIRED TO BE VINYL COATED.
  4. SIGNS SHALL BE INSTALLED ON THE TREE PROTECTION FENCE. WHILE ON ALL SIDES OF THE PROTECTION FENCE, A WHITE PLATE AT LEAST ONE SIGN FOR EVERY 150 LINEAR FEET. THE SIZE OF EACH SIGN SHALL BE A MINIMUM OF TWO FEET BY TWO FEET AND SHALL CONTAIN THE FOLLOWING LANGUAGE IN ENGLISH AND SPANISH: "TREE PROTECTION ZONE. KEEP OUT. ZONA DE LA PROTECCION DEL ARBOL. NO SE PERMITE ENTRAR."
  5. THE REMOVAL OF TREES ADJACENT TO TREE SAVE AREAS CAN CAUSE INADEQUATE DAMAGE TO THE PROTECTED TREES WHEN TO CLEARING ACTIVITIES. TRENCHES WITH A MINIMUM WIDTH OF ONE AND ONE HALF INCHES AND A MINIMUM DEPTH OF 30 INCHES SHALL BE CUT ALONG THE LIMITS OF LAND DISTURBANCE, SO AS TO CUT SHORTER THAN TREE ROOTS.
  6. ALL TREE PROTECTION MEASURES SHALL BE INSPECTED AND APPROVED BY THE BUILDING AND NEIGHBORHOOD SERVICES DEPARTMENT PRIOR TO START OF ANY LAND-DESTRUCTIVE ACTIVITIES.

| LEGEND |                         |
|--------|-------------------------|
|        | EXISTING TREE CANOPY    |
|        | TREE PRESERVATION AREAS |
|        | EXISTING SPECIMEN TREE  |
|        | TREE PROTECTION FENCE   |

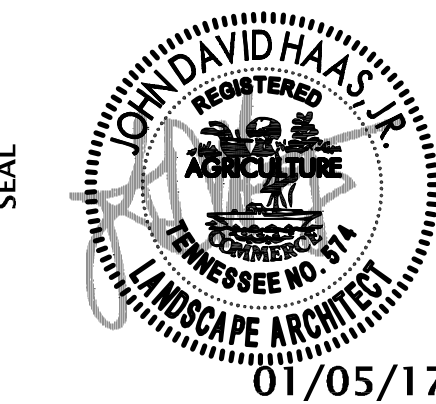
ENGINEERING PROVIDED BY:  
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BRENTWOOD, TN 37027  
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kpascarella@pearlstreetpartners.com



CONSULTANTS



01/05/17

PROJECT TITLE

**APEX VILLAGE  
PUD DEVELOPMENT PLAN**  
C.O.F. #6305  
FRANKLIN, TN

CLIENT

**CRESCENT  
COMMUNITIES  
LLC**

PROJECT NO. COF #6305  
Date 12/12/16  
Revisions  
1. PER CITY COMMENTS 01.05.17

Sheet Title

**TREE  
PRESERVATION  
PLAN**

Sheet Number

**C 1.0a**



ANTICIPATED IMPACT ON THE STREETS AS SHOWN IN THE MAJOR THOROUGHFARE PLAN

PERCENTAGES OF SITE-GENERATED TRAFFIC VOLUMES ON CITY STREETS

| Street Name                                                   | Classification | Entering Traffic | Exiting Traffic |
|---------------------------------------------------------------|----------------|------------------|-----------------|
| McEwen Drive (west of Carothers Parkway)                      | Major Arterial | 50%              | 50%             |
| McEwen Drive (between Carothers Parkway and Resource Parkway) | Major Arterial | 30%              | 35%             |
| McEwen Drive (east of Resource Parkway)                       | Major Arterial | 10%              | 10%             |
| Carothers Parkway (south of McEwen Drive)                     | Major Arterial | 15%              | 15%             |
| Carothers Parkway (between McEwen Drive and Pacific Drive)    | Major Arterial | 35%              | 30%             |
| Carothers Parkway (north of Pacific Drive)                    | Major Arterial | 20%              | 20%             |

DAILY SITE-GENERATED TRAFFIC VOLUMES ON CITY STREETS

| Street Name                                                   | Classification | Entering Traffic | Exiting Traffic | Total Vehicles Per Day |
|---------------------------------------------------------------|----------------|------------------|-----------------|------------------------|
| McEwen Drive (west of Carothers Parkway)                      | Major Arterial | 1,855            | 1,855           | 3,710                  |
| McEwen Drive (between Carothers Parkway and Resource Parkway) | Major Arterial | 1,113            | 1,298           | 2,411                  |
| McEwen Drive (east of Resource Parkway)                       | Major Arterial | 371              | 371             | 742                    |
| Carothers Parkway (south of McEwen Drive)                     | Major Arterial | 556              | 556             | 1,112                  |
| Carothers Parkway (between McEwen Drive and Pacific Drive)    | Major Arterial | 1,298            | 1,113           | 2,411                  |
| Carothers Parkway (north of Pacific Drive)                    | Major Arterial | 742              | 742             | 1,484                  |

THE FOLLOWING ITEMS OUTLINE RECOMMENDATIONS RELATED TO THE TRAFFIC IMPACT STUDY, PERFORMED BY FISCHBACH TRANSPORTATION, AND ADDITIONAL STAFF RECOMMENDATIONS PER THE THIRD PARTY REVIEW VIA VOLKERT INC. FOR IMPROVEMENTS RELATED TO THIS DEVELOPMENT:

- A TRAFFIC SIGNAL SHOULD BE INSTALLED AT THE INTERSECTION OF E. MCEWEN DRIVE AND RESOURCE PARKWAY; AT THIS TIME, THIS IMPROVEMENT IS REQUIRED PER THE OVATION DEVELOPMENT PLAN
- A TRAFFIC SIGNAL SHOULD BE INSTALLED AT THE INTERSECTION OF CAROTHERS PARKWAY AND RESOURCE PARKWAY
- THE STORAGE BAY ON THE EXISTING, SOUTHBOUND LEFT-HAND TURN LANE FROM CAROTHERS PARKWAY TO PACIFIC DRIVE SHALL BE EXTENDED TO 150'
- FUTURE RIGHT-OF-WAY RESERVATION SHOULD BE PROVIDED ALONG CAROTHERS PARKWAY AND E. MCEWEN DRIVE PER THE HYBRID EXHIBIT OF THE CAROTHERS INTEGRATED GROWTH PLAN. ROW IS TO BE RESERVED AND DEDICATED VIA FINAL SUBDIVISION PLAT AFTER SITE PLAN APPROVAL
- PACIFIC DRIVE SHALL INCLUDE ONE THROUGH LANE IN EACH DIRECTION AND A CONTINUOUS CENTER TURN LANE FROM CAROTHERS PARKWAY TO RESOURCE PARKWAY
- RESOURCE PARKWAY SHALL INCLUDE STORAGE BAYS AND LEFT-HAND TURN LANES INTO THE PROJECT ACCESS LOCATIONS AND TERRAPIN DRIVE INTERSECTION
- THE ACCESS POINTS TO DECK "P" VIA PACIFIC DRIVE AND RESOURCE PARKWAY SHALL PROVIDE ONE ENTRY LANE AND TWO EXIT LANES, STRIPED AS SEPARATE LEFT AND RIGHT TURNS.

ADJUSTED WEEKDAY PEAK PARKING DEMAND (SCENARIO 1)

| DAY AND TIME               | REQUIRED PARKING SPACES |                     |          | PLUS 52 SPACES IN EXISTING EASEMENT |
|----------------------------|-------------------------|---------------------|----------|-------------------------------------|
|                            | Visitors                | Employees/Residents | SUBTOTAL |                                     |
| Weekday (7:00 PM in June)  | 489                     | 1,016               | 1,505    | 1,256 *                             |
| Saturday (7:00 PM in June) | 481                     | 100                 | 581      | 517 *                               |

\* This is the total number of parking spaces needed in Parking Garage P. Based on the data provided in Shared Parking, 2nd Edition, which was published by the Urban Land Institute. Parking Garage Q should include 165 parking spaces per apartment in Building C.

ADJUSTED WEEKDAY PEAK PARKING DEMAND (SCENARIO 2)

| DAY AND TIME               | REQUIRED PARKING SPACES |                     |          | REDUCED 20% FOR INTERNAL TRIPS | PLUS 52 SPACES IN EXISTING EASEMENT |
|----------------------------|-------------------------|---------------------|----------|--------------------------------|-------------------------------------|
|                            | Visitors                | Employees/Residents | SUBTOTAL |                                |                                     |
| Weekday (2:00 PM in June)  | 499                     | 1,373               | 1,872    | 1,498                          | 1,550 *                             |
| Saturday (7:00 PM in June) | 552                     | 587                 | 1,139    | 895                            | 947 *                               |

\* This is the total number of parking spaces needed in Parking Garages P and Q (combined).

\*SEE SHARED PARKING STUDY FOR DETAILS

BUILDING USE MATRIX

| BUILDING | DESCRIPTION               |
|----------|---------------------------|
| A        | OFFICE & RESTAURANT       |
| B        | HOTEL                     |
| C        | MULTI-FAMILY & RESTAURANT |
| D        | FLEX COMMERCIAL & OFFICE  |
| E        | FLEX COMMERCIAL & OFFICE  |
| F        | RESTAURANT                |
| G        | RESTAURANT                |
| J        | FLEX/TOWNHOUSE            |
| K        | FLEX/TOWNHOUSE            |
| L        | FLEX/TOWNHOUSE            |
| M        | FLEX/TOWNHOUSE            |
| P        | GARAGE                    |
| Q        | GARAGE                    |

FRANKLIN CREST P.U.D. SUBDIVISION LOT-3 PLAT BOOK 50, PAGE 122, R.O.W.C., TN. C.O.F. PROJECT #1683

STREAM BUFFER NOTE: THERE SHALL BE NO MOWING, CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION IN RIPARIAN BUFFERS EXCEPT AS PERMITTED BY THE CITY ENGINEER, OR HIS DESIGNEE.

0.60 ACRE R.O.W. RESERVATION PER THE HYBRID EXHIBITS WITHIN THE CAROTHERS INTEGRATED GROWTH PLAN

ROW TO BE RESERVED AND DEDICATED VIA FINAL SUBDIVISION PLAT AFTER SITE PLAN APPROVAL

4. WATER IS PROVIDED BY MALLORY VALLEY UTILITY DISTRICT VIA EXISTING 10" & 18" MAINS SURROUNDING THE SITE. WATER AVAILABILITY OF APPROXIMATELY 1160 SFUG HAS BEEN CONFIRMED BY MVUD FOR THIS DEVELOPMENT.
5. SANITARY SEWER WILL BE PROVIDED BY THE CITY OF FRANKLIN VIA EXISTING SEWER INFRASTRUCTURE ALONG EAST MCWEEN DRIVE AND CAROTHERS PARKWAY. THE CITY OF FRANKLIN HAS APPROVED THE ADDITION OF 1160 SFUG FOR THE DEVELOPMENT.
6. REFUSE COLLECTION FOR THE DEVELOPMENT SHALL BE PROVIDED BY PRIVATE COLLECTION.

NOTES:

1. DEVELOPER TO RETAIN ALL MINERAL RIGHTS.
2. NO STRUCTURES CURRENTLY EXIST ON SITE
3. THERE ARE NO HISTORIC STRUCTURES WITHIN 500' OF THE SITE

1. **APPLICANT IS REQUESTING THE FOLLOWING:**
  - SECTION 5.3.5 (3)(b) (ii) RESIDENTIAL DEVELOPMENT REQUIREMENT (DESIGN MODIFICATION)**

APPLICANT IS REQUESTING THAT MAXIMUM LENGTH OF ANY ATTACHED RESIDENTIAL BUILDING CAN BE GREATER THAN 200 FEET.
2. **SECTION 5.5.4 - DEDICATION OF PUBLIC LAND FOR PARKS AND GREENWAYS/BLUEWAYS (MODIFICATION OF STANDARDS)**

APPLICANT IS REQUESTING THAT THE REQUIREMENT FOR PARKLAND DEDICATION BY WAIVED IN LIEU OF A PRIVATELY HELD AND MAINTAINED OPEN SPACE WITH AN ALL ACCESS PUBLIC EASEMENT
3. **SECTION 5.10.4 (1) (iii) - CONNECTIVITY INDEX REQUIREMENT (MODIFICATION OF STANDARDS)**

APPLICANT IS REQUESTING THAT THE MINIMUM CONNECTIVITY INDEX SCORE OF 1.65 CANNOT BE ACHIEVED DUE TO THE TOPOGRAPHIC CONDITIONS AND NATURAL FEATURES OF THE SITE.

| <b>DAY AND TIME</b>               | <b>REQUIRED PARKING SPACES</b> |                                 |                 |                                                        |
|-----------------------------------|--------------------------------|---------------------------------|-----------------|--------------------------------------------------------|
|                                   | <b>Visitors</b>                | <b>Employees/<br/>Residents</b> | <b>SUBTOTAL</b> | <b>REDUCED<br/>20% FOR<br/>INTERNAL<br/>TRIPS</b>      |
| <b>Weekday (2:00 PM in June)</b>  | 499                            | 1,373                           | 1,872           | 1,498                                                  |
| <b>Saturday (7:00 PM in June)</b> | 532                            | 587                             | 1,119           | 895                                                    |
|                                   |                                |                                 |                 | <b>PLUS 52<br/>SPACES IN<br/>EXISTING<br/>EASEMENT</b> |
|                                   |                                |                                 |                 | <b>1,550 *</b>                                         |

\*SEE SHARED PARKING STUDY FOR DETAILS

| BUILDING | DESCRIPTION               |
|----------|---------------------------|
| A        | OFFICE & RESTAURANT       |
| B        | HOTEL                     |
| C        | MULTI-FAMILY & RESTAURANT |
| D        | FLEX COMMERCIAL & OFFICE  |
| E        | FLEX COMMERCIAL & OFFICE  |
| F        | RESTAURANT                |
| G        | RESTAURANT                |
| J        | FLEXTOWNHOUSE             |
| K        | FLEXTOWNHOUSE             |
| L        | FLEXTOWNHOUSE             |
| M        | FLEXTOWNHOUSE             |
| P        | GARAGE                    |
| Q        | GARAGE                    |

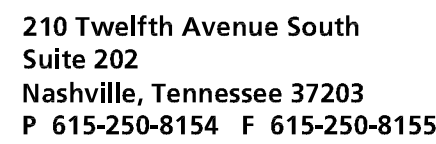
|                                                                                                                                                             |                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| SUBDIVISION/DEVELOPMENT<br>MAP & PARCEL NUMBER<br>ADDRESS                                                                                                   | APEX VILLAGE<br>MAP 062, PARCELS 01417 & 01418<br>CAROTHERS PARKWAY                                                             |
| EXISTING ZONING<br>CHARACTER AREA<br>SPECIAL AREA<br>OTHER APPLICABLE OVERLAYS                                                                              | GC - GENERAL COMMERCIAL<br>MCEVEN<br>4<br>FLOODWAY FRINGE OVERLAY (FFO)<br>FLOODWAY OVERLAY DISTRICT (FWO)                      |
| DEVELOPMENT STANDARD                                                                                                                                        | CONVENTIONAL                                                                                                                    |
| ACREAGE OF SITE<br>SQUARE FOOTAGE OF SITE                                                                                                                   | +/- 23.61 ACRES<br>1,028,538 SQ. FT.                                                                                            |
| RESIDENTIAL DENSITY<br>COMMERCIAL SQUARE FOOTAGE<br>PROPOSED HOTEL KEYS                                                                                     | 14.61 DWU/ACRE<br>350,000<br>200                                                                                                |
| PROPOSED ZONING                                                                                                                                             | SPECIFIC DEVELOPMENT<br>VARIETY (SD-X) 14.61, 350,000, 200                                                                      |
| MINIMUM REQUIRED SETBACK LINES<br>BUILDING SETBACKS                                                                                                         | 5 FT.                                                                                                                           |
| DEVELOPER:<br>KHRIS PASCARELLA<br>CRESCENT COMMUNITIES<br>205 POWELL AVENUE<br>BRENTWOOD, TN 37027<br>(615) 312-8242<br>kpascarella@pearlstreetpartners.com | APPLICANT:<br>JOHN HAAS<br>EDGE<br>210 12TH AVE. SOUTH - SUITE 202<br>NASHVILLE TN, 37203<br>(615) 250-8154<br>jhaas@edgela.com |
| BUILDING HEIGHT                                                                                                                                             | 12 STORIES MAX.                                                                                                                 |
| LANDSCAPE SURFACE RATIO<br>MIN. LANDSCAPE SURFACE RATIO                                                                                                     | 0.40<br>0.20                                                                                                                    |
| MINIMUM PARKING REQUIREMENT<br>PARKING PROVIDED                                                                                                             | SEE CHART THIS PAGE<br>SEE CHART THIS PAGE                                                                                      |
| EXISTING TREE CANOPY                                                                                                                                        | +/- 7.48 ACRES (32% OF SITE)                                                                                                    |
| MIN. AREA OF EXISTING TREE CANOPY<br>TO PRESERVE                                                                                                            | +/- 1.80 ACRES (24% OF EXISTING CANOPY)                                                                                         |
| *AREA OF PRESERVED TREE CANOPY                                                                                                                              | +/- 1.35 ACRES (18% OF EXISTING CANOPY)                                                                                         |
| (*NOTE: APPLICANT SHALL RESOLVE ANY TREE CANOPY RETENTION ISSUES AT SITE<br>PLAN SUBMITTAL WITH CITY OF FRANKLIN STAFF.)                                    |                                                                                                                                 |
| FORMAL OPEN SPACE -<br>REQUIRED                                                                                                                             | +/- 1.18 ACRES (5% OF GROSS<br>DEVELOPMENT SIZE)                                                                                |
| FORMAL OPEN SPACE -<br>PROVIDED                                                                                                                             | +/- 1.20 ACRES (5% OF GROSS<br>DEVELOPMENT SIZE)                                                                                |
| INFORMAL OPEN SPACE -<br>REQUIRED                                                                                                                           | NONE                                                                                                                            |
| INFORMAL OPEN SPACE -<br>PROVIDED                                                                                                                           | +/- 10.98 ACRES (47% OF GROSS<br>DEVELOPMENT SIZE)                                                                              |
| *REQUIRED PARKLAND DEDICATION                                                                                                                               | +/- 5.23 ACRES                                                                                                                  |
| *PROVIDED PARKLAND                                                                                                                                          | +/- 5.24 ACRES                                                                                                                  |
| *APPLICANT IS REQUESTING A MODIFICATION OF STANDARDS - SEE NOTES THIS PAGE                                                                                  |                                                                                                                                 |
| RESIDENTIAL DENSITY<br>NET DENSITY (MINUS ROW)<br>NET DENSITY (MINUS ROW<br>& OVERLAY CONSTRAINTS)                                                          | 14.61 DU/A<br>14.90 DU/A<br>18.90 DU/A                                                                                          |
| PROPOSED NUMBER OF RESIDENTIAL UNITS BY USE TYPE<br>TOWNHOMES<br>*MULTI-FAMILY UNITS                                                                        | 15 UNITS<br>330 UNITS                                                                                                           |
| TOTAL UNITS                                                                                                                                                 | 345 UNITS                                                                                                                       |
| *MULTI-FAMILY UNITS WILL BE DIVIDED INTO THE FOLLOWING MIX:                                                                                                 |                                                                                                                                 |
| STUDIOS                                                                                                                                                     | +/- 4% - 8%                                                                                                                     |
| ONE BEDROOM                                                                                                                                                 | +/- 50% - 54%                                                                                                                   |
| TWO BEDROOM                                                                                                                                                 | +/- 38% - 42%                                                                                                                   |
| THREE BEDROOM                                                                                                                                               | +/- 2% - 6%                                                                                                                     |
| (NOTE THAT THIS IS AN APPROXIMATE UNIT MIX ONLY - ACTUAL UNIT MIX NUMBERS<br>WILL BE PROVIDED AT SITE PLAN SUBMITTAL)                                       |                                                                                                                                 |
| PROPOSED SQUARE FOOTAGE BY USE TYPE (NONRESIDENTIAL)<br>OFFICE<br>COMMERCIAL<br>HOTEL                                                                       | +/- 300,000 SF<br>+/- 50,000 SF<br>200 KEYS                                                                                     |

 TREE PROTECTION AREA  
 EXISTING SPECIMEN TREE  
 100' — LIMITS OF DISTURBANCE  
 30' 60' 120'  
 NORTH

ENGINEERING PROVIDED BY:  
RYAN McMASTER  
KIMLEY-HORN  
214 OCEANSIDE DRIVE  
NASHVILLE, TN. 37204  
(615) 564-2876  
ryan.mcmaster@kimley-horn.com

APPLICANT:  
JOHN HAAS  
EDGE  
210 12TH AVE. SOUTH  
SUITE 202  
NASHVILLE TN, 37203  
(615) 250-8154  
jhaas@edgela.com

DEVELOPER:  
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CRESCENT COMMUNITIES  
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Oceanside Drive, Nashville, TN 37204  
615.564.2701 | [www.kimley-horn.com](http://www.kimley-horn.com)  
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01/05/17

**APEX VILLAGE**  
**PUD DEVELOPMENT PLAN**  
**C.O.F. #6305**  
**FRANKLIN, TN**

**CRESCENT  
COMMUNITIES**

PROJECT NO. COF #630  
Date 12/12/16

1. PER CITY COMMENTS 01.05.17

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Sheet Title

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**OVERALL**

## DEVELOPMENT

## DEVELOPMENT PLAN

Sheet Number

Sheet Number: \_\_\_\_\_

630

## C 2.0



\_\_\_\_\_

-DETAILS AND LAYOUT OF UTILITIES SHOWN GRAPHICALLY ON THIS PLAN ARE SUBJECT TO CHANGE BETWEEN DEVELOPMENT PLAN AND SITE PLAN SUBMITTALS.

-APPLICANT WILL WORK WITH CITY STAFF ON ALIGNMENT AND DESIGN OF ALL UTILITIES SHOWN ON THIS PLAN TO REACH AN AGREED-UPON SOLUTION FOR SERVING THE SITE.

-BASED UPON PRELIMINARY DESIGN, ALL PROPOSED SANITARY SEWER IS ANTICIPATED TO BE INSTALLED AT A DEPTH OF LESS THAN 12'. THEREFORE NO SANITARY SEWER EASEMENTS GREATER THAN 20' ARE ANTICIPATED.

TOTAL PROPERTY AREA = 23.61 ACRES  
DISTURBED AREA = 15.22 ACRES  
IMPERVIOUS AREA = 9.89 ACRES

ALL PERSONS WHO UNDERTAKE THE CONSTRUCTION OF WATER, SEWER AND SANITARY INFRASTRUCTURE PROJECTS IN THE CITY OF FRANKLIN, CITY OF FRANKLIN, MISSOURI, SHALL COMPLY WITH THE REQUIREMENTS AND REGULATIONS SET FORTH IN THE CITY OF FRANKLIN, MISSOURI, CHAPTER 10, ARTICLE 1, SECTIONS 10-1-1 THROUGH 10-1-10, CITY OF FRANKLIN, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION, ALONG WITH ANY AMENDMENTS, ADDITIONS, OR ALTERATION THAT MAY THEREAFTER BE ADOPTED BY THE CITY OF FRANKLIN, MISSOURI, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION.

THE CONTRACTOR SHALL OBTAIN WATER & SEWER INFRASTRUCTURE INSTALLATION PERMIT FROM THE CITY OF FRANKLIN, MISSOURI, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION, TO COMPLETE THE PRECONSTRUCTION SITE MEETING PRIOR TO COMMENCING WITH CONSTRUCTION.

THE CONTRACTOR SHALL OBTAIN AND KEEP ALL OF THE FOLLOWING ITEMS ON THE JOBSITE AT ALL TIMES DURING CONSTRUCTION:

- a. APPROVED PLANS AND RECLAIMED WATER AND/OR SEWER PLANS
- b. WATER & SEWER INFRASTRUCTURE INSTALLATION PERMIT, WITH ALL STEPS COMPLETED
- c. COPY OF APPROVED ALLOWANCE RESPONSE RESPONSE LETTER.
- d. COPY OF ALL APPROVED CUT SHEETS.

ACCEPTANCE OF THE CITY OF FRANKLIN, MISSOURI, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION, WATER & SEWER INFRASTRUCTURE INSTALLATION PERMIT SHALL BECOME THE ACCEPTANCE OF THE CITY OF FRANKLIN, MISSOURI, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION, BY THE CITY OF FRANKLIN INSPECTORS AND ACCEPTANCE BY THE FRANKLIN MUNICIPAL PLANNING COMMISSION. THE ACCEPTANCE DATE SHALL BE BASED ON THE DATE MAINTENANCE PERSONNEL HAVE BEEN RELEASED FROM THE PROJECT. THE CONTRACTOR SHALL SUBMIT PRIOR TO THE ACCEPTANCE OF THE CITY OF FRANKLIN PUBLIC WATER INFRASTRUCTURE, RECLAIMED WATER & SEWER INFRASTRUCTURE INSTALLATION PERMIT, TO THE CITY OF FRANKLIN, MISSOURI, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION, AND THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT AS-BUILT DRAWINGS TO THE PLANNING AND SUSTAINABILITY DEPARTMENT.

THE CONTRACTOR SHALL BE PUBLIC RIGHT-OF-WAY SHALL REQUIRE AN APPROVED TRAFFIC CONTROL PLAN WHICH COMPLIES WITH THE MUTCD, NO OFF-SITE EXCAVATION OR CONSTRUCTION SHALL BE PERMITTED WITHOUT THE CITY OF FRANKLIN, MISSOURI, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION, TEMPORARY CONSTRUCTION EASEMENT OF THE CITY OF FRANKLIN BY ANY ENTITY UNLESS 72 HOURS NOTICE HAS BEEN GIVEN TO THE CITY OF FRANKLIN, MISSOURI, CITY OF FRANKLIN, TENNESSEE, LATEST EDITION, CENTER. THE CONTRACTOR SHALL HAVE AN APPROVED TRAFFIC CONTROL PLAN ONSITE DURING CONSTRUCTION.

THE CONTRACTOR SHALL BE RESPONSIBLE TO EXISTING UTILITIES DURING CONSTRUCTION SHALL, AT HIS OWN EXPENSE, BE REPLACED OR REPAIRED TO ORIGINAL CONDITION AND QUALITY. AS APPROVED BY THE OWNER AND REPRESENTATIVE OF THE APPROPRIATE UTILITY AGENCY.

BE CONTRACTOR.

[illegible]

WATER  
WATER IS PROVIDED BY MALLORY VALLEY UTILITY DISTRICT VIA EXISTING 10" AND 18" MAINS SURROUNDING THE SITE. WATER AVAILABILITY OF APPROXIMATELY 1160 SFUE HAS BEEN CONFIRMED BY MWOF FOR THIS DEVELOPMENT.

SANITARY SEWER  
SANITARY SEWER WILL BE PROVIDED BY CITY OF FRANKLIN VIA EXISTING SEWER INFRASTRUCTURE ALONG EAST MEWEN DRIVE AND CAROTHERS PARKWAY. THE CITY OF FRANKLIN HAS APPROVED THE ADDITION OF 1160 SFUE FOR THE DEVELOPMENT.

RECLAIMED WATER LINE  
RECLAIMED WATER INFRASTRUCTURE IS NOT PRESENT OR PROPOSED ON THIS SITE.

STORMWATER  
STORMWATER FLOWS WILL BE TREATED FOR WATER QUALITY BY GREEN INFRASTRUCTURE THROUGHOUT THE SITE AND POST DEVELOPMENT PEAK FLOW DISCHARGES WILL BE CONTROLLED TO PRE DEVELOPMENT PEAK FLOWS BY THE DETENTION Pond AND OUTLET STRUCTURE.

ELECTRICITY  
ELECTRIC WILL BE PROVIDED BY MIDDLE TENNESSEE ELECTRIC MEMBERSHIP CORP.

GAS  
NATURAL GAS WILL BE PROVIDED BY ATMOS GAS VIA EXISTING MAINS ALONG EAST MEWEN DRIVE.

REFUSE COLLECTION  
REFUSE COLLECTION FOR THE DEVELOPMENT SHALL BE PROVIDED BY PRIVATE COLLECTION.

The legend consists of two entries:

- A rectangular box filled with a dense pattern of small dots, labeled "BIORETENTION AREA".
- A rectangular box filled with diagonal hatching lines, labeled "TREE PRESERVATION AREA".

THERE SHALL BE NO MOWING, CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION IN RIPARIAN BUFFERS EXCEPT AS PERMITTED BY THE CITY ENGINEER, OR HIS DESIGNEE.

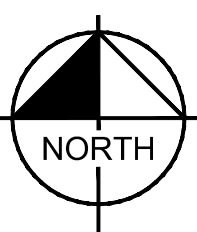
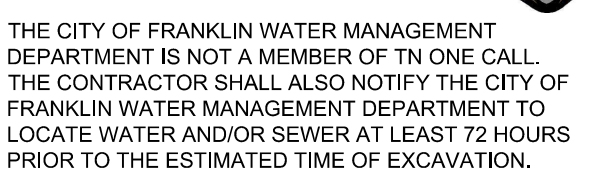
- TEST HYDRANT LOCATION: CORNER OF PACIFIC DR AND RESOURCE PKWY
- FLOW HYDRANT LOCATION: RESOURCE PARKWAY WEST OF ROUNDABOUT
- STATIC PRESSURE = 124 PSI
- RESIDUAL PRESSURE = 112 PSI
- FLOW @ 20 PSI = 3471
- TOTAL GPM DURING TEST = 1082
- DATE: JULY 31, 2016
- TEST PERFORMED BY ERIC BROOMFIELD AND BEN BUTLER OF HETTCOAT AND DAVIS.

---

STORMWATER FROM THE SITE WILL BE ROUTED TOWARDS WATER QUALITY FEATURES SPREAD THROUGHOUT THE SITE IN THE FORM OF BIORETENTION AREAS.

RUNOFF THAT EXCEEDS THE 1ST INCH OF RAINFALL WILL BE ROUTED VIA STORMWATER PIPES TO THE DETENTION POND SHOWN ON THE PLAN BELOW. AN OUTLET CONTROL STRUCTURE WILL LIMIT THE PEAK DISCHARGE FLOW RATE OF THE POND TO THE PRE-DEVELOPMENT PEAK DISCHARGE OF THE SITE UP TO THE 100-YEAR DESIGN STORM.

|  |                              |
|--|------------------------------|
|  | PROPOSED SANITARY SEWER PIPE |
|  | PROPOSED WATER MAIN          |
|  | PROPOSED STORM PIPE          |
|  | EXISTING SANITARY SEWER PIPE |
|  | EXISTING WATER MAIN          |
|  | EXISTING GAS MAIN            |
|  | EXISTING STORM PIPE          |
|  | LIMITS OF DISTURBANCE        |
|  | TREE PRESERVATION AREA       |
|  | FIRE HYDRANT                 |
|  | UTILITY EASEMENT             |
|  | DRAINAGE AREA BOUNDARY       |





Drawing name: K:\NSH\_LDEV\018253064 - Resource Pkwy\4-CADD\3-PlanSheets\Development Plan\C4.0-ROWandAccess-018253064.dwg Layout1 Jan 05, 2017 10:03am by: cj.murrell

THIS SITE IS LOCATED ALONG E McEWEN DRIVE, A PART OF THE CITY OF FRANKLIN MAJOR THOROUGHFARE PROJECT #2. THIS EXISTING ROAD WAS COMPLETED PER THE RECOMMENDATIONS IN THE MAJOR THOROUGHFARE PLAN.

THE FOLLOWING ITEMS OUTLINE RECOMMENDATIONS RELATED TO THE TRAFFIC IMPACT STUDY, PERFORMED BY FISCHBACH TRANSPORTATION, AND ADDITIONAL STAFF COMMENTS. THE FOLLOWING ITEMS ARE THE RECOMMENDED IMPROVEMENTS RELATED TO THIS DEVELOPMENT:

- 1. IMPROVEMENTS TO THE INTERSECTION OF E. MEWEN DRIVE AND RESCUE PARKWAY: AT THIS TIME, THIS IMPROVEMENT IS REQUIRED PER THE DIVISION DEVELOPMENT PLAN.
- 2. A RIGHT TURN LANE SHOULD BE ADDED AT THE INTERSECTION OF CAROTHERS PARKWAY AND RESCUE PARKWAY.
- 3. THE RIGHT TURN LANE ON THE SOUTHBEND LEFT-HAND TURN LANE FROM CAROTHERS PARKWAY TO PACIFIC DRIVE SHALL BE EXTENDED TO 150 FEET TO ALLOW FOR THE RIGHT TURN LANE TO BE USED BY THE TRAFFIC OF E. MEWEN DRIVE PER THE HYBRID EXHIBIT OF THE CAROTHERS INTEGRATED GROWTH PLAN. ROW IS TO BE RESERVED AND DEDICATED VIA FINAL PLAT TO THE RIGHT TURN LANE ON THE SOUTHBEND LEFT-HAND TURN LANE FROM PACIFIC DRIVE SHALL INCLUDE ONE THROUGH LANE IN EACH DIRECTION AND ONE TURN LANE TO ENTER TURN LANE FROM CAROTHERS PARKWAY TO RESCUE PARKWAY.
- 4. RESCUE PARKWAY SHALL INCLUDE STORAGE BAYS AND LEFT-HAND TURN LANE IN EACH DIRECTION TO ACCOMMODATE THE TRAFFIC OF THE DEVELOPMENT. THE ACCESS POINTS TO DECK "P" VIA PACIFIC DRIVE AND RESCUE PARKWAY SHALL BE THE ENTRY LANE AND TWO EXIT LANES, STRIPED AS SEPARATE LEFT AND RIGHT TURN.

PRIOR TO BEGINNING ANY CONSTRUCTION, THE DEVELOPER AND/OR CONTRACTOR, SHALL OBTAIN ALL NECESSARY PERMITS AS REQUIRED BY LAW. SUCH PERMITS MAY BE OBTAINED FROM THE CITY OF FRANKLIN, THE TENNESSEE DEPARTMENT OF TRANSPORTATION, WILLIAMSON COUNTY AND OTHER CITY OF FRANKLIN AGENCIES.  
 27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN APPROVED TRAFFIC CONTROL PLAN WHICH COMPLIES WITH THE MUTCD, NO OFF-SITE EXCAVATION MAY BE UNDERTAKEN IN ANY STREET, ROAD, ALLEY OR RIGHT-OF-WAY OF ANY CITY OF FRANKLIN, WITHOUT THE PREVIOUS WRITTEN APPROVAL OF THE CITY OF FRANKLIN BY ANY ENTITY UNLESS 2-HOUR NOTICE HAS BEEN GIVEN TO THE CITY OF FRANKLIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN APPROVED TRAFFIC CONTROL PLAN ON-SITE DURING CONSTRUCTION.  
 28. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, DESIGNATIONS AND REQUIREMENTS WITHIN THE REFERENCED "TOD" STANDARD SPECIFICATIONS SECTIONS, UNLESS OTHERWISE NOTED WITHIN THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY TECHNICAL STANDARDS.  
 29. THE CONTRACTOR REPRESENTATIVE OF THE PROJECT SHALL MAKE A FINAL INSPECTION OF THE PROJECT AFTER COMPLETION TO DETERMINE ACCEPTABILITY OF THE WORK AND FOR THE RELEASE OF PROTECTIVE BONDS IF REQUIRED. BEFORE THIS FINAL INSPECTION, THE CONTRACTOR SHALL MAKE A FINAL INSPECTION OF THE PROJECT AND SHALL CERTIFY IN WRITING TO THE CITY ENGINEER THAT THE WORK HAS BEEN COMPLETED ACCORDING TO THE STANDARD SPECIFICATIONS.  
 30. LOCATING AND COORDINATION FOR THE RELOCATION OF EXISTING UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. TENNESSEE'S ONE-CALL AND THE CITY OF FRANKLIN'S ONE-CALL SYSTEMS SHALL BE USED TO LOCATE EXISTING UTILITIES. IN COORDINATION WITH LOCAL UTILITY OWNERS, THE CONTRACTOR SHALL AT ALL TIMES MAINTAIN ACCESS TO ALL UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACCESS TO ALL UTILITY LINES.  
 31. TEMPORARY STROPPING SHALL CONFORM WITH THE STANDARD SPECIFICATIONS FOR ROAD AND DRIVEWAY CONSTRUCTION, PUBLISHED BY TDOT, THE LATEST EDITION EXCEPT AS HEREIN AMENDED, WHEN APPROVED. TEMPORARY STRIPPING SHALL BE USED TO MAINTAIN ACCESS TO ALL UTILITIES. TEMPORARY STRIPPING SHALL BE USED FOR ROAD AND DRIVEWAY CONSTRUCTION. TEMPORARY STRIPPING SHALL BE USED FOR ROAD AND PERMANENT STRIPPING CANNOT BE COMPLETED DUE TO WEATHER AND/OR OTHER CONDITIONS.  
 32. THERMOPLASTIC PAVEMENT MARKINGS SHOULD BE USED ON ALL PUBLIC AND PRIVATE CITY STREET PROJECTS. THERMOPLASTIC TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL BE USED ON ALL CITY STREET PROJECTS. THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS SHALL BE USED TO THE CITY OF FRANKLIN TRANSPORTATION & STREET TECHNICAL STANDARDS.

-11 LINKS  
-7 NODES  
CONNECTIVITY INDEX = 1.57

APPLICANT IS REQUESTING MODIFICATION OF STANDARDS FOR THE FOLLOWING

1. **SECTION 5.10.4 (1) (iii) - CONNECTIVITY INDEX REQUIREMENT**  
 APPLICANT IS REQUESTING THAT THE MINIMUM CONNECTIVITY INDEX SCORE OF 1.65 CANNOT BE ACHIEVED DUE TO THE TOPOGRAPHIC CONDITIONS AND NATURAL FEATURES OF THE SITE.

5.975 ACRES±  
260,278 SQFT.  
PLAT BOOK 57 PAGE 130

— PROPOSED FIRE HYDRANT (TYP.)

LOT-3

5.960 ACRES±  
259,609 SQFT.  
PLAT BOOK 57 PAGE 130

FRANKLIN CREST P.U.D.  
SUBDIVISION  
LOT-3  
PLAT BOOK 50,  
PAGE 122, R.O.W.C., TN.  
C.O.F. PROJECT #1683

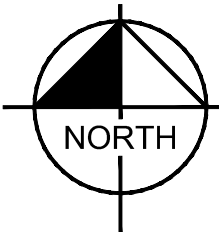
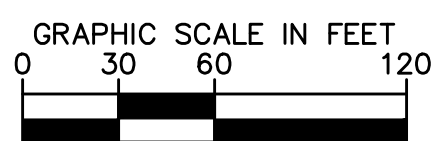
Franklin T-2 Sutphen

Width : 8.66 feet  
Track : 8.00  
Lock to Lock Time : 6.0  
Steering Angle : 42.0

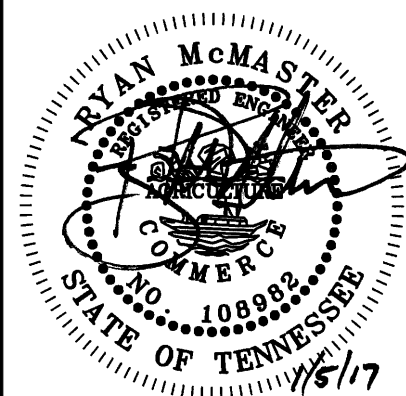
NOTE: MINIMUM 5 MPH DESIGN SPEED

-AT SITE PLAN SUBMITTAL, GRASS PAVERS WILL BE DELINEATED WHERE THE DESIGN FIRE APPARATUS IS NOT ABLE TO MAKE THE TURNING RADIUS OF THE ACCESSIBLE PATH ALONG THE SOUTHERN EDGE OF BUILDING C.

A cross-section diagram of a multi-use path. It shows a central horizontal line labeled "12' MULTI-USE PATH". Above this line, there are two diagonal lines sloping upwards and outwards, labeled "GRASS PAVERS AS-NEEDED". The diagram is flanked by vertical lines on both sides, indicating the boundaries of the path.



**APEX VILLAGE**  
**PUD DEVELOPMENT PLAN**  
FRANKLIN, TENNESSEE



|      |    |
|------|----|
| DATE | BY |
|------|----|

## REVISIONS

No.

SCALE (H)

DESIGNED BY:

CHECKED BY:

DATE: \_\_\_\_\_

0

OVERALL ROW  
ACCESS PLAN

|              |  |
|--------------|--|
| SHEET NUMBER |  |
|--------------|--|

## C4.0

DOF #6305

**EDGE**  
210 Twelfth Avenue South  
Suite 202  
Nashville, Tennessee 37203  
P 615-250-8154 F 615-250-8155

# Kimley»»Horn

214 Oceanside Drive, Nashville, TN 37204  
Main: 615.564.2701 | [www.kimley-horn.com](http://www.kimley-horn.com)





**ELEVATION 1 BUILDING F**  
SCALE: 1" = 20'

**BUILDING A**

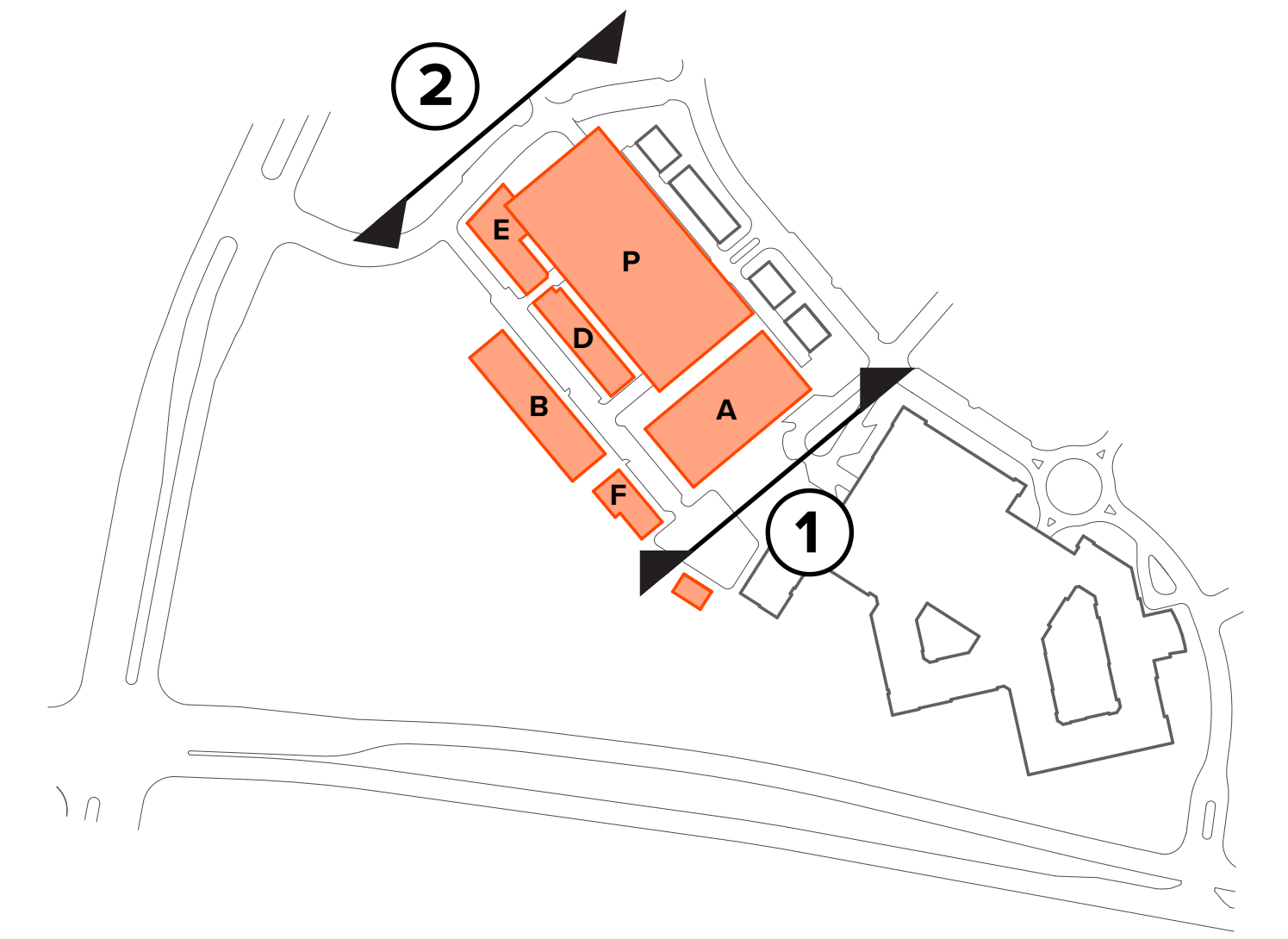


**ELEVATION 2**  
SCALE: 1" = 20'

**BUILDING P**

**BUILDING E**

**BUILDING B**



BUILDING MATERIALS TO INCLUDE:  
PRECAST CONCRETE, CONCRETE, NATURAL STONE  
CAST STONE, MASONRY (BRICK AND CMU) CEMENTITIOUS PANELS  
CURTAIN WALL AND STOREFRONT GLASS, STUCCO/ EIFS, WOOD

**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

OFFICE, RETAIL &  
GARAGE ELEVATIONS  
**A1**

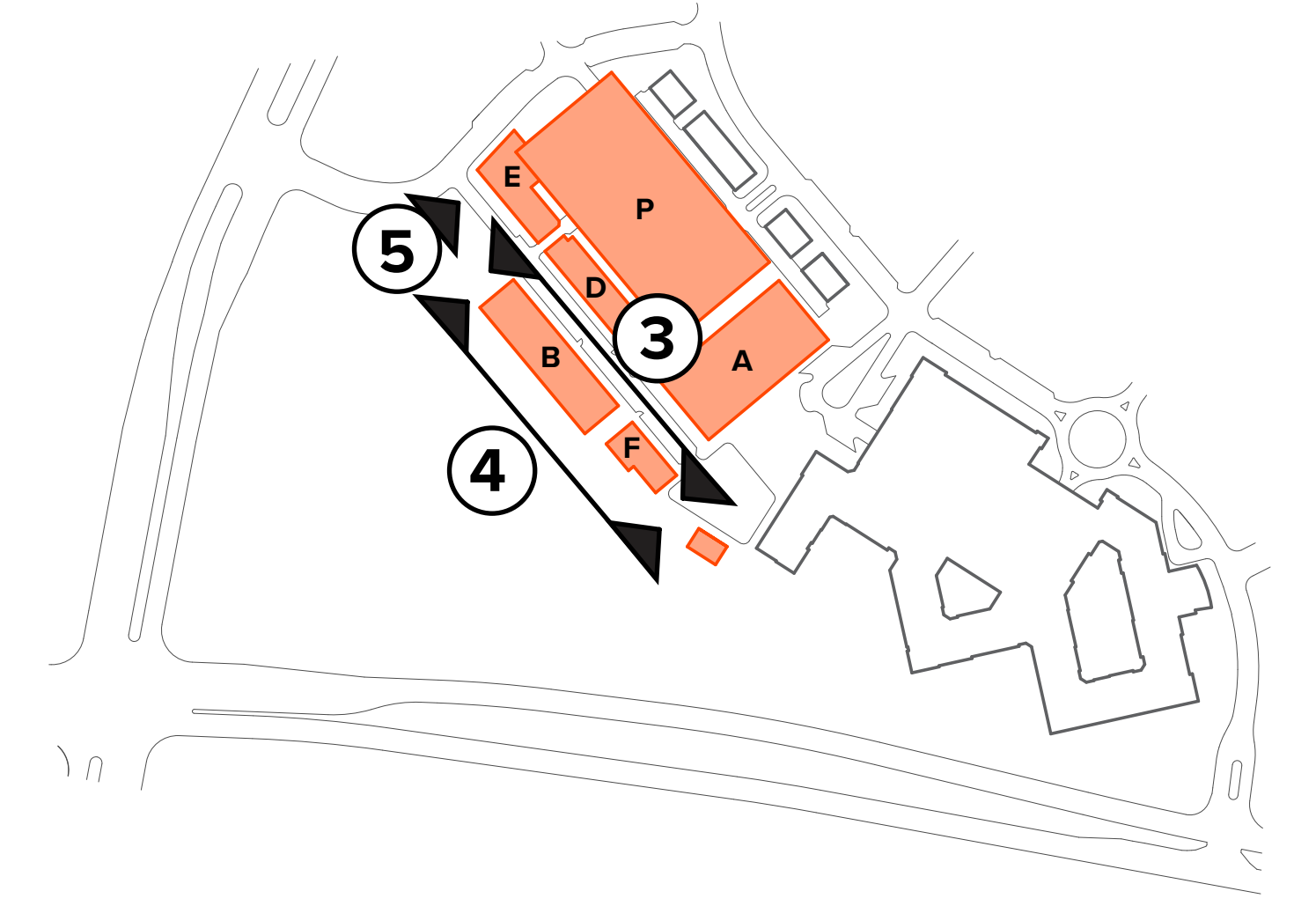




ELEVATION 3  
SCALE: 1" = 20'

**BUILDING F**

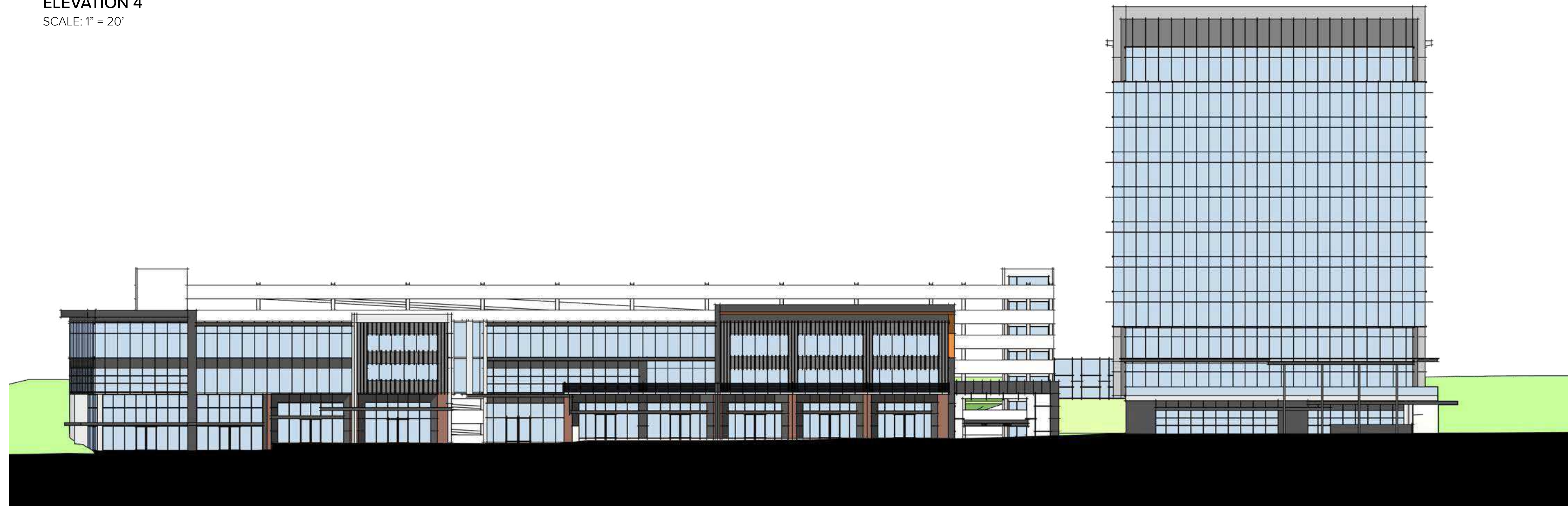
**BUILDING B**



ELEVATION 4  
SCALE: 1" = 20'

**BUILDING B**

**BUILDING F**



ELEVATION 5  
SCALE: 1" = 20'

**BUILDING E**

**BUILDING D**

**BUILDING A**

BUILDING MATERIALS TO INCLUDE:  
PRECAST CONCRETE, CONCRETE, NATURAL STONE  
CAST STONE, MASONRY (BRICK AND CMU) CEMENTITIOUS PANELS  
CURTAIN WALL AND STOREFRONT GLASS, STUCCO/ EIFS, WOOD

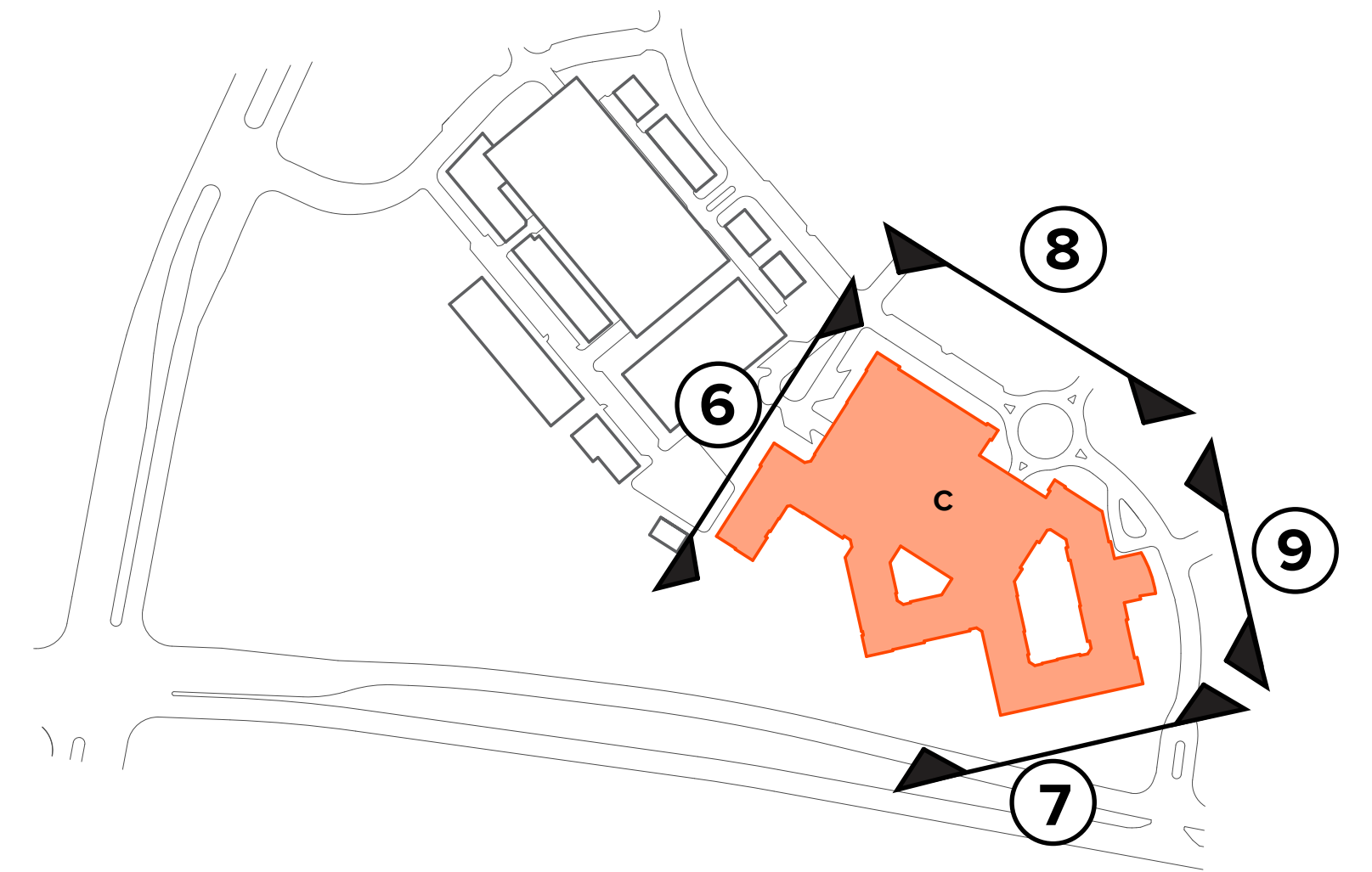
**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

RETAIL, OFFICE &  
HOTEL ELEVATIONS  
**A2**





**ELEVATION 6**  
SCALE: 1" = 20'



**ELEVATION 7**  
SCALE: 1" = 20'



**ELEVATION 8**  
SCALE: 1" = 20'



**ELEVATION 9**  
SCALE: 1" = 20'

BUILDING MATERIALS TO INCLUDE:  
STUCCO, METAL PANEL, CEMENTITIOUS LAP SIDING, CEMENTITIOUS PANELS

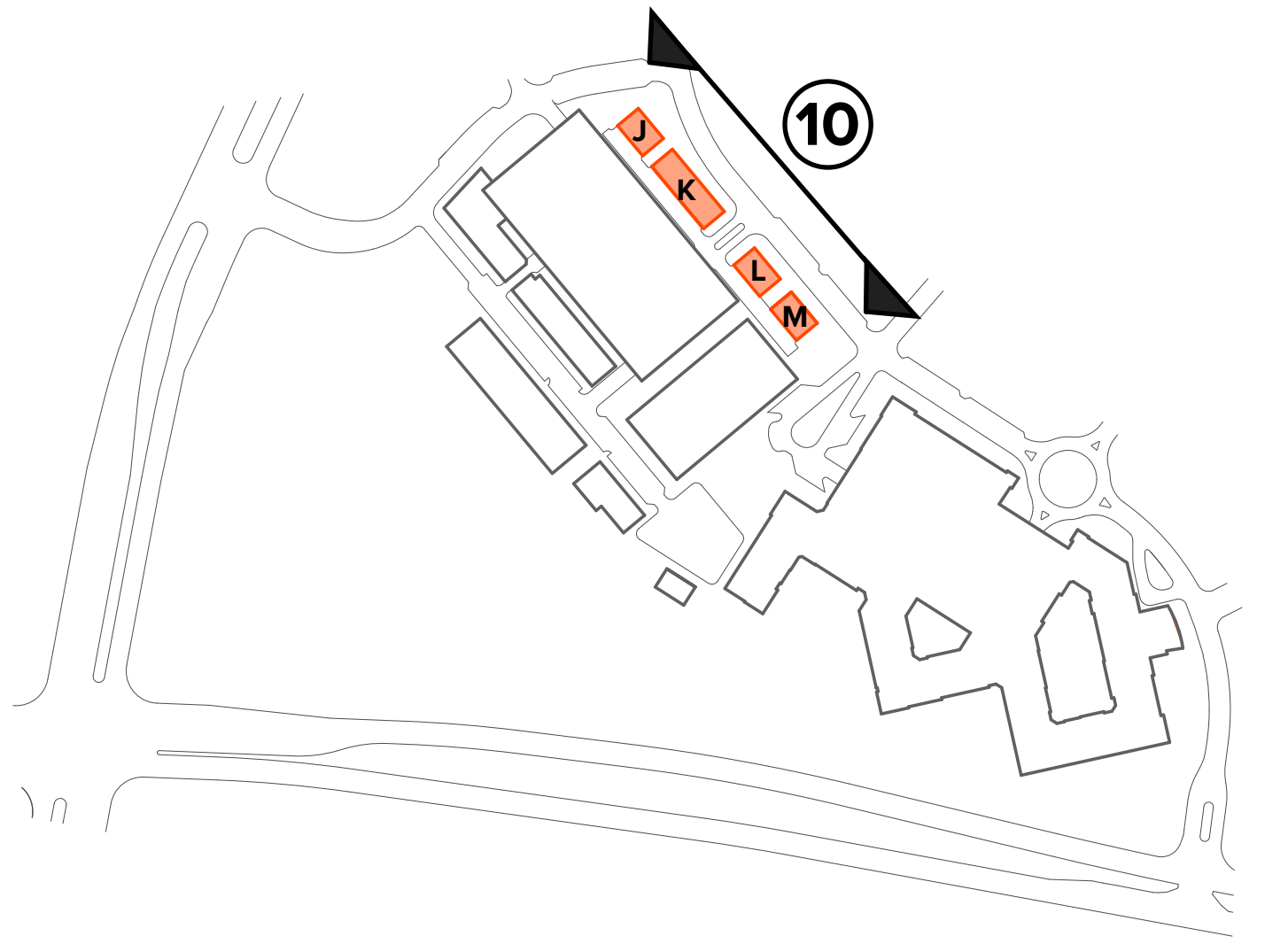
**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

**MUTI FAMILY  
ELEVATIONS  
A3**





**ELEVATION 10**  
SCALE: 1" = 20'



BUILDING MATERIALS TO INCLUDE:  
STUCCO, METAL PANEL, CEMENTITIOUS LAP SIDING, CEMENTITIOUS PANELS

**NOTE:**  
ELEVATIONS DEPICTED ARE SCHEMATIC  
REPRESENTATIONS ONLY AND REPRESENT  
DESIGN INTENT. DETAILED ELEVATIONS WITH  
MATERIAL SELECTIONS SHALL BE SUBMITTED  
AT SITE PLAN

**TOWNHOME  
ELEVATIONS  
A4**



January 5, 2017

Ms. Emily Hunter  
Franklin Planning & Sustainability Department  
109 3<sup>rd</sup> Avenue South  
Franklin, TN 37064

RE: Apex Village PUD Subdivision, Development Plan (Modification of Standards – Parkland) – COF #6305

Dear Ms. Hunter:

We are respectfully requesting a Modification of Standards for the City of Franklin Zoning Ordinance in regards to Section 5.5.4 Dedication of Public Land for Parks and Greenways / Blueways. We are requesting that the requirement for Park Land Dedication be waived in lieu of a privately held and maintained open space with an All Access Public Easement. (See attached exhibit) It should be noted that the area of open space meets the Park Land Dedication calculation requirement for the development as indicated on the attached plan.

This area will be designated on the plat as subject to an All Access Public Easement and shall cause the recorded declaration of restrictive covenants and easements to include an express, permanent, non-exclusive easement in favor of the public for access to the area and an obligation on the part of the owner's association to maintain the area in a condition suitable for public access and enjoyment.

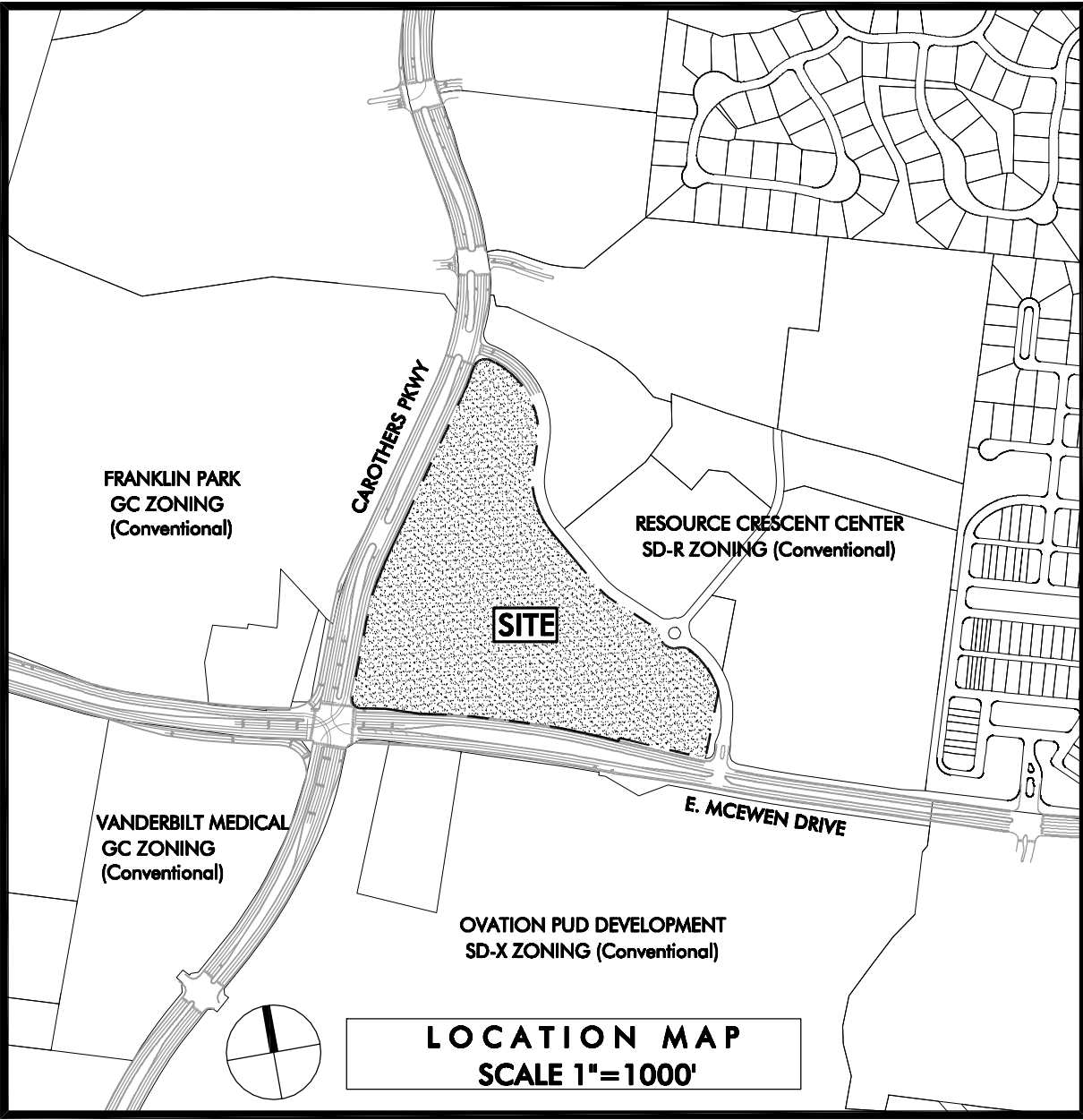
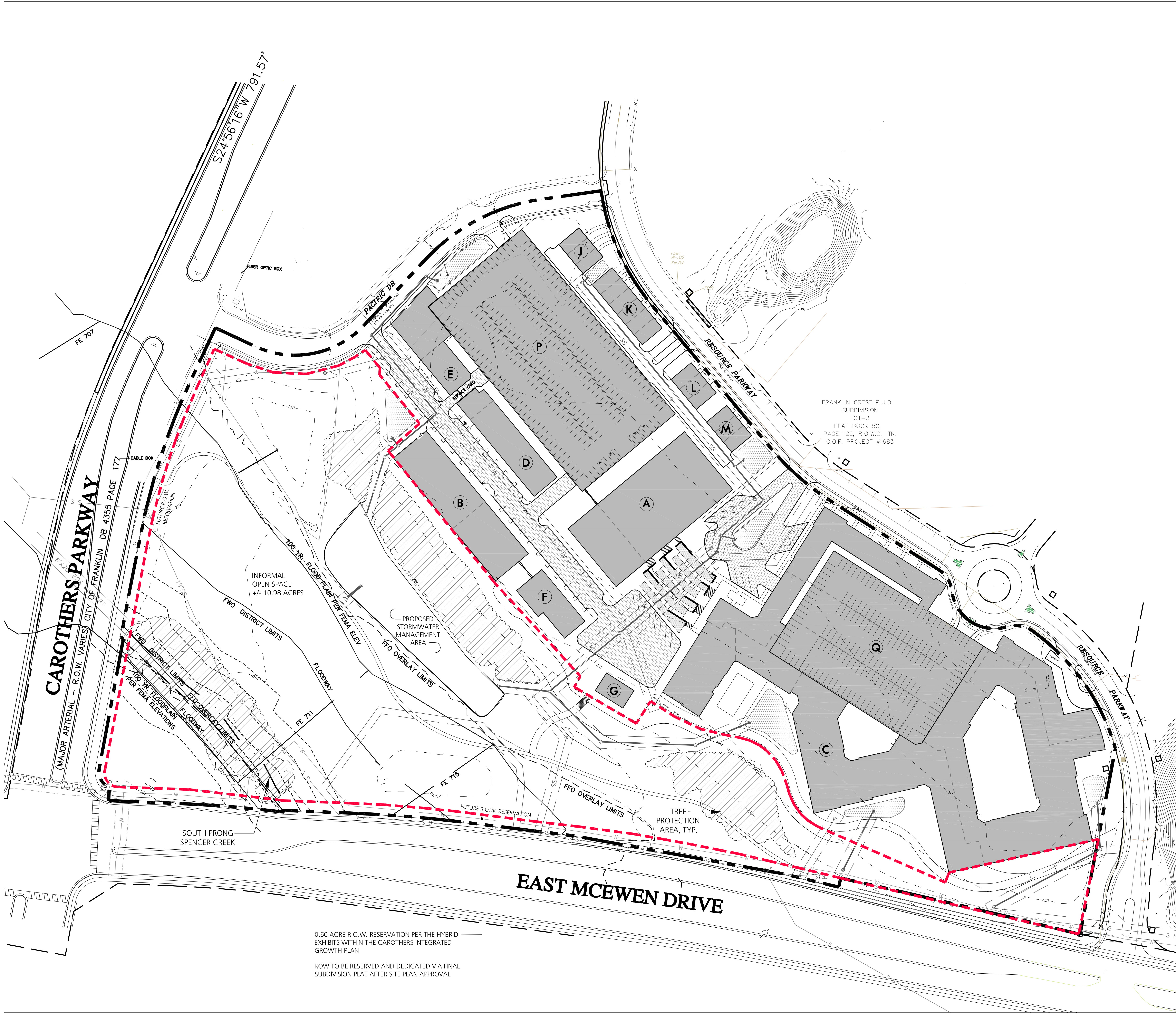
I thank you for your attention to this matter. If you should have any questions in regards to our request, please do not hesitate to contact me.

Sincerely,



John D. Haas, ASLA  
Principal  
EDGE Planning, Landscape Architecture & Urban Design





| SITE DATA                                           |                                                                            |
|-----------------------------------------------------|----------------------------------------------------------------------------|
| SUBDIVISION/DEVELOPMENT MAP & PARCEL NUMBER ADDRESS | APEX VILLAGE MAP 062, PARCELS 01417 & 01418 CAROTHERS PARKWAY              |
| EXISTING ZONING                                     | GC - GENERAL COMMERCIAL                                                    |
| CHARACTER AREA                                      | MC EWEN                                                                    |
| SPECIAL AREA                                        | 4                                                                          |
| OTHER APPLICABLE OVERLAYS                           | FLOODWAY FRINGE OVERLAY (FFO) FLOODWAY OVERLAY DISTRICT (FWO) CONVENTIONAL |
| DEVELOPMENT STANDARD                                |                                                                            |
| ACREAGE OF SITE                                     | +/- 23.61 ACRES                                                            |
| SQUARE FOOTAGE OF SITE                              | +/- 1,028,538 SQ. FT.                                                      |
| RESIDENTIAL DENSITY                                 | 14.61 DWU/ACRE                                                             |
| COMMERCIAL SQUARE FOOTAGE                           | 350,000                                                                    |
| PROPOSED HOTEL KEYS                                 | 200                                                                        |
| PROPOSED ZONING                                     | SPECIFIC DEVELOPMENT VARIETY (SD-X) 14.61, 350,000, 200                    |

|                                                  |                |
|--------------------------------------------------|----------------|
| REQUIRED PARKLAND DEDICATION                     | +/- 5.23 ACRES |
| PROVIDED PARKLAND                                | +/- 5.24 ACRES |
| RESIDENTIAL DENSITY                              | 14.61 DUA      |
| NET DENSITY (MINUS ROW)                          | 14.90 DUA      |
| NET DENSITY (MINUS ROW & OVERLAY CONSTRAINTS)    | 18.90 DUA      |
| PROPOSED NUMBER OF RESIDENTIAL UNITS BY USE TYPE |                |
| TOWNHOMES                                        | 15 UNITS       |
| *MULTI-FAMILY UNITS                              | 330 UNITS      |
| TOTAL UNITS                                      | 345 UNITS      |

|                                                                                                                                               |                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| PARKLAND DEDICATION                                                                                                                           |                               |
| REQUIRED PARKLAND                                                                                                                             | +/- 5.23 AC                   |
| PARKLAND AREA SHOWN                                                                                                                           | +/- 10.98 AC                  |
| AREA WITHIN FFO DISTRICT OR SLOPES ABOVE 14%                                                                                                  | +/- 8.36 AC                   |
| USEABLE PARKLAND                                                                                                                              | +/- 2.62 AC                   |
| (50% OF PARKLAND DEDICATION CAN BE LOCATED WITHIN FFO DISTRICT & SLOPES ABOVE 14%)                                                            |                               |
| <b>TOTAL PARKLAND DEDICATION</b>                                                                                                              | <b>+/- 5.24 AC (2.62 X 2)</b> |
| *NOTE: IF PARKLAND DEDICATION AREA CANNOT BE MET TO ACCOMMODATE 345 RESIDENTIAL UNITS, THE ADDITIONAL REQUIRED AREA WILL BE PAID "IN-LIEU OF" |                               |

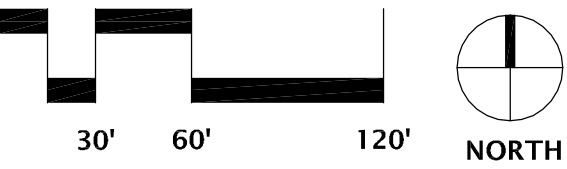
NOTE:  
APPLICANT WILL CAUSE THE +/- 10.98 ACRE PARCEL DEPICTED AS "INFORMAL OPEN SPACE" AS "PARKLAND DEDICATION" TO BE DESIGNATED ON THE PLAT AS SUBJECT TO A PUBLIC ACCESS EASEMENT AND SHALL CAUSE THE RECORDED DECLARATION OF RESTRICTIVE COVENANTS AND EASEMENTS TO INCLUDE AN EXPRESS, PERMANENT, NON-EXCLUSIVE EASEMENT IN FAVOR OF THE PUBLIC FOR ACCESS TO THE AREA AND AN OBLIGATION ON THE PART OF THE OWNER'S ASSOCIATION TO MAINTAIN THE AREA IN A CONDITION SUITABLE FOR PUBLIC ACCESS AND ENJOYMENT.

- LEGEND
- INFORMAL OPEN SPACE/ ALL ACCESS PUBLIC EASEMENT AREA
  - TREE PROTECTION AREA
  - LIMITS OF DISTURBANCE

ENGINEERING PROVIDED BY:  
RYAN MCMASTER  
KIMLEY-HORN  
214 OCEANSIDE DRIVE  
NASHVILLE, TN, 37204  
(615) 564-2876  
ryan.mcmaster@kimley-horn.com

APPLICANT:  
JOHN HAAS  
EDGE  
210 12TH AVE. SOUTH  
SUITE 202  
NASHVILLE TN, 37203  
(615) 250-8154  
jhaas@edgela.com

DEVELOPER:  
KHRIS PASCARELLA  
CRESCENT COMMUNITIES  
205 POWELL AVENUE  
BRENTWOOD, TN 37027  
(615) 312-8242  
kpascarella@pearlstreetpartners.com



CONSULTANTS



PROJECT TITLE

**APEX VILLAGE  
PUD DEVELOPMENT PLAN**  
C.O.F. #6305  
FRANKLIN, TN

CLIENT

**CRESCENT  
COMMUNITIES  
LLC**

PROJECT NO. COF #6305  
Date 12/12/16  
Revisions

1. PER CITY COMMENTS 01.05.17

Sheet Title

**MODIFICATION OF  
STANDARDS**

Sheet Number

**M1.00**



Drawing name: K:\NSH\_LDEV\018253064 - Resource Pkwy\4-CADD\3-PlanSheets\Development Plan\C4.0-ROWandAccess-018253064.dwg Layout1 Jan 05, 2017 10:03am by: cj.murrell

THIS SITE IS LOCATED ALONG E McEWEN DRIVE, A PART OF THE CITY OF FRANKLIN MAJOR THOROUGHFARE PROJECT #2. THIS EXISTING ROAD WAS COMPLETED PER THE RECOMMENDATIONS IN THE MAJOR THOROUGHFARE PLAN.

THE FOLLOWING ITEMS OUTLINE RECOMMENDATIONS RELATED TO THE TRAFFIC IMPACT STUDY, PERFORMED BY FISCHBACH TRANSPORTATION, AND ADDITIONAL STAFF COMMENTS. THE FOLLOWING ITEMS ARE THE RECOMMENDED IMPROVEMENTS RELATED TO THIS DEVELOPMENT:

- 1. IMPROVEMENTS TO THE INTERSECTION OF E. MEWEN DRIVE AND RESOURCE PARKWAY: AT THIS TIME, THIS IMPROVEMENT IS REQUIRED PER THE DIVISION DEVELOPMENT PLAN.
- 2. A RIGHT TURN LANE SHOULD BE ADDED AT THE INTERSECTION OF CAROTHERS PARKWAY AND RESOURCE PARKWAY.
- 3. THE RIGHT TURN LANE AT THE SOUTHBEND LEFT-HAND TURN LANE FROM CAROTHERS PARKWAY TO PACIFIC DRIVE SHALL BE EXTENDED TO 150 FEET.
- 4. THE RIGHT TURN LANE AT THE SOUTHBEND LEFT-HAND TURN LANE FROM E. MEWEN DRIVE TO THE HYBRID EXHIBIT OFF THE CAROTHERS INTEGRATED GROWTH PLAN, ROW IS TO BE RESERVED AND DEDICATED VIA FINAL PLANS TO THE CENTER TURN LANE FROM CAROTHERS PARKWAY TO RESOURCE PARKWAY.
- 5. RESOURCE PARKWAY SHALL INCLUDE ONE THROUGH LANE IN EACH DIRECTION AND ONE TURN LANE TO THE CENTER TURN LANE FROM CAROTHERS PARKWAY TO RESOURCE PARKWAY.
- 6. RESOURCE PARKWAY SHALL INCLUDE STORAGE BAYS AND LEFT-HAND TURN LANE IN EACH DIRECTION.
- 7. THE ACCESS POINTS TO DECK "P" VIA PACIFIC DRIVE AND RESOURCE PARKWAY SHALL BE ENTRY LANE AND TWO EXIT LANES, STRIPED AS SEPARATE LEFT AND RIGHT TURN.

3. PRIOR TO BEGINNING ANY CONSTRUCTION, THE DEVELOPER AND/OR CONTRACTOR, SHALL OBTAIN ALL NECESSARY PERMITS AS REQUIRED BY LAW. SUCH PERMITS MAY BE OBTAINED FROM THE CITY OF FRANKLIN, THE STATE OF TENNESSEE, THE COUNTY OF WILLIAMSON COUNTY AND OTHER CITY OF FRANKLIN AGENCIES.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN APPROVED TRAFFIC CONTROL PLAN WHICH COMPLIES WITH THE MUTCD. NO OFF-SITE EXCAVATION MAY BE UNDERTAKEN IN ANY STREET, ROAD, ALLEY OR RIGHT-OF-WAY OF ANY CITY OF FRANKLIN, THE STATE OF TENNESSEE, THE COUNTY OF WILLIAMSON COUNTY OR ANY OTHER CITY OF FRANKLIN BY ANY ENTITY UNLESS 24-HOUR NOTICE HAS BEEN GIVEN TO THE CITY OF FRANKLIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN APPROVED TRAFFIC CONTROL PLAN ON-SITE DURING CONSTRUCTION.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, DESIGNATIONS AND REQUIREMENTS WITHIN THE REFERENCED "TOD" STANDARD SPECIFICATIONS. SECTIONS, UNLESS OTHERWISE NOTED WITHIN THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY TECHNICAL STANDARDS.

6. THE CONTRACTOR REPRESENTATIVE OF THE PROJECT SHALL MAKE A FINAL INSPECTION OF THE PROJECT AFTER COMPLETION TO DETERMINE ACCEPTABILITY OF THE WORK AND FOR THE RELEASE OF PROTECTIVE BONDS IF REQUIRED. BEFORE THIS FINAL INSPECTION, THE CONTRACTOR SHALL MAKE A FINAL INSPECTION OF THE PROJECT AND CERTIFY IN WRITING TO THE CITY ENGINEER THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

7. LOCATING AND COORDINATION FOR THE RELOCATION OF EXISTING UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. TENNESSEE'S ONE-CALL AND THE CITY OF FRANKLIN'S ONE-CALL ARE REQUIRED TO BE USED TO LOCATE EXISTING UTILITIES. COORDINATION WITH LOCAL UTILITY OWNERS, THE CONTRACTOR SHALL AT ALL TIMES MAINTAIN ACCESS TO ALL UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACCESS TO ANY UTILITIES.

8. TEMPORARY STROPPING SHALL CONFORM WITH THE STANDARD SPECIFICATIONS FOR ROAD AND DRIVEWAY CONSTRUCTION, PUBLISHED BY TDOT, THE LATEST EDITION EXCEPT AS HEREIN AMENDED, WHEN APPROVED. TEMPORARY STRIPPING SHALL BE THE REQUIREMENT FOR ALL TEMPORARY STROPPING. TEMPORARY STRIPPING SHALL BE REMOVED AND PERMANENT STRIPPING COMPLETED TO WEATHER AND COLOR MATCH THE EXISTING PAVEMENT.

9. THERMOPLASTIC PAVEMENT MARKINGS SHOULD BE USED ON ALL PUBLIC AND PRIVATE CITY STREET PROJECTS. THERMOPLASTIC TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, SECTION 600.01 OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR ROAD AND DRIVEWAY CONSTRUCTION, PUBLISHED BY TDOT, THE LATEST EDITION. MARKINGS TO THE CITY OF FRANKLIN TRANSPORTATION & STREET TECHNICAL STANDARDS.

-11 LINKS  
-7 NODES  
CONNECTIVITY INDEX = 1.57

APPLICANT IS REQUESTING MODIFICATION OF STANDARDS FOR THE FOLLOWING

1. **SECTION 5.10.4 (1) (iii) - CONNECTIVITY INDEX REQUIREMENT**  
 APPLICANT IS REQUESTING THAT THE MINIMUM CONNECTIVITY INDEX SCORE OF 1.65 CANNOT BE ACHIEVED DUE TO THE TOPOGRAPHIC CONDITIONS AND NATURAL FEATURES OF THE SITE.

5.975 ACRES±  
260,278 SQFT.  
PLAT BOOK 57 PAGE 130

- PROPOSED FIRE HYDRANT (TYP.)

5.960 ACRES±  
259,609 SQFT.  
PLAT BOOK 57 PAGE 130

FRANKLIN CREST P.U.D.  
SUBDIVISION  
LOT-3  
PLAT BOOK 50,  
PAGE 122, R.O.W.C., TN.  
C.O.F. PROJECT #1683

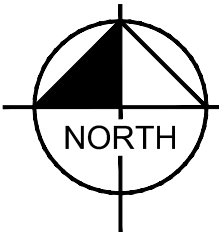
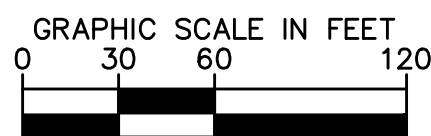
Franklin T-2 Sutphen

Width : 8.66 feet  
Track : 8.00  
Lock to Lock Time : 6.0  
Steering Angle : 42.0

NOTE: MINIMUM 5 MPH DESIGN SPEED

-AT SITE PLAN SUBMITTAL, GRASS PAVERS WILL BE DELINEATED WHERE THE DESIGN FIRE APPARATUS IS NOT ABLE TO MAKE THE TURNING RADIUS OF THE ACCESSIBLE PATH ALONG THE SOUTHERN EDGE OF BUILDING C.

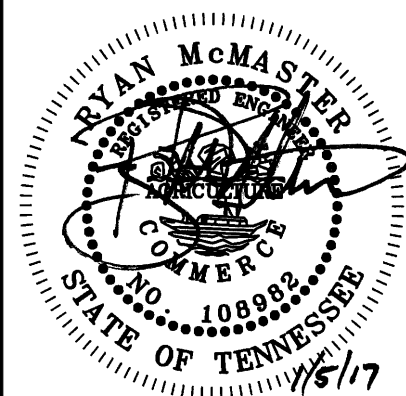
Diagram illustrating the layout of the 12' Multi-Use Path. The path is shown as a horizontal line with arrows at both ends. Above the path, the text "GRASS PAVERS AS-NEEDED" is written, with lines pointing to the ends of the path. Below the path, the text "12' MULTI-USE PATH" is written.



**APEX VILLAGE**  
**PUD DEVELOPMENT PLAN**  
**FRANKLIN, TENNESSEE**

# EDGE

# Kimley»»Horn



|                             |      |  |  |  |  |  |  |  |          |  |
|-----------------------------|------|--|--|--|--|--|--|--|----------|--|
| BY                          | DATE |  |  |  |  |  |  |  |          |  |
|                             |      |  |  |  |  |  |  |  |          |  |
| REVISIONS                   |      |  |  |  |  |  |  |  |          |  |
|                             |      |  |  |  |  |  |  |  |          |  |
| No.                         |      |  |  |  |  |  |  |  |          |  |
| SCALE (H):                  |      |  |  |  |  |  |  |  |          |  |
| SCALE (V):                  |      |  |  |  |  |  |  |  |          |  |
| DESIGNED BY:                |      |  |  |  |  |  |  |  | JYB      |  |
| DRAWN BY:                   |      |  |  |  |  |  |  |  | JYB      |  |
| CHECKED BY:                 |      |  |  |  |  |  |  |  | RLM      |  |
| DATE:                       |      |  |  |  |  |  |  |  | 11/07/16 |  |
| KHA PROJECT NO.: 1400000000 |      |  |  |  |  |  |  |  |          |  |

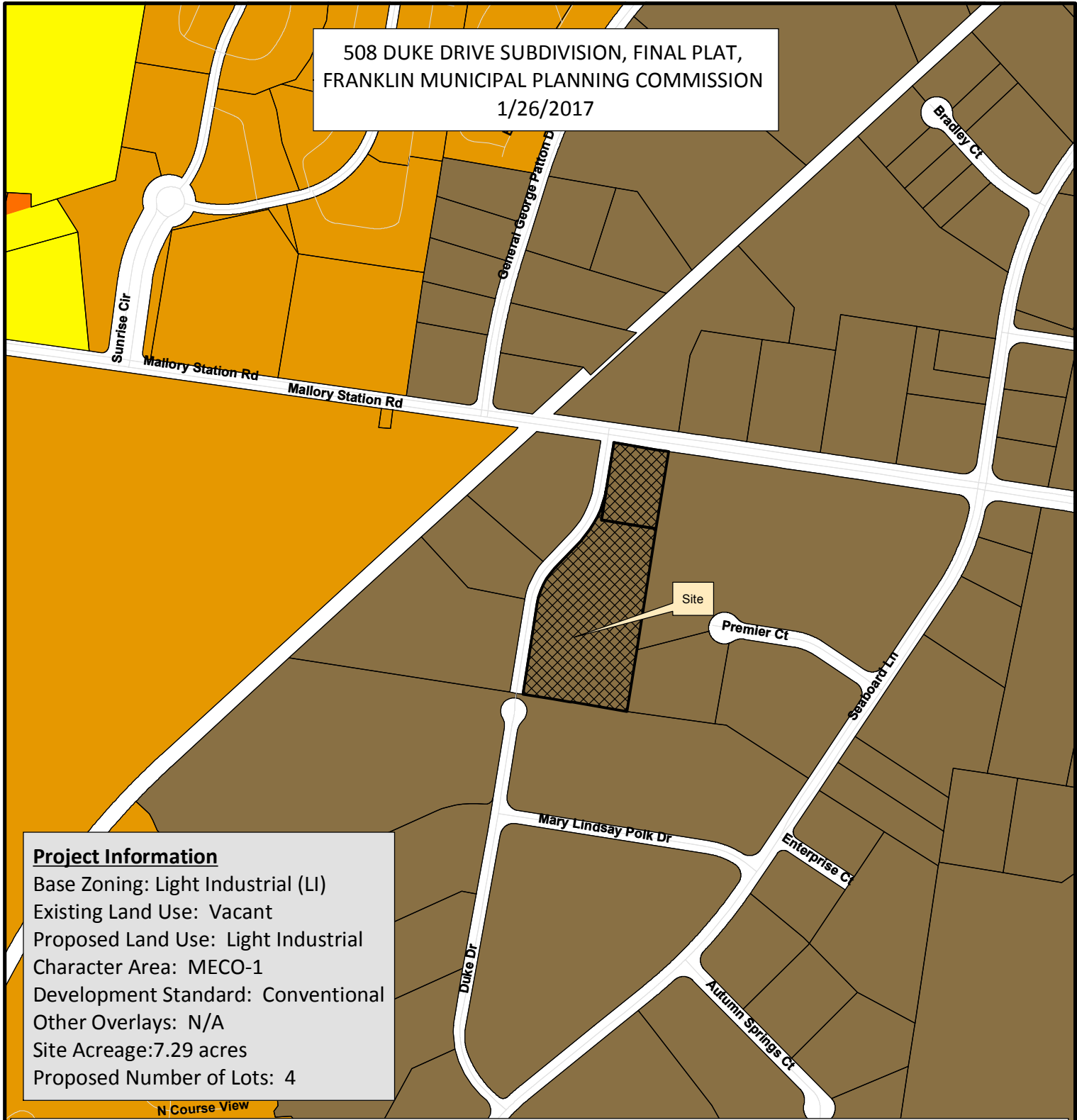
OVERALL ROW  
ACCESS PLA

SHEET NUMBER

COF #6305



508 DUKE DRIVE SUBDIVISION, FINAL PLAT,  
FRANKLIN MUNICIPAL PLANNING COMMISSION  
1/26/2017



**Project Information**  
 Base Zoning: Light Industrial (LI)  
 Existing Land Use: Vacant  
 Proposed Land Use: Light Industrial  
 Character Area: MECO-1  
 Development Standard: Conventional  
 Other Overlays: N/A  
 Site Acreage: 7.29 acres  
 Proposed Number of Lots: 4

- |                                        |                                     |
|----------------------------------------|-------------------------------------|
| 508 Duke Drive Subdivision             | SD-X Specific Development-Variety   |
| AG Agricultural District               | OR Office Residential District      |
| ER Estate Residential                  | GO General Office District          |
| R-1 Residential District               | CC Central Commercial District      |
| R-2 Residential District               | NC Neighborhood Commercial District |
| R-3 Residential District               | GC General Commercial District      |
| R-6 Residential District               | LI Light Industrial District        |
| RM-10 Attached 10 Residential District | HI Heavy Industrial District        |
| RM-15 Attached 15 Residential District | CI Civic and Institutional District |
| RM-20 Attached 20 Residential District |                                     |
| SD-R Specific Development-Residential  |                                     |

0 325 650 1,300 Feet

This map was created by the Franklin Planning Department. It was compiled from the most authentic information available. The City is not responsible for any errors or omissions contained hereon. All data and materials (c) copyright 2017. All rights reserved.

PURPOSE NOTE

THE PURPOSE OF THIS PLAT IS TO DIVIDE A TRACT OF LAND, AS DESCRIBED AND RECORDED IN DEED BOOK 1838, PAGE 133 AND DEED BOOK 4175, PAGE 256, R.O.W.C., TN, INTO FOUR (4) LOTS.

THIS PLAT VOIDS, VACATES, AND SUPERCEDES THE RECORDING OF LOTS 1 AND 2 OF THE HAYES FINAL PLAT - REVISION 1 AS OF RECORD IN PLAT BOOK P51, PAGE 2 - R.O.W.C., TN AND THE RECORDING OF LOT 1 OF THE FINAL PLAT FOR MALLORY VALLEY DISTRICT AS OF RECORD IN PLAT BOOK P46, PAGE 72 - R.O.W.C., TN.

GENERAL NOTES

1. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS USING THE 1001 NETWORK, TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FIPSZONE 4100; NAD83.

2. SUBJECT PROPERTY IS SHOWN ON WILLIAMSON COUNTY TAX MAP 53 AS PARCELS 107.00 & 107.01. TOTAL ACRES = 7.30±.

3. SITE ADDRESS  
508 DUKE DRIVE & 255 MALLORY STATION ROAD  
FRANKLIN, WILLIAMSON COUNTY, TENNESSEE, 37067  
8TH CIVIL DISTRICT

4. SUBJECT PROPERTY IS CURRENTLY ZONED: "LI" LIGHT INDUSTRIAL DISTRICT.

5. THIS SURVEYOR HAS NOT PHYSICALLY LOCATED ALL UNDERGROUND UTILITIES. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN HEREON WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS, AND/OR MAPS PREPARED BY OTHERS. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION AS INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF ALL UNDERGROUND UTILITIES SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. TENNESSEE ONE CALL 1-800-351-1111 OR 1-615-366-1987.

6. THIS SURVEYOR HAS NOT BEEN FURNISHED WITH A TITLE REPORT. THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.

7. MINIMUM REQUIRED BUILDING SETBACKS ARE AS FOLLOWS:  
EXTERIOR FRONT - 75' SIDES - 25' REAR - 25'  
INTERIOR FRONT - 75' SIDES - 5' REAR - 25'

8. PROPERTY OWNERS: MAP 53, PARCELS 107.00 & 107.01.  
CONTACT: MICHAEL EDWARD HAYES  
JENNIFER HAYES  
ADDRESS : 257 MALLORY STATION ROAD  
FRANKLIN, TN 37067  
PHONE: (615) 861-0532  
EMAIL: MIKE@MIKEHAYESLANDSCAPING.COM

9. SURVEYOR: H & H LAND SURVEYING, INC.  
CONTACT: JEFF K. KIMBRO, PLS.  
ADDRESS : 612A FITZHUGH BOULEVARD  
SMYRNA, TN 37167  
PHONE: (615) 831-0756  
E-MAIL: handhland@bellsouth.net

10. THE WITHIN DESCRIBED TRACT OF LAND DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD AREA AS EVIDENCED ON FEMA MAP NUMBER 47187C0204 F ON THE FLOOD INSURANCE RATE MAPS FOR THE CITY OF FRANKLIN, WILLIAMSON COUNTY, TENNESSEE. (MAP DATED: REVISED SEPTEMBER 29, 2006)

11. I HEREBY CERTIFY IN ACCORDANCE WITH T.C.A. 0820-3-.05 THAT THIS IS A CATEGORY 1 SURVEY AND THE RATIO OF PRECISION OF THE UNADJUSTED SURVEY IS GREATER THAN 1: 10,000

12. MINERAL RIGHTS ARE HELD BY THE OWNER OF RECORD.

13. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES (INCLUDING CABLE TELEVISION, ELECTRICAL, NATURAL GAS, SEWER, TELEPHONE AND WATER LINES) SHALL BE PLACED UNDERGROUND.

14. ALL STREET LIGHT LOCATIONS AND QUANTITIES ARE APPROXIMATE. FINAL POSITIONING AND QUANTITY SHALL BE AT THE DIRECTION OF MTEC.

15. THE RECORDING OF THIS PLAT VOIDS, VACATES, AND SUPERSEDES THE HAYES FINAL PLAT AS OF RECORD IN PLAT BOOK P51, PAGE 2-(R.O.W.C.,TN) AND THE FINAL PLAT FOR MALLORY VALLEY UTILITY DISTRICT AS OF RECORD IN PLAT BOOK P46, PAGE 72-(R.O.W.C.,TN).

16. ALL LOT CORNERS TO BE MARKED BY IRON RODS, UNLESS NOTED OTHERWISE.

17. STREET ADDRESSES SHOWN THUS [460]

18. ALL EXISTING STRUCTURES ARE TO BE REMOVED.

19. NO OBSTRUCTIONS OR ENCROACHMENTS WHICH IMPEDE THE FLOW OF STORMWATER SHALL BE PERMITTED WITHIN PUBLIC DRAINAGE EASEMENTS BETWEEN LOTS. THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY ENCROACHMENTS THAT ARE DAMAGED OR REMOVED IN THE COURSE OF MAINTENANCE ACTIVITY WITHIN EASEMENTS.

20. THE 2.5' WIDE ACCESS EASEMENTS (AE) AS SHOWN HEREON SHALL CONTAIN CONCRETE SIDEWALKS. ANY SIDEWALKS WHICH WHOLLY OR IN PART LIE OUTSIDE THE RIGHT-OF-WAY SHALL BE MAINTAINED BY THE HOA OR PROPERTY OWNERS.

21. ALL PROPERTY CORNERS THAT FALL WITHIN THE PROPOSED CONCRETE SIDEWALKS WILL NOT BE SET IN CONCRETE, BUT SHALL HAVE A 3" OFFSET INSIDE THE LOT FOR A WITNESS PIN.

22. SIDEWALKS AND TRAILS OUTSIDE OF PUBLIC RIGHT-OF-WAY SHALL BE PUBLIC ACCESS EASEMENTS AND SHALL BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.

23. ALL OPEN SPACE SHALL BE MAINTAINED BY THE HOA OR PROPERTY OWNER(S) AND SHALL BE PUBLIC UTILITY, DRAINAGE AND ACCESS EASEMENTS.

24. PROPERTY OWNER(S) OR HOA SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL STORMWATER MANAGEMENT FEATURES.

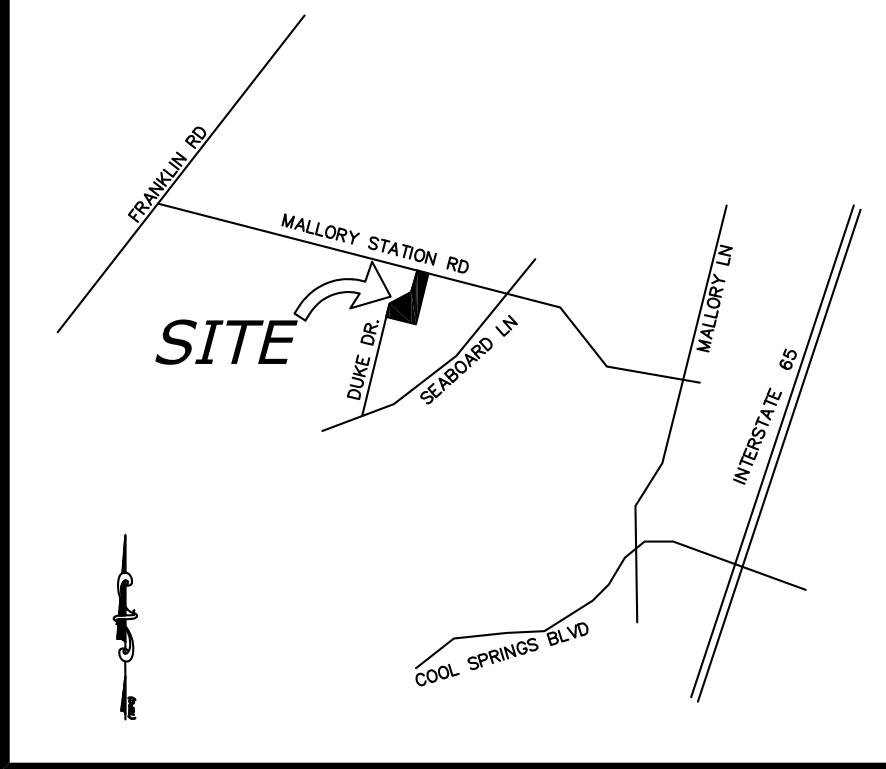
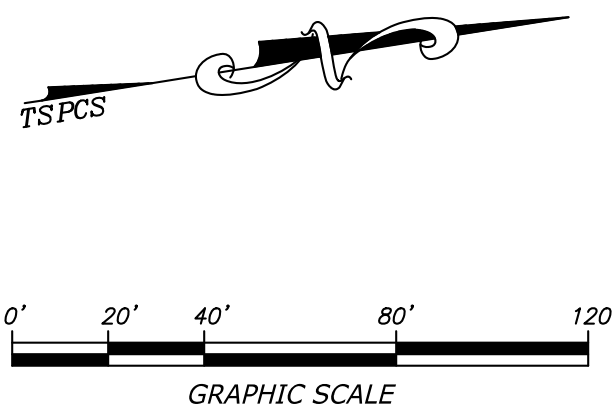
24. THE CITY OF FRANKLIN WATER MANAGEMENT DEPARTMENT HAS UNRESTRICTED ACCESS TO ITS DOMESTIC WATER, SANITARY SEWER, RECLAIM WATER LINES OR SYSTEM IMPROVEMENTS LOCATED WITHIN ITS EXCLUSIVE EASEMENTS WITHIN THE DEVELOPMENT. IN THE EVENT LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES ARE INSTALLED OR PLACED WITHIN A CITY OF FRANKLIN EASEMENT, THE CITY OF FRANKLIN SHALL HAVE THE RIGHT TO REMOVE SUCH ENCROACHMENTS WITHIN THE EASEMENT AS MAY BE NECESSARY FOR THE CITY OF FRANKLIN TO REPAIR, MAINTAIN OR REPLACE ITS INFRASTRUCTURE WHICH IS NOW OR IN THE FUTURE MAY BE LOCATED WITHIN THE EASEMENT WITHOUT OBTAINING ANY FURTHER PERMISSION FROM THE PROPERTY OWNER OR HOA. THE PROPERTY OWNER OR HOA SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY SUCH LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN IN COMMON OPEN SPACE LOTS AND IN AREAS OWNED BY THE PROPERTY OWNER OR HOA AT NO EXPENSE TO THE CITY OF FRANKLIN. INDIVIDUAL HOMEOWNERS SHALL BE RESPONSIBLE FOR STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN WITHIN AN EASEMENT ON THE HOMEOWNERS' LOT AT THE HOMEOWNERS' EXPENSE.

25. EASEMENTS AND P.U.D.E.'S SHOWN AS THUS \* ARE PER PLAT BOOK P51, PAGE 2 (R.O.W.C., TN) AND ARE TO BE MODIFIED/REMOVED UPON THE RECORDING OF THIS PLAT.

EASEMENTS

SANITARY SEWER EASEMENTS SHOWN HEREON ARE EXCLUSIVE EASEMENTS.  
A. WATER, WASTEWATER AND/OR RECLAIMED WATER MAINS: WHEN REQUIRED, PERMANENT EXCLUSIVE EASEMENTS MUST BE PROVIDED WITH A MINIMUM WIDTH OF 20 FEET. EASEMENT WIDTH REQUIREMENTS ARE AS FOLLOWS:

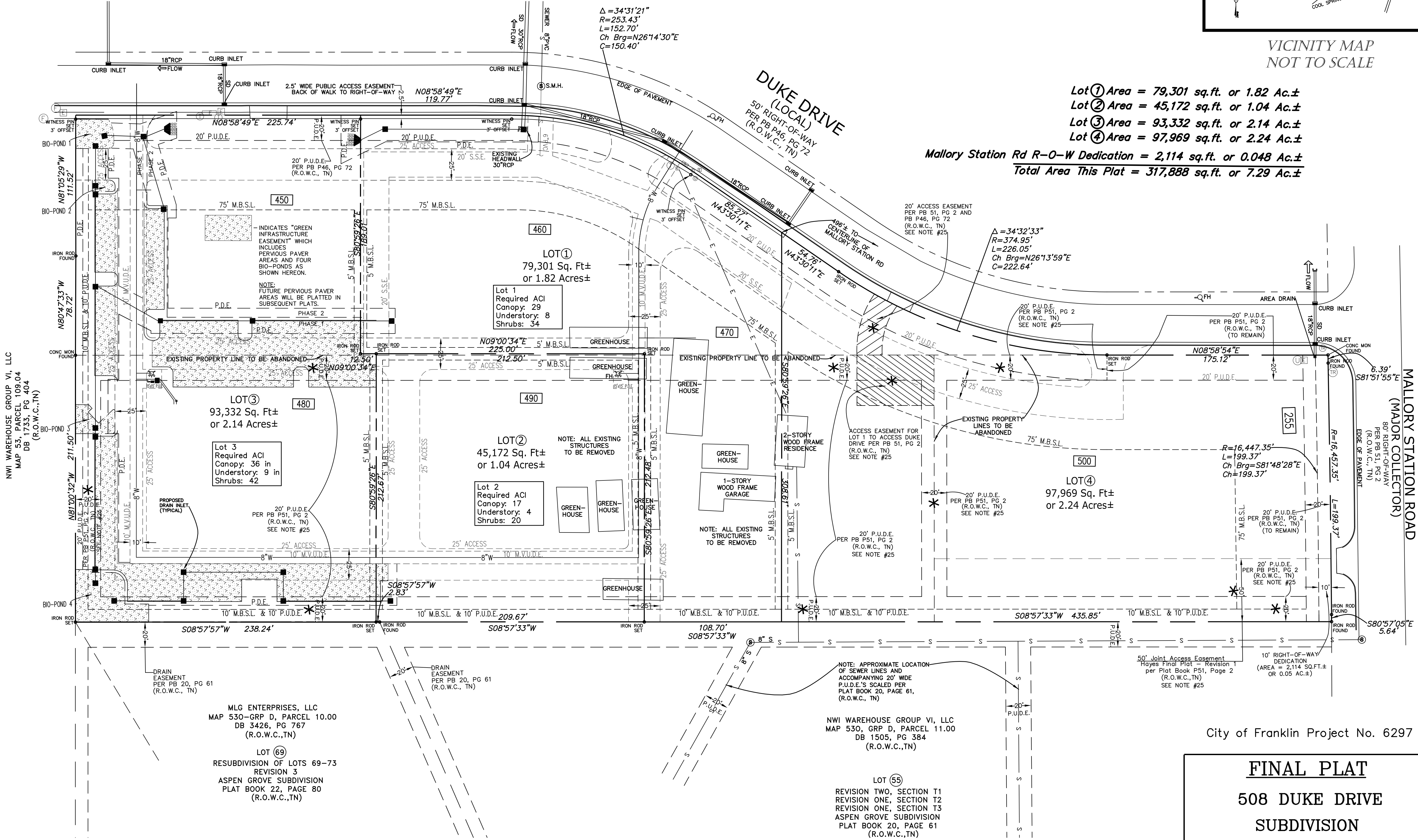
1. 0'-12' DEPTH REQUIRES 20' EASEMENT.
  2. 13'-20' DEPTH REQUIRES 30' EASEMENT.
  3. DEPTHS GREATER THAN 20' REQUIRES PRIOR APPROVAL.
- A MINIMUM 10-FOOT WIDE TEMPORARY CONSTRUCTION EASEMENT ON EACH SIDE OF THE PERMANENT EASEMENT MUST ALSO BE PROVIDED. NO TREES SHALL BE PLANTED WITHIN THE PERMANENT EASEMENTS.



VICINITY MAP  
NOT TO SCALE

Lot 1 Area = 79,301 sq.ft. or 1.82 Ac.±  
Lot 2 Area = 45,172 sq.ft. or 1.04 Ac.±  
Lot 3 Area = 93,332 sq.ft. or 2.14 Ac.±  
Lot 4 Area = 97,969 sq.ft. or 2.24 Ac.±

Mallory Station Rd R-O-W Dedication = 2,114 sq.ft. or 0.048 Ac.±  
Total Area This Plat = 317,888 sq.ft. or 7.29 Ac.±



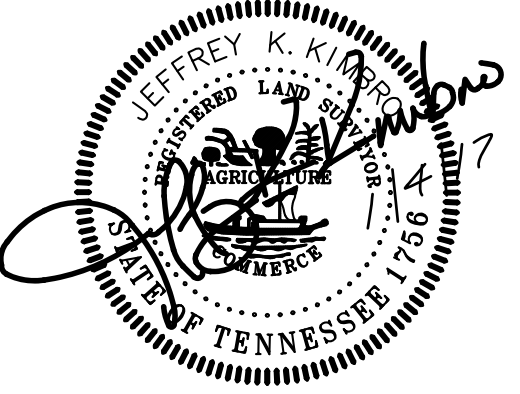
CERTIFICATE OF OWNERSHIP

I (we) hereby certify that I am (we are) the owner(s) of the property shown hereon as of record in Book 1838, Page 133 and Book 4175, Page 256, R.O.W.C., Tennessee, and adopt the plan of subdivision of the property as shown hereon and dedicate all public-ways and easements as noted. No lot(s) as shown hereon shall again be subdivided, re-subdivided, altered or changed so as to produce less area than is hereby established until otherwise approved by the Franklin Municipal Planning Commission, and under no condition shall such lot(s) be made to produce less area than is prescribed by the restrictive covenants as of record in Book \_\_\_\_\_, Page \_\_\_\_\_, R.O.W.C., Tennessee, running with the title to the property. I (we) further certify that there are no liens on this property.

Owner Signature \_\_\_\_\_ Date \_\_\_\_\_  
Michael Edward Hayes

Owner Signature \_\_\_\_\_ Date \_\_\_\_\_  
Jennifer Hayes

| CERTIFICATE OF SURVEY                                                                                                                                                                                                                                           | CERTIFICATE OF APPROVAL FOR RECORDING                                                                                                                                                           | CERTIFICATE OF APPROVAL OF WATER AND SEWER SYSTEMS                                                                                                                                                                                                                                                                                                                                                        | CERTIFICATE OF APPROVAL OF STREETS AND DRAINAGE                                                                                                                                                                                                                                                                                                                                           | CERTIFICATE OF APPROVAL OF SUBDIVISION NAME AND STREET NAMES                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I (we) hereby certify that the subdivision plat as shown hereon is correct and that all of the monuments shown hereon have been placed as indicated. This subdivision plat correctly represents a survey made under my supervision on the 3rd day of May, 2016. | Approved by the Franklin Municipal Planning Commission, _____, on this _____ day of _____, 20____, and this plat has been approved for recording in the Register's Office of Williamson County. | I hereby certify that:<br>(1) the water and sewer systems designated in The Final Plat of 508 Duke Drive Subdivision, have been installed in accordance with City specifications, or<br>(2) a performance agreement and surety in the amount of \$_____ for the water system and \$_____ for the sewer system has been posted with the City of Franklin, Tennessee, to assure completion of such systems. | I hereby certify that:<br>(1) the streets and drainage designated in The Final Plat of 508 Duke Drive Subdivision have been installed in accordance with City specifications, or<br>(2) a performance agreement and surety in the amount of \$_____ for streets and \$_____ for drainage has been posted with the City of Franklin, Tennessee, to assure completion of such improvements. | Subdivision name and street names approved by the Williamson County Emergency Management Agency.<br><br>_____<br>Williamson County Emergency Management Agency<br>Date _____ |
| Registered Professional Surveyor<br>Jeffrey K. Kimbro<br>1756<br>Tenn. License No. _____<br>Date 1/4/17                                                                                                                                                         | Secretary<br>Franklin Municipal Planning Commission<br>Date _____                                                                                                                               | Title<br>Mallory Valley Water District<br>Date _____                                                                                                                                                                                                                                                                                                                                                      | Director, Streets Department<br>City of Franklin, Tennessee<br>Date _____                                                                                                                                                                                                                                                                                                                 | City of Franklin, TN<br>Date _____                                                                                                                                           |



H & H LAND  
SURVEYING, INC.

612A FITZHUGH BOULEVARD  
SMYRNA, TENNESSEE 37167  
(615) 831-0756 (FAX) 355-6928  
H & H Project No. 2016-0167

City of Franklin Project No. 6297

FINAL PLAT

508 DUKE DRIVE  
SUBDIVISION

8TH CIVIL DISTRICT  
FRANKLIN, WILLIAMSON COUNTY, TENNESSEE

TOTAL ACRES: 7.29 Ac.± TOTAL LOTS: 4  
ACRES NEW STREETS: 0 FEET NEW STREETS: 0  
MILES NEW STREETS: 0 CLOSURE ERROR: 1:10,000  
SCALE: 1"= 40'  
DATE: NOVEMBER 7, 2016  
REVISED: DECEMBER 1, 2016  
REVISED: JANUARY 4, 2017



CONDITIONS OF APPROVAL:

Open Issues: 6 These issues are currently being filtered

Engineering - Final Plat Checklist

General Issues

**1. C. Final Plat**

[joseph.marlo@franklintn.gov](mailto:joseph.marlo@franklintn.gov) Comment not fully addressed. Applicant shall locate witness pins on the site along the full length of the proposed sidewalk in the built-out condition (i.e. including the future sidewalk extents in Lot 4 along Duke Drive.)

Performance Agreement and Surety

General Issues

**2. Engineering Sureties**

[kevin.long@franklintn.gov](mailto:kevin.long@franklintn.gov) Any unposted sureties associated with this development from [site plan\(s\) 6298](#) shall be transferred to this final plat as a condition of approval. No action is necessary from applicant.

(Previous comment restated for informational purposes only, no response necessary.)

Planning

[2016-0167\\_FINAL\\_PLAT\\_REV\\_010407.pdf](#)

**3. Concurrence with Site Plan**

[josh.king@franklintn.gov](mailto:josh.king@franklintn.gov) Applicant shall ensure all changes made to site plan #6298 are reflected in this final plat before submitting to one stop.

Planning (Landscape)

General Issues

**4. Tree preservation/easements**

[larry.mizell@franklintn.gov](mailto:larry.mizell@franklintn.gov) The plat shall show the tree preservation easements.  
The tree on the south property line shall have 15' tree easements to ensure the trees are not disturbed.

Water/Sewer

General Issues

**5. Sanitary sewer**

[ben.mcneil@franklintn.gov](mailto:ben.mcneil@franklintn.gov) Applicant did follow directions and remove the sewer from the plat. I misstated the comment on removing the sewer. The comment should have read to remove the sanitary sewer service locations from the plat. The service locations were not matching the site plan at the time.

Applicant shall show the sanitary sewer main lines and easements on the final plat.  
Do not show sanitary sewer service locations.  
[Edited By Lance Fittro]

**6. COF utilities**

[ben.mcneil@franklin.tn.gov](mailto:ben.mcneil@franklin.tn.gov) Applicant did not fully address the comment. The sanitary sewer at this location is the City of Franklin. There should be a sewer block stating City of Franklin on the plat. Mallory Valley does not have sanitary sewer at this location. Applicant shall correct.

MEDCORE MEDICAL SUBDIVISION, FINAL PLAT, LOT 3, REVISION 3  
FRANKLIN MUNICIPAL PLANNING COMMISSION  
1/26/2017

**Project Information**

Base Zoning: General Office (GO)  
Existing Land Use: Vacant  
Proposed Land Use: Medical Office  
Character Area: MECO-5  
Development Standard: Conventional  
Other Overlays: N/A  
Site Acreage: 11.62 acres  
Proposed Number of Lots: 2

- |                                        |                                     |
|----------------------------------------|-------------------------------------|
| Medcore Medical Subdivision            | SD-X Specific Development-Variety   |
| AG Agricultural District               | OR Office Residential District      |
| ER Estate Residential                  | GO General Office District          |
| R-1 Residential District               | CC Central Commercial District      |
| R-2 Residential District               | NC Neighborhood Commercial District |
| R-3 Residential District               | GC General Commercial District      |
| R-6 Residential District               | LI Light Industrial District        |
| RM-10 Attached 10 Residential District | HI Heavy Industrial District        |
| RM-15 Attached 15 Residential District | CI Civic and Institutional District |
| RM-20 Attached 20 Residential District |                                     |
| SD-R Specific Development-Residential  |                                     |



0 625 1,250 2,500 Feet

This map was created by the Franklin Planning Department.  
It was compiled from the most authentic information available.  
The City is not responsible for any errors or omissions contained hereon.  
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## NOTES

1. THE PURPOSE OF THIS PLAT IS TO RESUBDIVIDE 1 LOT INTO 2 LOTS.
2. EXISTING BASE ZONING: GO (GENERAL OFFICE DISTRICT)  
CHARACTER AREA OVERLAY: MECO-5  
OVERLAY DISTRICT: HTO  
DEVELOPMENT AREA STANDARD: CONVENTIONAL
3. THE PROPERTY DOES NOT LIE WITHIN THE 100 YEAR FLOOD PLAIN AND IS DETERMINED TO BE IN ZONE "X" AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM PANEL NUMBER 47187C0212F, DATED SEPTEMBER 29, 2006.
4. THIS PROPERTY CAN BE FOUND ON WILLIAMSON COUNTY TAX MAP 79 AND IS KNOWN AS PARCEL 48.04.
5. OWNER/ SUBDIVIDER: MTPC, LLC  
ADDRESS: 1400 DOWELL SPRINGS BLVD., SUITE 350  
KNOXVILLE, TENNESSEE 37909  
PHONE NO.: 865-321-4701  
P.O.C.: ANDY LORENZ (andy.lorenz@provisionhp.com)
6. SURVEYOR: LITTLEJOHN ENGINEERING ASSOCIATES, INC.  
ADDRESS: 1935 21ST AVE. SOUTH  
NASHVILLE, TENNESSEE 37212  
PHONE NO.: OFFICE: 615-385-4144 FAX: 615-385-4020  
P.O.C.: ROBERT SEARSON (rsearson@leainc.com)
7. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
8. ALL STREET LIGHT LOCATIONS AND QUANTITIES ARE APPROXIMATE. FINAL POSITIONING AND QUANTITY SHALL BE AT THE DIRECTION OF M.T.E.M.C.
9. ALL SIDEWALKS, TRAILS, PATHS, ETC., LYING OUTSIDE OF PUBLIC RIGHT OF WAY ARE PUBLIC ACCESS EASEMENTS AND SHALL BE MAINTAINED BY THE PROPERTY OWNERS' ASSOCIATION OR ASSIGNS, INCLUDING INDIVIDUAL PROPERTY OWNERS. SIDEWALK LOCATIONS WILL BE PROVIDED WITH THE SITE PLAN FOR EACH LOT.
10. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION ALLOWED IN THE STREAM BUFFER EXCEPT AS PERMITTED BY THE CITY ENGINEER OR BY APPROPRIATE FEDERAL OR STATE PERMITS.
11. NO BUILDING PERMITS SHALL BE ISSUED FOR PROJECTS IN THIS SECTION UNTIL THE INDIVIDUAL SITE PLAN HAS BEEN APPROVED.
12. PRIVATE DRIVES SHALL ALSO SERVE AS PUBLIC UTILITY, DRAINAGE AND ACCESS EASEMENT.
13. THE OWNER/SUBDIVIDER, MTPC, LLC, ATTESTS THAT NO ONE OTHER THAN THE OWNER HOLDS MINERAL RIGHTS TO THE PROPERTY. NO DOCUMENTATION HAS BEEN FOUND.
14. PROJECT GEODETIC REFERENCE NETWORK BASED ON: COORDINATE SYSTEM U.S. STATE PLANE 1983, ZONE 4100; PROJECT DATUM NAD 1983 (CONUS); VERTICAL DATUM NAVD 88.
15. MINIMUM REQUIRED SETBACK LINES:  
FRONT YARD: 50'  
SIDE YARD: 25'  
REAR YARD: 40'
16. SURVEY FIELD DATA COLLECTED ON 12-10-2015.
17. THE RECORDING OF THIS PLAT VOIDS, VACATES AND SUPERCEDES LOT 3 OF THE FINAL PLAT OF MEDCORE MEDICAL BUILDING SUBDIVISION, FINAL PLAT, REVISION TWO AS RECORDED IN PLAT BOOK P56, PAGE 82, REGISTER'S OFFICE OF WILLIAMSON COUNTY, TENNESSEE, (ROWC).
18. ALL MICROFTON UTILITY DISTRICT EASEMENTS ARE EXCLUSIVE EASEMENTS. NO EXCAVATION, BUILDING, STRUCTURE OR OBSTRUCTION OF ANY KIND WILL BE CONSTRUCTED OR PERMITTED WITHIN THE EASEMENTS EXCEPT FOR THE INSTALLATION OF PAVEMENT FOR PRIVATE OR PUBLIC DRIVEWAYS WHICH CROSS AN EASEMENT. NO TREES OR SHRUBBERY WILL BE PLANTED WITHIN THE EASEMENTS.
19. PROPERTY OWNER(S) OR HOA SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL STORMWATER MANAGEMENT FEATURES.
20. NO OBSTRUCTIONS OR ENCROACHMENTS WHICH IMPEDE THE FLOW OF STORMWATER SHALL BE PERMITTED WITHIN PUBLIC DRAINAGE EASEMENTS. THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY ENCROACHMENTS THAT ARE DAMAGED OR REMOVED IN THE COURSE OF MAINTENANCE ACTIVITY WITHIN EASEMENTS.
21. THERE SHALL BE NO MOWING, CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION IN RIPARIAN BUFFERS EXCEPT AS PERMITTED BY THE CITY ENGINEER, OR HIS DESIGNEE.
22. THE CITY OF FRANKLIN WATER MANAGEMENT DEPARTMENT HAS UNRESTRICTED ACCESS TO ITS DOMESTIC WATER, SANITARY SEWER, RECLAIM WATER LINES OR SYSTEM IMPROVEMENTS LOCATED WITHIN ITS EXCLUSIVE EASEMENTS WITHIN THE DEVELOPMENT. IN THE EVENT LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES ARE INSTALLED OR PLACED WITHIN A CITY OF FRANKLIN EASEMENT, THE CITY OF FRANKLIN SHALL HAVE THE RIGHT TO REMOVE SUCH ENCROACHMENTS WITHIN THE EASEMENT AS MAY BE NECESSARY FOR THE CITY OF FRANKLIN TO REPAIR, MAINTAIN OR REPLACE ITS INFRASTRUCTURE WHICH IS NOW OR IN THE FUTURE MAY BE LOCATED WITHIN THE EASEMENT WITHOUT OBTAINING ANY FURTHER PERMISSION FROM THE PROPERTY OWNER OR HOA. THE PROPERTY OWNER OR HOA SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY SUCH LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN IN COMMON OPEN SPACE LOTS AND IN AREAS OWNED BY THE PROPERTY OWNER OR HOA AT NO EXPENSE TO THE CITY OF FRANKLIN. INDIVIDUAL HOMEOWNERS SHALL BE RESPONSIBLE FOR STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN WITHIN AN EASEMENT ON THE HOMEOWNERS' LOT AT THE HOMEOWNERS' EXPENSE.
23. FUTURE CAROTHERS PARKWAY RIGHT-OF-WAY TO BE DEDICATED IN CONFORMANCE WITH THE APPLICABLE HYBRID EXHIBITS OF THE INTEGRATED GROWTH PLAN.

### CERTIFICATE OF APPROVAL OF WATER SYSTEMS

I hereby certify that the following water system outlined or indicated on the final plat entitled "Medcore Medical Building Subdivision, Revision Three, Resubdivision of Lot 3" has been installed in accordance with current local and/or state government requirements or a security bond in the amount of \$\_\_\_\_\_ has been posted with Microfton Utility District to assure completion of all required improvements in case of default.

Microfton Utility District \_\_\_\_\_ Date \_\_\_\_\_

### CERTIFICATE OF APPROVAL OF SEWER SYSTEMS

I hereby certify that: (1) the sewer systems designated in "Medcore Medical Building Subdivision, Revision Three, Resubdivision of Lot 3" Subdivision have been installed in accordance with City specifications, or (2) a performance agreement and surety in the amount of \$\_\_\_\_\_ for the sewer system has been posted with the City of Franklin, Tennessee, to assure completion of such systems.

City of Franklin \_\_\_\_\_ Date \_\_\_\_\_

### CERTIFICATE OF ELECTRIC POWER

Middle Tennessee Electric Membership Corporation (MTEMC) will provide electric service to the subject property according to the normal operating practices of MTEMC as defined in the rules and regulations, bylaws, policy bulletins and operational bulletins of MTEMC, and in accordance with the plat approval checklist, tree planting guidelines and other regulations contained on the MTEMC website at [www.mtemc.com](http://www.mtemc.com) (collectively the "Requirements"). No electric service will be provided until MTEMC's requirements have been met and approved in writing by an authorized representative of MTEMC. Any approval is, at all times, contingent upon continuing compliance with MTEMC's Requirements.

Middle Tennessee Electric Membership Corporation \_\_\_\_\_ Date \_\_\_\_\_

### CERTIFICATE OF APPROVAL FOR RECORDING

Approved by the Franklin Municipal Planning Commission, Franklin, Williamson County, Tennessee, with the exception of such conditions, if any, as are noted in the Planning Commission minutes for the \_\_\_\_\_ day of \_\_\_\_\_, 2017, and this plat has been approved for recording in the Registers Office of Williamson County.

Secretary \_\_\_\_\_ Date \_\_\_\_\_  
Franklin Municipal Planning Commission

### CERTIFICATE OF APPROVAL OF SUBDIVISION NAME, STREET NAMES, AND ADDRESSING

Subdivision name and street names approved by the Williamson County Emergency Management Agency.

Williamson County Emergency Management Agency \_\_\_\_\_ Date \_\_\_\_\_

City of Franklin \_\_\_\_\_ Date \_\_\_\_\_

### CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, AND SIDEWALKS

I hereby certify that: (1) the streets, drainage, and sidewalks designated in "Medcore Medical Building Subdivision, Revision Three, Resubdivision of Lot 3" Subdivision have been installed in accordance with City specifications, or (2) a performance agreement and surety in the amount of \$\_\_\_\_\_ for streets, \$\_\_\_\_\_ for drainage, and \$\_\_\_\_\_ for sidewalks has been posted with the City of Franklin, Tennessee, to assure completion of such improvements.

Director, Streets Department \_\_\_\_\_ Date \_\_\_\_\_  
City of Franklin, Tennessee

### CERTIFICATE OF SURVEY

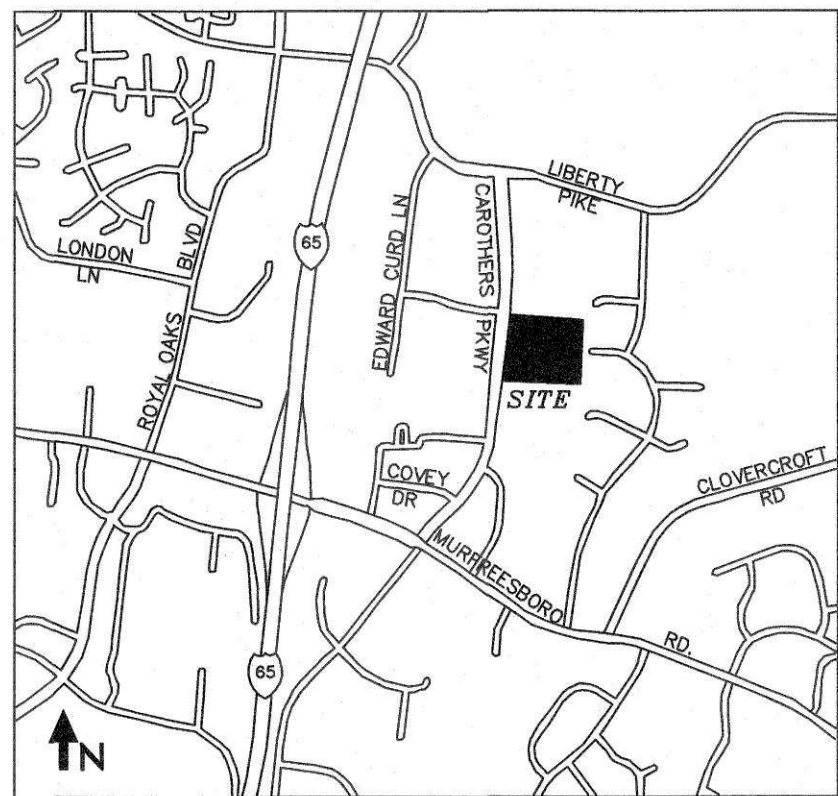
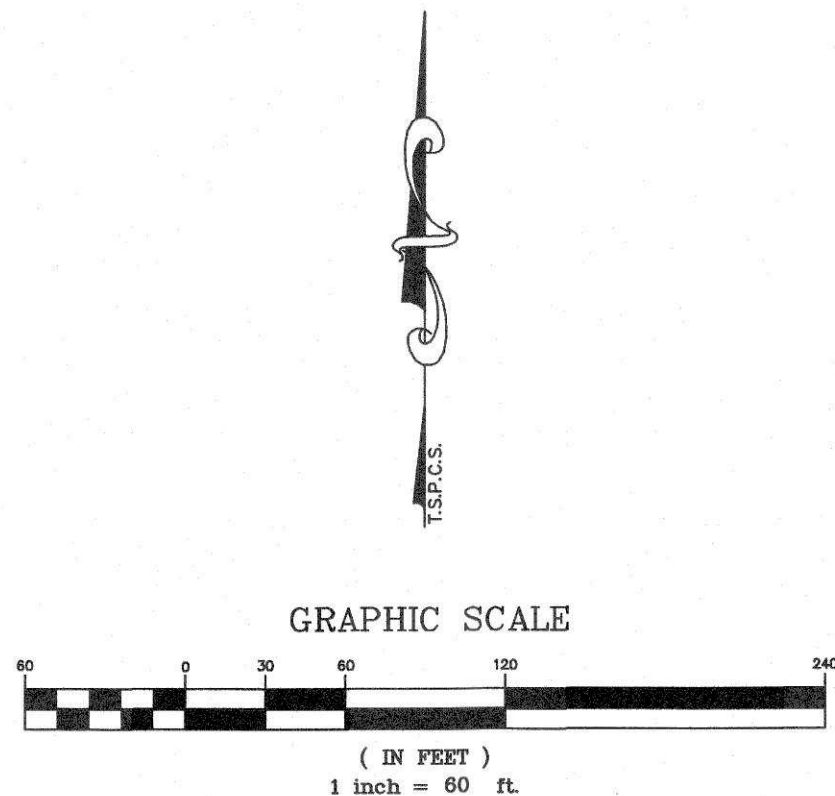
I (we) hereby certify that the subdivision plat as shown hereon is correct and that all of the monuments shown hereon have been or will be placed as indicated. This subdivision plat correctly represents a survey made under my supervision on the 10th day of December, 2015.

Robert M. Searson, Tenn. License No. 1666 \_\_\_\_\_ Date 1/5/17

### CERTIFICATE OF OWNERSHIP

I (we) hereby certify that I am (we are) the owner(s) of the property shown hereon as of record in Book 6628, Page 1, R.O.W.C., Tennessee, and adopt the plan of subdivision of the property as shown hereon and dedicate all public ways and easements as noted. No lot(s) as shown hereon shall again be subdivided, resubdivided, altered or changed so as to produce less area than is hereby established until otherwise approved by the Franklin Municipal Planning Commission, and under no condition shall such lot(s) be made to produce less area than is prescribed by the restrictive covenants as of record in Book \_\_\_\_\_, Page \_\_\_\_\_, R.O.W.C., Tennessee, running with the title to the property. I (we) further certify that there are no liens on this property, except as follows: Book \_\_\_\_\_, Page \_\_\_\_\_, R.O.W.C.

MTPC, LLC \_\_\_\_\_ Date \_\_\_\_\_  
Owner



| AREA TABLE |         |       |  |
|------------|---------|-------|--|
| LOT        | SQ. FT. | ACRES |  |
| 3          | 266,271 | 6.11  |  |
| 4          | 240,064 | 5.51  |  |
| TOTAL      | 506,335 | 11.62 |  |

| CURVE TABLE |            |         |              |         |             |         |              |  |  |
|-------------|------------|---------|--------------|---------|-------------|---------|--------------|--|--|
| CURVE       | ARC LENGTH | RADIUS  | DELTA ANGLE  | TANGENT | CHORD       | BEARING | CHORD LENGTH |  |  |
| C1          | 2.70'      | 92.00'  | 1°40'56.65"  | 1.35'   | N06°17'31"E |         | 2.70'        |  |  |
| C2          | 74.34'     | 92.00'  | 46°17'50.85" | 39.33'  | N17°41'52"W |         | 72.33'       |  |  |
| C3          | 32.84'     | 108.00' | 17°25'12.77" | 16.55'  | N32°08'09"W |         | 32.71'       |  |  |

| LINE TABLE |             |          |
|------------|-------------|----------|
| LINE       | BEARING     | DISTANCE |
| L1         | S82°15'47"E | 74.35'   |
| L2         | N42°25'25"E | 24.50'   |
| L3         | S82°25'54"E | 5.00'    |
| L4         | N07°34'06"E | 54.27'   |

**Littlejohn**  
An S&ME Company

1935 21st Avenue South, NASHVILLE, TENNESSEE 37212  
T 615.385.4144 F 615.385.4020 [www.leainc.com](http://www.leainc.com)

**MEDCORE MEDICAL**  
**BUILDING SUBDIVISION**  
**FINAL PLAT**  
**REVISION THREE, RESUBDIVISION OF LOT 3**  
**C.O.F. NO. 6319**  
FRANKLIN, WILLIAMSON COUNTY, TENNESSEE

|                             |                        |
|-----------------------------|------------------------|
| TOTAL ACRES: 11.62          | TOTAL LOTS: 2          |
| ACRES NEW PUBLIC STREETS: 0 | DISTRICT: 9TH          |
| LFT NEW PUBLIC STREETS: 0   | CLOSURE ERROR: 1:10000 |
| DATE: 12-12-16              |                        |
| REV: 01-05-17               |                        |

LEA PROJECT #554716089 SHEET 1 OF 2





## CONDITIONS OF APPROVAL:

Open Issues: 9 These issues are currently being filtered

## Addressing

[554716089\\_2016-12-12\\_Final Plat.pdf](#)

## 1. Addressing

[lori.jarosz@franklintn.gov](mailto:lori.jarosz@franklintn.gov) Email was sent to Zac with the addresses.

## Engineering - Final Plat Checklist

## General Issues

## 2. C. Final Plat

[joseph.marlo@franklintn.gov](mailto:joseph.marlo@franklintn.gov) The comment *"Applicant shall revise plat to show all easements indicated on the approved Site Plan, including Green Infrastructure Easements, Public Drainage Easements, Access Easements (including those labeled as "future" on the Site Plan), and Utility Easements."* has been partially addressed.

Applicant shall revise plat to show all easements shown on the approved site plan, including easements for the the alignment of the multi-use trail shown on Site Plan Sheet C2.4, and the additional concrete sidewalk required to tie into the relocated multi-use path.

## 3. C. Final Plat

[tomi@franklintn.gov](mailto:tomi@franklintn.gov) The previous comment "Applicant shall show location and description of all existing and proposed utility features, including: water lines, fire hydrants, sanitary sewer, storm sewers, culverts, outfalls, or ground-based utility vaults larger than 10 square feet." was misunderstood. The easements must not be labeled as existing or proposed. The utilities can be proposed but the easements are established with the recording of this plat. Remove the words proposed and existing from the easements.

## 4. C. Final Plat

[lance.fittro@franklintn.gov](mailto:lance.fittro@franklintn.gov) The previous comment, *"Applicant shall indicate all watercourses, conveyances, springs (perennial only), and channels that drain 25 acres or more. Show the location of the stream buffer."* has not been addressed correctly.

Applicant shall show the location of the stream buffer. The buffer shall be shown as a 30' Zone 1 Stream Buffer, and a 30' Zone 2 Stream Buffer (for a total buffer width of 60') as measured from top-of-bank of the stream.

## 5. Curb and Gutter in Carothers Parkway

[joseph.marlo@franklintn.gov](mailto:joseph.marlo@franklintn.gov) Applicant shall revise the plat to reflect the proposed Carothers Parkway turn lane construction including street, curb and gutter shown on the approved Site Plan Sheet C2.4. The extents of the street, curb, and gutter shown on the plat shall extend up to the ROW line at the entrance to the site. The "future" ROW dedication shown shall be dedicated with this plat (remove "future" from the ROW call-out, and remove General Note #23 from the plat).  
[Edited By Lance Fittro]

## 6. Lot Line Shift



[joseph.marlo@franklintn.gov](mailto:joseph.marlo@franklintn.gov) The dividing lot line between Lots 3 and 4 has shifted from the previous submittal. Applicant shall revise the plat to reflect the lot line shown on the approved Site Plan drawings.

## Performance Agreement and Surety

### General Issues

#### 7. Engineering Sureties

[kevin.long@franklintn.gov](mailto:kevin.long@franklintn.gov) No sureties are associated with this final plat.

(Previous comment restated for informational purposes only, no response necessary.)

## Stormwater

### General Issues

#### 8. Plats

[jeff.willoughby@franklintn.gov](mailto:jeff.willoughby@franklintn.gov) Not addressed. Please revise note as per statement above.

## Water/Sewer

### 554716089\_2016-12-12\_Final Plat.pdf

#### 9. Utility easement

[dustin.harper@franklintn.gov](mailto:dustin.harper@franklintn.gov) Issue re-opened

[dustin.harper@franklintn.gov](mailto:dustin.harper@franklintn.gov) Applicant failed to address the issue, applicant shall label the sewer line depths to ensure the proper easement widths are provided.

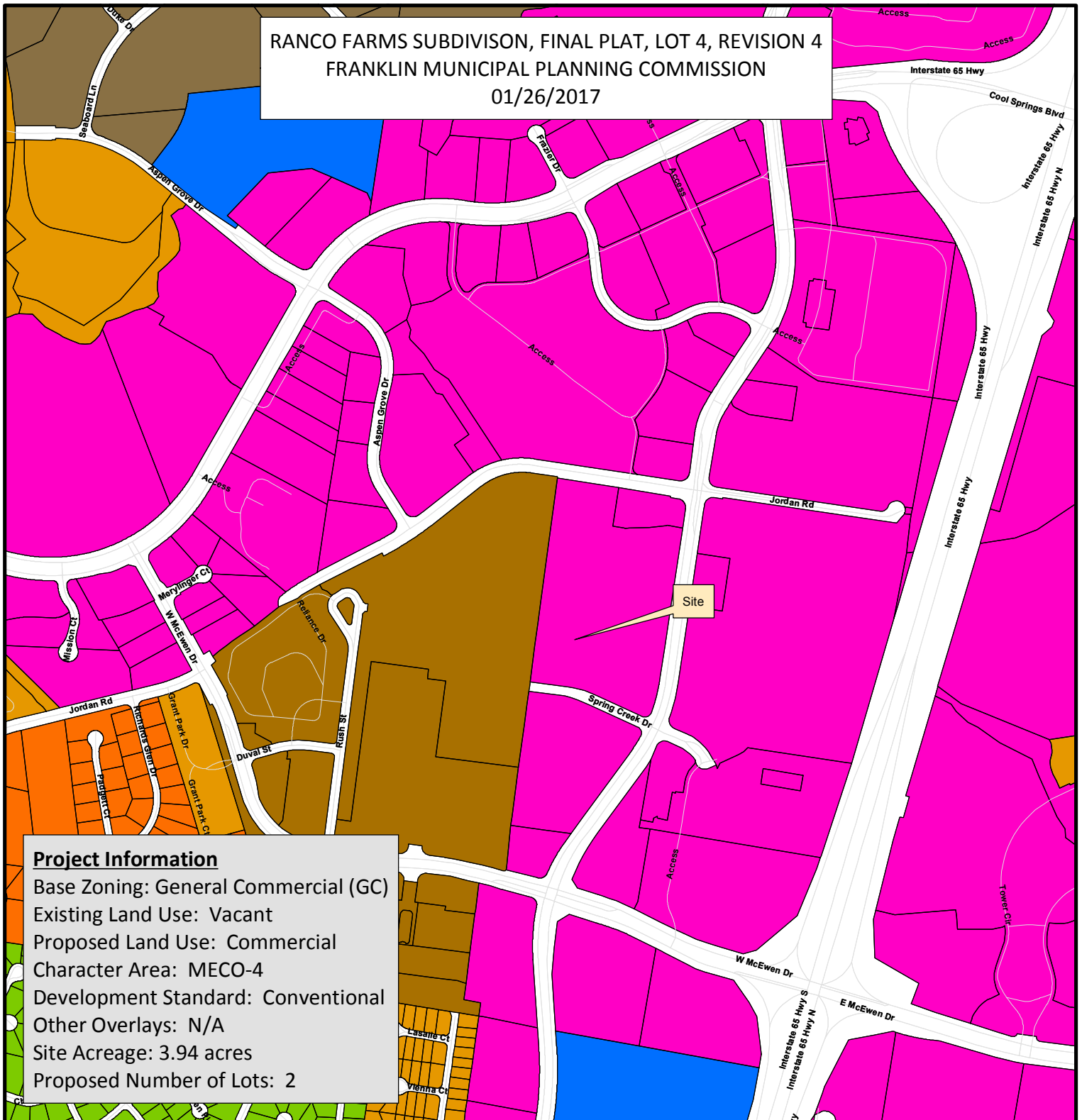
##### EASEMENTS

A. Water, Wastewater and/or Reclaimed Water Mains: When required, permanent exclusive easements must be provided with a minimum width of 20 feet. Easement width requirements are as follow:

1. 0'-12' depth requires 20' easement.
2. 13'-20' depth requires 30' easement.
3. Depths greater than 20' requires prior approval.

A minimum 10-foot wide temporary construction easement on each side of the permanent easement must also be provided. No trees shall be planted within the permanent easements.

RANCO FARMS SUBDIVISON, FINAL PLAT, LOT 4, REVISION 4  
FRANKLIN MUNICIPAL PLANNING COMMISSION  
01/26/2017



**Project Information**

Base Zoning: General Commercial (GC)  
Existing Land Use: Vacant  
Proposed Land Use: Commercial  
Character Area: MECO-4  
Development Standard: Conventional  
Other Overlays: N/A  
Site Acreage: 3.94 acres  
Proposed Number of Lots: 2

- |                                        |                                     |
|----------------------------------------|-------------------------------------|
| Ranco Farms                            | SD-X Specific Development-Variety   |
| AG Agricultural District               | OR Office Residential District      |
| ER Estate Residential                  | GO General Office District          |
| R-1 Residential District               | CC Central Commercial District      |
| R-2 Residential District               | NC Neighborhood Commercial District |
| R-3 Residential District               | GC General Commercial District      |
| R-6 Residential District               | LI Light Industrial District        |
| RM-10 Attached 10 Residential District | HI Heavy Industrial District        |
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| RM-20 Attached 20 Residential District |                                     |
| SD-R Specific Development-Residential  |                                     |

0 500 1,000 2,000 Feet

This map was created by the Franklin Planning Department.  
It was compiled from the most authentic information available.  
The City is not responsible for any errors or omissions contained hereon.  
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## NOTES

1. THE PURPOSE OF THIS PLAT IS TO RESUBDIVIDE 1 LOT INTO 2 LOTS.
2. EXISTING BASE ZONING: GO (GENERAL OFFICE DISTRICT)  
CHARACTER AREA OVERLAY: MECO-5  
OVERLAY DISTRICT: HTO  
DEVELOPMENT AREA STANDARD: CONVENTIONAL
3. THE PROPERTY DOES NOT LIE WITHIN THE 100 YEAR FLOOD PLAIN AND IS DETERMINED TO BE IN ZONE "X" AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM PANEL NUMBER 47187C0212F, DATED SEPTEMBER 29, 2006.
4. THIS PROPERTY CAN BE FOUND ON WILLIAMSON COUNTY TAX MAP 79 AND IS KNOWN AS PARCEL 48.04.
5. OWNER/ SUBDIVIDER: MTPC, LLC  
ADDRESS: 1400 DOWELL SPRINGS BLVD., SUITE 350  
KNOXVILLE, TENNESSEE 37909  
PHONE NO.: 865-321-4701  
P.O.C.: ANDY LORENZ (andy.lorenz@provisionhp.com)
6. SURVEYOR: LITTLEJOHN ENGINEERING ASSOCIATES, INC.  
ADDRESS: 1935 21ST AVE. SOUTH  
NASHVILLE, TENNESSEE 37212  
PHONE NO.: OFFICE: 615-385-4144 FAX: 615-385-4020  
P.O.C.: ROBERT SEARSON (rsearson@leainc.com)
7. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, SUCH AS CABLE TELEVISION, ELECTRICAL (EXCLUDING TRANSFORMERS), GAS, SEWER, TELEPHONE, AND WATER LINES SHALL BE PLACED UNDERGROUND.
8. ALL STREET LIGHT LOCATIONS AND QUANTITIES ARE APPROXIMATE. FINAL POSITIONING AND QUANTITY SHALL BE AT THE DIRECTION OF M.T.E.M.C.
9. ALL SIDEWALKS, TRAILS, PATHS, ETC., LYING OUTSIDE OF PUBLIC RIGHT OF WAY ARE PUBLIC ACCESS EASEMENTS AND SHALL BE MAINTAINED BY THE PROPERTY OWNERS' ASSOCIATION OR ASSIGNS, INCLUDING INDIVIDUAL PROPERTY OWNERS. SIDEWALK LOCATIONS WILL BE PROVIDED WITH THE SITE PLAN FOR EACH LOT.
10. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION ALLOWED IN THE STREAM BUFFER EXCEPT AS PERMITTED BY THE CITY ENGINEER OR BY APPROPRIATE FEDERAL OR STATE PERMITS.
11. NO BUILDING PERMITS SHALL BE ISSUED FOR PROJECTS IN THIS SECTION UNTIL THE INDIVIDUAL SITE PLAN HAS BEEN APPROVED.
12. PRIVATE DRIVES SHALL ALSO SERVE AS PUBLIC UTILITY, DRAINAGE AND ACCESS EASEMENT.
13. THE OWNER/SUBDIVIDER, MTPC, LLC, ATTESTS THAT NO ONE OTHER THAN THE OWNER HOLDS MINERAL RIGHTS TO THE PROPERTY. NO DOCUMENTATION HAS BEEN FOUND.
14. PROJECT GEODETIC REFERENCE NETWORK BASED ON: COORDINATE SYSTEM U.S. STATE PLANE 1983, ZONE 4100; PROJECT DATUM NAD 1983 (CONUS); VERTICAL DATUM NAVD 88.
15. MINIMUM REQUIRED SETBACK LINES:  
FRONT YARD: 50'  
SIDE YARD: 25'  
REAR YARD: 40'
16. SURVEY FIELD DATA COLLECTED ON 12-10-2015.
17. THE RECORDING OF THIS PLAT VOIDS, VACATES AND SUPERCEDES LOT 3 OF THE FINAL PLAT OF MEDCORE MEDICAL BUILDING SUBDIVISION, FINAL PLAT, REVISION TWO AS RECORDED IN PLAT BOOK P56, PAGE 82, REGISTER'S OFFICE OF WILLIAMSON COUNTY, TENNESSEE, (ROWC).
18. ALL MICROFTON UTILITY DISTRICT EASEMENTS ARE EXCLUSIVE EASEMENTS. NO EXCAVATION, BUILDING, STRUCTURE OR OBSTRUCTION OF ANY KIND WILL BE CONSTRUCTED OR PERMITTED WITHIN THE EASEMENTS EXCEPT FOR THE INSTALLATION OF PAVEMENT FOR PRIVATE OR PUBLIC DRIVEWAYS WHICH CROSS AN EASEMENT. NO TREES OR SHRUBBERY WILL BE PLANTED WITHIN THE EASEMENTS.
19. PROPERTY OWNER(S) OR HOA SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL STORMWATER MANAGEMENT FEATURES.
20. NO OBSTRUCTIONS OR ENCROACHMENTS WHICH IMPEDE THE FLOW OF STORMWATER SHALL BE PERMITTED WITHIN PUBLIC DRAINAGE EASEMENTS. THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY ENCROACHMENTS THAT ARE DAMAGED OR REMOVED IN THE COURSE OF MAINTENANCE ACTIVITY WITHIN EASEMENTS.
21. THERE SHALL BE NO MOWING, CLEARING, GRADING, CONSTRUCTION, STORAGE, OR DISTURBANCE OF VEGETATION IN RIPARIAN BUFFERS EXCEPT AS PERMITTED BY THE CITY ENGINEER, OR HIS DESIGNEE.
22. THE CITY OF FRANKLIN WATER MANAGEMENT DEPARTMENT HAS UNRESTRICTED ACCESS TO ITS DOMESTIC WATER, SANITARY SEWER, RECLAIM WATER LINES OR SYSTEM IMPROVEMENTS LOCATED WITHIN ITS EXCLUSIVE EASEMENTS WITHIN THE DEVELOPMENT. IN THE EVENT LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES ARE INSTALLED OR PLACED WITHIN A CITY OF FRANKLIN EASEMENT, THE CITY OF FRANKLIN SHALL HAVE THE RIGHT TO REMOVE SUCH ENCROACHMENTS WITHIN THE EASEMENT AS MAY BE NECESSARY FOR THE CITY OF FRANKLIN TO REPAIR, MAINTAIN OR REPLACE ITS INFRASTRUCTURE WHICH IS NOW OR IN THE FUTURE MAY BE LOCATED WITHIN THE EASEMENT WITHOUT OBTAINING ANY FURTHER PERMISSION FROM THE PROPERTY OWNER OR HOA. THE PROPERTY OWNER OR HOA SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY SUCH LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN IN COMMON OPEN SPACE LOTS AND IN AREAS OWNED BY THE PROPERTY OWNER OR HOA AT NO EXPENSE TO THE CITY OF FRANKLIN. INDIVIDUAL HOMEOWNERS SHALL BE RESPONSIBLE FOR STRUCTURES REMOVED OR DISTURBED BY THE CITY OF FRANKLIN WITHIN AN EASEMENT ON THE HOMEOWNERS' LOT AT THE HOMEOWNERS' EXPENSE.
23. FUTURE CAROTHERS PARKWAY RIGHT-OF-WAY TO BE DEDICATED IN CONFORMANCE WITH THE APPLICABLE HYBRID EXHIBITS OF THE INTEGRATED GROWTH PLAN.

### CERTIFICATE OF APPROVAL OF WATER SYSTEMS

I hereby certify that the following water system outlined or indicated on the final plat entitled "Medcore Medical Building Subdivision, Revision Three, Resubdivision of Lot 3" has been installed in accordance with current local and/or state government requirements or a security bond in the amount of \$\_\_\_\_\_ has been posted with Microfton Utility District to assure completion of all required improvements in case of default.

Microfton Utility District \_\_\_\_\_

Date \_\_\_\_\_

### CERTIFICATE OF APPROVAL OF SEWER SYSTEMS

I hereby certify that: (1) the sewer systems designated in "Medcore Medical Building Subdivision, Revision Three, Resubdivision of Lot 3" Subdivision have been installed in accordance with City specifications, or (2) a performance agreement and surety in the amount of \$\_\_\_\_\_ for the sewer system has been posted with the City of Franklin, Tennessee, to assure completion of such systems.

City of Franklin \_\_\_\_\_

Date \_\_\_\_\_

### CERTIFICATE OF ELECTRIC POWER

Middle Tennessee Electric Membership Corporation (MTEMC) will provide electric service to the subject property according to the normal operating practices of MTEMC as defined in the rules and regulations, bylaws, policy bulletins and operational bulletins of MTEMC, and in accordance with the plat approval checklist, tree planting guidelines and other regulations contained on the MTEMC website at [www.mtemc.com](http://www.mtemc.com) (collectively the "Requirements"). No electric service will be provided until MTEMC's requirements have been met and approved in writing by an authorized representative of MTEMC. Any approval is, at all times, contingent upon continuing compliance with MTEMC's Requirements.

Middle Tennessee Electric Membership Corporation \_\_\_\_\_

Date \_\_\_\_\_

### CERTIFICATE OF APPROVAL FOR RECORDING

Approved by the Franklin Municipal Planning Commission, Franklin, Williamson County, Tennessee, with the exception of such conditions, if any, as are noted in the Planning Commission minutes for the \_\_\_\_\_ day of \_\_\_\_\_, 2017, and this plat has been approved for recording in the Registers Office of Williamson County.

Secretary  
Franklin Municipal Planning Commission \_\_\_\_\_

Date \_\_\_\_\_

### CERTIFICATE OF APPROVAL OF SUBDIVISION NAME, STREET NAMES, AND ADDRESSING

Subdivision name and street names approved by the Williamson County Emergency Management Agency.

Williamson County Emergency Management Agency \_\_\_\_\_

Date \_\_\_\_\_

City of Franklin \_\_\_\_\_

Date \_\_\_\_\_

### CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, AND SIDEWALKS

I hereby certify that: (1) the streets, drainage, and sidewalks designated in "Medcore Medical Building Subdivision, Revision Three, Resubdivision of Lot 3" Subdivision have been installed in accordance with City specifications, or (2) a performance agreement and surety in the amount of \$\_\_\_\_\_ for streets, \$\_\_\_\_\_ for drainage, and \$\_\_\_\_\_ for sidewalks has been posted with the City of Franklin, Tennessee, to assure completion of such improvements.

Director, Streets Department  
City of Franklin, Tennessee \_\_\_\_\_

Date \_\_\_\_\_

### CERTIFICATE OF SURVEY

I (we) hereby certify that the subdivision plat as shown hereon is correct and that all of the monuments shown hereon have been or will be placed as indicated. This subdivision plat correctly represents a survey made under my supervision on the 10th day of December, 2015.

Robert M. Searson, Tenn. License No. 1666 \_\_\_\_\_

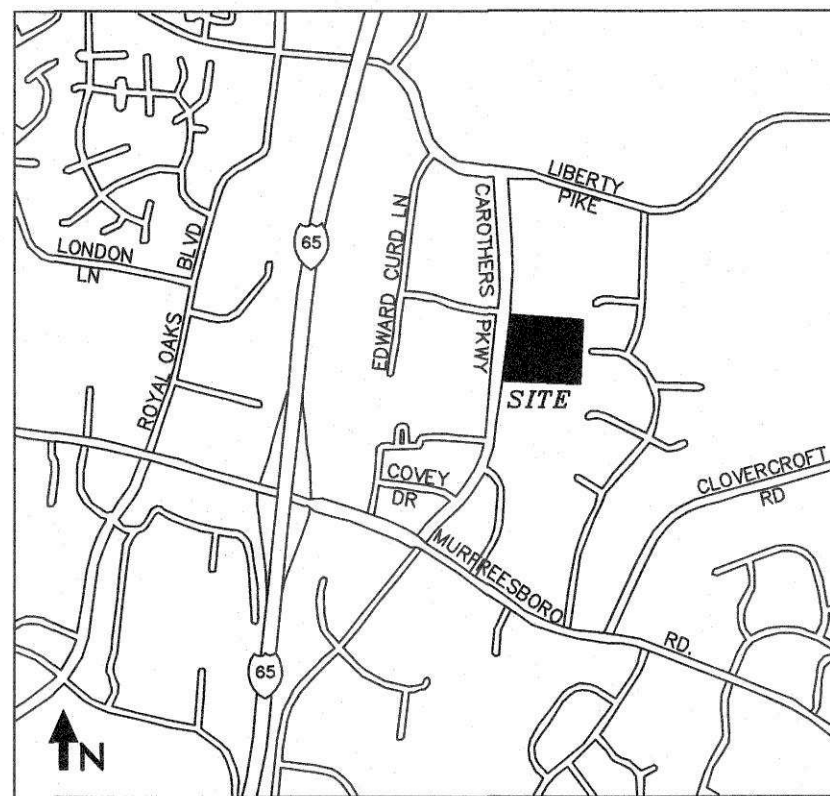
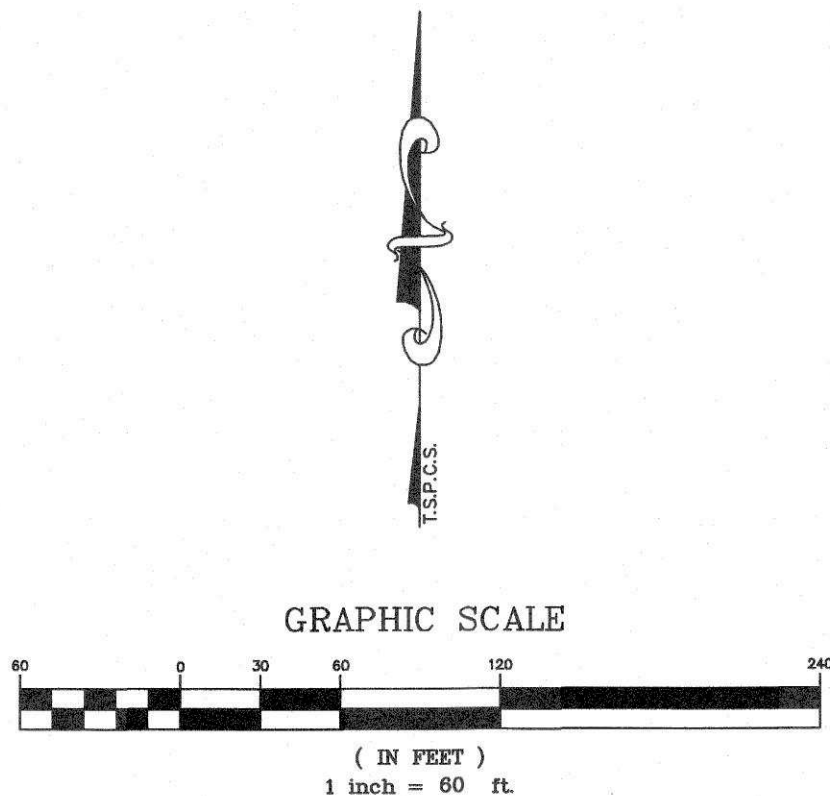
Date 1/5/17

### CERTIFICATE OF OWNERSHIP

I (we) hereby certify that I am (we are) the owner(s) of the property shown hereon as of record in Book 6628, Page 1, R.O.W.C., Tennessee, and adopt the plan of subdivision of the property as shown hereon and dedicate all public ways and easements as noted. No lot(s) as shown hereon shall again be subdivided, resubdivided, altered or changed so as to produce less area than is hereby established until otherwise approved by the Franklin Municipal Planning Commission, and under no condition shall such lot(s) be made to produce less area than is prescribed by the restrictive covenants as of record in Book \_\_\_\_\_, Page \_\_\_\_\_, R.O.W.C., Tennessee, running with the title to the property. I (we) further certify that there are no liens on this property, except as follows: Book \_\_\_\_\_, Page \_\_\_\_\_, R.O.W.C.

MTPC, LLC  
Owner \_\_\_\_\_

Date \_\_\_\_\_



| AREA TABLE |         |       |  |
|------------|---------|-------|--|
| LOT        | SQ. FT. | ACRES |  |
| 3          | 266,271 | 6.11  |  |
| 4          | 240,064 | 5.51  |  |
| TOTAL      | 506,335 | 11.62 |  |

| CURVE TABLE |            |         |              |         |             |         |              |  |  |
|-------------|------------|---------|--------------|---------|-------------|---------|--------------|--|--|
| CURVE       | ARC LENGTH | RADIUS  | DELTA ANGLE  | TANGENT | CHORD       | BEARING | CHORD LENGTH |  |  |
| C1          | 2.70'      | 92.00'  | 1°40'56.65"  | 1.35'   | N06°17'31"E |         | 2.70'        |  |  |
| C2          | 74.34'     | 92.00'  | 46°17'50.85" | 39.33'  | N17°41'52"W |         | 72.33'       |  |  |
| C3          | 32.84'     | 108.00' | 17°25'12.77" | 16.55'  | N32°08'09"W |         | 32.71'       |  |  |

| LINE TABLE |             |          |
|------------|-------------|----------|
| LINE       | BEARING     | DISTANCE |
| L1         | S82°15'47"E | 74.35'   |
| L2         | N42°25'25"E | 24.50'   |
| L3         | S82°25'54"E | 5.00'    |
| L4         | N07°34'06"E | 54.27'   |

**Littlejohn**  
An S&ME Company

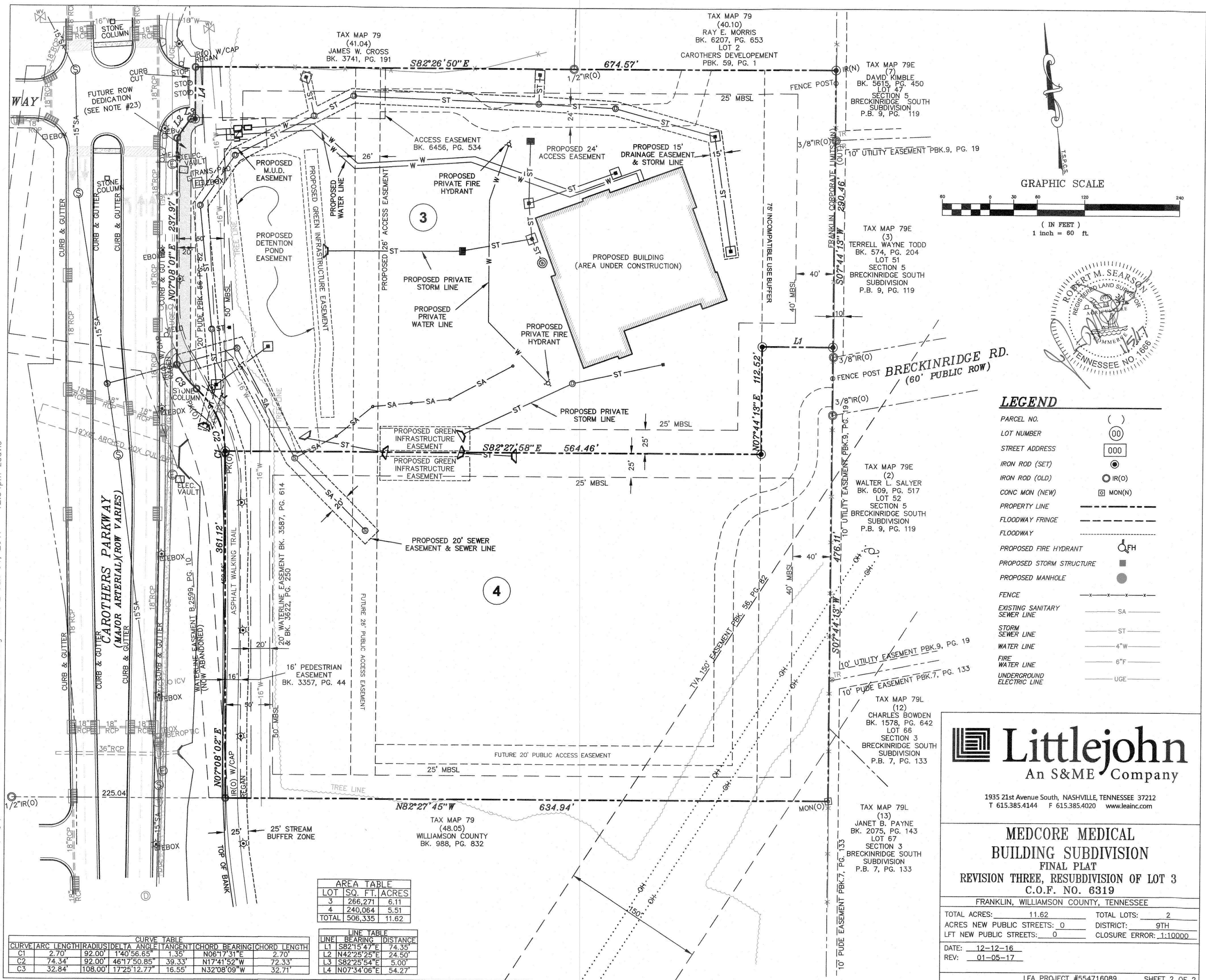
1935 21st Avenue South, NASHVILLE, TENNESSEE 37212  
T 615.385.4144 F 615.385.4020 [www.leainc.com](http://www.leainc.com)

**MEDCORE MEDICAL**  
**BUILDING SUBDIVISION**  
**FINAL PLAT**  
**REVISION THREE, RESUBDIVISION OF LOT 3**  
**C.O.F. NO. 6319**  
FRANKLIN, WILLIAMSON COUNTY, TENNESSEE

|                             |                        |
|-----------------------------|------------------------|
| TOTAL ACRES: 11.62          | TOTAL LOTS: 2          |
| ACRES NEW PUBLIC STREETS: 0 | DISTRICT: 9TH          |
| LFT NEW PUBLIC STREETS: 0   | CLOSURE ERROR: 1:10000 |
| DATE: 12-12-16              |                        |
| REV: 01-05-17               |                        |

LEA PROJECT #554716089 SHEET 1 OF 2







## CONDITIONS OF APPROVAL:

Open Issues: 4 These issues are currently being filtered

## Engineering - Final Plat Checklist

## General Issues

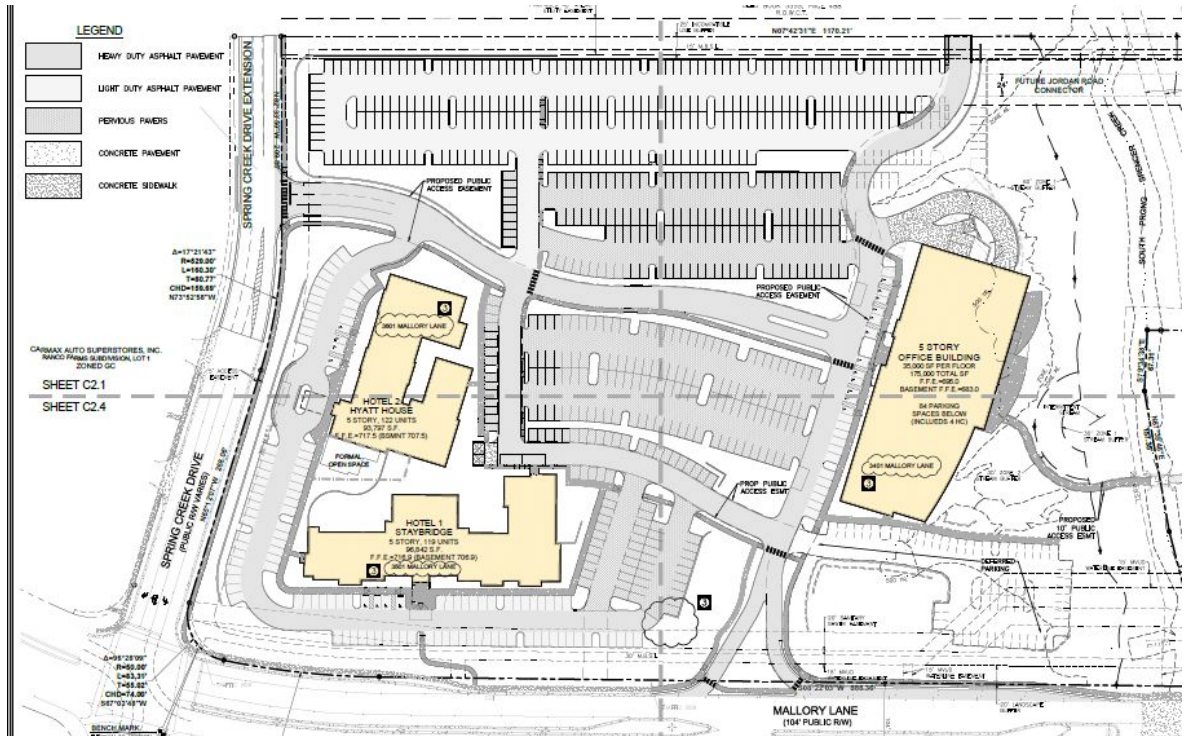
## 1. Plat Reference

[joseph.marlo@franklntn.gov](mailto:joseph.marlo@franklntn.gov) The comment "Prior to final approval, applicant shall complete book and page number in the Plat Reference note." shall remain open until completed.

## 2. C. Final Plat

[lance.fittro@franklntn.gov](mailto:lance.fittro@franklntn.gov) The revisions that were discussed and hand-corrected on the previous plat shall be reflected on this plat, including:

- Green Infrastructure Easements in the drive aisles where there are no pervious pavers are unnecessary.



## Performance Agreement and Surety

## General Issues

## 3. Engineering Sureties

[kevin.long@franklntn.gov](mailto:kevin.long@franklntn.gov) No sureties are associated with this Final Plat. Sureties were posted with the previous final plat.

## Planning

## COF 6320 RESUB LOT 4.pdf

## 4. Revision number

[josh.king@franklntn.gov](mailto:josh.king@franklntn.gov) This plat is revision #4. Revision #3 (Dec 2016) must be recorded before this revision can be recorded at one stop.

**ORDINANCE 2016-52**

**TO BE ENTITLED: "AN ORDINANCE TO AMEND CHAPTER 3 OF THE ZONING ORDINANCE OF THE CITY OF FRANKLIN, TENNESSEE, TO AMEND THE USE TABLE AND REGULATIONS PERTAINING TO SELF STORAGE FACILITIES USES."**

**WHEREAS**, the City of Franklin, Tennessee, wishes to promote the orderly development and redevelopment of land within the City; and

**WHEREAS**, the Franklin Zoning Ordinance contains requirements that regulate land uses and establishes development standards to enhance the quality of developments through superior building and site design standards; and

**WHEREAS**, the Franklin Zoning Ordinance contains specific requirements in Chapter 3, Section 3.2, Subsection 3.2.3, Use Table, Table 3-2: Permitted Uses, and in Subsection 3.2.8(3), Self-Storage Facilities, that regulate the location and appearance of self-storage uses; and

**WHEREAS**, the Franklin Municipal Planning Commission and the Board of Mayor and Aldermen have reevaluated the regulations pertaining to Self-Storage Facilities and have determined that the existing use and development standards specified in the Franklin Zoning Ordinance should be updated in order to provide the necessary site development standards necessary to ensure that self-storage uses can be appropriately developed with restrictions in certain commercial districts within the City of Franklin; and

**WHEREAS**, this text amendment is in the best interest of the citizens of Franklin.

**NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF MAYOR AND ALDERMAN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:**

**SECTION I.** That Chapter 3, Section 3.2, Subsection 3.2.3, Table 3-2: Permitted Uses, of the Franklin Zoning Ordinance shall be, and is hereby, amended to delete the following text noted with a ~~strike through~~, to add the following text noted in **bold**, and is approved to read as follows:

| TABLE 3-2: PERMITTED USES    |                       |    |     |     |     |     |      |      |       |       |       |    |    |    |    |    |    |                            |    |                                          |
|------------------------------|-----------------------|----|-----|-----|-----|-----|------|------|-------|-------|-------|----|----|----|----|----|----|----------------------------|----|------------------------------------------|
| Use Types<br>“P” = Permitted | Base Zoning Districts |    |     |     |     |     |      |      |       |       |       |    |    |    |    |    |    | Additional<br>Requirements |    |                                          |
|                              | AG                    | ER | R-1 | R-2 | R-3 | R-6 | SD-R | SD-X | RM-10 | RM-15 | RM-20 | OR | GO | NC | CC | GC | LI |                            | HI | CI                                       |
| INDUSTRIAL USES              |                       |    |     |     |     |     |      |      |       |       |       |    |    |    |    |    |    |                            |    |                                          |
| Self-Storage<br>Facilities   |                       |    |     |     |     |     |      | P    |       |       |       |    |    |    |    | P  | P  | P                          |    | Sec. 3.2.8 (1)<br>and <del>(4)</del> (3) |



**SECTION II.** That Chapter 3, Section 3.2, Subsection 3.2.8(3) of the Franklin Zoning Ordinance is hereby amended to delete the following text noted with a ~~strikethrough~~; to add the following text noted in **bold**, and is approved to read as follows:

3.2.8 Regulations for Industrial Uses

\*\*\*

(3) Self-Storage Facilities

(a) One on-site apartment, not to exceed 1,500 square feet, shall be permitted for security personnel and shall be attached to, and incorporated into, the self-storage facility.

(b) Outdoor storage facilities shall not be located within required setbacks; ~~however, they shall be completely screened from public rights-of-way. and no storage doors shall front public rights-of-way.~~

~~(c) Self-storage facilities are prohibited from locating within 500 feet of an arterial street right-of-way as shown on the FMTP. However, a self-storage facility may encroach into the 500-foot setback if a buildable lot exists between the proposed self-storage facility and the arterial street or the self-storage facility site is designed as follows:~~

~~(i) — an eight-foot-high masonry screen wall shall be constructed around the portion of the self-storage facility site located within 500 feet of the arterial street right-of-way. The wall shall have columns no farther apart than 50 feet on-center;~~

~~(ii) — Within eight feet of the exterior of the masonry screen wall, canopy trees, a minimum of two inches in caliper, shall be planted every 40 to 50 feet on-center. If overhead utility lines exist, then understory trees, a minimum of 1.5 inches in caliper, shall be used with a spacing that shall be 30 to 40 feet on-center; and~~

~~(iii) — Within eight feet of the exterior of the screen wall, evergreen or deciduous shrubs with a height of at least 30 inches at installation shall be planted no farther than five feet on-center.~~

**(c) For GC and SD-X zoned properties, self-storage facilities are prohibited from locating within 500 feet of an arterial or collector street right-of-way as shown on the FMTP unless the structure contains active ground floor uses (civic, institutional, commercial, and/or office) for a minimum of 50% of the gross ground floor area (including the leasing center office).**

**SECTION III. BE IT FINALLY ORDAINED** by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on third and final reading, the health, safety, and welfare of the citizens requiring it.

**ATTEST:**

**CITY OF FRANKLIN, TENNESSEE:**

By: \_\_\_\_\_

**Eric Stuckey**  
City Administrator

By: \_\_\_\_\_

**Dr. Ken Moore**  
Mayor

**Approved as to form by:**

\_\_\_\_\_  
Shauna R. Billingsley  
City Attorney

PLANNING COMMISSION RECOMMENDED:

\_\_\_\_\_

PASSED FIRST READING:

\_\_\_\_\_

PASSED SECOND READING:

\_\_\_\_\_

PUBLIC HEARING HELD:

\_\_\_\_\_

PASSED THIRD READING:

\_\_\_\_\_

**ORDINANCE 2016-53**

**TO BE ENTITLED: "AN ORDINANCE TO AMEND CHAPTER 3 OF THE ZONING ORDINANCE OF THE CITY OF FRANKLIN, TENNESSEE, TO AMEND THE REGULATIONS FOR COMMERCIAL USES FOR BED AND BREAKFAST ESTABLISHMENTS IN ORDER TO THE INCREASE THE MAXIMUM NUMBER OF PERMITTED GUESTS FROM SIX TO EIGHT, AND INCREASE THE MAXIMUM NUMBER OF SLEEPING ROOMS AVAILABLE FOR TRANSIENT OCCUPANCY FROM THREE TO FOUR."**

**WHEREAS**, the City of Franklin, Tennessee, encourages unique, innovative, and sustainable neighborhoods; and

**WHEREAS**, the City encourages tourism and has become a major destination for tourists; and

**WHEREAS**, the City of Franklin, Tennessee encourages the development of unique, transient lodging opportunities to enhance the experience of visitors; and

**WHEREAS**, the City of Franklin, Tennessee encourages entrepreneurs and small business ownership; and

**WHEREAS**, the City of Franklin wishes to amend the Franklin Zoning Ordinance to revise the maximum number of rooms and occupancy regulations for bed and breakfast establishments to be consistent with the requirements for short-term vacation rentals; and

**WHEREAS**, this text amendment is in the best interest of the citizens of Franklin.

**NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF MAYOR AND ALDERMEN OF FRANKLIN, TENNESSEE, AS FOLLOWS:**

**SECTION I.** That Chapter 3, Section 3.2, Subsection 3.2.7 (3) (d) of the Franklin Zoning Ordinance is hereby amended to delete the following text noted with a ~~striketrough~~; to add the following text noted in **bold**, and is approved to read as follows:

3.2.7 Regulations for Commercial Uses

\*\*\*

(3) Bed and Breakfast

Bed and breakfast uses shall be established in accordance with the following standards, after notification to adjacent property owners within 500 feet pursuant to Subsection 2.3.8, Public Notification, and a neighborhood meeting held pursuant to Subsection 2.4.2(6)(c), Neighborhood Meeting, (regardless of whether the use is proposed as part of a PUD).

\*\*\*



- (d) A maximum of ~~four~~ **three** sleeping rooms may be available for transient occupancy by up to ~~eight~~ **six** guests, and in no event shall a sleeping room be occupied by a guest for more than seven consecutive days.

**SECTION II. BE IT FINALLY ORDAINED** by the Board of Mayor and Aldermen of the City of Franklin, Tennessee that this Ordinance shall take effect from and after its passage on third and final reading, the health, safety, and welfare of the citizens requiring it.

**ATTEST:**

**CITY OF FRANKLIN, TENNESSEE:**

**BY:** \_\_\_\_\_  
Eric S. Stuckey  
**City Administrator**

**BY:** \_\_\_\_\_  
Dr. Ken Moore  
**Mayor**

**Approved as to Form:**

\_\_\_\_\_  
Shauna R. Billingsley, City Attorney

PLANNING COMMISSION RECOMMENDED:

\_\_\_\_\_

PASSED FIRST READING:

\_\_\_\_\_

PUBLIC HEARING HELD:

\_\_\_\_\_

PASSED SECOND READING:

\_\_\_\_\_

PASSED THIRD READING:

\_\_\_\_\_