City of Franklin

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

Meeting Agenda

Work Session

Tuesday, September 11, 2018 | **5:00 PM** | **Board Room**

Call to Order

Citizen Comments

WORKSESSION DISCUSSION ITEMS

1. 18-0938 Presentation of 'On the Table' by Franklin Tomorrow

2. 18-0885 Presentation of City of Franklin Website

Sponsors: Milissa Reierson

3. 18-0906 The City of Franklin's submission of the Comprehensive Annual Performance Evaluation Report (CAPER) to the Department of Housing and Urban Development

Sponsors: Building and Neighborhood Services (BNS) and Chris Bridgewater

Attachments: CAPER Program year 2018 - draft

4. 18-0147 *Consideration of Liquor License for HolBev, LLC, dba Holiday Cigars & Spirits, (Alpa Patel, Managing Agent) 108 N. Royal Oaks Blvd, Franklin, TN 37067. (Deferred from 8/14/18 Work Session and BOMA)

Sponsors: Lanaii Benne

Attachments: 2018 Certificate Alpa Patel.pdf

Legislative History

8/14/18	Work Session	deferred
8/14/18	Board of Mayor & Aldermen	referred as an Old Business Item to the Board of Mayor & Aldermen

5. 18-0894 Consideration Of Certificate Of Compliance For Wine In Grocery Stores For Herban Market, LLC, Located At 3078 Maddux Way, Suite 300, Franklin, TN, 37069 (Ashlea Hogancamp, Owner and Managing Agent; Matthew Hogancamp, Owner and Managing Agent)

Sponsors: Lanaii Benne

Attachments: Herban market WIGS Certificate RENEWAL 2018.pdf

6. 18-0877 Consideration of COF Contract No. 2018-0191, a Memorandum of Understanding Between the City of Franklin and the Franklin Special School District for Master Planning Professional Services.

Sponsors: Lisa Clayton

Attachments: 18-0877_2018-0191 MOU FSSD

2018-0191 MOU_COF and FSSD for Parks.Law Approved 2

FSSD Phase I Project_MOU_8172018CityDraft

7. 18-0921 *Consideration of Contract Number 2018-0193 a Cooperation Agreement (PILOT) between the City of Franklin and the Franklin Housing Authority for the 48-Unit Chickasaw Senior Complex.

Sponsors: Eric Stuckey, Vernon Gerth and Kristine Brock

Attachments: 2018-0193 Cooperation Agreement - PILOT (Chickasaw).Law Approved

8. 18-0892 Consideration of Resolution 2018-72, A Resolution Amending Resolution 2016-77 That Authorized The City Of Franklin To Contribute $400,000 To The Goose Creek Sanitary Sewer Extension Project As Part Of The Lampo Group (Ramsey Solutions) Corporate Headquarters Project Clarifying The Owner Name, Matt 5:14-16, LLC Which Is Closely Held And Affiliated With The Principals Of The Lampo Group, LLC.

Sponsors: Eric Stuckey and Vernon Gerth

Attachments: Resolution 2018-72 Goose Creek Sewer Extension (Matt 5)_with exhibits.Law A

9. 18-0900 Consideration of Resolution No. 2018-74, “A Resolution to select the Utility Design Concept for the Columbia Avenue Widening & Improvements Project”.

Sponsors: Paul Holzen

Attachments: Res 2018-74 Columbia Ave Utility Concept Rev1.Law Approved.pdf

Resolution 2017-43

Functional_rollout

10. 18-0908 Consideration of Resolution No. 2018-73, “A Resolution to select the Pedestrian Design Concept for the Columbia Avenue Widening & Improvements Project”.

Sponsors: Paul Holzen

Attachments: Res 2018-73 Columbia Ave sidewalk design Rev1_with Exhibit A.Law Approvec

Functional_rollout

Resolution 2017-43

Other Business

Adjournment

Anyone requesting accommodations due to disabilities should contact ADA coordinator at 791-3277.

CR-05 - Goals and Outcomes

Progress the jurisdiction has made in carrying out its strategic plan and its action plan. 91.520(a)

This could be an overview that includes major initiatives and highlights that were proposed and executed throughout the program year.

The City continues to meet with a variety of stakeholders in the community including for-profit, non-profit, residents and the business community to further the goal of creating affordable housing within the City. Additionally, we activiley support Fair Housing Outreach, including hosting a public meeting in January to celebrate the 50th Anniversary of the signing of the Fair Housing Law.

In addition to the funds the City receives from the CBBG, the Mayor and Board of Aldermen have designated $100,000.00 from our General Fund to create new housing units that will support low to moderate income residents or assist with maintaining the current housing stock for the same population.

Comparison of the proposed versus actual outcomes for each outcome measure submitted with the consolidated plan and explain, if applicable, why progress was not made toward meeting goals and objectives. 91.520(g)

Categories, priority levels, funding sources and amounts, outcomes/objectives, goal outcome indicators, units of measure, targets, actual outcomes/outputs, and percentage completed for each of the grantee's program year goals.

Goal	Category	Source / Amount	Indicator	Unit of Measure	Expected – Strategic Plan	Actual – Strategic Plan	Percent Complete	Expected – Program Year	Actual – Program Year	Percent Complete

Table 1 - Accomplishments – Program Year & Strategic Plan to Date

Assess how the jurisdiction's use of funds, particularly CDBG, addresses the priorities and specific objectives identified in the plan, giving special attention to the highest priority activities identified.

The majority of City's CDBG allocation for the 2017-18 year was put toward creating new, affordable homes for our low to moderate income

OMB Control No: 2506-0117 (exp. 06/30/2018)

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residents through the CBDO portion of the grant. Affordable housing is a priority for the City as our population continues to grow and housing costs escalate at such a rapid pace.

With this funding the Hard Bargain neighborhood, which is a thriving African American Community, has been able to remain stable. With the CDBG funding and community support Hard Bargain has completed "Bungelow Court" a Planned Unit Development of 7 new homes that have all been sold to low-to-moderate people. The last two will be completed by the end of fy2019. The neighborhood is located within two square city blocks in the downtown Franklin area and totals over 130 households. Many of the families in the neighborhood today have roots that go back several generations.

https://www.tennessean.com/story/news/local/williamson/2018/07/05/here-comes-neighborhood-last-house-hard-bargain-bungalow-court-

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sold/744342002/

7-18 Hard Bargain

OMB Control No: 2506-0117 (exp. 06/30/2018)

CR-10 - Racial and Ethnic composition of families assisted

Describe the families assisted (including the racial and ethnic status of families assisted). 91.520(a)

	CDBG
White	1
Black or African American	1
Asian	0
American Indian or American Native	0
Native Hawaiian or Other Pacific Islander	0
Total	2
Hispanic	0
Not Hispanic	0

Table 2 – Table of assistance to racial and ethnic populations by source of funds

Narrative

This year the City focused on creating new homes, from our CBDO funds, for purchase that would benefit low-to-moderate income residents. These homes are in the Natchez and Hard Bargain historic neighborhoods within the City of Franklin. The homes are deed restricted and sold to residents that meet the Metropolitan Statiscal Area Median income parameters of 80% AMI or less.

https://www.tennessean.com/story/news/local/williamson/2018/07/05/here-comes-neighborhood-last-house-hard-bargain-bungalow-court-sold/744342002/

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OMB Control No: 2506-0117 (exp. 06/30/2018)

CR-15 - Resources and Investments 91.520(a)

Identify the resources made available

Source of Funds	Source	Resources Made Available	Amount Expended During Program Year
CDBG	CDBG	263,690	111,281
HOME	HOME		
HOPWA	HOPWA		
ESG	ESG		
Other	Other		

Table 3 - Resources Made Available

Narrative

One more house in the Hard Bargain neighborhood has been completed and sold, we will expend the an additional $115,952.00 on the final home. That leaves 85k available for Community Housing Partnership to build a house; they are looking to find a suitable lot to build on. The Housing Commission worked with our IT Department to identify all vacant lots within the City limits that may be buildable lots.

Identify the geographic distribution and location of investments

Target Area	Planned Percentage of Allocation	Actual Percentage of Allocation	Narrative Description

Table 4 – Identify the geographic distribution and location of investments

Narrative

CDBG funds are invested throughout the community as eligible projects are brought forward by partners.

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OMB Control No: 2506-0117 (exp. 06/30/2018)

Leveraging

Explain how federal funds leveraged additional resources (private, state and local funds), including a description of how matching requirements were satisfied, as well as how any publicly owned land or property located within the jurisdiction that were used to address the needs identified in the plan.

The homes in Hard Bargain are sold below market value with the stipilulation that the home buyer participate in a home ownership class. Hard Bargain hosts several events throughout the year to garner financial support for this project, including a fund raising dinner, a music festival, and direct mailings.

The City also contributes through appropriations, approximately 40k to civic organizations that specifically support low to moderate income residents.

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OMB Control No: 2506-0117 (exp. 06/30/2018)

CR-20 - Affordable Housing 91.520(b)

Evaluation of the jurisdiction's progress in providing affordable housing, including the number and types of families served, the number of extremely low-income, low-income, moderate-income, and middle-income persons served.

	One-Year Goal	Actual
Number of Homeless households to be provided affordable housing units	0	0
Number of Non-Homeless households to be provided affordable housing units	0	0
Number of Special-Needs households to be provided affordable housing units	0	0
Total	0	0

Table 5 – Number of Households

	One-Year Goal	Actual
Number of households supported through Rental Assistance	0	0
Number of households supported through The Production of New Units	2	2
Number of households supported through Rehab of Existing Units	0	0
Number of households supported through Acquisition of Existing Units	0	0
Total	2	2

Table 6 – Number of Households Supported

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Discuss the difference between goals and outcomes and problems encountered in meeting these goals.

The primary obstacle to meeting all of the identified needs, including those identified as priorities, is the general lack of funding resources available to the public and private agencies who serve the needs of low- and moderate-income residents.

It is the intent of the City of Franklin to encourage the acquisition, development, management and/or financing of affordable housing options at various price points.

Discuss how these outcomes will impact future annual action plans.

Decent, safe and affordable housing has been established by the City of Franklin Board of Mayor and Alderman as one of its top priorities. The City of Franklin Staff and Board of Mayor and Alderman have adopted policies that aim to further the goal of housing that is affordable within the City of Franklin. Theses policies for Affordable Housing assists organizations and developers that commit to the construction of permanently affordable housing dwellings. This policy seeks to promote diversity by producing a wide variety of housing options.

Include the number of extremely low-income, low-income, and moderate-income persons served by each activity where information on income by family size is required to determine the eligibility of the activity.

Number of Households Served	CDBG Actual	HOME Actual
Extremely Low-income	0	0
Low-income	2	0
Moderate-income	0	0
Total	2	0

Table 7 – Number of Households Served

Narrative Information

In an effort to educate the residents about affordable housing staff and volunteers from the Housing Commission have been reaching out to various HOA's, civic and faith based groups. We have presented to a local Church and a HOA group for one of the larger neighborhoods. In July we presented to the Noon Rotary Club and are on the agenda to present at the Breakfast Rotary Club in August.

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OMB Control No: 2506-0117 (exp. 06/30/2018)

CR-25 - Homeless and Other Special Needs 91.220(d, e); 91.320(d, e); 91.520(c)

Evaluate the jurisdiction's progress in meeting its specific objectives for reducing and ending homelessness through:

Reaching out to homeless persons (especially unsheltered persons) and assessing their individual needs

The City of Franklin participates in providing for homeless by being a member of the Homeless No More Continuuim of Care, Buffalo Valley. We meet quarterly to address needs, available funding and brainstorm. Local non-profits and Faith Based Organizations provide most of the service.

Addressing the emergency shelter and transitional housing needs of homeless persons

The City does not have a direct homeless shelter, nor do they receive direct funding from the Emergency Shelter Grant. The City worked with a non-profit to create a men's group home and we have a domestic violence shelter for victims of domestic violence. Very recently the Doorstep Project has been created, this project supports transistional housing for people moving back into mainstream living.

Helping low-income individuals and families avoid becoming homeless, especially extremely low-income individuals and families and those who are: likely to become homeless after being discharged from publicly funded institutions and systems of care (such as health care facilities, mental health facilities, foster care and other youth facilities, and corrections programs and institutions); and, receiving assistance from public or private agencies that address housing, health, social services, employment, education, or youth needs

Helping homeless persons (especially chronically homeless individuals and families, families with children, veterans and their families, and unaccompanied youth) make the transition to permanent housing and independent living, including shortening the period of time that individuals and families experience homelessness, facilitating access for homeless individuals and families to affordable housing units, and preventing individuals and families who were recently homeless from becoming homeless again

The City collaborates with Bridges of Williamson County, a domestic violence shelter that also has transistional housing to assist individuals and families get back into main stream living. Bridges offers legal assistance, as well as, educaction and case management. Community Housing Partnership works with our elderly, low income, and the disabled residents to create and maintain afforable housing within the City of Franklin. Additionally, they assist in the management of a men's group home within the City.

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OMB Control No: 2506-0117 (exp. 06/30/2018)

CR-30 - Public Housing 91.220(h); 91.320(j)

Actions taken to address the needs of public housing

The City worked with our local PHA to complete a nearly $2 million renovation on 22 units. These include 4 one-bedroom, 14 two-bedroom and 4 three-bedroom units.

This included an exterior renovation with new roofs, porches and painted brick. The interior renovation included energy efficient appliances and lighting, new fixtures and cabinets in the bathrooms and kitchens, new HVAC systems which replaced window units and baseboard heat, new windows and more efficient insulation.

Actions taken to encourage public housing residents to become more involved in management and participate in homeownership

The City approved an ordinance that encourages responsible growth and approved a Planned Unit Development to allow for the construction and development of 48 senior residence apartments and 12 attached residential homes. The majority of the units will have one bedroom. These units will be income-based, with a goal of qualifying public housing residents to become homeowners.

Actions taken to provide assistance to troubled PHAs

N/A Our PHA is stable.

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OMB Control No: 2506-0117 (exp. 06/30/2018)

CR-35 - Other Actions 91.220(j)-(k); 91.320(i)-(j)

Actions taken to remove or ameliorate the negative effects of public policies that serve as barriers to affordable housing such as land use controls, tax policies affecting land, zoning ordinances, building codes, fees and charges, growth limitations, and policies affecting the return on residential investment. 91.220 (j); 91.320 (i)

The phenomenal growth of Williamson County, that includes the City of Franklin, has resulted in a poplulation shift from a small town to a business hub making it the 7th largest City in Tennessee. The Envision Franklin Planning Document was adopted in January, 2017. This plan focuses on the City striving to create inviting neighborhoods with memorable that may include infill development. This will include the redevelopment of properties or vacant lots and adaptive reuse of older buildings.

Actions taken to address obstacles to meeting underserved needs. 91.220(k); 91.320(j)

The City is an active liaison with numerous non-profits and our local housing authority. We continue to implement programs through grants and support funding applications for various non-profit agencies that assist our underserved population. The City offers deferral of Water and Wastewater Development and Access Fees on ower-occupied residential dwelling units that qualify as affordable.

The City has implemented an opp in Round Up Program that encourages residents to round up their water bill to the nearest dollar. This supports a fund that is dedicated to assisting with the cost of water and sewer tap fees.

http://www.franklintn.gov/services/round-up-program

Actions taken to reduce lead-based paint hazards. 91.220(k); 91.320(j)

Any rehabilitation effort used by the City or its subreceipents will include lead-safe work practices. The City of Franklin continues to make lead poisioning infomation available to our residents, especially when we spear head a neighborhood cleanup.

The City uses the following company if an issue comes to light regarding a lead issue:

http://lyellenvironmentalservices.com/

Actions taken to reduce the number of poverty-level families. 91.220(k); 91.320(j)

The City continues its relationship with Habitat for Humanity, the Franklin Housing Authority, Bridges Domestic Violence Shelter, Hard Bargain Association, Graceworks and Community Housing Partnership sharing a goal of meeting the housing needs of our low to moderate income citizens. We continue to search out opportunities to bring affordable housing to the City of Franklin, including identifying all the vacant lots within the City, to see if they are buildable.

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Actions taken to develop institutional structure. 91.220(k); 91.320(j)

- The City of Franklin, through its Building & Neighborhood Services Department is the lead entity for implementing the City's Consoldiated Plan, Annual Action Plan and each of the CAPER's.
- The City is actively engaged with our Continuum of Care and has a voice on the Board of Housing Equality Alliance of Tennessee, (HEAT).
- The Department continues to have a strong working relationship with many community organizations and non-profits.

Actions taken to enhance coordination between public and private housing and social service agencies. 91.220(k); 91.320(j)

The City of Franklin works as the liaison with Franklin Housing Authority, Bridges Domestic Violence Shelter, Hard Bargain Association, Graceworks and Community Housing Partnership with a common goal of meeting the housing needs of our low to moderate income citizens. We are actively involved in current and future projects that will support creating and maintaining housing for our financially challenged residents.

The City also hosted a public mobile workshop tour that went around the various neighborhoods that have been here for decades and those that have been here for only a few years.

Mobile Workshop

THE HOUSING COMMISSION MOBILE WORKSHOPThursday, June 7, 2018â¿¢ Developments to be included:â¿¢ The original 16- (now 15-) block of downtownâ¿¢ Adams Courtâ¿¢ Charleton Greenâ¿¢ Cannonwoodâ¿¢ Good Neighborhoodâ¿¢The Villages at West Mainâ¿¢ Rucker Parkâ¿¢ Fieldstone Farmsâ¿¢ Berry Farms Reams-Fleming siteâ¿¢ Strahl Street Habitat Housingâ¿¢ Park Streetâ¿¢ Natchez Streetâ¿¢ Willow Springsâ¿¢ Franklin Greenâ¿¢ Carlisleâ¿¢ Westhavenâ¿¢ The Hill Property

Identify actions taken to overcome the effects of any impediments identified in the jurisdictions analysis of impediments to fair housing choice. 91.520(a)

The City of Franklin actively engages in activities to affirmatively further fair housing. The lack of affordability is the number one barrier to fair housing in Franklin; the City continues to search out creative ways to bring affordability to the City. Franklin continues to support the Fair Housing Conference, HEAT Alliance and webinars that relate to fair housing, including, sending staff and citizens to this year's Fair Housing Conference. The City realizes the importance of having housing choices for its residents and consequently the importance of removing impediments to housing retention.

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CR-40 - Monitoring 91.220 and 91.230

Describe the standards and procedures used to monitor activities carried out in furtherance of the plan and used to ensure long-term compliance with requirements of the programs involved, including minority business outreach and the comprehensive planning requirements

The overall purpose of the monitoring is to maximize grant performance consistent with the comprehensive planning process, while continuing to develop partnerships with the stakeholders and various service providers. Monitoring also ensures that the City and stakeholders continue to be conscious stewards of the grant funding received and that we are providing top quality service and care for our residents. All federally funded programs are monitored on a regular basis through project site visits and sub recipient site visits to ensure compliance with all applicable federal regulations. Monitoring provides staff an opportunity to meet with our sub recipients and the citizens being served and share any new federal guidance or regulations which benefit us all. Monitoring is directed toward the comprehensive planning program goals, financial compliance, and regulatory performances. Each sub recipient and staff meet often to allow staff to receive, review and authorize any reports of invoices that relate to program goals.

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Citizen Participation Plan 91.105(d); 91.115(d)

Describe the efforts to provide citizens with reasonable notice and an opportunity to comment on performance reports.

The City has a web page that addresses information that relates to activities, meetings and public notices for the CDBG funding. We also use media sources to advertise the program. http://www.franklintn.gov/government/building-neighborhood-services/housing-commission.

Additionally, the meeting was posted on the COF's face book page.

CR-45 - CDBG 91.520(c)

Specify the nature of, and reasons for, any changes in the jurisdiction's program objectives and indications of how the jurisdiction would change its programs as a result of its experiences.

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N/A, there have been no changes.

Does this Jurisdiction have any open Brownfields Economic Development Initiative (BEDI) grants?

No

[BEDI grantees] Describe accomplishments and program outcomes during the last year.

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OMB Control No: 2506-0117 (exp. 06/30/2018)

CR-45 - CDBG 91.520(c)

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N/A, there have been no changes.

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No

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ADMINISTRATION

Dr. Ken Moore
Mayor

Eric S. Stuckey
City Administrator

HISTORIC
FRANKLIN
TENNESSEE

RETAILER'S CERTIFICATE

Pursuant to T.C.A. §57-3-208, the City of Franklin hereby certifies the following facts concerning applicant HolBev, LLC d/b/a Holiday Cigars & Spirits (Alpa Patel), who has made application for a retailer's license to handle alcoholic beverages at 108 N. Royal Oaks Boulevard, which is within the corporate limits of the City of Franklin, Williamson County, Tennessee:

1. The owner who is to be in actual charge of the business has not been convicted of any violation of the laws against possession, sale, manufacture, or transportation of beer or other alcoholic beverages, or of any felony, or of any crime involving moral turpitude, within the past ten (10) years immediately preceding the date of application, and will not violate any of the provisions of Tennessee Code Annotated, Title 57, Chapter 3;

2. The applicant(s) has secured a location for the business which complies with all restrictions of local law, ordinances, or resolutions, duly adopted by the local authorities as to location.

3. The applicant (by and through one or more of its owners) meets all residency requirements established by local authority under Franklin Municipal Code Section 2-108A.

4. The applicant has complied with local laws, ordinances, and resolutions duly adopted by the local authority regulating the number of retail licenses to be issued within the jurisdiction.

This the 11th Day of September, 2018.

_____

Dr. Ken Moore, Mayor

ADMINISTRATION

Dr. Ken Moore
Mayor

Eric S. Stuckey
City Administrator

HISTORIC
FRANKLIN
TENNESSEE

CERTIFICATE OF COMPLIANCE
RETAIL FOOD STORE WINE
(Herban Market) – (3078 Maddux Way, Suite 300)

The City of Franklin hereby certifies the following facts concerning application in the name of Ashlea Hogancamp and Matthew Hogancamp with Herban Market, LLC at 3078 Maddux Way, Suite 300, Franklin, TN 37069, who has made application for a Certificate of Compliance to sell retail food store wine at 3078 Maddux Way, Suite 300, which is within the corporate limits of the City of Franklin, Williamson, County, Tennessee:

1. An investigation has been undertaken of the applicant's felony criminal record and of the location of said business, and from said investigation the undersigned certify that the applicant or applicants who are to be in actual charge of the business have not been convicted of a felony within a ten-year period immediately preceding the date of application and, if a corporation, that the executive officers or those in control have not been convicted of a felony within a ten-year period immediately preceding the date of the application;

2. The applicant or applicants have secured a location which lies within the city limits of the City of Franklin which complies with all applicable zoning laws adopted therein by the City.

This the _____ day of _____, 2018

_____
Dr. Ken Moore, Mayor
City of Franklin

ATTEST: _____
Eric Stuckey, City Administrator/Recorder

MEMORANDUM OF UNDERSTANDING BETWEEN THE MUNICIPAL GOVERNMENT OF THE CITY OF FRANKLIN AND THE FRANKLIN SPECIAL SCHOOL DISTRICT

This Agreement by and between the Municipal Government of the City of Franklin (hereinafter "the COF"), and the Franklin Special School District (hereinafter "FSSD"), 507 New Highway 96 West, Franklin, Tennessee is entered into on this the _____day of September 2018.

WHEREAS, the Board of Mayor and Aldermen approved Resolution 2016-05, adopting the Comprehensive Parks and Recreation Master Plan; and

WHEREAS, the City of Franklin's 2015 Comprehensive Parks and Recreation Master Plan recommended exploring a joint use agreement with the FSSD regarding parks programming and facilities; and

WHEREAS, the programming and facilities with FSSD were evaluated and documented in the Master Plan Summary Report in partnership with the FSSD, incorporating public input from parents, students and teachers of FSSD, and the broader community; and

WHEREAS, the City of Franklin's 2015 Comprehensive Parks and Recreation Master Plan recommended exploring a joint use agreement with the FSSD regarding parks programming and facilities following the approval of completing the Scope of Services for the Freedom Middle School, Poplar Middle and Elementary Schools – Phase I Baseball & Softball Field Renovation; Track & Field Elements and Restroom/Concession Stand Structure (COF Contract No. 2018-0085); and

WHEREAS, COF desires to provide for facilities and programming to the community; and

WHEREAS, FSSD and COF desire to enter into this Memorandum of Understanding to document their agreement concerning the Phase I Baseball & Softball Field Renovation; Track & Field Elements and Restroom/Concession Stand Structure Project Master Plan, and the FSSD's Portion, as well as all details relating to same.

NOW, THEREFORE, FOR GOOD AND VALUABLE CONSIDERATION, THE RECEIPT AND ADEQUACY OF WHICH IS HEREBY ACKNOWLEDGED, THE PARTIES HERETO AGREE AS FOLLOWS:

A. SCOPE:

1. Subject to approval of the Board of Mayor and Aldermen, COF will contract with Lose & Associates, Inc. (the "Consultant") to perform all survey and design work required for the ballfield renovation (the "Work") per COF Contract No. 2018-0085.

2. Pursuant to COF Contract No. 2018-0085, the Consultant shall be paid a total fee not to exceed sixty thousand dollars ($60,000) with incremental payments to occur on a monthly basis. Monthly payments shall be based upon invoices submitted to the COF that comport with the fee schedule proposed by the Consultant and approved by the COF. FSSD hereby agrees to pay to the COF half of the total contract cost in an amount not to exceed thirty thousand dollars ($30,000).

3. COF will coordinate the Work with FSSD site director to minimize disruption and not negatively impact the site's normal school routine.

4. COF and FSSD shall work jointly to write a Shared Use Agreement to establish a yearly maintenance program and cost associated with the yearly upkeep of all amenities within the construction site based upon the outcome of the Scope of Services Contract 2018-0085. The plan shall assign capital and yearly maintenance cost(s) and financial responsibility to each party.

5. The Work, including but not limited to unforeseen conditions by either party, is expected to be completed by the Consultant within nine (9) weeks of the start date. If additional time is necessary, and an extension of time is mutually agreed upon by COF and the Consultant, as per COF Contract 2018-0085, then COF and FSSD shall work together and coordinate the Work in order to minimize disruption. COF and FSSD will accept and approve the final report with formal presentation to both respected Boards.

6. Upon approval of the Masterplan and budget, COF and FSSD will enter into the next phase of the project with a new contract initiating construction documents, bidding and construction with an anticipated date of opening Spring 2020.

7. FSSD grants COF, and its agents, a Right of Entry onto the property associated with the Work at times mutually agreeable to the parties, per Paragraph (3) above. Said Right of Entry shall endure for the duration of the Work, and shall automatically terminate upon the completion of the Work.

B. <u>TERMS AND CONDITIONS:</u>

1. This Memorandum of Understanding may be modified, or terminated, by written amendment that is executed and approved by the appropriate signatories of the parties on the signature page of this Memorandum of Understanding.
2. No person on the basis of disability, age, race, color, religion, sex, national origin or any other classification protected by the Constitution of the United States or the Constitution of the State of Tennessee, or any state or federal laws shall be excluded from participation in, denied benefits of, or otherwise subjected to discrimination in the performance of this Memorandum of Understanding.
3. Neither party shall assign its rights hereunder.

4. This Memorandum of Understanding contains the entire understanding between the parties relating to the subject matter contained herein.

IN WITNESS WHEREOF, each party has caused this MOU to be executed by an authorized person effective as of the date and year written below.

City of Franklin

By: _____
Mayor Ken Moore

Date: _____

Franklin Special School District

By: _____
Dr. David Snowden, Superintendent

Date: 9/17/18

Approved as to form only:

_____
Shauna R. Billingsley
City Attorney

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A. <u>SCOPE:</u>

1. Subject to approval of the Board of Mayor and Aldermen, COF will contract with Lose & Associates, Inc. (the "Consultant") to perform all survey and design work required for the ballfield renovation (the "Work") per COF Contract No. 2018-0085.

2. Pursuant to COF Contract No. 2018-0085, the Consultant shall be paid a total fee not to exceed sixty thousand dollars ($60,000) with incremental payments to occur on a monthly basis. Monthly payments shall be based upon invoices submitted to the COF that comport with the fee schedule proposed by the Consultant and approved by the COF. FSSD hereby agrees to pay to the COF half of the total contract cost in an amount not to exceed thirty thousand dollars ($30,000).

3. COF will coordinate the Work with FSSD site director to minimize disruption and not negatively impact the site's normal school routine.

4. COF and FSSD shall work jointly to write a Shared Use Agreement to establish a yearly maintenance program and cost associated with the yearly upkeep of all amenities within the construction site based upon the outcome of the Scope of Services Contract 2018-0085. The plan shall assign capital and yearly maintenance cost(s) and financial responsibility to each party.

5. The Work, including but not limited to unforeseen conditions by either party, is expected to be completed by the Consultant within nine (9) weeks of the start date. If additional time is necessary, and an extension of time is mutually agreed upon by COF and the Consultant, as per COF Contract 2018-0085, then COF and FSSD shall work together and coordinate the Work in order to minimize disruption. COF and FSSD will accept and approve the final report with formal presentation to both respected Boards.

6. Upon approval of the Masterplan and budget, COF and FSSD will enter into the next phase of the project with a new contract initiating construction documents, bidding and construction with an anticipated date of opening Spring 2020.

7. FSSD grants COF, and its agents, a Right of Entry onto the property associated with the Work at times mutually agreeable to the parties, per Paragraph (3) above. Said Right of Entry shall endure for the duration of the Work, and shall automatically terminate upon the completion of the Work.

B. <u>TERMS AND CONDITIONS:</u>

1. This Memorandum of Understanding may be modified, or terminated, by written amendment that is executed and approved by the appropriate signatories of the parties on the signature page of this Memorandum of Understanding.

2. No person on the basis of disability, age, race, color, religion, sex, national origin or any other classification protected by the Constitution of the United States or the Constitution of the State of Tennessee, or any state or federal laws shall be excluded from participation in, denied benefits of, or otherwise subjected to discrimination in the performance of this Memorandum of Understanding.

3. Neither party shall assign its rights hereunder.

4. This Memorandum of Understanding contains the entire understanding between the parties relating to the subject matter contained herein.

IN WITNESS WHEREOF, each party has caused this MOU to be executed by an authorized person effective as of the date and year written below.

City of Franklin

By: _____
Mayor Ken Moore

Date: _____

Franklin Special School District

By: _____
Dr. David Snowden, Superintendent

Date: _____

Approved as to form only:

_____
Shauna R. Billingsley
City Attorney

Project No. 2018-019
COF Contract No. 2018-0191

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE MUNICIPAL GOVERNMENT OF THE CITY OF FRANKLIN
AND
THE FRANKLIN SPECIAL SCHOOL DISTRICT

This Agreement by and between the Municipal Government of the City of Franklin (hereinafter "the COF"), and the Franklin Special School District (hereinafter "FSSD"), 507 New Highway 96 West, Franklin, Tennessee is entered into on this the _____day of September 2018.

WHEREAS, the Board of Mayor and Aldermen approved Resolution 2016-05, adopting the Comprehensive Parks and Recreation Master Plan; and

WHEREAS, the City of Franklin's 2015 Comprehensive Parks and Recreation Master Plan recommended exploring a joint use agreement with the FSSD regarding parks programming and facilities; and

WHEREAS, the programming and facilities with FSSD was evaluated and documented in the Master Plan Summary Report in partnership with the FSSD, incorporating public input from parents, students and teachers of FSSD, and the broader community; and

WHEREAS, the City of Franklin's 2015 Comprehensive Parks and Recreation Master Plan recommended exploring a joint use agreement with the FSSD regarding parks programming and facilities following the approval of completing the Scope of Services for the Freedom Middle School, Poplar Middle and Elementary Schools – Ballfield Renovation (COF Contract No. 2018-0085); and

WHEREAS, COF desires to provide for facilities and programming to the community; and

WHEREAS, FSSD and COF desire to enter into this Memorandum of Understanding to document their agreement concerning the Ballfield Renovation Project Master Plan, and the FSSD's Portion, as well as all details relating to same.

NOW, THEREFORE, FOR GOOD AND VALUABLE CONSIDERATION, THE RECEIPT AND ADEQUACY OF WHICH IS HEREBY ACKNOWLEDGED, THE PARTIES HERETO AGREE AS FOLLOWS:

A. <u>SCOPE:</u>

1. The COF and FSSD will contract with Lose & Associates, Inc. (the "Consultant") to perform all survey and design work required for the ballfield renovation (the "Work") per COF Contract No. 2018-0085.

2. Pursuant to COF Contract No. 2018-0085, the Consultant shall be paid monthly for work performed based on the fee schedule not-to-exceed ($60,000) sixty-thousand dollars. FSSD shall pay half of the total contract in the amount of ($30,000) thirty-thousand dollars to COF.

DRAFT

3. COF will coordinate the Work with FSSD site director to minimize disruption and not negatively impact the site's normal school routine.

4. COF and FSSD shall work jointly to establish a yearly maintenance program and cost associated with the yearly upkeep of site based upon the outcome of the Scope of Services Contract 2018-0085. The plan shall assign maintenance cost and financial responsibility to each party.

5. The Work, including but not limited to unforeseen conditions by either party is expected to be completed by the Consultant within nine (9) weeks of the start date. If additional time is necessary, and an extension of time is mutually agreed upon by COF and the Consultant, as per COF Contract 2018-0085, then COF and FSSD shall work together and coordinate the Work in order to minimize disruption. The COF and the FSSD will accept and approve the final report with formal presentation to both respected Boards.

6. Upon approval of the Masterplan and budget, the COF and FSSD will enter into the next phase of the project with a new contract initiating construction documents, bidding and construction with an anticipated date of opening Spring 2020.

7. FSSD grants COF, and its agents, a Right of Entry onto the property associated with the Work at times mutually agreeable to the parties, per Paragraph (3) above. Said Right of Entry shall endure for the duration of the Work, and shall automatically terminate upon the completion of the Work.

B. <u>TERMS AND CONDITIONS:</u>

1. This Memorandum of Understanding may be modified by written amendment that is executed and approved by the appropriate signatories of the parties on the signature page of this Memorandum of Understanding.

2. The COF may terminate this Memorandum of Understanding for convenience by giving the FSSD at least thirty days written notice before the desired effective deadline date.

3. No person on the grounds of handicap, age, race color, religion, sex national origin or any other classification protected by the Constitution of the United States or the Constitution of the State of Tennessee, or and state or federal laws, shall be excluded from participation in, or be denied benefits of, or otherwise subjected to, discrimination in the performance of this Memorandum of Understanding.

4. The COF agrees not to assign its rights hereunder.

5. This Memorandum of Understanding contains the entire understanding between the parties relating to the subject matter contained herein.

DRAFT

Municipal Government of the City of Franklin

By: _____

Title:_____

Franklin Special School District

By: _____
Dr. David Snowden, Superintendent

DRAFT

COOPERATION AGREEMENT
FOR
CHICKASAW SENIOR COMMUNITY
Chickasaw Senior Community, L.P.
COF Contract No. 2018-0193

THIS COOPERATION AGREEMENT (the "**Agreement**") entered into as of this ___ day of _____, 201_, by and between the **FRANKLIN HOUSING AUTHORITY**, a public body corporate and politic, organized and existing under the laws of the State of Tennessee (the "**Local Authority**") and the CITY OF FRANKLIN, TENNESSEE, on behalf of itself and on behalf of Williamson County, Tennessee (the "**Municipality**") in connection with the Payment in Lieu of Taxes ("**PILOT**") for the Project described below.

In consideration of the mutual covenants hereinafter set forth, the parties hereto do agree as follows:

1. Whenever used in this Agreement:

   a. The term "**Project**" shall mean the Chickasaw Senior Community a 48-unit (each a "**Unit**") senior housing community developed on 3.81 acres of land located at 600 Chickasaw Place, Franklin, Tennessee, which land is leased from the Local Authority by Chickasaw Senior Community, L.P., a Tennessee limited partnership (the "**Lessee**" or "**Owner**"), which shall rent said units to individuals with incomes of less than sixty percent (60%) of the area median income for Williamson County, Tennessee MSA (as published annually by the U.S. Department of Housing and Urban Development) (the "**Income Requirement**"). The Project, which is restricted under government regulations pursuant to Section 42 of the Internal Revenue Code of 1986, as amended, is located on real property leased from the Local Authority by the Lessee pursuant to a PILOT Lease Agreement (the "**Ground Lease**") that complies with, among other things, the applicable Qualified Allocation Plan of the Tennessee Housing Development Agency ("**THDA**"), such Project having been determined by the Local Authority to be in furtherance of its public purposes.

   b. The term "**Taxing Body**" shall mean the State or any political subdivision or taxing unit thereof in which the Project is situated and which would have authority to assess or levy real or personal property taxes or to certify such taxes to a taxing body or public officer to be levied for its use and benefit with respect to the Project if it were not exempt from taxation.

   c. The term "**Shelter Rent**" shall mean the total of all charges to all tenants of the Project for dwelling rents and non-dwelling rents (excluding all other income of the Project), less the cost to the Owner of all dwelling and non-dwelling utilities.

d. The term "**Blighted Area**" shall mean any area where dwellings predominate which, because of dilapidation, overcrowding, faulty arrangement or design, lack of ventilation, light or sanitation facilities, or any combination of these factors, are detrimental to safety, health, or morals.

2. The Local Authority has secured low income housing tax credits or equivalent governmental financing from THDA covering a portion of the construction of the Project to develop or acquire and administer the Project. The obligations of the parties hereto shall apply to the Project.

3. a. Under the constitution and statutes of the State of Tennessee, the Project is exempt from all real and personal property taxes and special assessments levied or imposed by any Taxing Body. With respect to the Project, so long as either (i) the Project is leased or owned by the Local Authority, or (ii) any contract between the Local Authority and the United States Government or the State of Tennessee, or any agencies thereof (the "**Government**") for loans or annual contributions, or both, in connection with the Project remains in force and effect, or (iii) any bonds issued in connection with the Project or any monies due to the Government in connection with the Project remain unpaid, whichever period is the longest, the Municipality agrees that it will not levy or impose any real or personal property taxes or special assessments upon the Project or upon the Local Authority with respect thereto. During such period, the Lessee shall make annual payments (PILOTS) in lieu of such taxes and special assessments and in payment for the public services and facilities furnished from time to time without other cost or charge for or with respect to the Project.

b. Each such annual PILOT shall be made annually on or before the date such taxes are due (currently February 28), and shall be in an amount equal to either (i) ten percent (10%) of the Shelter Rent actually collected but in no event to exceed ten percent (10%) of the Shelter Rent charged by the Owner in respect to the Project during such fiscal year or (ii) fifty dollars ($50.00) per Unit per year, whichever amount is the lower. A copy of the certified audit shall accompany the PILOT submittal, which shall be submitted no later than sixty (60) days after HUD accepts the audit.

c. No payment for any year shall be made to the Municipality more than the amount of the real property taxes which would have been paid to the Municipality for such year if the Project were not exempt from taxation.

d. Upon failure of the Lessee to make any PILOT, no lien against the Project or assets of the Local Authority shall attach, nor shall any interest or penalties accrue or attach on account thereof.

e. Upon failure of the Lessee to make any PILOT when due, the Municipality shall provide notice to the Local Authority and the Lessee. In the event that Lessee fails to cure the nonpayment default within ten (10) days, the Local Authority shall declare a default in the Ground Lease, terminate said Ground Lease, and convey the project to Lessee. Lessee hereby agrees to and does accept the conveyance of any quitclaim deed made in the event of a termination of the Ground Lease on the grounds of default.

4. During the period commencing with the date of the acquisition of any part of the site or sites of the Project and continuing so long as either (i) the Project is leased or owned by a public body of a governmental agency and is used for low or moderate income housing purposes, or (ii) any contract between the Local-Authority and the Government for loans, or annual contributions, or both, in connection with the Project remains in force and effect, or (iii) any bonds issued in connection with the Project or any monies due to the Government in connection with the Project remain unpaid, whichever period is the longest, the Municipality without cost or charge to the Local Authority or the tenants of the Project (other than the PILOT) shall:

a. Furnish or cause to be furnished to the Local Authority and the tenants of the Project public services and facilities of the same character and to the same extent as are furnished from time to time without cost or charge to other dwellings and inhabitants in the Municipality;

b. Vacate such streets, road, and alleys within the area of the Project as may be necessary in the development thereof, and convey without charge to the Local Authority such interest as the Municipality may have in such vacated area; and, in so far as it is lawfully able to do so without cost or expense to the Local Authority or to the Municipality, cause to be removed from such vacated areas, in so far as it may be necessary, all public or private utility lines and equipment;

c. Insofar as the Municipality may lawfully do so, (i) grant such deviations from the building code of the Municipality as are reasonable and necessary to promote economy and efficiency in the development and administration of the Project, and at the same time safeguard health and safety, and (ii) make such changes in any zoning of the site and surrounding territory of the Project as are reasonable and necessary for the development and protection of the Project and the surrounding territory;

d. Accept grants or easements necessary for the development of the Project; and,

e. Cooperate with the Local Authority by such other lawful action or ways as the Municipality and the Local Authority may find necessary regarding tile new development and administration of the Project.

5. In respect to the Project the Municipality further agrees that within a reasonable time after receipt of a written request therefore from the Local Authority:

a. It will accept the dedication of all interior streets, roads, alleys, and adjacent sidewalks within the area of the Project, together with all storm and sanitary sewer mains in such dedicated areas, after the Owner, at its own expense, has completed the grading, improvement, paving, and installation thereof in accordance with specifications acceptable to the Municipality;

b. It will accept necessary dedications of land for, and will grade, improve, pave, and provide sidewalks for, all streets bounding the Project or as necessary to provide adequate access hereto (in consideration whereof the Owner shall pay to the. Municipality such amount as would be assessed against the Project site for such work if such site were privately owned); and,

c. It will provide, or cause to be provided, water mains, and storm and sanitary sewer mains, leading to the Project and serving the bounding streets thereof (in consideration whereof the Owner shall pay to the Municipality such amount as would be assessed against the Project site for such work if such site were privately owned).

6. If by reason of the Municipality's failure or refusal to furnish or cause to be furnished any public services or facilities which it has agreed hereunder to furnish or to cause to be furnished to the Local Authority or to the tenants of the Project, the Local Authority incurs any expense to obtain, such services or facilities then the Local Authority may deduct the amount of such expense from any PILOT due or to become due to the Municipality in respect to the Project or any other low-rent housing projects owned or operated by the Local Authority.

7. No Cooperation Agreement heretofore entered into between the Municipality and the Local Authority shall be construed to apply to the Project covered by this Agreement.

8. No member of the governing body of the Municipality or any other public official of the Municipality who exercises any responsibilities or functions with respect to the Project during his tenure or for one year thereafter shall have any interest,

direct or indirect, in the Project or any property included or planned to be included in the Project, or any contracts in connection with the Projects or property. If any such governing body member or such other public official of the Municipality involuntarily acquires or had acquired prior to the beginning of his tenure any such interest, he shall immediately disclose such interest to the Local Authority.

9. So long as any contract between the Local Authority and the Government for loans (including preliminary loans) or annual contributions, or both, regarding the Project remains in force and effect, or so long as any bonds issued regarding the Project or any monies due to the Government in connection with the Project remain unpaid, this Agreement shall not be abrogated, changed, or modified without the consent of the Government. The privileges and obligations of the Municipality hereunder shall remain in full force and effect with respect to the Project so long as the beneficial title to the Project is held by the Local Authority or by any other public body or governmental agency, including the Government, authorized by law to engage in the development or administration of low rent housing projects and the Income Requirement remains in effect. If at any time beneficial title to, or possession of, the Project is held by such other public body or governmental agency, including the Government, the provisions hereof shall inure to the benefit of and may be enforced by such other public body or governmental agency, including the Government.

[Remainder of Page Left Blank]

IN WITNESS WHEREOF the Municipality and the Local Authority have respectively signed this Agreement and caused their seals to be affixed and attested as of the day and year first above written,

MUNICIPALITY:

CITY OF FRANKLIN, TENNESSEE

By: _____
Dr. Ken Moore, Mayor

Attest:

By: _____
Eric S. Stuckey, City Administrator

APPROVED AS TO LEGALITY OF
FORM AND COMPOSITION:

_____
Shauna R. Billingsley
City Attorney

LOCAL AUTHORITY:

ATTEST:

FRANKLIN HOUSING AUTHORITY,
a Tennessee public body corporate and politic

_____
Name: _____
Title: _____

By: _____
Derwin Jackson, Executive Director

RESOLUTION NO. 2018-72

A RESOLUTION AMENDING RESOLUTION 2016-77 THAT AUTHORIZED THE CITY OF FRANKLIN TO CONTRIBUTE $400,000 TO THE GOOSE CREEK SANITARY SEWER EXTENSION PROJECT AS PART OF THE LAMPO GROUP (RAMSEY SOLUTIONS) CORPORATE HEADQUARTERS PROJECT CLARIFYING THE OWNER NAME, MATT 5:14-16, LLC, WHICH IS CLOSELY HELD AND AFFILIATED WITH THE PRINCIPALS OF THE LAMPO GROUP, LLC.

WHEREAS, on November 22, 2016, the Board of Mayor and Aldermen approved Resolution 2016-77, which said that The Lampo Group would extend the sanitary sewer from the west side to the east side of I-65 through The Lampo Group property to their southernmost property line and authorized the City to reimburse The Lampo Group in the amount not to exceed $400,000.00.

WHEREAS, it has now come to the attention of the City that Matt 5:14-16, LLC, is the owner and developer which is closely held and affiliated with the principals of The Lampo Group, LLC. Matt 5:14-16 is the entity responsible for ensuring that this work and the extension of the sanitary sewer project is completed and therefore authorized to receive payment.

NOW THEREFORE, BE IT RESOLVED, BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE THAT:

Resolution 2016-77 is amended to authorize as follows:

Authority is granted to the City Administrator to reimburse Matt 5:14-16, LLC, based on actual cost, in an amount not to exceed Four Hundred Thousand and No/100 Dollars ($400,000.00) following the installation, testing, and acceptance of the sanitary sewer main as determined by City staff as shown in Exhibit B. Payment to be made within sixty (60) days.

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2018

ATTEST:

By: _____

ERIC S. STUCKEY
City Administrator

CITY OF FRANKLIN, TENNESSEE:

By: _____

DR. KEN MOORE
Mayor

Approved as to Form:

By: _____

Shauna R. Billingsley
City Attorney

Law Dept. approved 09.07.18

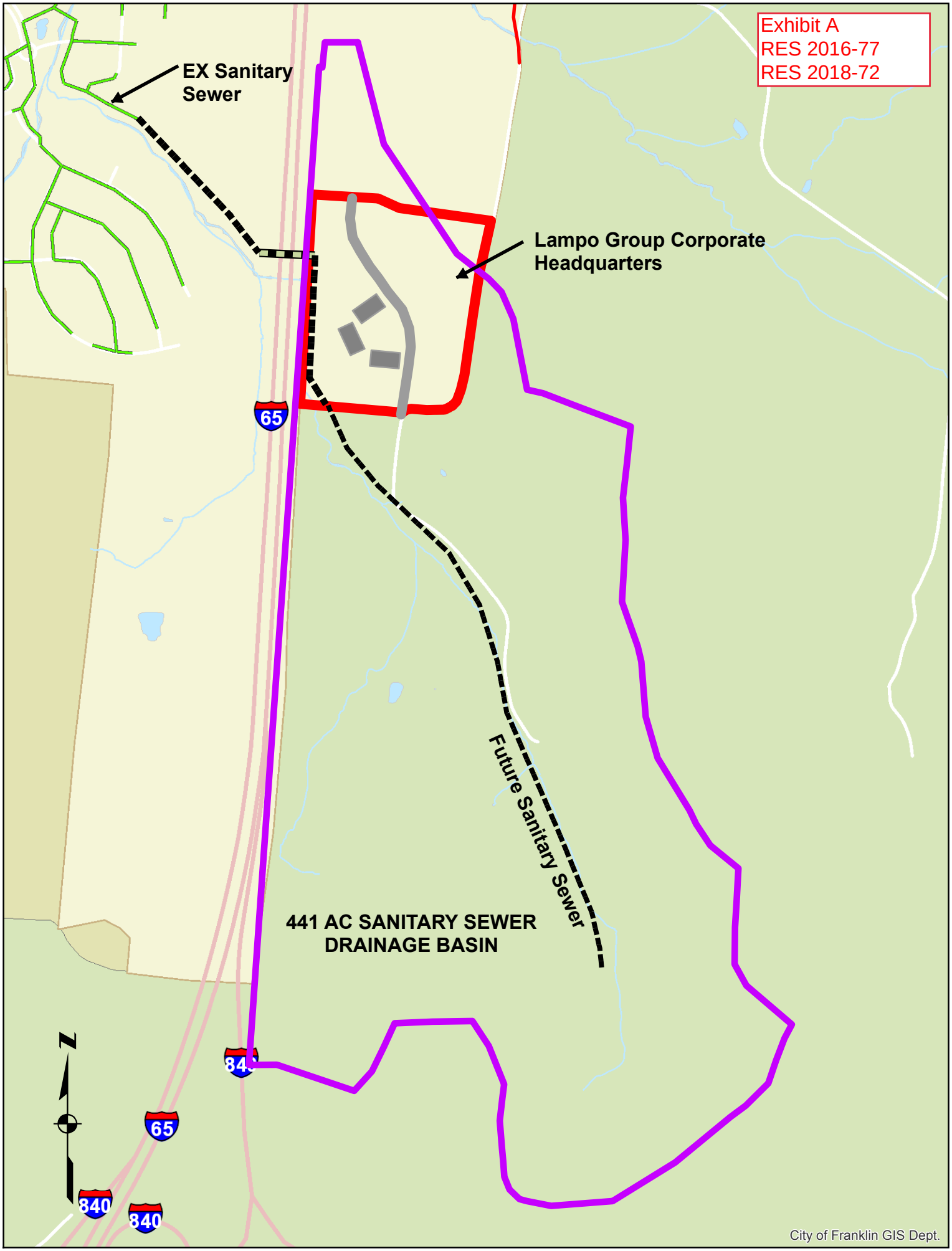


Exhibit A
RES 2016-77
RES 2018-72
EX Sanitary Sewer
Lampo Group Corporate Headquarters
65
Future Sanitary Sewer
441 AC SANITARY SEWER DRAINAGE BASIN
N
65
840
840
City of Franklin GIS Dept.

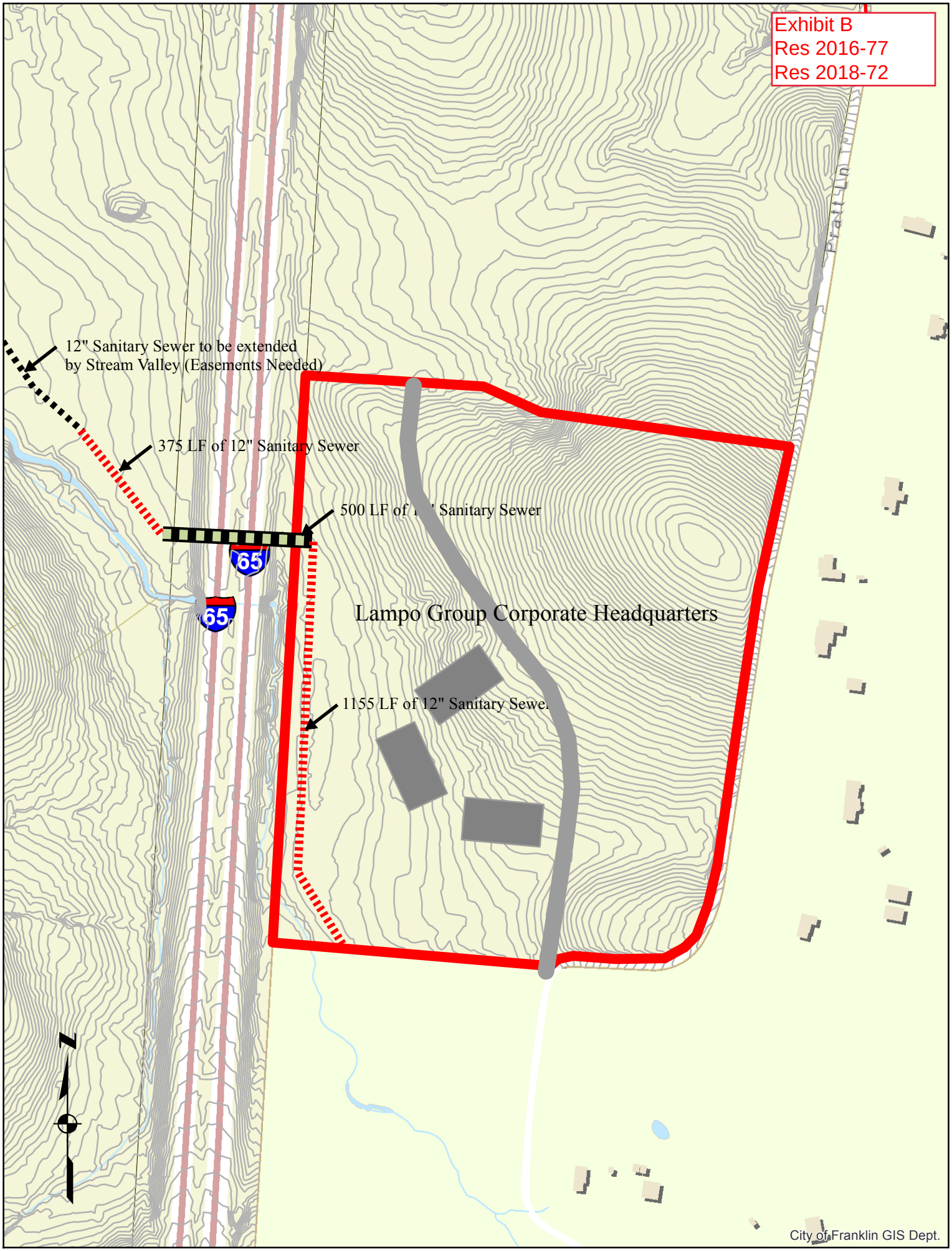


Exhibit B
Res 2016-77
Res 2018-72
12" Sanitary Sewer to be extended
by Stream Valley (Easements Needed)
375 LF of 12" Sanitary Sewer
500 LF of 12" Sanitary Sewer
65
65
Lampo Group Corporate Headquarters
1155 LF of 12" Sanitary Sewer
Pratt Ln
City of Franklin GIS Dept.

RESOLUTION NO. 2018-74

A RESOLUTION TO SELECT THE UTILITY DESIGN CONCEPT FOR THE COLUMBIA AVENUE WIDENING & IMPROVEMENTS PROJECT

WHEREAS, on December 11, 2013, the Nashville Area Metropolitan Planning Organization (MPO) adopted the Transportation Improvement Program (TIP) for Fiscal Years 2014-2017, allocating $6,000,000.00 in total funding to the Preliminary Engineering (Environmental), Design, and Right-of-Way phases of this project and reserves an additional $15,000,000.00 in total funding for the Construction Phase; and

WHEREAS, the transportation improvements associated with the project will generally be funded with eighty percent (80%) federal funds and twenty percent (20%) state funds; and

WHEREAS, on July 14, 2015, the City of Franklin Board of Mayor and Aldermen unanimously approved the Local Agency Project Agreement (COF Contract No. 2014-0289, TDOT Contract No. 140204), which formally began the Columbia Avenue Widening & Improvements Project; and

WHEREAS, on September 12, 2017, the Board of Mayor and Aldermen approved Resolution 2017-43, selecting the Five-Lane Concept (with Access Management) as the preferred design concept for the Columbia Avenue Widening & Improvements Project; and

WHEREAS, staff has continued to develop the Five-Lane Concept (with Access Management) with the following options for utility relocations:

- Option 1 – OVERHEAD Utilities
- Option 2 – UNDERGROUND utilities.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE:

That the Board of Mayor and Aldermen select **Option 1** as the preferred utility relocation design concept for the Columbia Avenue Widening & Improvements Project.

IT IS SO RESOLVED AND DONE on this ____ day of _____ 2018.

ATTEST:

By: _____
ERIC S. STUCKEY
City Administrator

CITY OF FRANKLIN, TENNESSEE:

By: _____
DR. KEN MOORE
Mayor

Approved as to Form:

By: _____
Shauna R. Billingsley
City Attorney

Law Dept. approved 09.18.18

RESOLUTION 2017-43

A RESOLUTION TO SELECT THE CORRIDOR DESIGN CONCEPT FOR THE COLUMBIA AVENUE WIDENING & IMPROVEMENTS PROJECT

WHEREAS, on December 11, 2013, the Nashville Area Metropolitan Planning Organization (MPO) adopted the Transportation Improvement Program (TIP) for Fiscal Years 2014-2017, allocating $6,000,000.00 in total funding to the Preliminary Engineering (Environmental), Design, and Right-of-Way phases of this project and reserves an additional $15,000,000.00 in total funding for the Construction Phase; and

WHEREAS, the transportation improvements associated with the project will generally be funded with 80 percent Federal Funds and 20 percent State Funds; and

WHEREAS, on July 14, 2015, the City of Franklin Board of Mayor and Aldermen unanimously approved the Local Agency Project Agreement (COF Contract No. 2014-0289, TDOT Contract No. 140204), which formally began the Columbia Avenue Widening & Improvements Project; and

WHEREAS, the preliminary engineering/environmental phase includes preparation of a National Environmental Policy Act (NEPA) document, technical study determinations (Archaeological, Natural Resources, Noise, and Air Quality), and the development of functional level roadway concept designs, as required by the Federal Highways Administration (FHWA) and TDOT; and

WHEREAS, as part of the preliminary engineering phase, three public meetings were conducted (May 17, 2016; January 31, 2017; May 16, 2017; and August 30, 2017) to engage the corridor users, business owners, and other stakeholders to gather their input on the roadway design; and

WHEREAS, the roadway design concepts developed for Columbia Avenue generally include the following Options: Option 1— Five-Lane Concept (with Access Management) and Option 2—Roundabout Concept, as conceptual shown on Exhibit A; and

WHEREAS, roadway design concepts for Columbia Avenue Project were presented during a public meeting and special Board of Mayor and Aldermen work session on August 30, 2017.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

Section 1. The Board of Mayor and Aldermen have selected Option 1 (one) as the preferred corridor design concept for the Columbia Ave Widening and Improvements Project as conceptually shown in Exhibit A.

Section 2. City staff is directed to continue to work with impacted property owners and other stakeholders to further develop the preferred corridor design concept and develop recommendations on bike and pedestrian facilities, utility relocation, streetscape improvements, and transit facilities for the proposed project. These options shall be presented back to the Board of Mayor and Aldermen for a final determination prior to proceeding with the design phase of the project.

IT IS SO RESOLVED AND DONE on this 12th day of September 2017

ATTEST:

By: _____

Eric S. Stuckey
City Administrator

CITY OF FRANKLIN, TENNESSEE:

By: _____

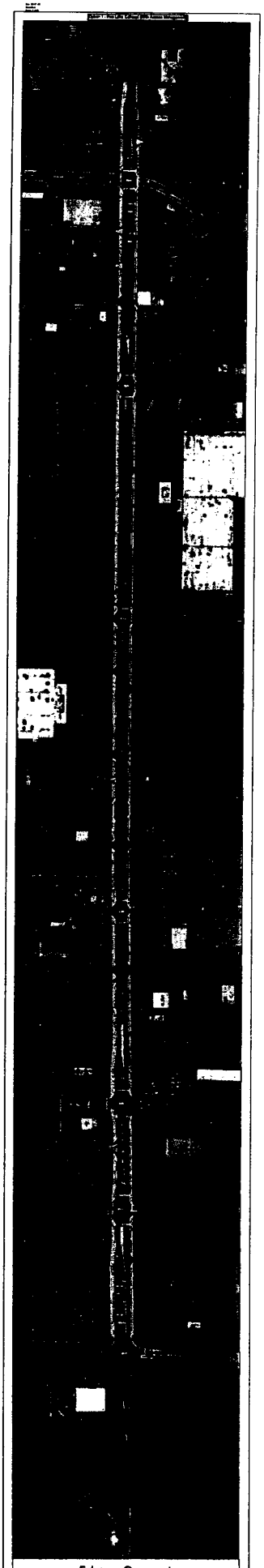
Dr. Ken Moore
Mayor

Approved as to Form:

By: Shauna R. Billingsley

Shauna R. Billingsley
City Attorney

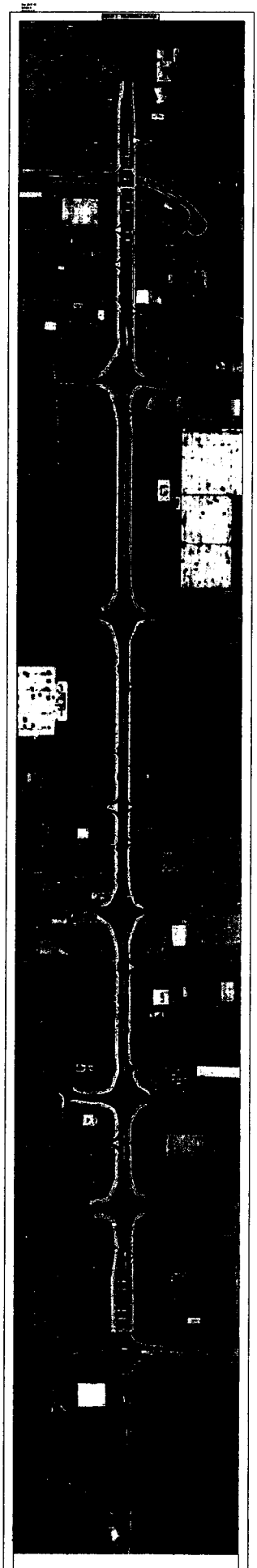
Law Dept. approved (2) 09.05.17



5-Lane Concept
(Access Management)

Columbia Avenue Roadway Concept
Franklin, Tennessee

BWSC



Roundabout Concept

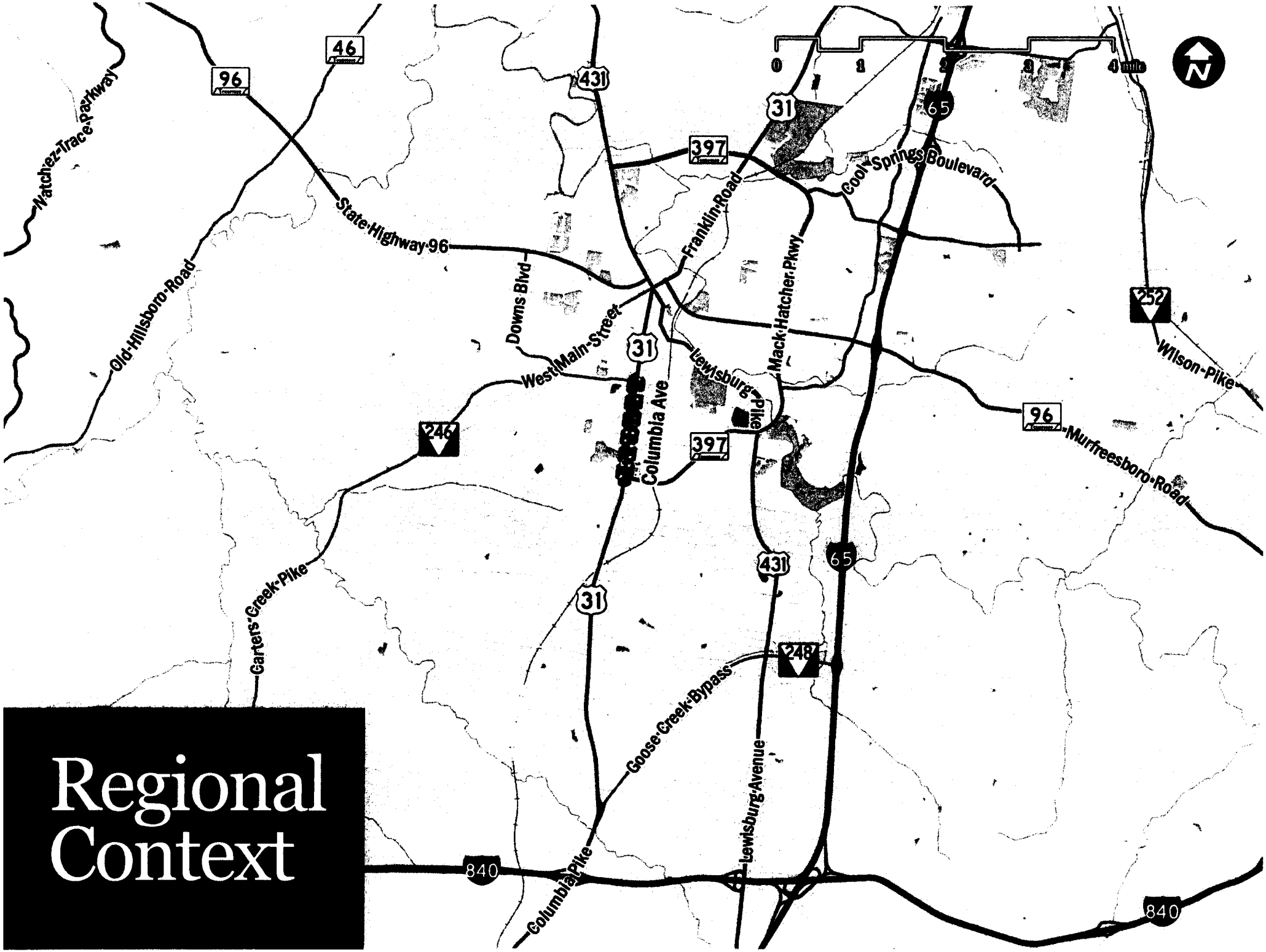
Columbia Avenue Roadway Concept
Franklin, Tennessee

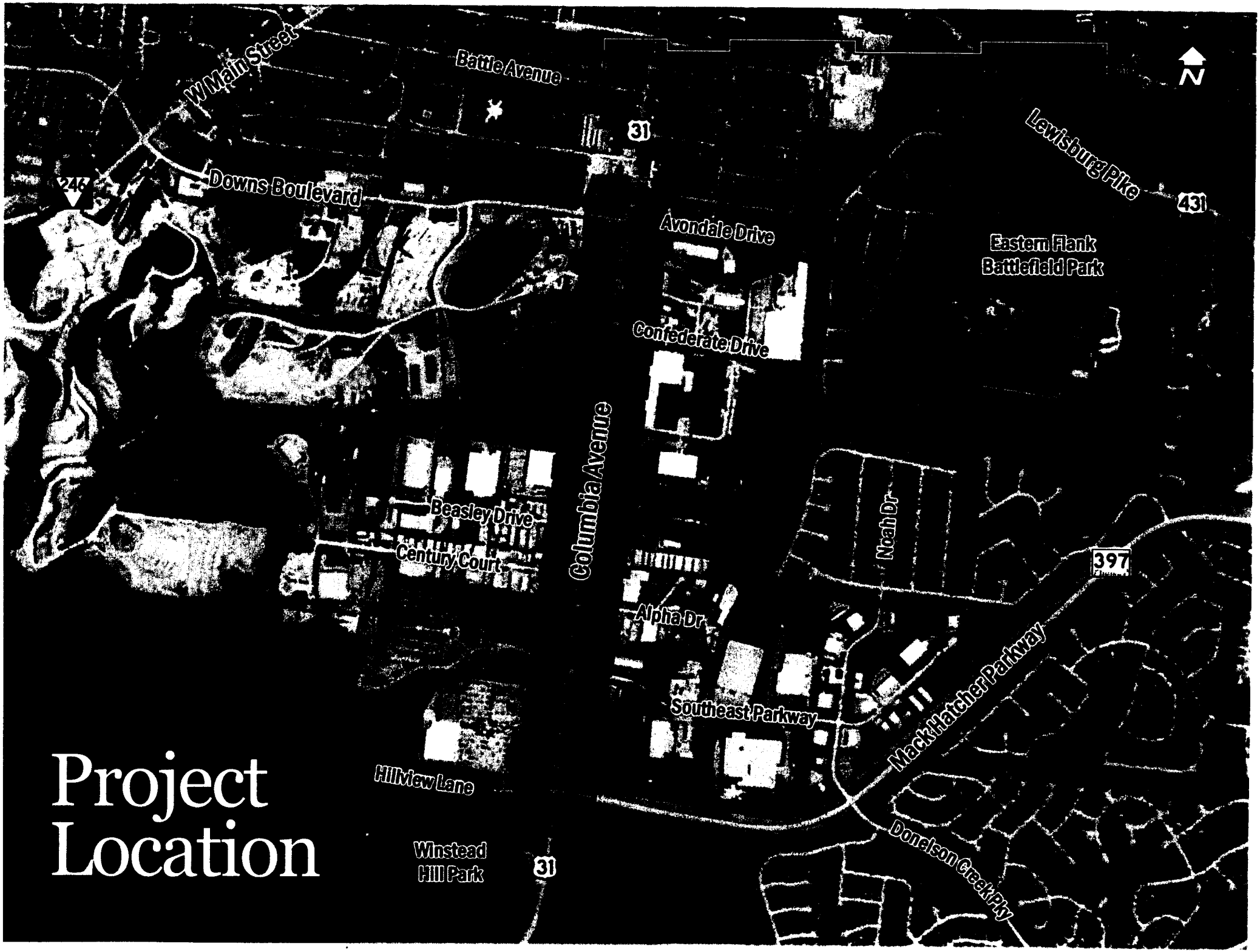
BWSC

CITY OF FRANKLIN, TENNESSEE

Columbia Avenue

Special BOMA Work Session | August 30, 2017


Regional Context
Natchez Trace Parkway
Old Hillsboro Road
State Highway 96
Downs Blvd
West Main Street
Franklin Road
Columbia Ave
Lewisburg Pike
Mack Hatcher Pkwy
Cool Springs Boulevard
Wilson Pike
Murfreesboro Road
Carters Creek Pike
Goose Creek Bypass
Lewisburg Avenue
Columbia Pike
96
46
431
31
397
65
252
246
248
840
0
1
2
3
4 mile
N



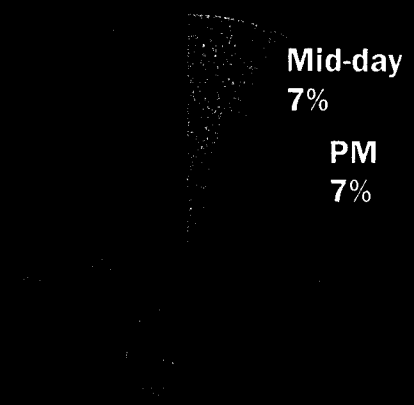
Project Location

May 2016

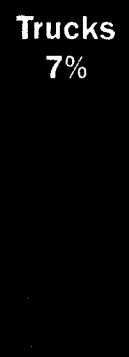
18,900

vehicles/day

DAILY TRAFFIC

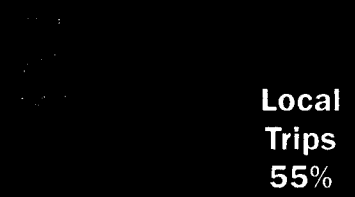


TRAFFIC COMPOSITION



11% Peak Trucks

TRAFFIC TYPE



April 2016 travel time

from Battle Avenue to Winstead Elementary School, in minutes.

3:10
with no traffic

5:10
average day

10:20
longest recorded

Future Growth

2016

EXISTING CONDITIONS

based on data from City and TDOT count stations

18,900

vehicles/day

2021

BUILD YEAR

forecast conditions at project completion

19,800

vehicles/day

2041

DESIGN YEAR

improvements are designed to accommodate 20 years of growth

25,400

vehicles/day

3

components of comparison

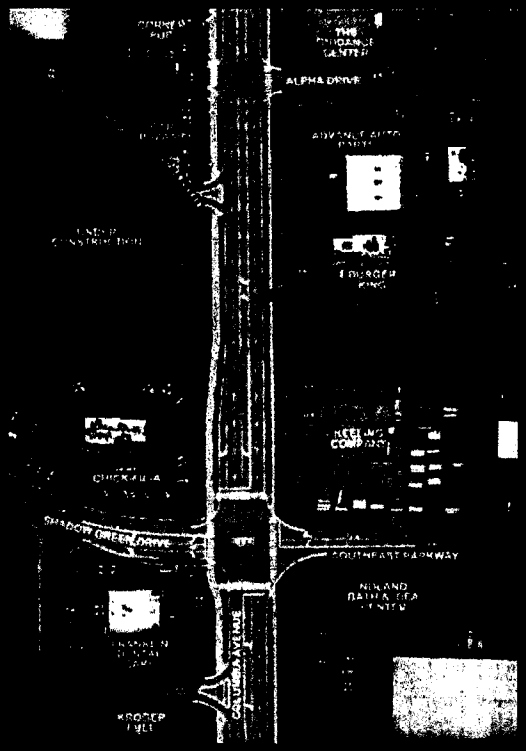
Operations

Safety

Physical Impact

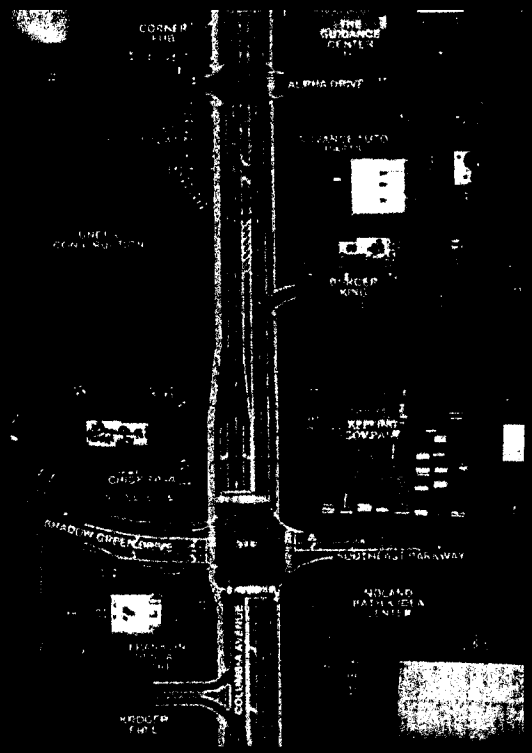
Corridor Concepts

Example: Columbia Avenue at Southeast Parkway



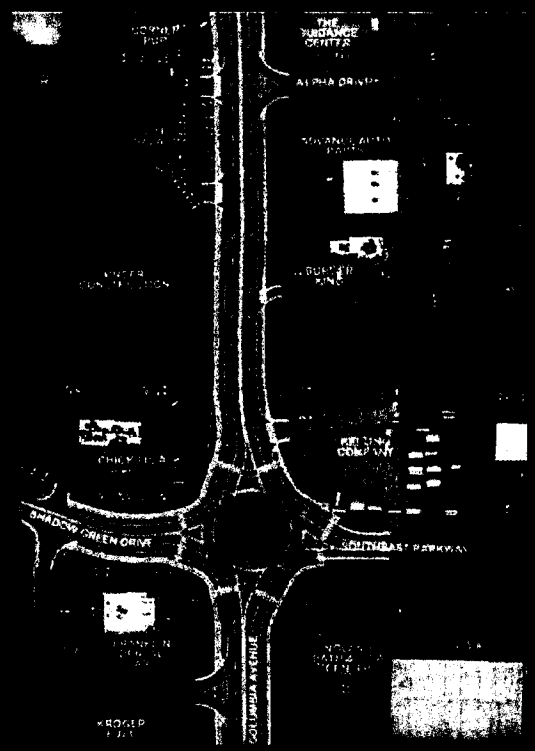
Five-Lane Concept

(Traditional)



Five-Lane Concept

(Access Management)



Roundabout Concept

(Access Management)

Operations

Anticipated Travel Time and Average Speed, 2041 Volumes (Columbia Avenue)

No-Build Conditions	Five-Lane Concept (Traditional)	Five-Lane Concept (Access Mgmt.)	Roundabout Concept
5:50	4:30	4:40	4:30
14.5 mph	18.5 mph	18.1 mph	18.5 mph

[illegible]

[illegible]

Operations

Corridor Delay

Operations

Delay, Level of Service (LOS), and Queue Lenth

Signalized Intersections		
Level of Service	**Average Control Delay** (seconds/vehicle)	**General Description**
A	≤10	Free Flow
B	>10 – 20	[illegible]
C	>20 – 35	Stable Flow (acceptable delays)
D	>35 – 55	[illegible]
E	>55 – 80	Unstable Flow (intolerable delay)
F	>80	[illegible]

Operations

Delay, Level of Service (LOS), and Queue Length

Unsignalized Intersections *(i.e. All-Way Stop, Two-Way Stop, Roundabout)*		
Level of Service	**Average Control Delay** (seconds/vehicle)	**General Description**
A	≤10	Free Flow
B	>10 – 15	Stable Flow (slight delays)
C	>15 – 25	Stable Flow (acceptable delays)
D	>25 – 35	Approaching Unstable Flow (tolerable delay, occasionally will wait more than one vehicle length to proceed)
E	>35 – 50	Unstable Flow (intolerable delay)
F	>50	Forced Flow (jammed and congested flow)

NOTE: Two way stop controlled intersections are defined in terms of individual movements.

Safety

Collision Data (2013–2016)

7.72 collisions/ MVM

MVM = Million Vehicle-Miles

2.76 collisions/ MVM

1.23 collisions/ MVM

0.68 collisions/ MVM

All Collisions

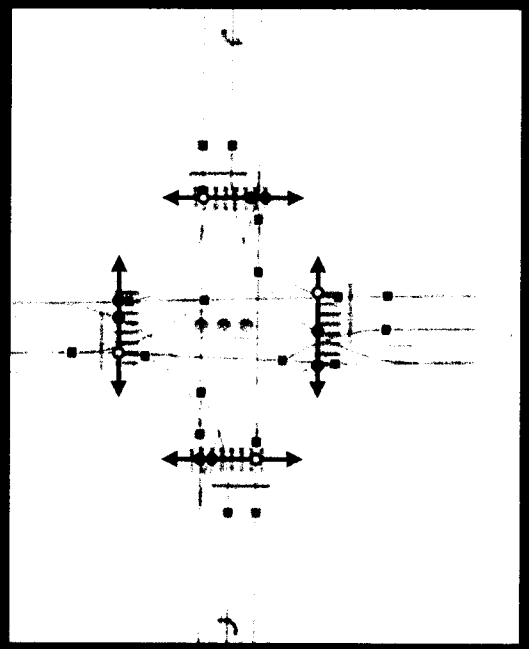
Columbia Avenue Actual Crash History

Fatal/Injury Collisions

Statewide Averages

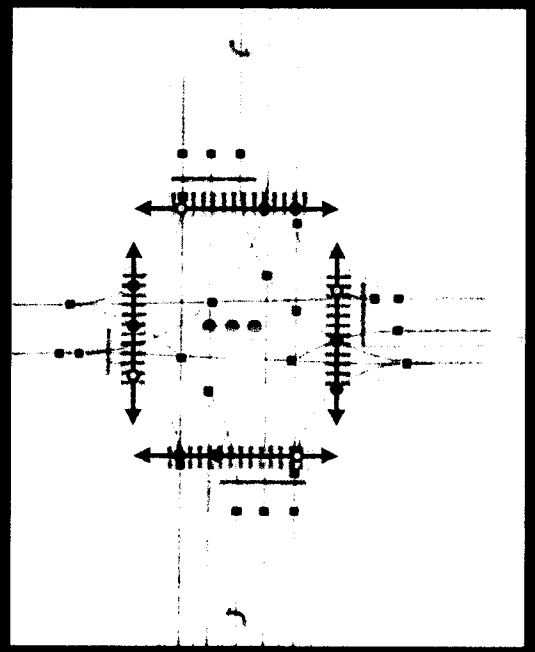
Safety

Columbia Avenue Conflict Points



No-Build Conditions

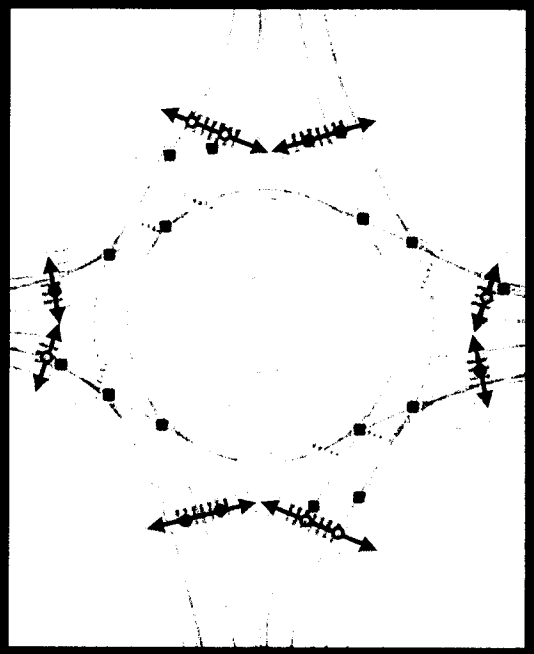
504*



Five-Lane Concepts

(Traditional) (Acc. Mgmt.)

583* **385***



Roundabout Concept

258*

*NOTE: Vehicle Conflict Points

Safety

2041 Anticipated Change in Traffic Collisions

Between Intersections

+41%

+26%

-10%

No-Build:
+49% over
2016 conditions

At Intersections

+2%

+1%

No-Build:
+43% over
2016 conditions

-26%

No-Build Condition (2041)

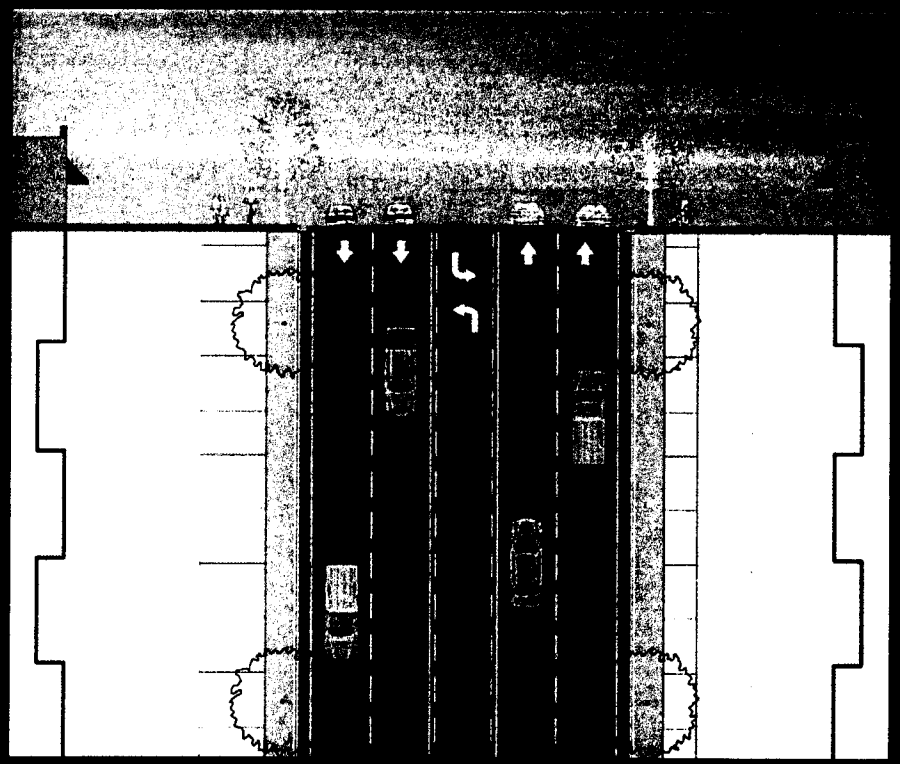
Five-Lane Concept (Traditional)

Five-Lane Concept (Access Management)

Roundabout Concept

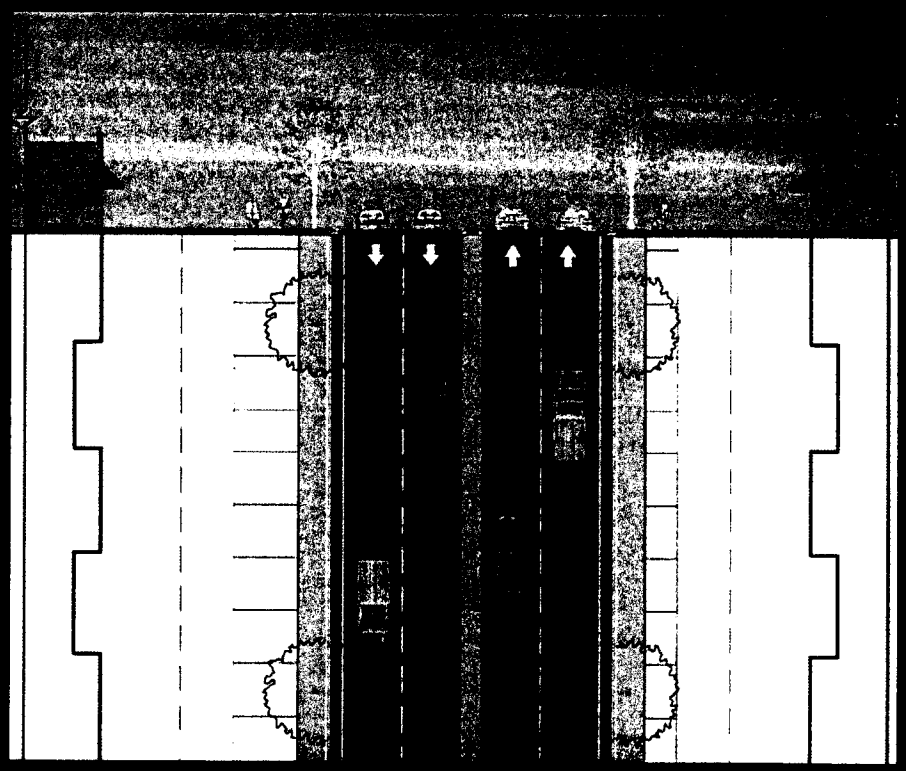
Physical Impact

Typical Sections



Five-Lane Concepts

91' wide (back of walk to back of walk)

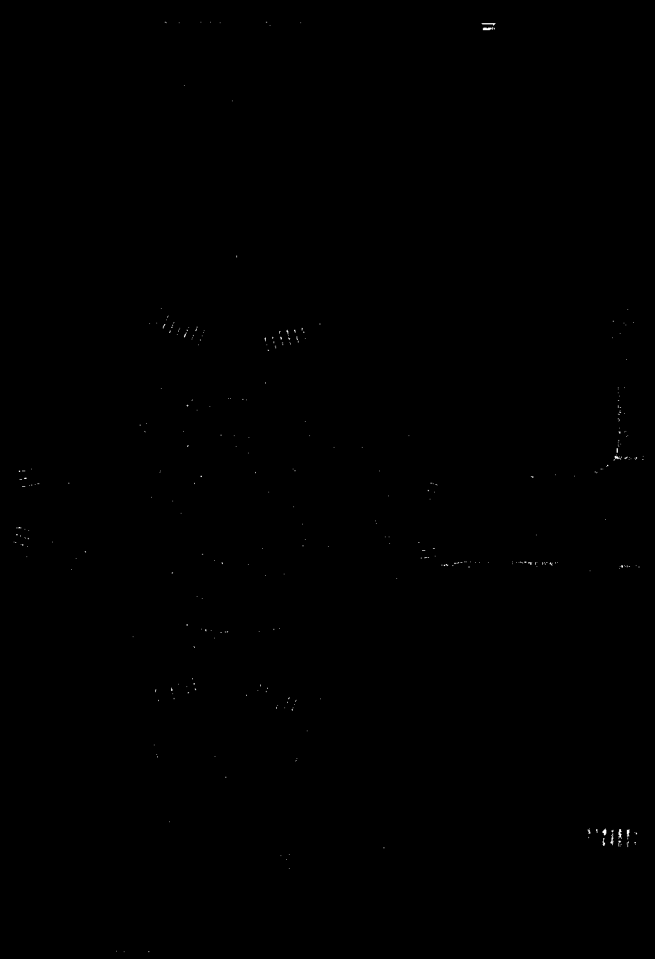


Roundabout Concept

83' wide (back of walk to back of walk)

Physical Impact

Five-Lane Concepts



Roundabout Concept

Data Summary

		No-Build Conditions (2041 volumes)	5-Lane Concept (Traditional)	5-Lane Concept (Access Mgmt.)	Roundabout Concept
Operational Performance	Through Traffic Delay			**145 (sec/veh)**	
	Side Street Delay		**230 (sec/veh)**	**230 (sec/veh)**	
	Average Travel Time				
Safety Performance	Between Intersections	**BASELINE (+49% from 2016)**			
	At Intersections	**BASELINE (+43% from 2016)**			
Physical Impact	Between Intersections				**83' (total width)**
	At Intersections		**AVERAGE footprint**	**AVERAGE footprint**	

next step

BOMA selects ***preferred concept*** to bring forward to detailed design.

Level of Service (LOS) for No-Build Condition

	Cross-Street	Traffic Control Device	Geometry	(AM) Peak Hour						(MID) Peak Hour						(PM) Peak Hour						SAT Peak Hour					
				2016 Existing		2021 Future		2041 Design		2016 Existing		2021 Future		2041 Design		2016 Existing		2021 Future		2041 Design		2016 Existing		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	**OVERALL**	**27.8**	**C**	**29.5**	**C**	**40.9**	**D**	**33.6**	**C**	**34.5**	**C**	**36.5**	**D**					**49.1**	**D**	**27.9**	**C**	**30.5**	**C**	**38.0**	**D**
			EASTBOUND (EB)	**55.5**	**E**	**56.0**	**E**	**56.7**	**E**	**50.9**	**D**	**53.0**	**D**	**65.1**	**E**	**54.0**	**D**	**55.9**	**E**	**69.0**	**E**	**39.0**	**D**	**40.1**	**D**	**46.2**	**D**
			EB Left	*51.7*	*D*	*52.0*	*D*	*52.1*	*D*	*38.7*	*D*	*39.8*	*D*	*41.9*	*D*	*42.9*	*D*					*29.9*	*C*				
			EB Thru/Right	*55.9*	*E*	*56.4*	*E*	*57.1*	*E*	*54.1*	*D*	*56.5*	*E*	*71.1*	*E*	*54.9*	*D*	*57.0*	*E*	*71.2*	*E*	*39.9*	*D*	*41.2*	*D*	*47.9*	*D*
			WESTBOUND (WB)	**36.7**	**D**	**37.2**	**D**	**40.1**	**D**					**31.9**	**C**	**28.0**	**C**	**29.5**	**C**	**43.8**	**D**					**21.5**	**C**
			WB Left	*42.5*	*D*	*43.0*	*D*	*44.1*	*D*	*34.4*	*C*	*34.8*	*C*	*36.2*	*D*	*35.7*	*D*	*38.6*	*D*	*73.4*	*E*	*24.1*	*C*	*24.4*	*C*	*25.4*	*C*
			WB Thru	*45.3*	*D*	*45.7*	*D*	*45.7*	*D*							*36.1*	*D*	*36.9*	*D*	*40.1*	*D*	*29.1*	*C*	*29.3*	*C*	*30.8*	*C*
			WB Right	*32.8*	*C*	*33.5*	*C*	*37.5*	*D*					*28.3*	*C*	*20.2*	*C*	*22.2*	*C*	*26.3*	*C*					*17.4*	*B*
			NORTHBOUND (NB)	**24.4**	**C**	**29.1**	**C**	**49.6**	**D**	**26.1**	**C**	**30.1**	**C**	**31.5**	**C**	**35.8**	**D**	**38.6**	**D**	**44.6**	**D**	**30.9**	**C**	**37.9**	**D**	**64.5**	**E**
			NB Left	*15.4*	*B*	*16.3*	*B*	*16.8*	*B*	*24.1*	*C*	*26.8*	*C*	*27.5*	*C*							*28.4*	*C*	*29.5*	*C*	*30.6*	*C*
			NB Thru	*29.7*	*C*	*35.6*	*D*	*63.6*	*E*	*29.5*	*C*	*34.1*	*C*	*36.5*	*D*	*40.1*	*D*	*43.3*	*D*	*51.3*	*D*	*35.3*	*D*	*44.7*	*D*	*82.9*	*F*
			NB Right	*9.3*	*A*					*16.0*	*B*											*17.0*	*B*	*18.0*	*B*	*19.1*	*B*
			SOUTHBOUND (SB)					**27.9**	**C**	**34.7**	**C**	**34.7**	**C**	**34.7**	**C**					**51.0**	**D**	**26.7**	**C**				
			SB Left					*53.8*	*D*					*56.6*	*E*							*36.4*	*D*				
			SB Thru					*5.0*	*A*	*17.1*	*B*									*53.9*	*D*	*20.3*	*C*	*23.6*	*C*	*25.8*	*C*
			SB Right					*9.8*	*A*	*14.3*	*B*	*14.3*	*B*	*14.5*	*B*							*17.1*	*B*	*17.1*	*B*	*18.3*	*B*
2	Parkway Commons / Cemetery	Signal	**OVERALL**	**15.3**	**B**	**17.0**	**B**	**34.8**	**C**					**31.1**	**C**					**19.4**	**B**	**15.8**	**B**	**17.2**	**C**	**25.1**	**C**
			EASTBOUND					**52.8**	**D**					**62.8**	**E**	**48.9**	**D**	**50.8**	**D**	**51.5**	**D**	**38.1**	**D**	**38.3**	**D**	**38.6**	**D**
			EB Left/Thru	*58.1*	*E*									*72.5*	*E*	*55.5*	*E*	*58.3*	*E*	*59.7*	*E*	*43.1*	*D*	*43.4*	*D*	*44.5*	*D*
			EB Right					*45.2*	*D*	*34.1*	*C*	*34.6*	*C*	*35.3*	*D*	*37.8*	*D*					*28.8*	*C*				
			WESTBOUND	**61.7**	**E**	**61.7**	**E**	**61.7**	**E**	**60.3**	**E**	**60.7**	**E**	**62.5**	**E**	**61.7**	**E**	**61.8**	**E**	**61.9**	**E**	**49.7**	**D**	**49.8**	**D**	**49.9**	**D**
			WB Left/Thru/Right	*61.7*	*E*	*61.7*	*E*	*61.7*	*E*	*60.3*	*E*	*60.7*	*E*	*62.5*	*E*	*61.7*	*E*	*61.8*	*E*	*61.9*	*E*	*49.7*	*D*	*49.8*	*D*	*49.9*	*D*
			NORTHBOUND	**13.3**	**B**	**15.2**	**B**	**48.9**	**D**	**13.5**	**B**	**14.6**	**B**	**22.8**	**C**	**12.7**	**B**	**14.0**	**B**	**17.3**	**B**	**9.4**	**A**	**11.4**	**B**	**17.6**	**B**
			NB Left					*61.8*	*E*					*48.9*	*D*	*38.0*	*D*	*40.3*	*D*	*43.3*	*D*	*26.5*	*C*	*26.9*	*C*	*28.7*	*C*
			NB Thru/Right	*12.2*	*B*	*14.3*	*B*	*48.5*	*D*	*11.2*	*B*	*12.5*	*B*	*20.6*	*C*	*10.4*	*B*	*12.6*	*B*	*15.2*	*B*	*8.4*	*A*	*10.6*	*B*	*16.9*	*B*
			SOUTHBOUND	**11.9**	**B**									**27.3**	**C**					**13.1**	**B**	**13.8**	**B**	**15.7**	**B**	**27.3**	**C**
			SB Left											*79.2*	*E*	*71.1*	*E*	*74.7*	*E*	*78.4*	*E*	*63.5*	*E*				
			SB Thru/Right	*11.8*	*B*									*27.1*	*C*					*13.0*	*A*	*13.7*	*B*	*15.6*	*B*	*27.2*	*C*
3	Southeast Parkway / Shadow Green Drive	Signal	**OVERALL**	**20.0**	**C**	**27.9**	**C**	**54.2**	**D**	**22.9**	**C**	**34.1**	**C**	**44.8**	**D**	**20.3**	**C**	**24.5**	**C**	**29.9**	**C**	**25.0**	**C**	**25.7**	**C**	**33.0**	**C**
			EASTBOUND	**50.1**	**D**	**59.9**	**E**	**69.6**	**E**	**58.2**	**E**	**103.1**	**F**	**130.7**	**F**					**53.0**	**D**	**35.0**	**D**	**38.4**	**D**	**45.3**	**D**
			EB Left	*52.9*	*D*	*64.6*	*F*	*109.5*	*F*	*70.5*	*E*	*107.8*	*F*	*149.6*	*F*					*60.2*	*E*	*36.5*	*D*	*43.2*	*D*	*60.4*	*E*
			EB Thru					*54.6*	*D*	*55.9*	*E*											*39.5*	*D*	*41.1*	*D*	*41.3*	*D*
			EB Right					*47.6*	*D*	*48.8*	*D*	*50.6*	*D*	*58.5*	*E*					*44.9*	*D*	*33.7*	*C*	*35.5*	*D*	*37.7*	*D*
			WESTBOUND					**57.2**	**E**	**55.7**	**E**	**60.5**	**E**	**72.3**	**E**	**54.7**	**D**	**57.4**	**E**	**62.2**	**E**	**43.3**	**D**	**44.1**	**E**	**44.2**	**D**
			WB Left																							*40.2*	*D*
			WB Thru/Right					*57.7*	*E*	*57.9*	*E*	*65.6*	*E*	*83.3*	*F*	*56.7*	*E*	*59.8*	*E*	*66.2*	*E*	*43.8*	*D*	*44.9*	*E*	*45.0*	*D*
			NORTHBOUND	**16.5**	**B**	**23.0**	**C**	**77.2**	**E**	**11.9**	**B**	**14.6**	**B**	**28.6**	**C**	**11.9**	**B**	**16.2**	**B**	**25.6**	**C**	**26.2**	**C**	**27.9**	**C**	**40.9**	**D**
			NB Left	*5.6*	*A*	*7.2*	*A*	*9.7*	*A*	*4.4*	*A*	*5.8*	*A*	*8.0*	*A*	*6.5*	*A*	*14.5*	*B*	*32.6*	*C*	*12.6*	*B*	*15.0*	*B*	*19.5*	*B*
			NB Thru/Right	*17.4*	*B*	*24.7*	*B*	*84.2*	*F*	*12.9*	*B*	*16.0*	*B*	*31.7*	*C*	*12.7*	*B*	*16.6*	*B*	*23.9*	*C*	*28.4*	*C*	*30.8*	*C*	*45.7*	*D*
			SOUTHBOUND	**9.9**	**A**	**14.5**	**B**	**14.7**	**B**	**14.8**	**B**	**17.0**	**B**	**19.7**	**B**	**15.2**	**B**	**19.7**	**B**	**22.7**	**C**	**14.3**	**B**	**16.9**	**B**	**20.4**	**C**
			SB Left	*15.4*	*B*	*46.2*	*D*	*141.7*	*E*	*13.2*	*B*	*15.4*	*B*	*39.2*	*D*	*11.1*	*B*	*24.1*	*B*	*26.2*	*C*	*15.5*	*B*	*18.5*	*B*	*27.7*	*C*
			SB Thru	*9.0*	*A*					*14.4*	*B*	*16.1*	*B*	*16.9*	*B*	*15.6*	*B*	*20.3*	*C*	*23.2*	*C*	*14.0*	*B*	*15.7*	*B*	*19.3*	*B*
			SB Right							*18.1*	*B*					*12.9*	*B*					*15.0*	*B*	*20.9*	*C*	*21.3*	*C*
4	Alpha Drive	Stop	**WESTBOUND**	**23.2**	**C**	**36.2**	**E**	**180.3**	**F**	**47.3**	**E**	**102.3**	**F**	**534.8**	**F**	**43.8**	**E**	**109.9**	**F**	**999.9**	**F**	**24.9**	**C**	**35.4**	**E**	**166.3**	**F**
			WB Left/Thru/Right	*26.1*	*D*	*40.5*	*E*	*318.5*	*F*	*47.3*	*E*	*102.3*	*F*	*534.8*	*F*	*43.8*	*E*	*109.9*	*F*	*999.9*	*F*	*24.9*	*C*	*35.4*	*E*	*166.3*	*F*
			SOUTHBOUND	**13.2**	**B**	**17.5**	**C**	**37.7**	**E**	**11.8**	**B**	**13.9**	**B**	**25.9**	**D**	**10.6**	**B**	**11.5**	**B**	**15.6**	**C**	**11.0**	**B**	**12.4**	**B**	**18.3**	**C**
			SB Left	*13.2*	*B*	*17.5*	*C*	*37.7*	*E*	*11.8*	*B*	*13.9*	*B*	*25.9*	*D*	*10.6*	*B*	*11.5*	*B*	*15.6*	*C*	*11.0*	*B*	*12.4*	*B*	*18.3*	*C*
5	Century Court	Signal	**OVERALL**	**14.2**	**B**	**15.9**	**B**	**24.0**	**C**	**17.8**	**B**	**22.2**	**C**	**42.6**	**D**	**15.6**	**B**	**19.5**	**B**	**35.7**	**D**	**7.4**	**A**	**8.8**	**A**	**29.8**	**C**
			EASTBOUND	**55.9**	**E**	**57.1**	**E**	**57.9**	**E**	**55.0**	**E**	**55.5**	**E**	**56.3**	**E**												
			EB Left	*60.2*	*E*	*62.8*	*E*	*65.2*	*E*	*60.1*	*E*	*62.8*	*E*	*65.9*	*F*	*58.7*	*E*	*59.9*	*E*	*60.1*	*E*	*48.2*	*D*	*48.3*	*D*	*48.3*	*D*
			EB Thru/Right																								
			WESTBOUND																								
			WB Left/Thru/Right																								
			NORTHBOUND	**10.9**	**B**	**12.0**	**B**	**18.0**	**B**	**8.6**	**A**	**12.2**	**B**	**22.2**	**C**	**7.3**	**A**	**8.7**	**A**	**13.4**	**B**	**2.9**	**A**	**3.6**	**A**	**8.2**	**A**
			NB Left	*8.6*	*A*	*11.7*	*B*	*24.9*	*C*	*10.3*	*B*	*18.4*	*B*	*55.6*	*E*	*12.6*	*B*	*25.3*	*C*	*36.5*	*D*	*6.2*	*A*	*12.0*	*B*	*82.6*	*F*
			NB Thru/Right	*11.2*	*B*	*12.1*	*B*	*17.1*	*B*	*8.4*	*A*	*11.5*	*B*	*18.0*	*B*	*7.0*	*A*	*7.8*	*A*	*12.1*	*B*	*2.8*	*A*	*3.3*	*A*	*5.5*	*A*
			SOUTHBOUND	**9.4**	**A**	**11.7**	**B**	**24.4**	**C**	**18.3**	**B**	**25.1**	**C**	**62.3**	**E**	**15.7**	**B**	**22.5**	**C**	**51.7**	**D**	**8.3**	**A**	**9.9**	**A**	**36.3**	**D**
			SB Left	*4.8*	*A*	*5.1*	*A*	*9.4*	*A*	*8.1*	*A*											*2.0*	*A*	*2.1*	*A*	*3.4*	*A*
			SB Thru/Right	*9.4*	*A*	*11.7*	*B*	*24.4*	*C*	*18.3*	*B*	*25.2*	*B*	*62.4*	*E*	*15.7*	*B*	*22.5*	*C*	*51.8*	*D*	*8.4*	*A*	*10.0*	*A*	*36.4*	*D*
6	Beasley Drive / Lumber Drive	Two-Way Stop Control (TWSC)	**EASTBOUND**	**17.7**	**C**	**21.8**	**C**	**999.9**	**F**	**28.1**	**C**	**36.8**	**E**	**45.0**	**E**	**22.2**	**C**	**30.6**	**D**	**57.5**	**F**	**24.7**	**C**	**39.3**	**E**	**141.7**	**F**
			EB Left/Thru/Right	*17.7*	*C*	*21.8*	*C*	*999.9*	*F*	*28.1*	*C*	*36.8*	*E*	*45.0*	*E*	*22.2*	*C*	*30.6*	*D*	*57.5*	*F*	*24.7*	*C*	*39.3*	*E*	*141.7*	*F*
			WESTBOUND	**19.2**	**C**	**24.7**	**C**	**64.7**	**F**	**29.1**	**D**	**55.5**	**F**	**83.8**	**F**	**30.6**	**D**	**61.8**	**F**	**92.1**	**F**	**26.3**	**D**	**52.3**	**F**	**999.9**	**F**
			WB Left/Thru/Right	*19.2*	*C*	*24.7*	*C*	*64.7*	*F*	*29.1*	*D*	*55.5*	*F*	*83.8*	*F*	*30.6*	*D*	*61.8*	*F*	*92.1*	*F*	*26.3*	*D*	*52.3*	*F*	*999.9*	*F*
			NORTHBOUND	**10.0**	**B**	**10.6**	**B**	**12.8**	**B**	**10.4**	**B**	**11.2**	**B**	**20.5**	**C**	**10.3**	**B**	**11.5**	**B**	**18.6**	**C**	**10.9**	**B**	**12.6**	**B**	**22.8**	**C**
			NB Left	*10.0*	*B*	*10.6*	*B*	*12.8*	*B*	*10.4*	*B*	*11.2*	*B*	*20.5*	*C*	*10.3*	*B*	*11.5*	*B*	*18.6*	*C*	*10.9*	*B*	*12.6*	*B*	*22.8*	*C*
			SOUTHBOUND	**10.8**	**B**	**12.7**	**B**	**22.6**	**C**	**10.8**	**B**	**12.7**	**B**	**22.4**	**D**	**10.3**	**B**	**11.2**	**B**	**21.3**	**C**	**10.9**	**B**	**18.8**	**C**	**27.8**	**D**
			SB Left	*10.8*	*B*	*12.7*	*B*	*22.6*	*C*	*10.8*	*B*	*12.7*	*B*	*22.4*	*D*	*10.3*	*B*	*11.2*	*B*	*21.3*	*C*	*10.9*	*B*	*18.8*	*C*	*27.8*	*D*
7	Franklin Business Park (North) / Future Werthan Circle	Signal	**OVERALL**	**8.2**	**A**	**9.0**	**A**	**18.6**	**B**	**9.8**	**A**	**10.2**	**B**	**15.9**	**B**	**8.5**	**A**	**10.0**	**A**	**14.0**	**B**	**15.5**	**B**	**18.1**	**B**	**36.0**	**D**
			WESTBOUND	**61.0**	**E**									**59.4**	**E**									**45.9**	**D**	**46.2**	**D**
			WB Left	*62.8*	*E*									*62.0*	*E*					*61.1*	*E*	*48.5*	*D*	*48.9*	*D*	*52.8*	*D*
			WB Right					*57.2*	*E*																		
			NORTHBOUND	**10.6**	**B**	**11.7**	**B**	**27.7**	**C**					**16.8**	**B**					**15.4**	**B**	**13.7**	**B**	**17.6**	**B**	**48.1**	**D**
			NB Thru/Right	*10.6*	*B*	*11.7*	*B*	*27.7*	*C*					*16.8*	*B*					*15.4*	*B*	*13.7*	*B*	*17.6*	*B*	*48.1*	*D*
			SOUTHBOUND	**2.9**	**A**	**3.3**	**A**	**5.5**	**A**	**3.6**	**A**	**4.8**	**A**	**10.0**	**B**	**3.6**	**A**	**5.8**	**A**	**12.0**	**B**	**11.1**	**B**	**15.9**	**B**	**22.6**	**C**
			SB Left	*5.9*	*A*	*9.6*	*A*	*28.8*	*C*	*4.1*	*A*	*8.9*	*A*	*24.7*	*C*	*5.1*	*A*	*8.5*	*A*	*24.9*	*C*	*15.0*	*B*	*26.0*	*C*	*28.8*	*C*
			SB Thru	*2.8*	*A*	*3.1*	*A*	*4.7*	*A*	*3.5*	*A*	*4.7*	*A*	*9.8*	*A*	*3.5*	*A*	*5.7*	*A*	*11.3*	*B*	*10.8*	*B*	*15.0*	*B*	*22.1*	*C*
8	Confederate Drive / Werthan Circle	TWSC	**EASTBOUND**	**23.8**	**C**	**49.3**	**E**	**999.0**	**F**	**16.3**	**C**	**27.4**	**D**	**181.8**	**F**	**18.8**	**C**	**23.0**	**C**	**39.6**	**E**	**20.6**	**C**	**33.1**	**D**	**163.3**	**F**
			EB Left	*31.2*	*D*	*81.8*	*F*	*999.0*	*F*	*29.3*	*C*	*42.4*	*E*	*465.6*	*F*	*20.4*	*C*	*26.7*	*D*	*50.4*	*F*	*25.3*	*D*	*45.4*	*E*	*343.5*	*F*
			EB Thru/Right	*15.0*	*C*	*20.2*	*C*	*868.3*	*F*	*15.7*	*C*	*19.5*	*C*	*42.8*	*E*	*16.1*	*C*	*20.0*	*C*	*30.0*	*D*	*19.0*	*C*	*25.1*	*D*	*49.0*	*E*
			WESTBOUND	**24.0**	**C**	**38.8**	**E**	**249.3**	**F**	**20.3**	**C**	**29.6**	**D**	**83.0**	**F**	**18.0**	**C**	**22.5**	**C**	**36.8**	**E**	**20.1**	**C**	**28.9**	**D**	**78.6**	**F**
			WB Left	*29.6*	*D*	*58.3*	*F*	*431.1*	*F*	*24.1*	*C*	*39.0*	*E*	*139.8*	*F*	*20.2*	*C*	*26.8*	*D*	*49.3*	*E*	*24.6*	*C*	*41.9*	*E*	*138.1*	*F*
			WB Thru/Right	*16.3*	*C*	*22.1*	*C*	*37.8*	*E*	*16.6*	*C*	*21.7*	*C*	*35.1*	*E*	*15.9*	*C*	*19.2*	*C*	*26.8*	*D*	*17.7*	*C*	*23.3*	*C*	*49.2*	*E*
			NORTHBOUND	**9.8**	**A**	**10.4**	**B**	**12.2**	**B**	**9.6**	**A**	**10.4**	**B**	**12.3**	**B**	**10.0**	**B**	**11.4**	**B**	**14.1**	**B**	**10.3**	**B**	**11.7**	**B**	**15.2**	**C**
			NB Left	*9.8*	*A*	*10.4*	*B*	*12.2*	*B*	*9.6*	*A*	*10.4*	*B*	*12.3*	*B*	*10.0*	*B*	*11.4*	*B*	*14.1*	*B*	*10.3*	*B*	*11.7*	*B*	*15.2*	*C*
			SOUTHBOUND	**11.0**	**B**	**12.7**	**B**	**19.9**	**C**	**10.9**	**B**	**12.6**	**B**	**19.6**	**C**	**10.2**	**B**	**11.0**	**B**	**14.9**	**B**	**11.4**	**B**	**13.1**	**B**	**19.5**	**C**
			SB Left	*11.0*	*B*	*12.7*	*B*	*19.9*	*C*	*10.9*	*B*	*12.6*	*B*	*19.6*	*C*	*10.2*	*B*	*11.0*	*B*	*14.9*	*B*	*11.4*	*B*	*13.1*	*B*	*19.5*	*C*
9	Carr Avenue	Stop	**WESTBOUND**	**19.0**	**C**	**22.5**	**C**	**31.8**	**D**	**20.3**	**C**	**25.2**	**D**	**44.6**	**E**	**21.0**	**C**	**25.6**	**D**	**47.4**	**E**	**21.3**	**C**	**26.2**	**D**	**47.9**	**E**
			WB Left/Thru/Right	*19.0*	*C*	*22.5*	*C*	*31.8*	*D*	*20.3*	*C*	*25.2*	*D*	*44.6*	*E*	*21.0*	*C*	*25.6*	*D*	*47.4*	*E*	*21.3*	*C*	*26.2*	*D*	*47.9*	*E*
			SOUTHBOUND	**10.0**	**B**	**10.7**	**B**	**11.9**	**B**	**10.0**	**B**	**10.7**	**B**	**11.9**	**B**	**9.9**	**A**	**10.3**	**B**	**11.5**	**B**	**10.1**	**B**	**10.7**	**B**	**12.0**	**B**
			SB Left	*10.0*	*B*	*10.7*	*B*	*11.9*	*B*	*10.0*	*B*	*10.7*	*B*	*11.9*	*B*	*9.9*	*A*	*10.3*	*B*	*11.5*	*B*	*10.1*	*B*	*10.7*	*B*	*12.0*	*B*
10	Downs Boulevard	Signal	**OVERALL**	**22.3**	**C**	**22.4**	**C**	**52.5**	**C**	**20.1**	**C**	**24.4**	**C**	**99.3**	**C**	**26.7**	**C**	**29.8**	**C**	**57.2**	**E**	**22.0**	**C**	**26.3**	**C**	**65.5**	**E**
			EASTBOUND					**66.9**	**E**													**44.0**	**D**	**45.2**	**D**	**81.1**	**F**
			EB Left/Thru											*62.6*	*E*												
			EB Right					*69.5*	*E*													*43.3*	*D*	*44.6*	*D*	*88.2*	*F*
			WESTBOUND																								
			WB Left/Thru/Right																								
			NORTHBOUND	**8.2**	**A**	**8.8**	**A**	**17.0**	**B**	**8.0**	**A**	**12.4**	**B**	**15.9**	**B**					**17.9**	**B**	**12.1**	**B**	**17.0**	**B**	**63.3**	**E**
			NB Left	*6.9*	*A*	*8.0*	*A*	*22.3*	*C*	*9.1*	*A*	*20.2*	*C*	*25.6*	*C*					*28.3*	*C*	*18.7*	*B*	*27.5*	*C*	*123.3*	*F*
			NB Thru/Right	*8.9*	*A*	*9.1*	*A*	*14.2*	*B*	*7.5*	*A*	*8.0*	*A*	*10.5*	*A*	*7.8*	*A*	*8.1*	*A*	*9.5*	*A*	*6.8*	*A*	*8.4*	*A*	*14.2*	*A*
			SOUTHBOUND	**9.8**	**A**	**12.3**	**B**	**26.5**	**C**	**13.4**	**B**	**21.9**	**C**	**45.9**	**D**	**19.1**	**B**	**30.3**	**C**	**117.7**	**F**	**15.1**	**B**	**22.1**	**C**	**53.0**	**D**
			SB Left	*6.5*	*A*	*7.8*	*A*	*14.7*	*B*	*7.8*	*A*	*13.8*	*B*	*16.8*	*B*	*13.3*	*B*	*15.7*	*B*	*23.9*	*C*	*9.5*	*A*	*12.7*	*B*	*18.3*	*B*
			SB Thru/Right	*9.8*	*A*	*12.3*	*B*	*26.5*	*C*	*13.5*	*B*	*21.9*	*B*	*46.1*	*D*	*19.1*	*B*	*30.4*	*C*	*118.2*	*F*	*15.1*	*B*	*22.2*	*C*	*53.1*	*D*
11	James Avenue	Stop	**WESTBOUND**	**14.7**	**B**	**16.0**	**B**	**19.9**	**C**	**15.4**	**C**	**16.9**	**C**	**21.1**	**C**	**14.5**	**B**	**15.6**	**C**	**19.0**	**C**	**14.8**	**B**	**16.1**	**C**	**20.0**	**C**
			WB Left/Thru/Right	*14.7*	*B*	*16.0*	*C*	*19.9*	*C*	*15.4*	*C*	*16.9*	*C*	*21.1*	*C*	*14.5*	*B*	*15.6*	*C*	*19.0*	*C*	*14.8*	*B*	*16.1*	*C*	*20.0*	*C*
			SOUTHBOUND	**9.2**	**A**	**9.5**	**A**	**10.5**	**B**	**9.1**	**A**	**9.5**	**A**	**10.4**	**B**	**8.7**	**A**	**8.9**	**A**	**9.5**	**A**	**9.0**	**A**	**9.3**	**A**	**10.2**	**B**
			SB Left	*9.2*	*A*	*9.5*	*A*	*10.5*	*B*	*9.1*	*A*	*9.5*	*A*	*10.4*	*B*	*8.7*	*A*	*8.9*	*A*	*9.5*	*A*	*9.0*	*A*	*9.3*	*A*	*10.2*	*B*

Delay Reduction Color Code: Reduced Green Time Increases

NOTES : (1) No-Build results updated 8/25/2017 to assume consistent signal timings/offsets with 2016 existing conditions. Previous data had assumed improvements to signal timings in future conditions.

(2) Delay of "999.9" seconds indicates maximum limit of model.

Level of Service (LOS) for Five-Lane (Traditional) Concept

	Cross-Street	Traffic Control Device	Geometry	[AM] Peak Hour				[MID] Peak Hour				[PM] Peak Hour				[SAT] Peak Hour			
				2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	OVERALL	20.5	C	23.2	C	21.8	C	22.7	C	29.1	C	30.3	C	21.8	C	23.6	C
			EASTBOUND (EB)									95.1	D	85.7	D	30.8	C	30.8	C
			EB Left									32.8	C	32.9	C				
			EB Thru									39.5	D	40.9	D	31.9	C	32.3	C
			EB Right									32.6	C	32.8	C				
			WESTBOUND (WB)					21.5	C	21.7	C	26.0	C	29.6	C	18.8	B	19.0	B
			WB Left					25.1	C	25.2	C	31.8	C	41.3	D	21.2	C	21.2	C
			WB Thru									32.2	C	32.7	C	26.9	C	26.9	C
			WB Right					18.2	B	18.4	B	21.0	C	21.4	C	15.8	B	15.9	B
			NORTHBOUND (NB)	16.6	B	21.0	C	20.5	C	24.1	C	17.5	B	19.7	B	22.9	C	25.5	C
			NB Left	11.8	B	13.2	B	16.1	B	18.5	B	15.2	B	19.6	B	18.7	B	21.6	C
			NB Thru	19.1	B	24.5	C	22.7	C	26.8	C	19.0	B	21.2	C	25.4	C	28.4	C
			NB Right	9.0	A	11.0	B	14.9	B	17.4	B	10.7	B	13.5	B	16.2	B	17.3	B
			SOUTHBOUND (SB)	20.5	C	24.0	C	19.8	B	20.4	C	22.5	C	36.0	D	20.5	C	23.5	C
			SB Left	25.1	C	27.2	C	31.9	C	32.5	C	48.8	D	49.8	D	25.2	C	28.8	C
			SB Thru	16.9	B	21.7	C	8.5	A	8.3	A	12.7	B	31.6	C	17.2	B	19.6	B
			SB Right	8.1	A	9.6	A	11.8	B	13.0	B	10.7	B	10.8	B	13.9	B	14.3	B
2	Parkway Commons / Cemetery	Signal	OVERALL	7.6	A	8.4	A	19.9	B	23.9	C	14.4	B	17.9	B	18.2	B	18.9	B
			EASTBOUND					36.9	D	42.6	D								
			EB Left					40.5	D	48.5	D	37.9	D	38.0	D	37.2	D	37.9	D
			EB Thru/Right																
			WESTBOUND	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			WB Left/Thru/Right	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			NORTHBOUND	6.4	A	7.6	A	22.1	C	24.6	C	18.2	B	21.4	C	20.8	C	23.3	C
			NB Left	54.1	D	54.7	D	36.7	D	39.4	D	36.5	D	37.2	D	32.1	C	32.6	C
			NB Thru/Right	3.6	A	4.9	A	20.5	C	23.0	C	16.2	B	19.5	B	19.9	B	22.6	C
			SOUTHBOUND	4.1	A	4.6	A	10.6	B	16.7	B	6.2	A	11.1	B	6.8	A	10.5	B
			SB Left	29.3	C	29.8	C												
			SB Thru/Right	4.0	A	4.6	A	10.5	B	16.6	B	6.1	A	11.1	B	6.8	A	10.5	B
3	Southeast Parkway / Shadow Green Drive	Signal	OVERALL	14.5	B	17.6	B	16.4	B	19.2	B	16.8	B	19.2	B	14.8	B	16.2	B
			EASTBOUND	27.7	C	28.7	C	30.6	C	32.5	C	29.9	C	30.1	C	26.0	C	28.3	C
			EB Left	29.3	C	32.6	C	31.7	C	36.0	D	32.4	C	33.5	C	27.4	C	31.2	C
			EB Thru									35.9	D	35.4	D	30.5	C	32.1	C
			EB Right					29.1	C	29.4	C					24.7	C	26.3	C
			WESTBOUND	35.9	D	36.0	D	34.7	C	35.1	D	35.3	D	35.8	D	35.4	D	36.2	D
			WB Left	33.3	C	33.3	C	29.4	C	29.6	C	30.1	C	30.2	C				
			WB Thru/Right	36.2	D	36.9	D	37.0	D	37.6	D	36.6	D	37.1	D	35.9	D	36.9	D
			NORTHBOUND	7.9	A	10.8	B	9.7	A	12.4	B	17.2	B	19.0	B	9.5	A	12.4	B
			NB Left	3.8	A	4.5	A	8.2	A	22.0	C	27.8	C	45.1	D	15.8	B	29.4	C
			NB Thru/Right	8.3	A	11.5	B	9.9	A	10.9	B					8.0	A	8.6	A
			SOUTHBOUND	13.4	B	18.7	B	12.1	B	16.2	B	10.9	B	14.1	B	12.6	B	12.7	B
			SB Left	16.3	B	27.2	C	11.4	B	20.0	C	7.5	A	8.5	A	8.4	A	10.5	B
			SB Thru	13.2	B	17.8	B	14.3	B	18.4	B	11.7	B	16.0	B	13.4	B	14.3	B
			SB Right	10.1	A	11.4	B	0.3	A	0.4	A	0.1	A	0.1	A				
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			EB Left/Thru/Right	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			WESTBOUND	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			WB Left/Thru/Right	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			NORTHBOUND	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			NB Left	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			SOUTHBOUND	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
			SB Left	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
5	Century Court	Signal	OVERALL	7.7	A	9.6	A	7.8	A	9.6	A	6.1	A	7.1	A	4.1	A	5.8	A
			EASTBOUND	35.8	D	36.9	D	36.1	D	36.8	D								
			EB Left	38.3	D	39.9	D	39.8	D	42.0	D	38.5	D	39.0	D				
			EB Thru/Right																
			WESTBOUND																
			WB Left/Thru/Right																
			NORTHBOUND	2.3	A	3.5	A	2.6	A	5.2	A	1.7	A	2.4	A	1.2	A	1.9	A
			NB Left	2.8	A	11.1	B	5.1	A	18.5	B	2.1	A	4.4	A	1.5	A	3.3	A
			NB Thru/Right	2.2	A	2.4	A	2.3	A	3.5	A	1.7	A	2.3	A	1.2	A	1.9	A
			SOUTHBOUND	8.5	A	11.8	B	6.1	A	7.7	A	4.6	A	6.0	A	3.8	A	5.6	A
			SB Left	6.3	A	7.8	A	4.5	A	4.7	A	3.0	A	3.3	A	2.0	A	2.6	A
			SB Thru/Right	8.5	A	11.8	B	6.1	A	7.7	A	4.6	A	6.0	A	3.8	A	5.6	A
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND	13.5	B	14.5	B	15.3	C	17.8	C	15.0	C	17.3	C	15.5	C	18.1	C
			EB Left/Thru/Right	13.5	B	14.5	B	15.3	C	17.8	C	15.0	C	17.3	C	15.5	C	18.1	C
			WESTBOUND	13.9	B	14.7	B	17.1	C	22.0	C	18.0	C	23.0	C	15.6	C	19.0	C
			WB Left/Thru/Right	13.9	B	14.7	B	17.1	C	22.0	C	18.0	C	23.0	C	15.6	C	19.0	C
			NORTHBOUND	10.3	B	11.4	B	10.6	B	11.8	B	10.4	B	11.5	B	10.5	B	11.6	B
			NB Left	10.3	B	11.4	B	10.6	B	11.8	B	10.4	B	11.5	B	10.5	B	11.6	B
			SOUTHBOUND	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
			SB Left	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
7	Franklin Business Park (North) / Future Werthan Circle	Signal	OVERALL	4.1	A	4.6	A	5.0	A	6.3	A	4.1	A	5.1	A	7.5	A	9.0	A
			WESTBOUND	41.0	D	41.0	D					41.2	D	41.4	D				
			WB Left	42.0	D	42.2	D	40.4	D	40.6	D	42.6	D	43.0	D				
			WB Right	40.4	D	40.4	D												
			NORTHBOUND	3.4	A	4.4	A	5.0	A	6.3	A	4.5	A	6.3	A	6.1	A	7.8	A
			NB Thru/Right	3.4	A	4.4	A	5.0	A	8.3	A	4.5	A	6.3	A	6.1	A	7.8	A
			SOUTHBOUND	3.2	A	3.1	A	2.2	A	2.5	A	1.7	A	2.1	A	3.4	A	5.2	A
			SB Left	3.9	A	4.9	A	2.2	A	2.7	A	1.9	A	2.8	A	3.9	A	13.4	B
			SB Thru					2.2	A	2.5	A	1.7	A	2.0	A	3.3	A	4.5	A
8	Confederate Drive / Werthan Circle	Signal	OVERALL					6.6	A	7.0	A	4.8	A	5.0	A	5.6	A	6.5	A
			EASTBOUND	40.1	D	40.3	D					41.7	D	41.7	D				
			EB Left	42.3	D	43.1	D					42.7	D	42.9	D				
			EB Thru/Right																
			WESTBOUND	39.4	D	39.4	D					41.3	D	41.4	D				
			WB Left	40.6	D	40.9	D	43.8	D	42.0	D	42.0	D	42.2	D				
			WB Thru/Right																
			NORTHBOUND	1.8	A	1.8	A	4.2	A	4.4	A	2.5	A	2.5	A	3.0	A	4.0	A
			NB Left					2.3	A	2.4	A	1.4	A	1.5	A	2.5	A	3.6	A
			NB Thru/Right	1.9	A	1.9	A	4.2	A	4.5	A	2.5	A	2.5	A	3.0	A	4.0	A
			SOUTHBOUND					3.6	A	4.5	A	3.9	A	4.5	A	4.5	A	5.9	A
			SB Left	3.0	A	3.4	A	1.7	A	2.8	A					2.8	A	3.5	A
			SB Thru/Right					3.7	A	4.6	A	3.9	A	4.5	A	4.6	A	6.0	A
9	Carr Avenue	Stop	WESTBOUND	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			WB Left/Thru/Right	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			SOUTHBOUND	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
			SB Left	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
10	Downs Boulevard	Signal	OVERALL	19.7	B	21.0	C	18.9	B	22.8	C	18.6	B	22.2	C	22.2	C	25.2	C
			EASTBOUND	32.9	C	34.1	C	30.0	C	32.5	C	30.1	C	33.8	C	32.5	C	35.4	D
			EB Left	46.8	D	53.9	D	42.7	D	45.5	D	45.4	D	52.1	D				
			EB Thru																
			EB Right	30.7	C	31.1	C	27.5	C	29.9	C	27.1	C	30.2	C	29.9	C	34.1	C
			WESTBOUND																
			WB Left																
			WB Thru/Right																
			NORTHBOUND					16.4	B	19.2	B	14.3	B	16.7	B				
			NB Left					35.4	D	42.0	D	28.7	C	32.8	C				
			NB Thru/Right	2.1	A	2.8	A	5.9	A	6.7	A	2.8	A	3.7	A	3.1	A	5.2	A
			SOUTHBOUND	14.3	B	23.5	C	15.0	B	20.1	C	16.5	B	22.0	C	19.0	B	30.1	C
			SB Left	10.0	B	14.3	B	9.0	A	9.9	A	10.0	B	11.0	B	12.4	B	15.5	B
			SB Thru/Right	14.9	B	25.0	C	15.8	B	21.4	C	17.4	B	23.7	C	20.0	C	32.4	C
			SB Right	10.3	B	14.7	B	9.3	A	10.3	B	10.3	B	11.4	B	12.7	B	15.9	B
11	James Avenue	Stop	WESTBOUND	16.2	C	20.4	C	16.4	C	20.6	C	14.5	B	17.2	C	15.5	C	19.2	C
			WB Right	16.2	C	20.4	C	16.4	C	20.6	C	14.5	B	17.2	C	15.5	C	19.2	C

Delay Reduction Color Code: [illegible]

Level of Service (LOS) for Five-Lane (Access Management) Concept

	Cross-Street	Traffic Control Device	Geometry	[AM] Peak Hour				[MID] Peak Hour				[PM] Peak Hour				[SAT] Peak Hour			
				2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	OVERALL	20.5	C	23.2	C	21.8	C	22.7	C	28.1	C	30.2	C	21.7	C	23.6	C
			EASTBOUND (EB)									35.1	D	35.7	D	30.8	C	30.8	C
			EB Left									32.8	C	32.9	C				
			EB Thru									39.5	D	40.9	D	31.9	C	32.3	C
			EB Right									32.6	C	32.8	C				
			WESTBOUND (WB)					21.5	C	21.7	C	26.0	C	29.6	C	18.8	B	19.0	B
			WB Left					25.1	C	25.2	C	31.8	C	41.3	D	21.2	C	21.2	C
			WB Thru									32.2	C	32.7	C	26.9	C	26.9	C
			WB Right					18.2	B	18.4	B	21.0	C	21.4	C	15.8	B	15.9	B
			NORTHBOUND (NB)	16.6	B	21.0	C	20.5	C	24.1	C	17.5	B	19.7	B	22.9	C	25.5	C
			NB Left	11.8	B	13.2	B	16.1	B	18.5	B	15.2	B	19.6	B	18.7	B	21.6	C
			NB Thru	19.1	B	24.5	C	22.7	C	26.8	C	19.0	B	21.2	C	25.4	C	28.4	C
			NB Right	9.0	A	11.0	B	14.9	B	17.4	B	10.7	B	11.5	B	16.2	B	17.3	B
			SOUTHBOUND (SB)	20.5	C	24.0	C	19.8	B	20.4	C	22.4	C	35.9	D	20.3	C	23.3	C
			SB Left	25.1	C	27.2	C	32.0	C	32.5	C	46.7	D	49.8	D	24.8	C	28.8	C
			SB Thru	16.9	B	21.6	C	8.5	A	9.3	A	12.7	B	31.6	C	17.2	B	19.6	B
			SB Right	8.1	A	9.6	A	11.8	B	13.0	B	10.7	B	10.8	B	13.9	B	14.3	B
2	Parkway Commons / Cemetery	Signal	OVERALL	7.6	A	8.4	A	19.8	B	23.0	C	14.4	B	17.9	B	16.2	B	18.9	B
			EASTBOUND					36.9	D	42.6	D								
			EB Left					40.5	D	48.5	D	37.9	D	38.0	D	37.2	D	37.9	D
			EB Thru/Right																
			WESTBOUND	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			WB Left/Thru/Right	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			NORTHBOUND	6.4	A	7.6	A	22.1	C	24.6	C	18.2	B	24.1	C	20.8	C	23.3	C
			NB Left	54.1	D	54.7	D	36.7	D	39.4	D	36.5	D	37.2	D	32.1	C	32.6	C
			NB Thru/Right	3.6	A	4.9	A	20.5	C	23.0	C	16.2	B	19.5	B	19.9	B	22.6	C
			SOUTHBOUND	4.1	A	4.6	A	10.6	B	16.7	B	6.1	A	11.1	B	6.8	A	10.5	B
			SB Left	29.3	C	29.7	C												
			SB Thru/Right	4.0	A	4.6	A	10.5	B	16.6	B	6.1	A	11.0	B	6.8	A	10.5	B
3	Southeast Parkway / Shadow Green Drive	Signal	OVERALL	14.5	B	17.6	B	18.4	B	19.2	B	16.8	B	19.0	B	15.1	B	16.9	B
			EASTBOUND	27.7	C	28.7	C	30.6	C	32.3	C	29.9	C	30.1	C	26.0	C	28.3	C
			EB Left	29.3	C	32.6	C	31.7	C	36.0	D	32.4	C	33.5	C	27.4	C	31.2	C
			EB Thru									35.3	D	35.4	D	30.5	C	32.1	C
			EB Right					29.1	C	29.4	C					24.7	C	26.3	C
			WESTBOUND	35.9	D	36.0	D	34.7	C	35.1	D	35.9	D	35.8	D	35.4	D	36.2	D
			WB Left	33.3	C	33.3	C	29.4	C	29.6	C	30.1	C	30.2	C				
			WB Thru/Right	36.2	D	36.3	D	37.0	D	37.6	D	36.6	D	37.1	D	35.9	D	36.9	D
			NORTHBOUND	7.9	A	10.8	B	9.7	A	12.4	B	17.2	B	19.0	B	9.5	A	12.4	B
			NB Left	3.8	A	4.5	A	8.2	A	22.0	C	27.8	C	45.1	D	15.8	B	29.4	C
			NB Thru/Right	8.3	A	11.5	B	9.9	A	10.9	B					8.0	A	8.6	A
			SOUTHBOUND	13.4	B	18.7	B	12.0	B	16.1	B	10.2	B	13.7	B				
			SB Left	16.3	B	27.3	C	11.3	B	20.0	C	7.5	A	8.3	A	8.8	A	10.6	B
			SB Thru	13.2	B	17.9	B	14.2	B	18.4	B	11.6	B	15.7	B	14.1	B	14.6	B
			SB Right	9.9	A	11.3	B	0.3	A	0.4	A	0.1	A	0.1	A				
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			EB Left/Thru/Right	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			WESTBOUND	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			WB Left/Thru/Right	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			NORTHBOUND	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			NB Left	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			SOUTHBOUND	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
			SB Left	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
5	Century Court	Signal	OVERALL	7.7	A	9.6	A	7.7	A	9.6	A	6.2	A	7.2	A	4.9	A	5.2	A
			EASTBOUND	35.8	D	36.3	D	36.1	D	36.8	D								
			EB Left	38.5	D	39.9	D	38.8	D	42.0	D	38.5	D	39.0	D				
			EB Thru/Right																
			WESTBOUND																
			WB Left/Thru/Right																
			NORTHBOUND	2.3	A	3.5	A	2.6	A	5.2	A	1.7	A	2.4	A	1.2	A	1.9	A
			NB Left	2.8	A	11.1	B	5.1	A	18.5	B	2.1	A	4.4	A	1.5	A	3.3	A
			NB Thru/Right	2.2	A	2.4	A	2.3	A	3.5	A	1.7	A	2.3	A	1.2	A	1.9	A
			SOUTHBOUND	8.6	A	11.8	B	6.2	A	7.8	A	4.7	A	6.2	A	3.6	A	5.5	A
			SB Left	6.4	A	7.8	A	4.7	A	4.7	A	3.2	A	3.5	A	1.9	A	2.7	A
			SB Thru/Right	8.6	A	11.8	B	6.2	A	7.8	A	4.7	A	6.2	A	3.6	A	5.5	A
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND	13.5	B	14.5	B	15.2	C	17.6	C	15.0	C	16.7	C	15.1	C	18.0	C
			EB Left/Thru/Right	13.5	B	14.5	B	15.2	C	17.6	C	15.0	C	16.7	C	15.1	C	18.0	C
			WESTBOUND	13.9	B	14.7	B	17.0	C	21.9	C	18.0	C	22.6	C	15.6	C	18.9	C
			WB Left/Thru/Right	13.9	B	14.7	B	17.0	C	21.9	C	18.0	C	22.6	C	15.6	C	18.9	C
			NORTHBOUND	10.3	B	11.4	B	10.6	B	11.7	B	10.4	B	11.4	B	10.4	B	11.5	B
			NB Left	10.3	B	11.4	B	10.6	B	11.7	B	10.4	B	11.4	B	10.4	B	11.5	B
			SOUTHBOUND	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
			SB Left	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
7	Franklin Business Park (North) / Future Werthan Circle	Signal	OVERALL	4.4	A	4.8	A	5.6	A	7.2	A	4.4	A	5.9	A	8.4	A	10.0	B
			WESTBOUND	41.4	D	41.7	D												
			WB Left	42.4	D	43.5	D	40.6	D	40.6	D								
			WB Right	40.3	D	40.4	D												
			NORTHBOUND	3.8	A	4.4	A	5.8	A	8.6	A	4.9	A	7.3	A	7.0	A	8.1	A
			NB Thru/Right	3.8	A	4.4	A	5.8	A	8.6	A	4.9	A	7.3	A	7.0	A	8.1	A
			SOUTHBOUND					2.3	A	2.6	A	1.7	A	2.4	A	4.1	A	5.8	A
			SB Left	4.1	A	5.0	A	2.3	A	2.9	A	1.9	A	3.2	A	5.0	A	16.6	B
			SB Thru					2.3	A	2.6	A	1.7	A	2.4	A	4.0	A	4.8	A
8	Confederate Drive / Werthan Circle	Signal	OVERALL					6.6	A	7.1	A	4.8	A	5.0	A	5.6	A	6.5	A
			EASTBOUND	40.1	D	40.3	D					41.7	D	41.7	D				
			EB Left	42.3	D	43.1	D					42.7	D	42.9	D				
			EB Thru/Right																
			WESTBOUND	39.4	D	39.4	D					41.5	D	41.4	D				
			WB Left	40.6	D	40.9	D	41.8	D	42.0	D	42.0	D	42.2	D				
			WB Thru/Right																
			NORTHBOUND	1.4	A	1.8	A	4.2	A	4.6	A	2.5	A	2.5	A	3.0	A	4.0	A
			NB Left	0.4	A	0.6	A	2.3	A	2.7	A	1.4	A	1.5	A	2.5	A	3.6	A
			NB Thru/Right	1.5	A	1.9	A	4.2	A	4.7	A	2.5	A	2.6	A	3.0	A	4.0	A
			SOUTHBOUND					3.6	A	4.5	A	3.9	A	4.5	A	4.5	A	5.9	A
			SB Left	3.0	A	3.4	A	3.7	A	2.8	A					2.8	A	3.5	A
			SB Thru/Right					3.7	A	4.6	A	3.9	A	4.5	A	4.6	A	6.0	A
9	Carr Avenue	Stop	WESTBOUND	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			WB Left/Thru/Right	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			SOUTHBOUND	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
			SB Left	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
10	Downs Boulevard	Signal	OVERALL	19.7	B	21.0	C	19.1	B	22.9	C	18.6	B	22.1	C	22.1	C	25.2	C
			EASTBOUND	32.9	C	34.1	C	30.0	C	32.5	C	30.1	C	33.8	C	32.5	C	35.4	D
			EB Left	46.8	D	53.9	D	42.7	D	45.5	D	45.4	D	52.1	D				
			EB Thru																
			EB Right	30.7	C	31.1	C	27.5	C	29.9	C	27.1	C	30.2	C	29.9	C	34.1	C
			WESTBOUND																
			WB Left																
			WB Thru/Right																
			NORTHBOUND					16.9	B	19.2	B	14.4	B	16.4	B				
			NB Left					38.5	D	42.3	D	28.8	C	32.6	C				
			NB Thru/Right	2.1	A	2.8	A	4.9	A	6.6	A	2.8	A	3.3	A	3.1	A	5.2	A
			SOUTHBOUND	14.3	B	23.5	C	15.0	B	20.1	C	16.5	B	22.0	C	19.0	B	30.1	C
			SB Left	10.0	B	14.3	B	9.0	A	9.9	A	10.0	B	11.0	B	12.4	B	15.5	B
			SB Thru/Right	14.9	B	25.0	C	15.8	B	21.4	C	17.4	B	23.7	C	20.0	C	32.4	C
			SB Right	10.3	B	14.7	B	9.3	A	10.3	B	10.3	B	11.4	B	12.7	B	15.9	B
11	James Avenue	Stop	WESTBOUND	15.3	C	18.9	C	15.2	C	18.6	C	15.2	B	15.4	C	14.3	B	17.3	C
			WB Left/Thru/Right	15.3	C	18.9	C	15.2	C	18.6	C	13.2	B	15.4	C	14.3	B	17.3	C

Delay Reduction Color Code: Actuated Green Time Increases

Level of Service (LOS) for Roundabout Concept

	Cross-Street	Traffic Control Device	Geometry	[AM] Peak Hour				[MID] Peak Hour				[PM] Peak Hour				[SAT] Peak Hour			
				2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	**OVERALL**	**20.7**	**C**	**22.6**	**C**	**23.6**	**C**	**25.0**	**C**	**25.7**	**C**	**33.9**	**C**	**25.9**	**C**	**28.4**	**C**
			EASTBOUND (EB)									**35.1**	**D**	**56.7**	**D**	**28.7**	**C**	**28.9**	**C**
			EB Left									*32.8*	*C*	*33.7*	*C*				
			EB Thru									*39.5*	*D*	*42.7*	*D*	*32.0*	*C*	*32.6*	*C*
			EB Right									*32.6*	*C*	*33.4*	*C*				
			WESTBOUND (WB)					**21.7**	**C**	**21.7**	**C**	**26.0**	**C**	**31.3**	**C**	**18.9**	**B**	**19.1**	**B**
			WB Left					*25.1*	*C*	*25.1*	*C*	*31.8*	*C*	*45.3*	*D*	*21.2*	*C*	*21.3*	*C*
			WB Thru									*32.2*	*C*	*33.6*	*C*	*27.0*	*C*	*27.0*	*C*
			WB Right					*18.5*	*B*	*18.5*	*B*	*21.0*	*C*	*22.0*	*C*	*15.8*	*B*	*16.0*	*B*
			NORTHBOUND (NB)	**15.9**	**B**	**19.9**	**B**	**19.6**	**B**	**23.1**	**C**	**17.5**	**B**	**19.1**	**B**	**23.2**	**C**	**25.9**	**C**
			NB Left	*11.6*	*B*	*13.0*	*B*	*15.5*	*B*	*18.0*	*B*	*15.2*	*B*	*19.4*	*B*	*18.1*	*B*	*21.4*	*C*
			NB Thru	*18.2*	*B*	*23.1*	*C*	*21.7*	*C*	*25.6*	*C*	*19.0*	*B*	*20.6*	*C*	*25.9*	*C*	*29.1*	*C*
			NB Right	*8.8*	*A*	*10.8*	*B*	*14.4*	*B*	*16.9*	*B*	*10.7*	*B*	*11.1*	*B*	*16.4*	*B*	*17.4*	*B*
			SOUTHBOUND (SB)	**22.2**	**C**	**23.9**	**C**	**24.8**	**C**	**26.8**	**C**	**28.7**	**C**	**43.7**	**D**	**29.7**	**C**	**35.8**	**D**
			SB Left	*35.3*	*D*	*35.6*	*D*	*33.8*	*C*	*34.1*	*C*					*35.3*	*D*	*37.1*	*D*
			SB Thru	*10.8*	*B*	*13.9*	*B*	*17.0*	*B*	*20.9*	*C*	*27.1*	*C*	*48.7*	*D*	*26.3*	*C*	*36.0*	*D*
			SB Right	*8.0*	*A*	*9.6*	*B*	*11.7*	*B*	*12.9*	*B*					*14.9*	*B*	*15.4*	*B*
2	Parkway Commons / Cemetery	Roundabout	**OVERALL**	**7.2**	**A**	**8.8**	**A**	**8.5**	**A**	**11.2**	**B**	**7.9**	**A**	**10.3**	**B**	**7.1**	**A**	**8.9**	**A**
			EASTBOUND	**7.0**	**A**	**8.5**	**A**	**11.9**	**B**	**18.5**	**C**	**11.2**	**B**	**17.0**	**C**	**9.3**	**A**	**13.1**	**B**
			EB Left/Thru/U-Turn	*7.1*	*A*	*8.7*	*A*	*12.9*	*B*	*20.7*	*C*	*11.7*	*B*	*18.2*	*C*	*9.8*	*A*	*14.1*	*B*
			EB Right	*6.6*	*A*	*7.7*	*A*	*8.9*	*A*	*11.4*	*B*	*10.4*	*B*	*14.7*	*B*	*8.4*	*A*	*11.1*	*B*
			WESTBOUND	**8.6**	**A**	**10.9**	**B**	**8.4**	**A**	**10.7**	**B**	**7.0**	**A**	**8.5**	**A**	**6.8**	**A**	**8.4**	**A**
			WB Left/Thru/Right/U-Turn	*8.6*	*A*	*10.9*	*B*	*8.4*	*A*	*10.7*	*B*	*7.0*	*A*	*8.5*	*A*	*6.8*	*A*	*8.4*	*A*
			NORTHBOUND	**8.1**	**A**	**10.3**	**B**	**8.2**	**A**	**10.6**	**B**	**7.3**	**A**	**9.0**	**A**	**7.0**	**A**	**8.7**	**A**
			NB Left/Thru/U-Turn	*8.1*	*A*	*10.3*	*B*	*8.2*	*A*	*10.6*	*B*	*7.3*	*A*	*9.0*	*A*	*7.0*	*A*	*8.7*	*A*
			NB Thru/Right	*8.1*	*A*	*10.3*	*B*	*8.2*	*A*	*10.6*	*B*	*7.3*	*A*	*9.0*	*A*	*7.0*	*A*	*8.7*	*A*
			SOUTHBOUND	**5.9**	**A**	**6.8**	**A**	**7.7**	**A**	**9.3**	**A**	**7.6**	**A**	**9.5**	**A**	**6.6**	**A**	**7.8**	**A**
			SB Left/Thru/U-Turn	*5.9*	*A*	*6.8*	*A*	*7.7*	*A*	*9.3*	*A*	*7.6*	*A*	*9.5*	*A*	*6.6*	*A*	*7.8*	*A*
			SB Thru/Right	*5.9*	*A*	*6.8*	*A*	*7.7*	*A*	*9.3*	*A*	*7.6*	*A*	*9.5*	*A*	*6.6*	*A*	*7.8*	*A*
3	Southeast Parkway / Shadow Green Drive	Roundabout	**OVERALL**	**10.3**	**B**	**15.0**	**C**	**13.0**	**B**	**20.9**	**C**	**10.7**	**B**	**15.8**	**C**	**10.0**	**B**	**14.2**	**B**
			EASTBOUND	**10.2**	**B**	**13.7**	**B**	**18.6**	**C**	**35.2**	**E**	**13.2**	**B**	**20.7**	**C**	**12.7**	**B**	**20.4**	**C**
			EB Left/Thru/U-Turn	*10.5*	*B*	*14.2*	*B*	*19.9*	*C*	*39.0*	*E*	*13.3*	*B*	*20.0*	*C*	*12.0*	*B*	*18.2*	*C*
			EB Right	*10.0*	*B*	*13.3*	*B*	*17.4*	*C*	*31.9*	*D*	*13.2*	*B*	*21.2*	*C*	*13.1*	*B*	*21.9*	*C*
			WESTBOUND	**14.4**	**B**	**23.5**	**C**	**15.3**	**C**	**25.5**	**D**	**10.8**	**B**	**15.4**	**C**	**10.0**	**B**	**13.8**	**B**
			WB Left/Thru/U-Turn	*12.0*	*B*	*16.4*	*C*	*16.1*	*C*	*26.9*	*D*	*10.7*	*B*	*14.5*	*B*	*10.0*	*B*	*13.4*	*B*
			WB Right	*15.1*	*C*	*25.3*	*D*	*14.6*	*B*	*24.3*	*C*	*11.0*	*B*	*15.9*	*C*	*10.0*	*B*	*14.1*	*B*
			NORTHBOUND	**12.1**	**B**	**18.8**	**C**	**11.7**	**B**	**17.7**	**C**	**8.2**	**A**	**10.4**	**B**	**9.0**	**A**	**12.1**	**B**
			NB Left/Thru/U-Turn	*12.1*	*B*	*18.8*	*C*	*11.7*	*B*	*17.7*	*C*	*8.2*	*A*	*10.4*	*B*	*9.0*	*A*	*12.1*	*B*
			NB Thru/Right	*12.1*	*B*	*18.8*	*C*	*11.7*	*B*	*17.7*	*C*	*8.2*	*A*	*10.4*	*B*	*9.0*	*A*	*12.1*	*B*
			SOUTHBOUND	**7.0**	**A**	**8.5**	**A**	**11.4**	**B**	**17.2**	**C**	**12.1**	**B**	**19.0**	**C**	**9.9**	**A**	**14.0**	**B**
			SB Left/Thru/U-Turn	*7.0*	*A*	*8.5*	*A*	*11.4*	*B*	*17.2*	*C*	*12.1*	*B*	*19.0*	*C*	*9.9*	*A*	*14.0*	*B*
			NB Thru/Right	*7.0*	*A*	*8.5*	*A*	*11.4*	*B*	*17.2*	*C*	*12.1*	*B*	*19.0*	*C*	*9.9*	*A*	*14.0*	*B*
4	Alpha Drive	Two-Way Stop Control (TWSC)	**EASTBOUND**	**11.2**	**B**	**12.1**	**B**	**13.0**	**B**	**14.7**	**B**	**14.1**	**B**	**16.3**	**C**	**13.6**	**B**	**15.5**	**C**
			EB Left/Thru/Right	*11.2*	*B*	*12.1*	*B*	*13.0*	*B*	*14.7*	*B*	*14.1*	*B*	*16.3*	*C*	*13.6*	*B*	*15.5*	*C*
			WESTBOUND	**15.0**	**C**	**18.4**	**C**	**17.9**	**C**	**26.5**	**D**	**14.8**	**B**	**18.7**	**C**	**14.5**	**B**	**17.9**	**C**
			WB Left/Thru/Right	*15.0*	*C*	*18.4*	*C*	*17.9*	*C*	*26.5*	*D*	*14.8*	*B*	*18.7*	*C*	*14.5*	*B*	*17.9*	*C*
5	Century Court	Roundabout	**OVERALL**	**9.0**	**A**	**12.0**	**B**	**10.9**	**B**	**16.0**	**C**	**8.7**	**A**	**11.6**	**B**	**7.7**	**A**	**9.8**	**A**
			EASTBOUND	**8.3**	**A**	**10.8**	**B**	**13.3**	**B**	**20.8**	**C**	**12.2**	**B**	**18.6**	**C**	**9.6**	**A**	**13.0**	**B**
			EB Left/Thru/U-Turn	*8.2*	*A*	*10.6*	*B*	*13.7*	*B*	*21.1*	*C*	*12.5*	*B*	*18.5*	*C*	*9.2*	*A*	*12.4*	*B*
			EB Right	*8.5*	*A*	*11.0*	*B*	*13.0*	*B*	*20.6*	*C*	*12.1*	*B*	*18.7*	*C*	*10.2*	*B*	*13.9*	*B*
			WESTBOUND	**10.3**	**B**	**13.4**	**B**	**11.0**	**B**	**14.5**	**B**	**8.0**	**A**	**10.1**	**B**	**7.7**	**A**	**9.6**	**A**
			WB Left/Thru/Right/U-Turn	*10.3*	*B*	*13.4*	*B*	*11.0*	*B*	*14.5*	*B*	*8.0*	*A*	*10.1*	*B*	*7.7*	*A*	*9.6*	*A*
			NORTHBOUND	**10.0**	**B**	**13.8**	**B**	**11.2**	**B**	**16.7**	**C**	**7.9**	**A**	**10.1**	**B**	**7.6**	**A**	**9.5**	**A**
			NB Left/Thru/U-Turn	*10.0*	*B*	*13.8*	*B*	*11.2*	*B*	*16.7*	*C*	*7.9*	*A*	*10.1*	*B*	*7.6*	*A*	*9.5*	*A*
			NB Thru/Right	*10.0*	*B*	*13.8*	*B*	*11.2*	*B*	*16.7*	*C*	*7.9*	*A*	*10.1*	*B*	*7.6*	*A*	*9.5*	*A*
			SOUTHBOUND	**7.8**	**A**	**9.7**	**A**	**10.0**	**B**	**14.1**	**B**	**8.8**	**A**	**11.8**	**B**	**7.7**	**A**	**9.7**	**A**
			SB Left/Thru/U-Turn	*7.8*	*A*	*9.7*	*A*	*10.0*	*B*	*14.1*	*B*	*8.8*	*A*	*11.8*	*B*	*7.7*	*A*	*9.7*	*A*
			SB Thru/Right	*7.8*	*A*	*9.7*	*A*	*10.0*	*B*	*14.1*	*B*	*8.8*	*A*	*11.8*	*B*	*7.7*	*A*	*9.7*	*A*
6	Beasley Drive / Lumber Drive	TWSC	**EASTBOUND**	**13.0**	**B**	**15.1**	**C**	**15.2**	**C**	**19.8**	**C**	**16.7**	**C**	**23.0**	**C**	**16.3**	**C**	**21.5**	**C**
			EB Right	*13.0*	*B*	*15.1*	*C*	*15.2*	*C*	*19.8*	*C*	*16.7*	*C*	*23.0*	*C*	*16.3*	*C*	*21.5*	*C*
			WESTBOUND	**13.3**	**B**	**15.1**	**C**	**14.9**	**B**	**18.2**	**C**	**13.5**	**B**	**15.7**	**C**	**14.6**	**B**	**17.5**	**C**
			WB Right	*13.3*	*B*	*15.1*	*C*	*14.9*	*B*	*18.2*	*C*	*13.5*	*B*	*15.7*	*C*	*14.6*	*B*	*17.5*	*C*
7	Franklin Business Park (North) / Future Werthan Circle	Roundabout	**OVERALL**	**7.4**	**A**	**9.1**	**A**	**7.6**	**A**	**9.4**	**A**	**6.8**	**A**	**8.0**	**A**	**7.9**	**A**	**10.3**	**B**
			WESTBOUND	**9.7**	**A**	**12.9**	**B**	**10.5**	**B**	**14.5**	**B**	**7.7**	**A**	**9.4**	**A**	**12.2**	**B**	**20.0**	**C**
			WB Left/Right/U-Turn	*9.7*	*A*	*12.9*	*B*	*10.5*	*B*	*14.5*	*B*	*7.7*	*A*	*9.4*	*A*	*12.2*	*B*	*20.0*	*C*
			NORTHBOUND	**7.7**	**A**	**9.4**	**A**	**7.4**	**A**	**8.9**	**A**	**6.6**	**A**	**7.5**	**A**	**6.9**	**A**	**8.4**	**A**
			NB Thru/U-Turn	*7.7*	*A*	*9.4*	*A*	*7.4*	*A*	*8.9*	*A*	*6.6*	*A*	*7.5*	*A*	*6.9*	*A*	*8.4*	*A*
			NB Thru/Right	*7.7*	*A*	*9.4*	*A*	*7.4*	*A*	*8.9*	*A*	*6.6*	*A*	*7.5*	*A*	*6.9*	*A*	*8.4*	*A*
			SOUTHBOUND	**6.9**	**A**	**8.4**	**A**	**7.6**	**A**	**9.5**	**A**	**7.0**	**A**	**8.5**	**A**	**8.0**	**A**	**10.3**	**B**
			SB Left/Thru/U-Turn	*6.9*	*A*	*8.4*	*A*	*7.6*	*A*	*9.5*	*A*	*7.0*	*A*	*8.5*	*A*	*8.0*	*A*	*10.3*	*B*
			SB Thru	*6.9*	*A*	*8.4*	*A*	*7.6*	*A*	*9.5*	*A*	*7.0*	*A*	*8.5*	*A*	*8.0*	*A*	*10.3*	*B*
8	Confederate Drive / Werthan Circle	Roundabout	**OVERALL**	**8.2**	**A**	**10.3**	**B**	**7.8**	**A**	**9.7**	**A**	**6.5**	**A**	**7.7**	**A**	**7.0**	**A**	**7.9**	**A**
			EASTBOUND	**9.1**	**A**	**12.0**	**B**	**8.6**	**A**	**10.9**	**B**	**7.6**	**A**	**9.4**	**A**	**8.3**	**A**	**8.7**	**A**
			EB Left/Thru/Right/U-Turn	*9.1*	*A*	*12.0*	*B*	*8.6*	*A*	*10.9*	*B*	*7.6*	*A*	*9.4*	*A*	*8.3*	*A*	*8.7*	*A*
			WESTBOUND	**10.3**	**B**	**14.0**	**B**	**10.6**	**B**	**14.8**	**B**	**7.7**	**A**	**9.8**	**A**	**8.1**	**A**	**10.4**	**B**
			WB Left/Thru/Right/U-Turn	*10.3*	*B*	*14.0*	*B*	*10.6*	*B*	*14.8*	*B*	*7.7*	*A*	*9.8*	*A*	*8.1*	*A*	*10.4*	*B*
			NORTHBOUND	**8.6**	**A**	**11.0**	**B**	**8.1**	**A**	**10.0**	**B**	**6.3**	**A**	**7.5**	**A**	**6.9**	**A**	**8.3**	**A**
			NB Left/Thru/U-Turn	*8.6*	*A*	*11.0*	*B*	*8.1*	*A*	*10.0*	*B*	*6.3*	*A*	*7.5*	*A*	*6.9*	*A*	*8.3*	*A*
			NB Thru/Right	*8.6*	*A*	*11.0*	*B*	*8.1*	*A*	*10.0*	*B*	*6.3*	*A*	*7.5*	*A*	*6.9*	*A*	*8.3*	*A*
			SOUTHBOUND	**7.4**	**A**	**9.0**	**A**	**7.2**	**A**	**8.6**	**A**	**6.6**	**A**	**7.8**	**A**	**6.9**	**A**	**7.2**	**A**
			SB Left/Thru/U-Turn	*7.4*	*A*	*9.0*	*A*	*7.2*	*A*	*8.6*	*A*	*6.6*	*A*	*7.8*	*A*	*6.9*	*A*	*7.2*	*A*
			SB Thru/Right	*7.4*	*A*	*9.0*	*A*	*7.2*	*A*	*8.6*	*A*	*6.6*	*A*	*7.8*	*A*	*6.9*	*A*	*7.2*	*A*
9	Carr Avenue	Stop	**WESTBOUND**	**10.8**	**B**	**11.5**	**B**	**11.0**	**B**	**11.9**	**B**	**10.9**	**B**	**11.8**	**B**	**11.4**	**B**	**12.4**	**B**
			WB Right	*10.8*	*B*	*11.5*	*B*	*11.0*	*B*	*11.9*	*B*	*10.9*	*B*	*11.8*	*B*	*11.4*	*B*	*12.4*	*B*
10	Downs Boulevard	Signal	**OVERALL**	**17.7**	**B**	**19.2**	**B**	**17.6**	**B**	**19.4**	**B**	**19.8**	**B**	**22.2**	**C**	**21.6**	**C**	**25.6**	**C**
			EASTBOUND					**29.6**	**C**	**30.7**	**C**	**29.1**	**C**	**30.4**	**C**	**32.2**	**C**	**35.4**	**D**
			EB Left	*42.7*	*D*	*44.6*	*D*	*42.4*	*D*	*43.6*	*D*	*43.0*	*D*	*44.8*	*D*				
			EB Thru																
			EB Right					*27.1*	*C*	*28.1*	*C*	*26.4*	*C*	*27.5*	*C*	*29.9*	*C*	*34.4*	*C*
			WESTBOUND																
			WB Left	*36.4*	*D*	*36.6*	*D*												
			WB Thru/Right																
			NORTHBOUND					**15.6**	**B**	**16.3**	**B**	**18.5**	**B**	**18.7**	**B**	**16.9**	**B**	**17.3**	**B**
			NB Left					*37.1*	*D*	*37.3*	*D*								
			NB Thru/Right	*3.9*	*A*	*5.2*	*A*	*3.7*	*A*	*4.8*	*A*	*3.4*	*A*	*4.4*	*A*	*4.2*	*A*	*6.2*	*A*
			SOUTHBOUND	**17.4**	**B**	**32.6**	**C**	**12.3**	**B**	**16.3**	**B**	**14.9**	**B**	**21.3**	**C**	**18.2**	**B**	**29.8**	**C**
			SB Left	*12.5*	*B*	*18.7*	*B*	*7.8*	*A*	*8.9*	*A*	*9.0*	*A*	*10.7*	*B*	*11.6*	*B*	*14.8*	*B*
			SB Thru/Right	*18.1*	*B*	*34.9*	*C*	*12.9*	*B*	*17.2*	*B*	*15.7*	*B*	*22.8*	*C*	*19.1*	*B*	*32.1*	*C*
			SB Right	*12.8*	*B*	*19.1*	*B*	*8.1*	*A*	*9.2*	*A*	*9.4*	*A*	*11.1*	*B*	*11.9*	*B*	*15.2*	*B*
14	James Avenue	Stop	**WESTBOUND**	**15.0**	**C**	**18.5**	**C**	**14.8**	**B**	**18.0**	**C**	**13.3**	**B**	**15.5**	**C**	**14.7**	**B**	**18.0**	**C**
			WB Left/Thru/Right	*15.0*	*C*	*18.5*	*C*	*14.8*	*B*	*18.0*	*C*	*13.3*	*B*	*15.5*	*C*	*14.7*	*B*	*18.0*	*C*

Delay Reduction Color Code: [illegible] Increase (Red)

Queue Length for No-Build Condition

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)			[MID] Peak Hour Queue Length (Feet)			[PM] Peak Hour Queue Length (Feet)			[SAT] Peak Hour Queue Length (Feet)		
						2016	2021	2041	2016	2021	2041	2016	2021	2041	2016	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)														
			EB Left	150'	(6 veh)	13'	13'	15'	56'	62'	73'	28'	29'	32'	28'	29'	33'
			EB Thru/Right	450'	(18 veh)	58'	60'	68'	205'	266'	353'	211'	234'	321'	202'	212'	305'
			WESTBOUND (WB)														
			WB Left	640'	(25 veh)	147'	155'	185'	96'	107'	127'	214'	224'	349'	86'	89'	106'
			WB Thru	999'	(40 veh)	81'	86'	98'	110'	116'	139'	108'	112'	133'	109'	113'	136'
			WB Right	325'	(13 veh)	60'	116'	230'	39'	45'	154'	42'	79'	167'	32'	35'	73'
			NORTHBOUND (NB)														
			NB Left	200'	(8 veh)	36'	37'	44'	57'	55'	61'	53'	53'	61'	81'	84'	100'
			NB Thru	775'	(31 veh)	587'	678'	1012'	325'	362'	419'	416'	493'	643'	355'	468'	613'
			NB Right	200'	(8 veh)	15'	18'	27'	15'			14'	14'	19'	15'	15'	21'
			SOUTHBOUND (SB)														
			SB Left	300'	(12 veh)	161'	214'	277'	210'	252'	323'	164'	184'	214'	169'	194'	204'
			SB Thru	560'	(22 veh)	9'	17'	75'	392'	476'	556'	762'	823'	1117'	420'	474'	607'
			SB Right	400'	(16 veh)	0'	0'	0'			1'	0'	0'	0'	0'		
2	Parkway Commons / Cemetery	Signal	EASTBOUND														
			EB Left/Thru	175'	(7 veh)	108'	112'	131'	292'	313'	413'	198'	218'	276'	176'	185'	224'
			EB Right	175'	(7 veh)	0'	0'	0'	21'	28'	38'	32'	36'	43'	25'	30'	33'
			WESTBOUND														
			WB Left/Thru/Right	250'	(10 veh)	12'	12'	12'	45'	47'	52'	12'	12'	12'	18'	18'	20'
			NORTHBOUND														
			NB Left	50'	(2 veh)	23'	23'	23'	41'	46'	55'	41'	42'	48'	25'	26'	27'
			NB Thru/Right	150'	(6 veh)	1003'	1188'	1590'	266'	306'	955'	245'	292'	1046'	217'	761'	900'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	0'					0'			1'			3'
			SB Thru/Right	150'	(6 veh)	290'	354'	364'	385'	476'	589'	465'	656'	700'	378'	422'	519'
3	Southeast Parkway / Shadow Green Drive	Signal	EASTBOUND														
			EB Left	100'	(4 veh)	83'	190'	208'	146'	227'	286'	77'	111'	128'	97'	132'	155'
			EB Thru	200'	(8 veh)	41'	68'	73'	44'	70'	77'	31'	47'	48'	35'	48'	52'
			EB Right	75'	(3 veh)	47'	66'	70'	53'	99'	186'	49'	57'	121'	53'	82'	157'
			WESTBOUND														
			WB Left	125'	(5 veh)	35'	36'	41'	110'	114'	135'	62'	65'	75'	38'	38'	44'
			WB Thru/Right	300'	(12 veh)	79'	86'	98'	112'	176'	262'	87'	164'	225'	66'	78'	87'
			NORTHBOUND														
			NB Left	150'	(6 veh)	41'			20'			27'	82'	164'	87'	150'	161'
			NB Thru/Right	150'	(6 veh)	612'	1030'	1360'	188'	382'	1131'	292'	349'	434'	602'	666'	956'
			SOUTHBOUND														
			SB Left	120'	(4 veh)	9'	20'	101'			39'	22'					61'
			SB Thru	580'	(23 veh)				252'	273'	288'	250'	402'	447'	209'	283'	244'
			SB Right	100'	(4 veh)							3'	25'	27'	29'		
4	Alpha Drive	Stop	WESTBOUND														
			WB Left/Thru/Right	200'	(8 veh)	26'	43'	167'	116'	192'	457'	84'	158'	9999'	37'	55'	174'
			SOUTHBOUND														
			SB Left	75'	(3 veh)	5'	9'	26'	6'	8'	22'	3'	4'	7'	3'	3'	7'
5	Century Court	Signal	EASTBOUND														
			EB Left	125'	(5 veh)	124'	151'	178'	121'	147'	172'	99'	114'	132'	59'	73'	82'
			EB Thru/Right	225'	(9 veh)	46'	47'	51'	59'	80'	66'	57'	57'	61'	32'	32'	34'
			WESTBOUND														
			WB Left/Thru/Right	50'	(2 veh)	11'	11'	11'	11'	11'	11'	11'	11'	11'	12'	12'	13'
			NORTHBOUND														
			NB Left	75'	(3 veh)			55'			93'			22'	6'	6'	6'
			NB Thru/Right	200'	(8 veh)	590'	676'	677'	583'	702'	953'	539'	616'	974'	120'	158'	174'
			SOUTHBOUND														
			SB Left	100'	(4 veh)	1'	1'	0'			2'	1'	1'	1'			1'
			SB Thru/Right	225'	(9 veh)	227'	482'	1111'	821'	1048'	1393'	957'	1204'	1640'	171'	1014'	1390'
6	Beasley Drive / Lumber Drive	Two-Way Stop Control (TWSC)	EASTBOUND														
			EB Left/Thru/Right	325'	(13 veh)	16'	19'	9999'	80'	55'	101'	42'	64'	151'	29'	44'	183'
			WESTBOUND														
			WB Left/Thru/Right	200'	(8 veh)	3'	4'	15'	35'	68'	104'	26'	52'	82'	23'	49'	9999'
			NORTHBOUND														
			NB Left	75'	(3 veh)	9'	10'	18'	9'	11'	32'	4'	5'	13'	3'	4'	10'
			SOUTHBOUND														
			SB Left	25'	(1 veh)	1'	2'	5'	5'	7'	19'	3'	3'	11'	4'	9'	17'
7	Franklin Business Park (North) / Future Werthan Circle	Signal	WESTBOUND														
			WB Left	150'	(6 veh)	33'	33'	37'	62'	66'	76'	48'	50'	58'	124'	129'	153'
			WB Right	150'	(6 veh)	30'	31'	34'	33'	33'	37'	31'	31'	34'	41'	42'	46'
			NORTHBOUND														
			NB Thru/Right	275'	(11 veh)	363'	556'	1328'	638'	795'	1325'	696'	817'	1156'	508'	651'	1158'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	7'			3'	5'	5'	4'	5'	10'			
			SB Thru	999'	(40 veh)	193'	214'	319'	205'	310'	553'	248'	409'	463'	661'	774'	848'
8	Confederate Drive / Werthan Circle	TWSC	EASTBOUND														
			EB Left	100'	(4 veh)	16'	61'	9999'	0'	18'	78'	3'	10'	21'	0'	20'	75'
			EB Thru/Right	150'	(6 veh)	5'	18'	175'	2'	13'	35'	1'	8'	14'	1'	16'	34'
			WESTBOUND														
			WB Left	100'	(4 veh)	17'	32'	117'	15'	26'	81'	5'	7'	17'	5'	10'	37'
			WB Thru/Right	200'	(8 veh)	6'	11'	24'	9'	16'	34'	4'	6'	11'	7'	12'	31'
			NORTHBOUND														
			NB Left	100'	(4 veh)	5'	8'	13'	0'	4'	5'	0'	3'	4'	0'	5'	7'
			SOUTHBOUND														
			SB Left	100'	(4 veh)	7'	9'	22'	7'	9'	21'	1'	1'	2'	4'	5'	11'
9	Carr Avenue	Stop	WESTBOUND														
			WB Left/Thru/Right	175'	(7 veh)	9'	11'	20'	22'	29'	64'	20'	27'	59'	20'	26'	58'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	3'	3'	5'	3'	4'	6'	3'	3'	5'	2'	3'	4'
10	Downs Boulevard	Signal	EASTBOUND														
			EB Left/Thru	350'	(14 veh)	104'	107'	119'	101'	105'	120'	118'	114'	132'	108'	113'	135'
			EB Right	350'	(14 veh)	107'	111'	274'	92'	96'	104'	95'	99'	107'	101'	149'	412'
			WESTBOUND														
			WB Left/Thru/Right	50'	(2 veh)	14'	14'	16'	23'	23'	27'	22'	22'	26'	21'	21'	25'
			NORTHBOUND														
			NB Left	150'	(6 veh)	166'	195'	245'	148'	198'	303'	311'	387'	586'	289'	347'	464'
			NB Thru/Right	175'	(7 veh)	490'	572'	627'	425'	493'	674'	355'	414'	581'	316'	350'	352'
			SOUTHBOUND														
			SB Left	50'	(2 veh)	5'	5'	8'	6'	8'	10'	7'	9'	10'	7'	8'	8'
			SB Thru/Right	125'	(5 veh)	301'	374'	596'	460'	685'	1031'	554'	826'	1093'	418'	493'	716'
11	James Avenue	Stop	WESTBOUND														
			WB Left/Thru/Right	125'	(5 veh)	7'	9'	15'	8'	10'	16'	8'	9'	14'	9'	11'	17'
			SOUTHBOUND														
			SB Left	200'	(8 veh)	0'	0'	1'	1'	1'	1'	1'	1'	1'	1'	1'	2'

Queue Reduction Color Code: [redacted]

NOTES: (1) No-Build results updated 8/25/2017 to assume consistent signal timings/offsets with 2016 existing conditions. Previous data had assumed improvements to signal timings in future conditions.

(2) Queue length of "9999" feet indicates maximum limit of model.

Queue Length for Five-Lane (Traditional) Concept

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)		[MID] Peak Hour Queue Length (Feet)		[PM] Peak Hour Queue Length (Feet)		[SAT] Peak Hour Queue Length (Feet)	
						2021	2041	2021	2041	2021	2041	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)										
			EB Left	150'	(6 veh)	10'	11'	44'	52'	23'	26'	27'	30'
			EB Thru	450'	(18 veh)	38'	48'	106'	126'	85'	99'	118'	141'
			EB Right	40'	(1 veh)	0'	0'	0'	0'	17'	34'	0'	0'
			WESTBOUND (WB)										
			WB Left	640'	(25 veh)	109'	129'	75'	89'	178'	198'	82'	97'
			WB Thru	999'	(40 veh)	64'	73'	87'	104'	91'	107'	104'	124'
			WB Right	325'	(13 veh)	109'	182'	66'	145'	87'	161'	74'	144'
			NORTHBOUND (NB)										
			NB Left	200'	(8 veh)	20'	24'	27'	32'	22'	26'	42'	50'
			NB Thru	775'	(31 veh)	228'	291'	135'	162'	160'	196'	157'	190'
			NB Right	40'	(1 veh)	40'	57'	6'	17'	1'	8'	11'	29'
			SOUTHBOUND (SB)										
			SB Left	300'	(12 veh)	153'	175'	100'	114'	116'	127'	91'	140'
			SB Thru	560'	(22 veh)	265'	315'	184'	242'	608'	804'	418'	509'
			SB Right	400'	(16 veh)	0'	0'	0'	0'	0'	0'	0'	0'
2	Parkway Commons / Cemetery	Signal	EASTBOUND										
			EB Left	175'	(7 veh)	102'	120'	229'	308'	175'	242'	189'	244'
			EB Thru/Right	175'	(7 veh)	0'	0'	0'	0'	0'	9'	0'	8'
			WESTBOUND										
			WB Left/Thru/Right	250'	(10 veh)	10'	10'	35'	39'	10'	10'	17'	18'
			NORTHBOUND										
			NB Left	150'	(6 veh)	74'	74'	93'	119'	105'	140'	80'	92'
			NB Thru/Right	150'	(6 veh)	95'	125'	234'	274'	275'	315'	254'	291'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	1'	1'	3'	3'	0'	1'	2'	2'
			SB Thru/Right	150'	(6 veh)	52'	57'	132'	448'	60'	78'	79'	98'
3	Southeast Parkway / Shadow Green Drive	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	99'	124'	121'	137'	78'	86'	108'	119'
			EB Thru	200'	(8 veh)	48'	52'	47'	52'	35'	37'	40'	43'
			EB Right	75'	(3 veh)	46'	48'	82'	124'	50'	80'	78'	121'
			WESTBOUND										
			WB Left	125'	(5 veh)	24'	28'	70'	83'	46'	54'	32'	36'
			WB Thru/Right	300'	(12 veh)	66'	73'	86'	104'	87'	103'	68'	75'
			NORTHBOUND										
			NB Left	200'	(8 veh)	4'	4'	24'	61'	102'	177'	70'	120'
			NB Thru/Right	385'	(15 veh)	50'	59'	92'	119'	32'	44'	72'	91'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	73'	114'	43'	73'	21'	22'	32'	46'
			SB Thru	580'	(23 veh)	147'	209'	145'	193'	113'	176'	101'	127'
			SB Right	100'	(4 veh)	0'	0'	0'	0'	1'	1'	7'	7'
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND										
			EB Left/Thru/Right	50'	(2 veh)	1'	1'	2'	3'	2'	4'	2'	3'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	11'	16'	43'	74'	34'	60'	16'	28'
			NORTHBOUND										
			NB Left	175'	(7 veh)	1'	1'	2'	2'	2'	3'	0'	1'
			SOUTHBOUND										
			SB Left	75'	(3 veh)	4'	6'	3'	7'	3'	4'	2'	3'
5	Century Court	Signal	EASTBOUND										
			EB Left	125'	(5 veh)	107'	124'	107'	125'	84'	98'	64'	70'
			EB Thru/Right	225'	(9 veh)	37'	40'	50'	54'	47'	52'	29'	31'
			WESTBOUND										
			WB Left/Thru/Right	50'	(2 veh)	8'	8'	9'	9'	9'	9'	11'	12'
			NORTHBOUND										
			NB Left	75'	(3 veh)	23'	47'	37'	66'	8'	15'	4'	8'
			NB Thru/Right	200'	(8 veh)	71'	82'	82'	137'	43'	100'	45'	111'
			SOUTHBOUND										
			SB Left	100'	(4 veh)			2'	2'	1'	1'	1'	1'
			SB Thru/Right	225'	(9 veh)	262'	327'	130'	152'	97'	128'	265'	384'
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND										
			EB Left/Thru/Right	325'	(13 veh)	11'	15'	18'	24'	23'	31'	14'	29'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	2'	3'	20'	32'	14'	24'	13'	20'
			NORTHBOUND										
			NB Left	25'	(1 veh)	10'	14'	10'	14'	4'	6'	3'	4'
			SOUTHBOUND										
			SB Left	200'	(8 veh)	1'	2'	3'	8'	3'	4'	4'	5'
7	Franklin Business Park (North) / Future Werthan Circle	Signal	WESTBOUND										
			WB Left	150'	(6 veh)	26'	28'	48'	55'	37'	43'	108'	128'
			WB Right	150'	(6 veh)	25'	28'	27'	30'	25'	28'	37'	41'
			NORTHBOUND										
			NB Thru/Right	275'	(11 veh)	72'	170'	235'	358'	118'	255'	157'	193'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	9'	9'	4'	4'	9'	12'	23'	55'
			SB Thru	999'	(40 veh)	90'	91'	70'	76'	50'	69'	121'	137'
8	Confederate Drive / Werthan Circle	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	62'	68'	36'	36'	35'	37'	39'	39'
			EB Thru/Right	150'	(6 veh)	37'	39'	35'	36'	26'	27'	34'	34'
			WESTBOUND										
			WB Left	100'	(4 veh)	47'	53'	52'	60'	28'	31'	26'	30'
			WB Thru/Right	200'	(8 veh)	29'	31'	36'	39'	25'	26'	31'	32'
			NORTHBOUND										
			NB Left	100'	(4 veh)	0'	0'			3'	3'		
			NB Thru/Right	115'	(4 veh)	8'	12'	78'	95'	84'	96'	101'	128'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	6'	10'	5'	10'				
			SB Thru/Right	325'	(13 veh)	154'	224'	116'	193'	116'	155'	135'	225'
9	Carr Avenue	Stop	WESTBOUND										
			WB Left/Thru/Right	175'	(7 veh)	6'	8'	13'	20'	13'	20'	11'	15'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	3'	4'	4'	5'	3'	5'	2'	4'
10	Downs Boulevard	Signal	EASTBOUND										
			EB Left	150'	(6 veh)	85'	100'	76'	89'	86'	102'	100'	119'
			EB Thru	350'	(14 veh)	8'	10'	5'	5'	8'	10'	5'	5'
			EB Right	350'	(14 veh)	192'	334'	115'	218'	163'	269'	279'	503'
			WESTBOUND										
			WB Left	100'	(4 veh)	8'	10'	9'	11'	12'	13'	14'	16'
			WB Thru/Right	250'	(10 veh)	9'	10'	14'	18'	13'	15'	11'	14'
			NORTHBOUND										
			NB Left	300'	(12 veh)	94'	102'	134'	195'	103'	159'	145'	184'
			NB Thru/Right	175'	(7 veh)	32'	38'	106'	569'	75'	98'	108'	366'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	5'	7'	5'	7'	6'	7'	7'	8'
			SB Thru	450'	(18 veh)	292'	416'	346'	482'	377'	551'	370'	529'
			SB Right	300'	(12 veh)	24'	28'	21'	23'	24'	27'	27'	29'
11	James Avenue	Stop	WESTBOUND										
			WB Right	125'	(5 veh)	9'	15'	9'	15'	8'	12'	10'	16'

Queue Reduction Color Code:

Queue Length for Five-Lane (Access Management) Concept

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)		[MID] Peak Hour Queue Length (Feet)		[PM] Peak Hour Queue Length (Feet)		[SAT] Peak Hour Queue Length (Feet)	
						2021	2041	2021	2041	2021	2041	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)										
			EB Left	150'	(6 veh)	10'	11'	44'	52'	23'	26'	27'	30'
			EB Thru	450'	(18 veh)	38'	43'	106'	126'	85'	99'	118'	141'
			EB Right	40'	(1 veh)	0'	0'	0'	0'	17'	34'	0'	0'
			WESTBOUND (WB)										
			WB Left	640'	(25 veh)	109'	129'	75'	89'	178'	198'	82'	97'
			WB Thru	999'	(40 veh)	64'	73'	87'	104'	91'	107'	104'	124'
			WB Right	325'	(13 veh)	109'	182'	66'	145'	87'	161'	74'	144'
			NORTHBOUND (NB)										
			NB Left	200'	(8 veh)	20'	24'	27'	32'	22'	26'	42'	50'
			NB Thru	775'	(31 veh)	228'	291'	135'	162'	160'	196'	157'	190'
			NB Right	40'	(1 veh)	40'	57'	6'	17'	1'	8'	11'	23'
			SOUTHBOUND (SB)										
			SB Left	300'	(12 veh)	135'	175'	100'	114'	116'	127'	91'	140'
			SB Thru	560'	(22 veh)	265'	314'	184'	243'	603'	804'	418'	509'
			SB Right	400'	(16 veh)	0'	0'	0'	0'	0'	0'	0'	0'
2	Parkway Commons / Cemetery	Signal	EASTBOUND										
			EB Left	175'	(7 veh)	102'	120'	229'	308'	175'	242'	189'	244'
			EB Thru/Right	175'	(7 veh)	0'	0'	0'	0'	0'	9'	0'	8'
			WESTBOUND										
			WB Left/Thru/Right	250'	(10 veh)	10'	10'	95'	39'	10'	10'	17'	18'
			NORTHBOUND										
			NB Left	150'	(6 veh)	74'	74'	93'	119'	105'	140'	80'	92'
			NB Thru/Right	150'	(6 veh)	95'	125'	234'	274'	275'	315'	254'	291'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	1'	1'	3'	3'	0'	1'	2'	2'
			SB Thru/Right	150'	(6 veh)	52'	57'	132'	448'	60'	78'	79'	98'
3	Southeast Parkway / Shadow Green Drive	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	99'	124'	121'	137'	78'	86'	105'	119'
			EB Thru	200'	(8 veh)	48'	52'	47'	52'	35'	37'	40'	43'
			EB Right	75'	(3 veh)	46'	48'	82'	124'	50'	80'	78'	121'
			WESTBOUND										
			WB Left	125'	(5 veh)	24'	28'	70'	83'	46'	54'	32'	36'
			WB Thru/Right	300'	(12 veh)	66'	73'	86'	104'	87'	109'	68'	75'
			NORTHBOUND										
			NB Left	200'	(8 veh)	4'	4'	24'	61'	102'	177'	70'	120'
			NB Thru/Right	385'	(15 veh)	50'	59'	92'	113'	32'	44'	72'	91'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	75'	114'	43'	73'	21'	21'	34'	46'
			SB Thru	580'	(23 veh)	147'	205'	143'	193'	112'	174'	116'	127'
			SB Right	100'	(4 veh)	0'	0'	0'	0'	1'	1'	7'	7'
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND										
			EB Left/Thru/Right	50'	(2 veh)	1'	1'	2'	8'	2'	4'	2'	5'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	11'	18'	43'	74'	34'	60'	16'	23'
			NORTHBOUND										
			NB Left	175'	(7 veh)	1'	1'	2'	2'	2'	3'	0'	1'
			SOUTHBOUND										
			SB Left	75'	(3 veh)	4'	6'	5'	7'	3'	4'	2'	3'
5	Century Court	Signal	EASTBOUND										
			EB Left	125'	(5 veh)	107'	124'	107'	125'	84'	98'	64'	70'
			EB Thru/Right	225'	(9 veh)	37'	40'	50'	54'	47'	52'	29'	31'
			WESTBOUND										
			WB Left/Thru/Right	50'	(2 veh)	8'	8'	9'	9'	9'	9'	11'	12'
			NORTHBOUND										
			NB Left	75'	(3 veh)	23'	47'	37'	66'	8'	15'	4'	8'
			NB Thru/Right	200'	(8 veh)	71'	82'	82'	137'	43'	100'	45'	111'
			SOUTHBOUND										
			SB Left	100'	(4 veh)			1'	2'	1'	1'	0'	1'
			SB Thru/Right	225'	(9 veh)	261'	325'	131'	153'	99'	130'	253'	374'
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND										
			EB Left/Thru/Right	325'	(13 veh)	11'	15'	18'	24'	22'	29'	14'	25'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	2'	5'	20'	32'	14'	23'	13'	20'
			NORTHBOUND										
			NB Left	25'	(1 veh)	10'	14'	10'	14'	4'	6'	3'	4'
			SOUTHBOUND										
			SB Left	200'	(8 veh)	1'	2'	5'	8'	3'	4'	4'	5'
7	Franklin Business Park (North) / Future Werthan Circle	Signal	WESTBOUND										
			WB Left	150'	(6 veh)	33'	37'	55'	62'	45'	52'	132'	157'
			WB Right	150'	(6 veh)	25'	28'	27'	29'	25'	28'	37'	41'
			NORTHBOUND										
			NB Thru/Right	275'	(11 veh)	72'	170'	252'	359'	118'	260'	137'	193'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	9'	9'	6'	6'	10'	14'	24'	65'
			SB Thru	999'	(40 veh)	89'	91'	70'	76'	49'	68'	121'	136'
8	Confederate Drive / Werthan Circle	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	62'	68'	36'	36'	35'	37'	39'	39'
			EB Thru/Right	150'	(6 veh)	37'	39'	35'	36'	26'	27'	34'	34'
			WESTBOUND										
			WB Left	100'	(4 veh)	47'	55'	52'	60'	28'	31'	26'	30'
			WB Thru/Right	200'	(8 veh)	29'	31'	36'	39'	25'	26'	31'	32'
			NORTHBOUND										
			NB Left	100'	(4 veh)	0'	0'	8'	8'			8'	8'
			NB Thru/Right	115'	(4 veh)	8'	12'	78'	106'	84'	100'	101'	128'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	6'	10'	5'	10'				
			SB Thru/Right	325'	(13 veh)	154'	224'	116'	193'	116'	155'	135'	223'
9	Carr Avenue	Stop	WESTBOUND										
			WB Left/Thru/Right	175'	(7 veh)	6'	8'	13'	20'	13'	20'	11'	15'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	3'	4'	4'	5'	3'	5'	2'	4'
10	Downs Boulevard	Signal	EASTBOUND										
			EB Left	150'	(6 veh)	85'	100'	76'	89'	86'	102'	100'	119'
			EB Thru	350'	(14 veh)	8'	10'	5'	5'	8'	10'	5'	5'
			EB Right	350'	(14 veh)	192'	334'	115'	218'	163'	269'	279'	503'
			WESTBOUND										
			WB Left	100'	(4 veh)	8'	10'	9'	11'	12'	13'	14'	16'
			WB Thru/Right	250'	(10 veh)	9'	10'	14'	18'	13'	15'	11'	14'
			NORTHBOUND										
			NB Left	300'	(12 veh)	94'	102'	137'	193'	104'	159'	144'	184'
			NB Thru/Right	175'	(7 veh)	32'	38'	106'	569'	78'	100'	109'	566'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	5'	7'	5'	7'	6'	7'	7'	8'
			SB Thru	450'	(18 veh)	292'	416'	346'	482'	377'	551'	370'	529'
			SB Right	300'	(12 veh)	24'	28'	21'	23'	24'	27'	27'	29'
11	James Avenue	Stop	WESTBOUND										
			WB Left/Thru/Right	125'	(5 veh)	5'	9'	6'	9'	4'	7'	6'	9'

Queue Reduction Color Code: [redacted]

Queue Length for Roundabout Concept

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)		[MID] Peak Hour Queue Length (Feet)		[PM] Peak Hour Queue Length (Feet)		[SAT] Peak Hour Queue Length (Feet)	
						2021	2041	2021	2041	2021	2041	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)										
			EB Left	150'	(6 veh)	10'	11'	43'	51'	23'	26'	27'	30'
			EB Thru	450'	(18 veh)	38'	43'	104'	123'	85'	101'	121'	144'
			EB Right	40'	(1 veh)	0'	0'	0'	0'	17'	34'	6'	19'
			WESTBOUND (WB)										
			WB Left	640'	(25 veh)	108'	128'	73'	87'	178'	215'	83'	99'
			WB Thru	999'	(40 veh)	64'	73'	86'	102'	91'	108'	106'	126'
			WB Right	325'	(13 veh)	106'	176'	61'	134'	87'	163'	82'	155'
			NORTHBOUND (NB)										
			NB Left	200'	(8 veh)	20'	24'	26'	31'	22'	25'	43'	53'
			NB Thru	999'	(40 veh)	223'	282'	131'	158'	160'	192'	162'	196'
			NB Right	40'	(1 veh)	40'	56'	5'	16'	1'	8'	12'	24'
			SOUTHBOUND (SB)										
			SB Left	300'	(12 veh)	130'	153'	152'	182'	114'	135'	158'	189'
			SB Thru	560'	(22 veh)	182'	222'	267'	333'	547'	784'	358'	513'
			SB Right	400'	(16 veh)	0'	0'	0'	0'	0'	0'	0'	0'
2	Parkway Commons / Cemetery	Roundabout	EASTBOUND										
			EB Left/Thru/U-Turn	175'	(7 veh)	13'	18'	47'	78'	35'	57'	33'	52'
			EB Right	175'	(7 veh)	4'	6'	13'	19'	19'	30'	16'	23'
			WESTBOUND										
			WB Left/Thru/Right/U-Turn	250'	(10 veh)	1'	1'	5'	7'	1'	1'	2'	2'
			NORTHBOUND										
			NB Left/Thru/U-Turn	150'	(6 veh)	70'	99'	53'	79'	55'	74'	52'	71'
			NB Thru/Right	150'	(6 veh)	70'	99'	53'	79'	55'	74'	52'	71'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	150'	(6 veh)	40'	52'	63'	86'	73'	104'	60'	83'
			SB Thru/Right	150'	(6 veh)	40'	52'	63'	86'	73'	104'	60'	83'
3	Southeast Parkway / Shadow Green Drive	Roundabout	EASTBOUND										
			EB Left/Thru/U-Turn	200'	(8 veh)	27'	37'	55'	93'	23'	36'	32'	49'
			EB Right	200'	(8 veh)	29'	41'	54'	87'	32'	50'	48'	77'
			WESTBOUND										
			WB Left/Thru/U-Turn	125'	(5 veh)	8'	12'	32'	53'	16'	24'	11'	16'
			WB Right	300'	(12 veh)	31'	52'	34'	56'	25'	40'	18'	28'
			NORTHBOUND										
			NB Left/Thru/U-Turn	450'	(18 veh)	102'	185'	89'	153'	65'	95'	71'	119'
			NB Thru/Right	450'	(18 veh)	102'	185'	89'	153'	65'	95'	71'	119'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	450'	(18 veh)	48'	66'	96'	175'	123'	230'	92'	164'
			SB Thru/Right	450'	(18 veh)	48'	66'	96'	175'	123'	230'	92'	164'
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND										
			EB Left/Thru/Right	50'	(2 veh)	0'	0'	2'	3'	2'	3'	1'	2'
			WESTBOUND										
			WB Left/Thru/Right	150'	(6 veh)	13'	21'	46'	87'	27'	44'	19'	31'
5	Century Court	Roundabout	EASTBOUND										
			EB Left/Thru/U-Turn	125'	(5 veh)	17'	23'	24'	39'	17'	27'	10'	14'
			EB Right	225'	(9 veh)	13'	19'	29'	47'	23'	38'	8'	12'
			WESTBOUND										
			WB Left/Thru/Right/U-Turn	50'	(2 veh)	1'	1'	1'	1'	1'	1'	1'	1'
			NORTHBOUND										
			NB Left/Thru/U-Turn	200'	(8 veh)	90'	146'	98'	187'	71'	101'	71'	101'
			NB Thru/Right	200'	(8 veh)	90'	146'	98'	187'	71'	101'	71'	101'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	275'	(11 veh)	56'	76'	79'	141'	85'	128'	82'	120'
			SB Thru/Right	275'	(11 veh)	56'	76'	79'	141'	85'	128'	82'	120'
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND										
			EB Right	325'	(13 veh)	16'	24'	30'	52'	39'	70'	29'	50'
			WESTBOUND										
			WB Right	200'	(8 veh)	2'	3'	16'	25'	9'	14'	12'	18'
7	Franklin Business Park (North) / Future Werthan Circle	Roundabout	WESTBOUND										
			WB Left/Right/U-Turn	150'	(6 veh)	9'	13'	15'	22'	9'	13'	39'	66'
			NORTHBOUND										
			NB Thru/U-Turn	275'	11'	73'	103'	70'	97'	59'	75'	63'	88'
			NB Thru/Right	275'	11'	73'	103'	70'	97'	59'	75'	63'	88'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	999'	(40 veh)	50'	69'	55'	76'	60'	83'	71'	102'
			SB Thru	999'	(40 veh)	50'	69'	55'	76'	60'	83'	71'	102'
8	Confederate Drive / Werthan Circle	Roundabout	EASTBOUND										
			EB Left/Thru/Right/U-Turn	150'	(6 veh)	17'	23'	11'	14'	7'	9'	11'	11'
			WESTBOUND										
			WB Left/Thru/Right/U-Turn	200'	(8 veh)	14'	21'	19'	30'	9'	12'	9'	13'
			NORTHBOUND										
			NB Left/Thru/U-Turn	115'	(4 veh)	71'	100'	66'	90'	54'	73'	65'	90'
			NB Thru/Right	115'	(4 veh)	71'	100'	66'	90'	54'	73'	65'	90'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	325'	(13 veh)	56'	76'	54'	74'	59'	80'	66'	71'
			SB Thru/Right	325'	(13 veh)	56'	76'	54'	74'	59'	80'	66'	71'
9	Carr Avenue	Stop	WESTBOUND										
			WB Right	175'	(7 veh)	2'	3'	6'	9'	5'	7'	6'	9'
10	Downs Boulevard	Signal	EASTBOUND										
			EB Left	150'	(6 veh)	82'	94'	76'	88'	83'	96'	100'	116'
			EB Thru	150'	(6 veh)	7'	9'	5'	5'	7'	9'	5'	5'
			EB Right	350'	(14 veh)	203'	237'	101'	191'	152'	257'	283'	517'
			WESTBOUND										
			WB Left	80'	(3 veh)	7'	9'	9'	11'	11'	12'	13'	16'
			WB Thru/Right	80'	(3 veh)	8'	10'	14'	17'	12'	14'	11'	14'
			NORTHBOUND										
			NB Left	900'	(36 veh)	100'	106'	138'	167'	175'	252'	182'	227'
			NB Thru/Right	900'	(36 veh)	192'	287'	176'	264'	150'	217'	198'	283'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	6'	9'	5'	7'	5'	7'	7'	8'
			SB Thru	450'	(18 veh)	332'	547'	327'	433'	359'	480'	377'	541'
			SB Right	300'	(12 veh)	27'	36'	20'	23'	23'	25'	27'	29'
11	James Avenue	Roundabout	WESTBOUND										
			WB Left/Thru/Right	125'	(5 veh)	5'	9'	5'	8'	4'	7'	6'	10'

Queue Reduction Color Code: (none)

DALTON
BANK
CVS
PHARMACY
CITIZENS
BANK
CITIZENS
BANK
CITIZENS
BANK

RESOLUTION NO. 2018-73

A RESOLUTION TO SELECT THE PEDESTRIAN AND/OR BICYCLE DESIGN CONCEPT FOR THE COLUMBIA AVENUE WIDENING & IMPROVEMENTS PROJECT

WHEREAS, on December 11, 2013, the Nashville Area Metropolitan Planning Organization (MPO) adopted the Transportation Improvement Program (TIP) for Fiscal Years 2014-2017, allocating $6,000,000.00 in total funding to the Preliminary Engineering (Environmental), Design, and Right-of-Way phases of this project and reserves an additional $15,000,000.00 in total funding for the Construction Phase; and

WHEREAS, the transportation improvements associated with the project will generally be funded with eighty percent (80%) federal funds and twenty percent (20%) state funds; and

WHEREAS, on July 14, 2015, the City of Franklin Board of Mayor and Aldermen unanimously approved the Local Agency Project Agreement (COF Contract No. 2014-0289, TDOT Contract No. 140204), which formally began the Columbia Avenue Widening & Improvements Project; and

WHEREAS, on September 12, 2017, the Board of Mayor and Aldermen approved Resolution 2017-43, selecting the Five-Lane Concept (with Access Management) as the preferred design concept for the Columbia Avenue Widening & Improvements Project; and

WHEREAS, staff has continued to develop the Five-Lane Concept (with Access Management) with options for the accommodation of pedestrians and/or bicycles as shown on Exhibit A.

NOW THEREFORE, BE IT RESOLVED, BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE:

That the Board of Mayor and Aldermen select **Option D**, as shown in Exhibit A, as the preferred corridor design concept for pedestrian and/or bicycle accommodations for the Columbia Avenue Widening & Improvements Project.

IT IS SO RESOLVED AND DONE on this _____ day of _____ 2018.

ATTEST:

By: _____
ERIC S. STUCKEY
City Administrator

CITY OF FRANKLIN, TENNESSEE:

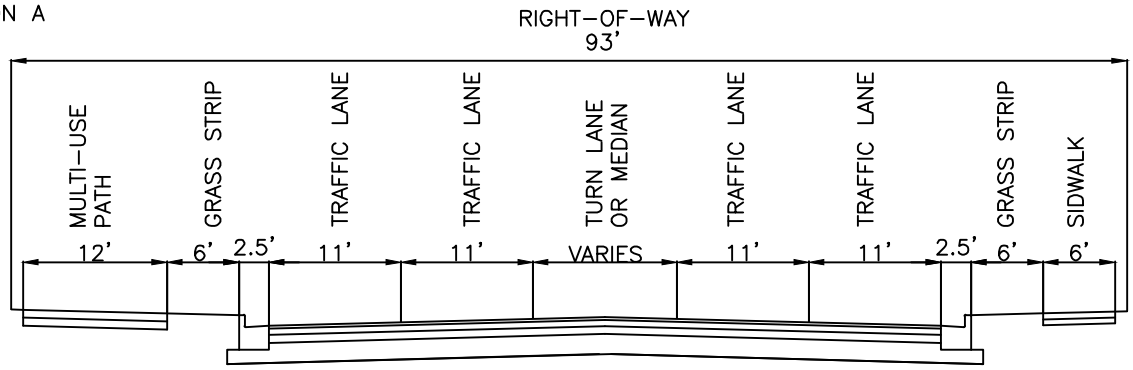
By: _____
DR. KEN MOORE
Mayor

Approved as to Form:

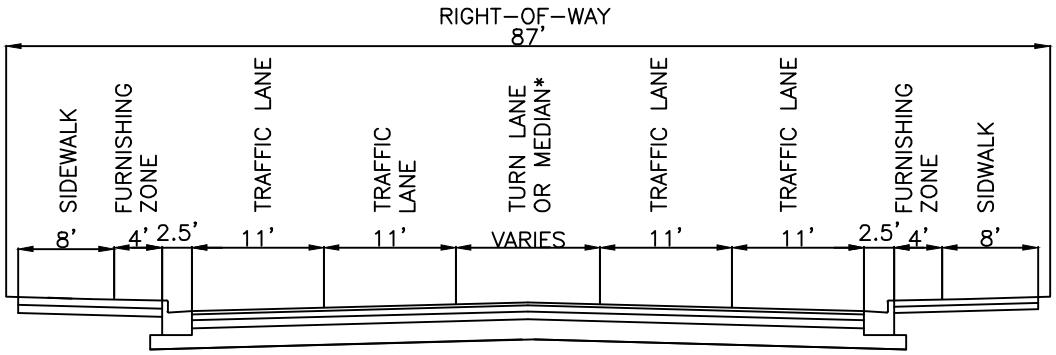
By: _____
Shauna R. Billingsley
City Attorney

Law Dept. approved 09.18.18

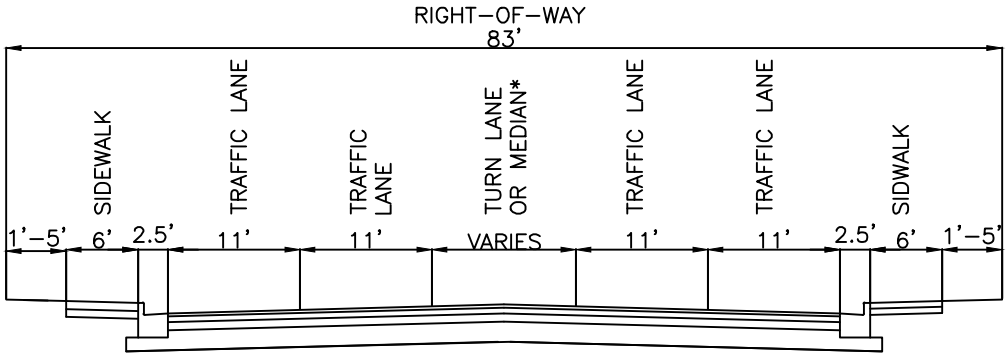
OPTION A



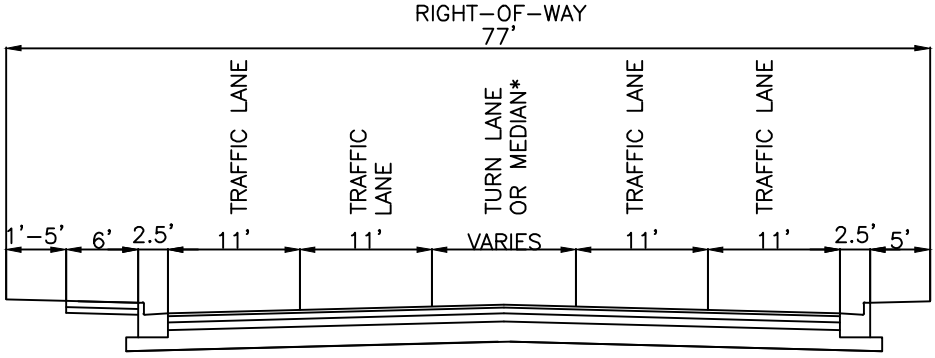
OPTION B



OPTION C



OPTION D



*TURN LANE OR MEDIAN SHALL BE INCORPORATED AS APPROVED IN RESOLUTION 2017-43

HISTORIC FRANKLIN TENNESSEE

CITY OF FRANKLIN ENGINEERING
109 THIRD AVE SOUTH
FRANKLIN, TN 37064

RESOLUTION NO. 2018-73
EXHIBIT A
PG 1 OF 1

DALTON
BANK
CVS
PHARMACY
CITIZENS
BANK
CITIZENS
BANK
CITIZENS
BANK

RESOLUTION 2017-43

A RESOLUTION TO SELECT THE CORRIDOR DESIGN CONCEPT FOR THE COLUMBIA AVENUE WIDENING & IMPROVEMENTS PROJECT

WHEREAS, on December 11, 2013, the Nashville Area Metropolitan Planning Organization (MPO) adopted the Transportation Improvement Program (TIP) for Fiscal Years 2014-2017, allocating $6,000,000.00 in total funding to the Preliminary Engineering (Environmental), Design, and Right-of-Way phases of this project and reserves an additional $15,000,000.00 in total funding for the Construction Phase; and

WHEREAS, the transportation improvements associated with the project will generally be funded with 80 percent Federal Funds and 20 percent State Funds; and

WHEREAS, on July 14, 2015, the City of Franklin Board of Mayor and Aldermen unanimously approved the Local Agency Project Agreement (COF Contract No. 2014-0289, TDOT Contract No. 140204), which formally began the Columbia Avenue Widening & Improvements Project; and

WHEREAS, the preliminary engineering/environmental phase includes preparation of a National Environmental Policy Act (NEPA) document, technical study determinations (Archaeological, Natural Resources, Noise, and Air Quality), and the development of functional level roadway concept designs, as required by the Federal Highways Administration (FHWA) and TDOT; and

WHEREAS, as part of the preliminary engineering phase, three public meetings were conducted (May 17, 2016; January 31, 2017; May 16, 2017; and August 30, 2017) to engage the corridor users, business owners, and other stakeholders to gather their input on the roadway design; and

WHEREAS, the roadway design concepts developed for Columbia Avenue generally include the following Options: Option 1— Five-Lane Concept (with Access Management) and Option 2—Roundabout Concept, as conceptual shown on Exhibit A; and

WHEREAS, roadway design concepts for Columbia Avenue Project were presented during a public meeting and special Board of Mayor and Aldermen work session on August 30, 2017.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

Section 1. The Board of Mayor and Aldermen have selected Option 1 (one) as the preferred corridor design concept for the Columbia Ave Widening and Improvements Project as conceptually shown in Exhibit A.

Section 2. City staff is directed to continue to work with impacted property owners and other stakeholders to further develop the preferred corridor design concept and develop recommendations on bike and pedestrian facilities, utility relocation, streetscape improvements, and transit facilities for the proposed project. These options shall be presented back to the Board of Mayor and Aldermen for a final determination prior to proceeding with the design phase of the project.

IT IS SO RESOLVED AND DONE on this 12th day of September 2017

ATTEST:

By: _____

Eric S. Stuckey
City Administrator

CITY OF FRANKLIN, TENNESSEE:

By: _____

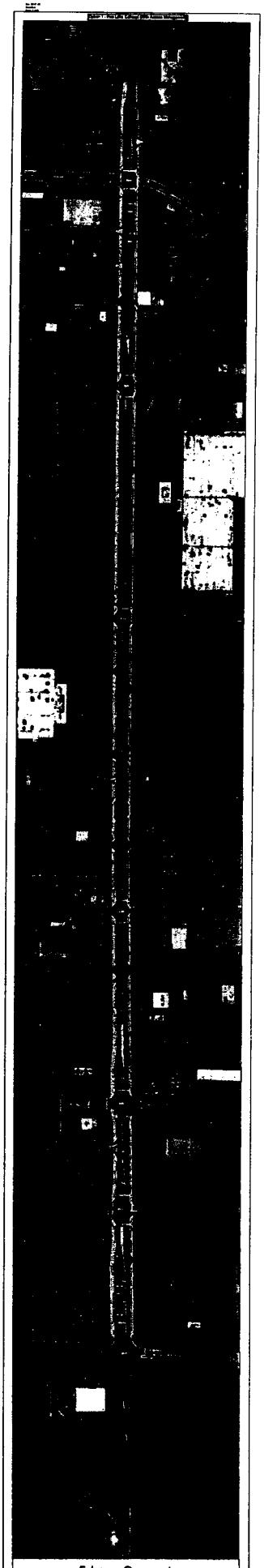
Dr. Ken Moore
Mayor

Approved as to Form:

By: Shauna R. Billingsley

Shauna R. Billingsley
City Attorney

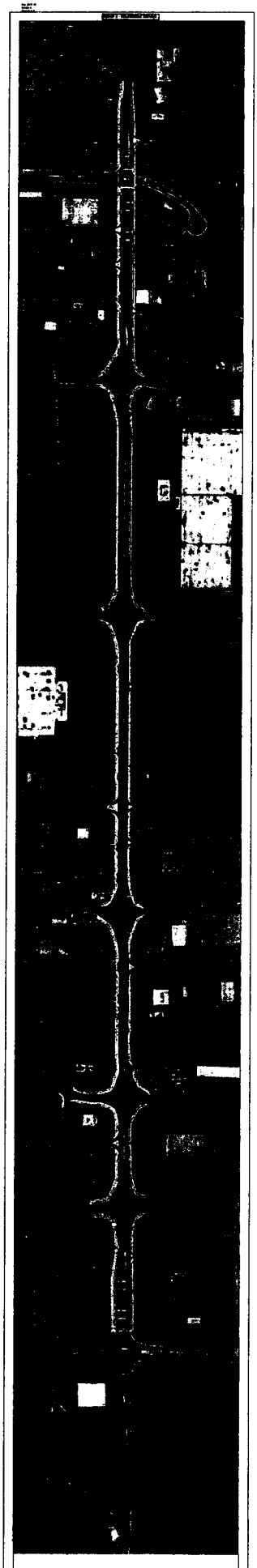
Law Dept. approved (2) 09.05.17



5-Lane Concept
(Access Management)

Columbia Avenue Roadway Concept
Franklin, Tennessee

BWSC



Roundabout Concept

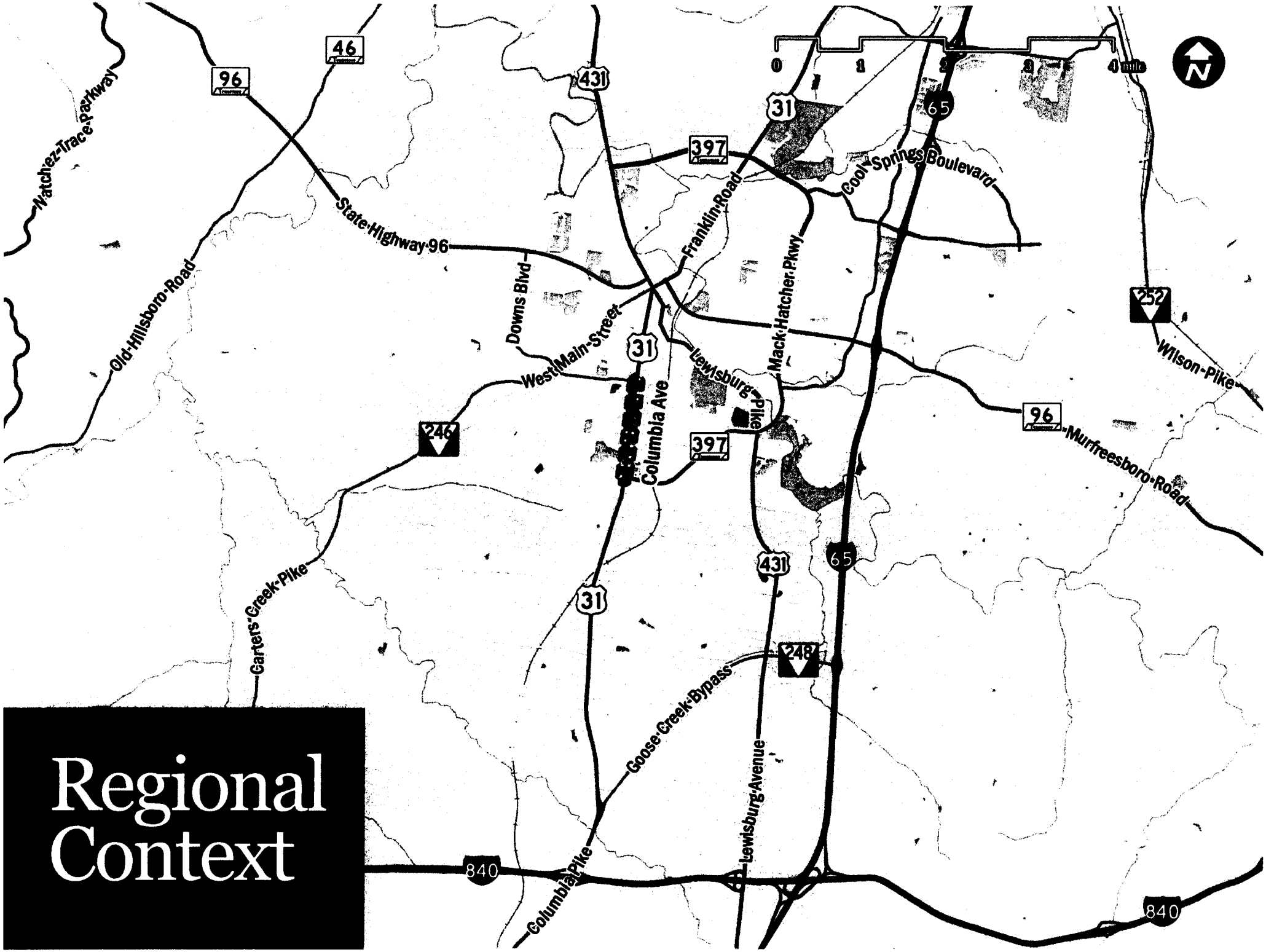
Columbia Avenue Roadway Concept
Franklin, Tennessee

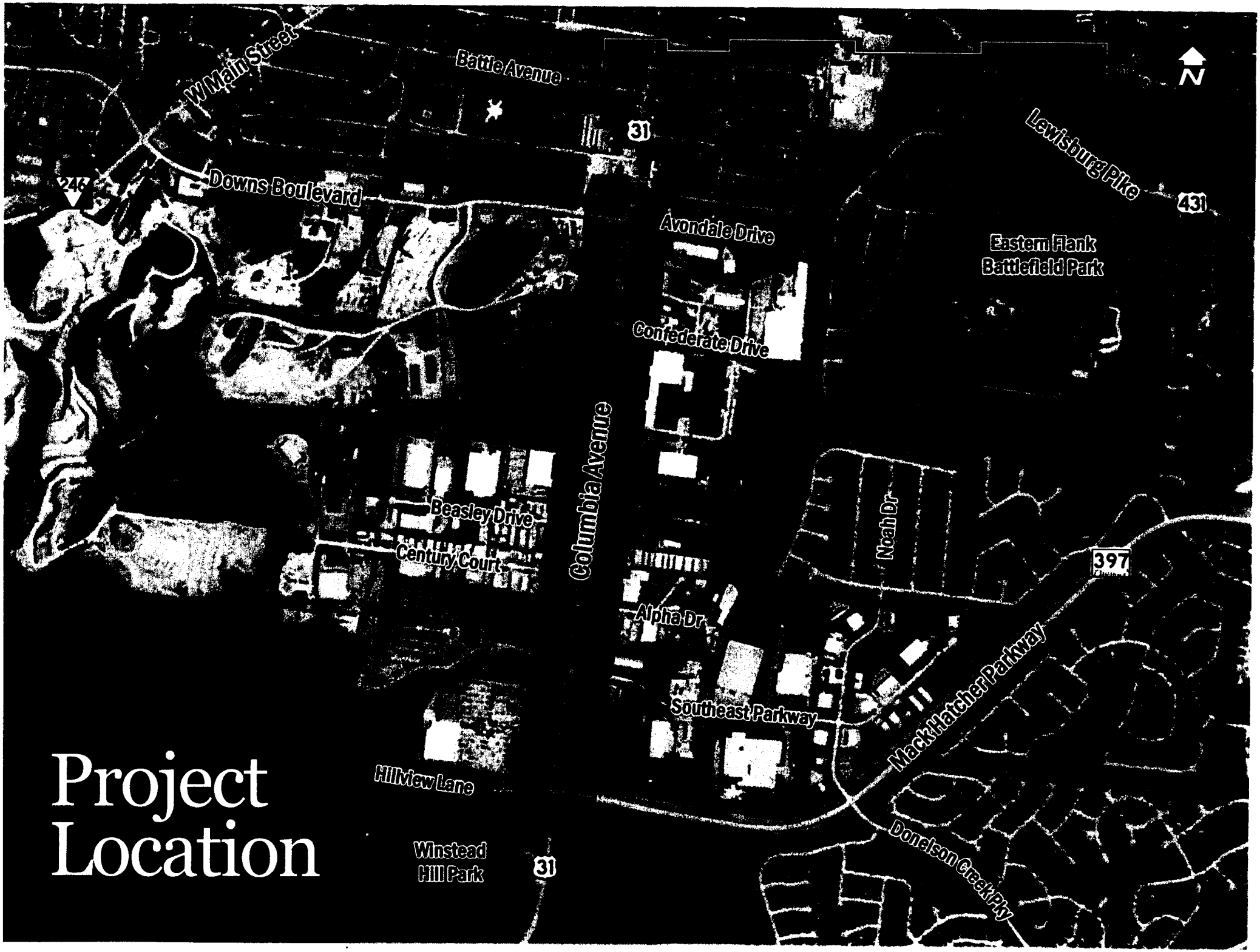
BWSC

CITY OF FRANKLIN, TENNESSEE

Columbia Avenue

Special BOMA Work Session | August 30, 2017


Regional Context
Natchez Trace Parkway
Old Hillsboro Road
State Highway 96
Downs Blvd
West Main Street
Franklin Road
Columbia Ave
Lewisburg Pike
Mack Hatcher Pkwy
Cool Springs Boulevard
Wilson Pike
Murfreesboro Road
Carters Creek Pike
Goose Creek Bypass
Lewisburg Avenue
Columbia Pike
96
46
431
31
397
65
252
246
248
840
0
1
2
3
4 mile
N



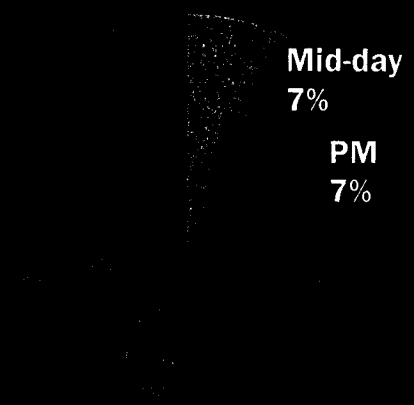
Project Location

May 2016

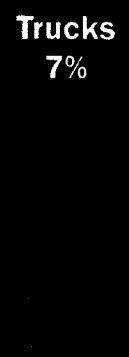
18,900

vehicles/day

DAILY TRAFFIC

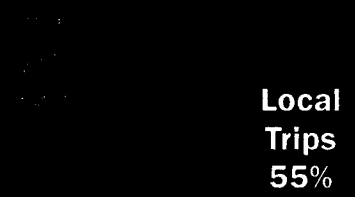


TRAFFIC COMPOSITION



11% Peak Trucks

TRAFFIC TYPE



April 2016 travel time

from Battle Avenue to Winstead Elementary School, in minutes.

3:10
with no traffic

5:10
average day

10:20
longest recorded

Future Growth

2016

EXISTING CONDITIONS

based on data from City and TDOT count stations

18,900

vehicles/day

2021

BUILD YEAR

forecast conditions at project completion

19,800

vehicles/day

2041

DESIGN YEAR

improvements are designed to accommodate 20 years of growth

25,400

vehicles/day

3

components of comparison

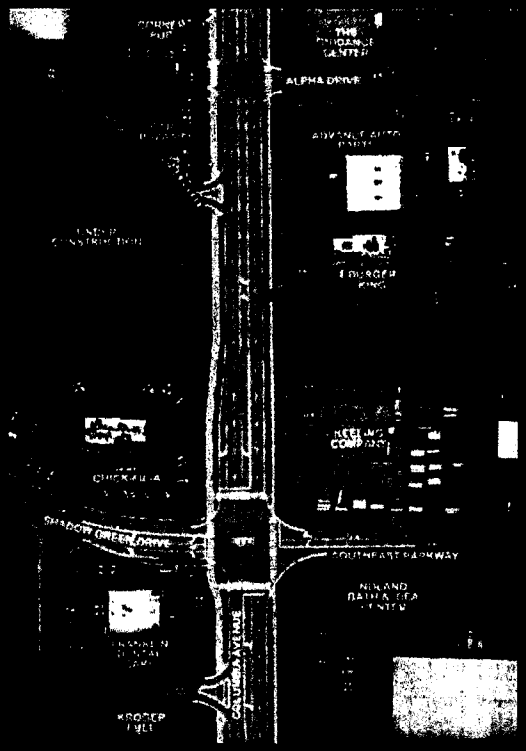
Operations

Safety

Physical Impact

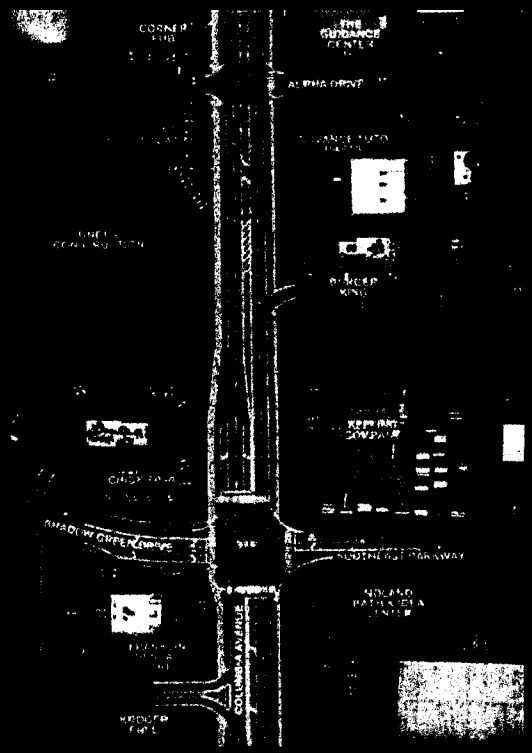
Corridor Concepts

Example: Columbia Avenue at Southeast Parkway



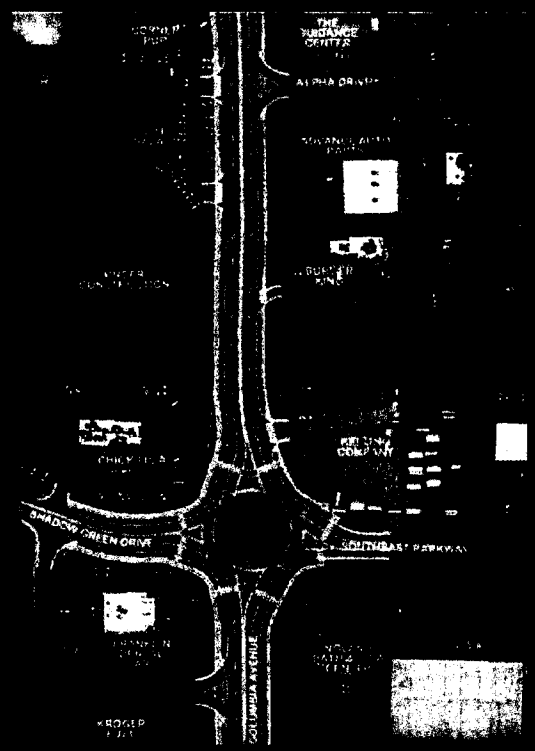
Five-Lane Concept

(Traditional)



Five-Lane Concept

(Access Management)



Roundabout Concept

(Access Management)

Operations

Anticipated Travel Time and Average Speed, 2041 Volumes (Columbia Avenue)

No-Build Conditions	Five-Lane Concept (Traditional)	Five-Lane Concept (Access Mgmt.)	Roundabout Concept
5:50	4:30	4:40	4:30
14.5 mph	18.5 mph	18.1 mph	18.5 mph

[illegible]

[illegible]

Operations

Corridor Delay

Operations

Delay, Level of Service (LOS), and Queue Lenth

Signalized Intersections		
Level of Service	**Average Control Delay** (seconds/vehicle)	**General Description**
A	≤10	Free Flow
B	>10 – 20	[illegible]
C	>20 – 35	Stable Flow (acceptable delays)
D	>35 – 55	[illegible]
E	>55 – 80	Unstable Flow (intolerable delay)
F	>80	[illegible]

Operations

Delay, Level of Service (LOS), and Queue Length

Unsignalized Intersections *(i.e. All-Way Stop, Two-Way Stop, Roundabout)*		
Level of Service	**Average Control Delay** (seconds/vehicle)	**General Description**
A	≤10	Free Flow
B	>10 – 15	Stable Flow (slight delays)
C	>15 – 25	Stable Flow (acceptable delays)
D	>25 – 35	Approaching Unstable Flow (tolerable delay, occasionally will wait more than one vehicle length to proceed)
E	>35 – 50	Unstable Flow (intolerable delay)
F	>50	Forced Flow (jammed and congested flow)

NOTE: Two way stop controlled intersections are defined in terms of individual movements.

Safety

Collision Data (2013–2016)

7.72 collisions/ MVM

MVM = Million Vehicle-Miles

2.76 collisions/ MVM

1.23 collisions/ MVM

0.68 collisions/ MVM

All Collisions

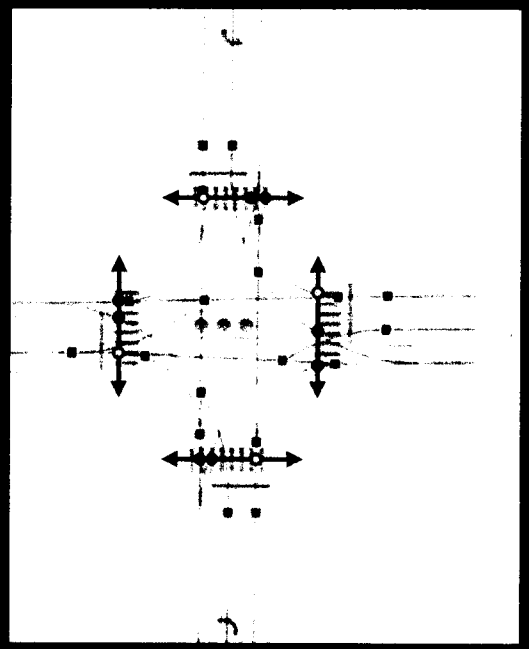
Columbia Avenue Actual Crash History

Fatal/Injury Collisions

Statewide Averages

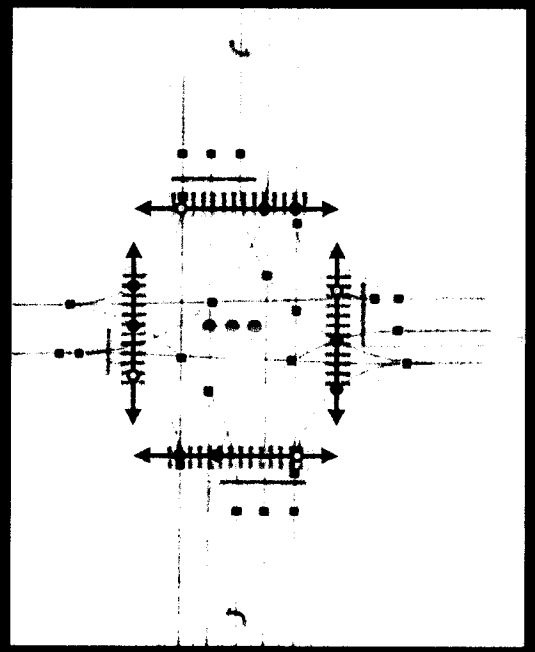
Safety

Columbia Avenue Conflict Points



No-Build Conditions

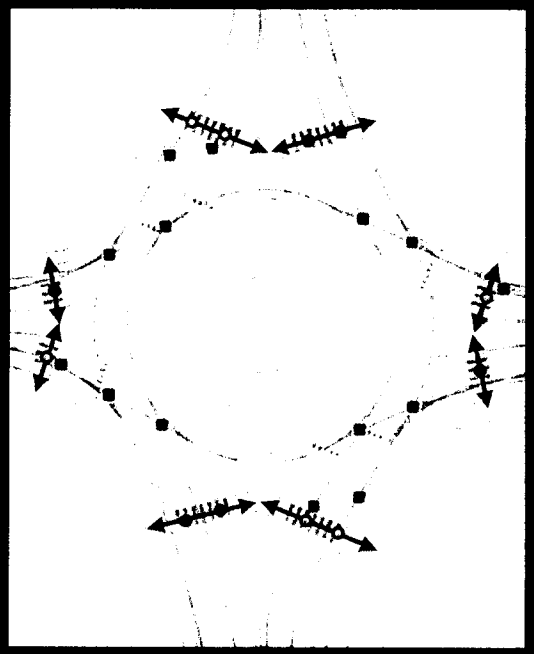
504*



Five-Lane Concepts

(Traditional) (Acc. Mgmt.)

583* **385***



Roundabout Concept

258*

*NOTE: Vehicle Conflict Points

Safety

2041 Anticipated Change in Traffic Collisions

Between Intersections

+41%

+26%

-10%

No-Build:
+49% over
2016 conditions

At Intersections

+2%

+1%

No-Build:
+43% over
2016 conditions

-26%

No-Build Condition (2041)

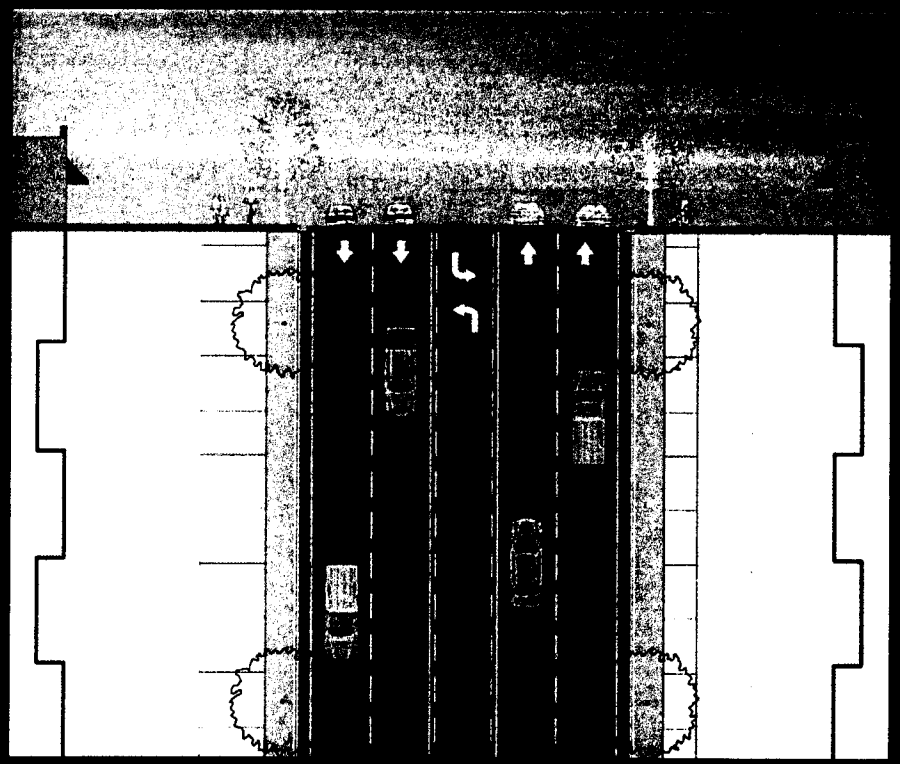
Five-Lane Concept (Traditional)

Five-Lane Concept (Access Management)

Roundabout Concept

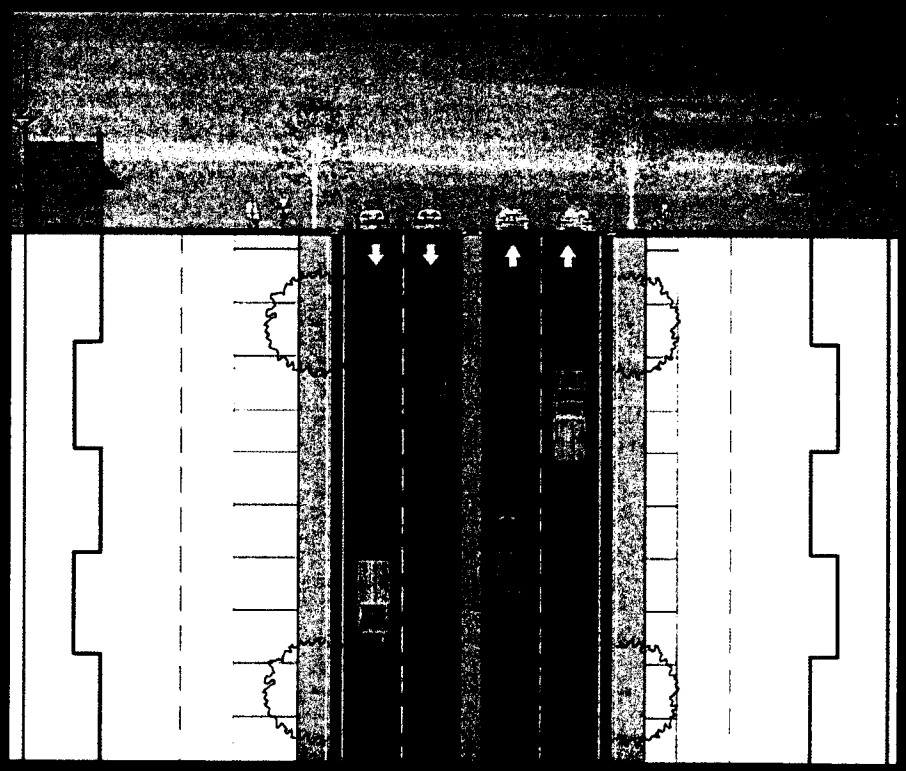
Physical Impact

Typical Sections



Five-Lane Concepts

91' wide (back of walk to back of walk)

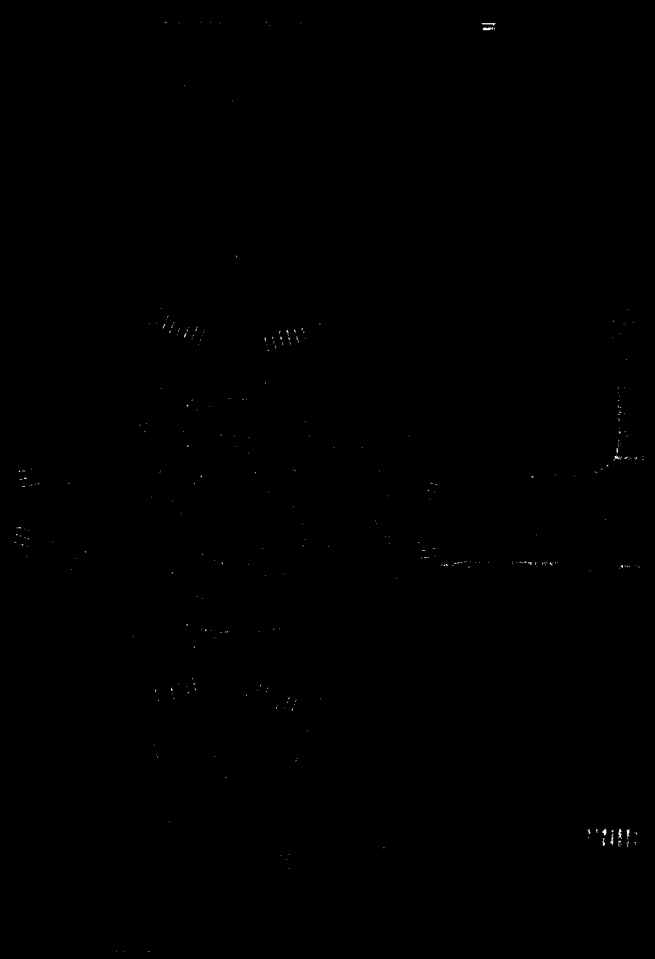


Roundabout Concept

83' wide (back of walk to back of walk)

Physical Impact

Five-Lane Concepts



Roundabout Concept

Data Summary

		No-Build Conditions (2041 volumes)	5-Lane Concept (Traditional)	5-Lane Concept (Access Mgmt.)	Roundabout Concept
Operational Performance	Through Traffic Delay			**145 (sec/veh)**	
	Side Street Delay		**230 (sec/veh)**	**230 (sec/veh)**	
	Average Travel Time				
Safety Performance	Between Intersections	**BASELINE (+49% from 2016)**			
	At Intersections	**BASELINE (+43% from 2016)**			
Physical Impact	Between Intersections				**83' (total width)**
	At Intersections		**AVERAGE footprint**	**AVERAGE footprint**	

next step

BOMA selects ***preferred concept*** to bring forward to detailed design.

Level of Service (LOS) for No-Build Condition

	Cross-Street	Traffic Control Device	Geometry	(AM) Peak Hour						(MID) Peak Hour						(PM) Peak Hour						SAT Peak Hour					
				2016 Existing		2021 Future		2041 Design		2016 Existing		2021 Future		2041 Design		2016 Existing		2021 Future		2041 Design		2016 Existing		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	**OVERALL**	**27.8**	**C**	**29.5**	**C**	**40.9**	**D**	**33.6**	**C**	**34.5**	**C**	**36.5**	**D**					**49.1**	**D**	**27.9**	**C**	**30.5**	**C**	**38.0**	**D**
			EASTBOUND (EB)	**55.5**	**E**	**56.0**	**E**	**56.7**	**E**	**50.9**	**D**	**53.0**	**D**	**65.1**	**E**	**54.0**	**D**	**55.9**	**E**	**69.0**	**E**	**39.0**	**D**	**40.1**	**D**	**46.2**	**D**
			EB Left	*51.7*	*D*	*52.0*	*D*	*52.1*	*D*	*38.7*	*D*	*39.8*	*D*	*41.9*	*D*	*42.9*	*D*					*29.9*	*C*				
			EB Thru/Right	*55.9*	*E*	*56.4*	*E*	*57.1*	*E*	*54.1*	*D*	*56.5*	*E*	*71.1*	*E*	*54.9*	*D*	*57.0*	*E*	*71.2*	*E*	*39.9*	*D*	*41.2*	*D*	*47.9*	*D*
			WESTBOUND (WB)	**36.7**	**D**	**37.2**	**D**	**40.1**	**D**					**31.9**	**C**	**28.0**	**C**	**29.5**	**C**	**43.8**	**D**					**21.5**	**C**
			WB Left	*42.5*	*D*	*43.0*	*D*	*44.1*	*D*	*34.4*	*C*	*34.8*	*C*	*36.2*	*D*	*35.7*	*D*	*38.6*	*D*	*73.4*	*E*	*24.1*	*C*	*24.4*	*C*	*25.4*	*C*
			WB Thru	*45.3*	*D*	*45.7*	*D*	*45.7*	*D*							*36.1*	*D*	*36.9*	*D*	*40.1*	*D*	*29.1*	*C*	*29.3*	*C*	*30.8*	*C*
			WB Right	*32.8*	*C*	*33.5*	*C*	*37.5*	*D*					*28.3*	*C*	*20.2*	*C*	*22.2*	*C*	*26.3*	*C*					*17.4*	*B*
			NORTHBOUND (NB)	**24.4**	**C**	**29.1**	**C**	**49.6**	**D**	**26.1**	**C**	**30.1**	**C**	**31.5**	**C**	**35.8**	**D**	**38.6**	**D**	**44.6**	**D**	**30.9**	**C**	**37.9**	**D**	**64.5**	**E**
			NB Left	*15.4*	*B*	*16.3*	*B*	*16.8*	*B*	*24.1*	*C*	*26.8*	*C*	*27.5*	*C*							*28.4*	*C*	*29.5*	*C*	*30.6*	*C*
			NB Thru	*29.7*	*C*	*35.6*	*D*	*63.6*	*E*	*29.5*	*C*	*34.1*	*C*	*36.5*	*D*	*40.1*	*D*	*43.3*	*D*	*51.3*	*D*	*35.3*	*D*	*44.7*	*D*	*82.9*	*F*
			NB Right	*9.3*	*A*					*16.0*	*B*											*17.0*	*B*	*18.0*	*B*	*19.1*	*B*
			SOUTHBOUND (SB)					**27.9**	**C**	**34.7**	**C**	**34.7**	**C**	**34.7**	**C**					**51.0**	**D**	**26.7**	**C**				
			SB Left					*53.8*	*D*					*56.6*	*E*							*36.4*	*D*				
			SB Thru					*5.0*	*A*	*17.1*	*B*									*53.9*	*D*	*20.3*	*C*	*23.6*	*C*	*25.8*	*C*
			SB Right					*9.8*	*A*	*14.3*	*B*	*14.3*	*B*	*14.5*	*B*							*17.1*	*B*	*17.1*	*B*	*18.3*	*B*
2	Parkway Commons / Cemetery	Signal	**OVERALL**	**15.3**	**B**	**17.0**	**B**	**34.8**	**C**					**31.1**	**C**					**19.4**	**B**	**15.8**	**B**	**17.2**	**C**	**25.1**	**C**
			EASTBOUND					**52.8**	**D**					**62.8**	**E**	**48.9**	**D**	**50.8**	**D**	**51.5**	**D**	**38.1**	**D**	**38.3**	**D**	**38.6**	**D**
			EB Left/Thru	*58.1*	*E*									*72.5*	*E*	*55.5*	*E*	*58.3*	*E*	*59.7*	*E*	*43.1*	*D*	*43.4*	*D*	*44.5*	*D*
			EB Right					*45.2*	*D*	*34.1*	*C*	*34.6*	*C*	*35.3*	*D*	*37.8*	*D*					*28.8*	*C*				
			WESTBOUND	**61.7**	**E**	**61.7**	**E**	**61.7**	**E**	**60.3**	**E**	**60.7**	**E**	**62.5**	**E**	**61.7**	**E**	**61.8**	**E**	**61.9**	**E**	**49.7**	**D**	**49.8**	**D**	**49.9**	**D**
			WB Left/Thru/Right	*61.7*	*E*	*61.7*	*E*	*61.7*	*E*	*60.3*	*E*	*60.7*	*E*	*62.5*	*E*	*61.7*	*E*	*61.8*	*E*	*61.9*	*E*	*49.7*	*D*	*49.8*	*D*	*49.9*	*D*
			NORTHBOUND	**13.3**	**B**	**15.2**	**B**	**48.9**	**D**	**13.5**	**B**	**14.6**	**B**	**22.8**	**C**	**12.7**	**B**	**14.0**	**B**	**17.3**	**B**	**9.4**	**A**	**11.4**	**B**	**17.6**	**B**
			NB Left					*61.8*	*E*					*48.9*	*D*	*38.0*	*D*	*40.3*	*D*	*43.3*	*D*	*26.5*	*C*	*26.9*	*C*	*28.7*	*C*
			NB Thru/Right	*12.2*	*B*	*14.3*	*B*	*48.5*	*D*	*11.2*	*B*	*12.5*	*B*	*20.6*	*C*	*10.4*	*B*	*12.6*	*B*	*15.2*	*B*	*8.4*	*A*	*10.6*	*B*	*16.9*	*B*
			SOUTHBOUND	**11.9**	**B**									**27.3**	**C**					**13.1**	**B**	**13.8**	**B**	**15.7**	**B**	**27.3**	**C**
			SB Left											*79.2*	*E*	*71.1*	*E*	*74.7*	*E*	*78.4*	*E*	*63.5*	*E*				
			SB Thru/Right	*11.8*	*B*									*27.1*	*C*					*13.0*	*A*	*13.7*	*B*	*15.6*	*B*	*27.2*	*C*
3	Southeast Parkway / Shadow Green Drive	Signal	**OVERALL**	**20.0**	**C**	**27.9**	**C**	**54.2**	**D**	**22.9**	**C**	**34.1**	**C**	**44.8**	**D**	**20.3**	**C**	**24.5**	**C**	**29.9**	**C**	**25.0**	**C**	**25.7**	**C**	**33.0**	**C**
			EASTBOUND	**50.1**	**D**	**59.9**	**E**	**69.6**	**E**	**58.2**	**E**	**103.1**	**F**	**130.7**	**F**					**53.0**	**D**	**35.0**	**D**	**38.4**	**D**	**45.3**	**D**
			EB Left	*52.9*	*D*	*64.6*	*F*	*109.5*	*F*	*70.5*	*E*	*107.8*	*F*	*149.6*	*F*					*60.2*	*E*	*36.5*	*D*	*43.2*	*D*	*60.4*	*E*
			EB Thru					*54.6*	*D*	*55.9*	*E*											*39.5*	*D*	*41.1*	*D*	*41.3*	*D*
			EB Right					*47.6*	*D*	*48.8*	*D*	*50.6*	*D*	*58.5*	*E*					*44.9*	*D*	*33.7*	*C*	*35.5*	*D*	*37.7*	*D*
			WESTBOUND					**57.2**	**E**	**55.7**	**E**	**60.5**	**E**	**72.3**	**E**	**54.7**	**D**	**57.4**	**E**	**62.2**	**E**	**43.3**	**D**	**44.1**	**E**	**44.2**	**D**
			WB Left																							*40.2*	*D*
			WB Thru/Right					*57.7*	*E*	*57.9*	*E*	*65.6*	*E*	*83.3*	*F*	*56.7*	*E*	*59.8*	*E*	*66.2*	*E*	*43.8*	*D*	*44.9*	*E*	*45.0*	*D*
			NORTHBOUND	**16.5**	**B**	**23.0**	**C**	**77.2**	**E**	**11.9**	**B**	**14.6**	**B**	**28.6**	**C**	**11.9**	**B**	**16.2**	**B**	**25.6**	**C**	**26.2**	**C**	**27.9**	**C**	**40.9**	**D**
			NB Left	*5.6*	*A*	*7.2*	*A*	*9.7*	*A*	*4.4*	*A*	*5.8*	*A*	*8.0*	*A*	*6.5*	*A*	*14.5*	*B*	*32.6*	*C*	*12.6*	*B*	*15.0*	*B*	*19.5*	*B*
			NB Thru/Right	*17.4*	*B*	*24.7*	*B*	*84.2*	*F*	*12.9*	*B*	*16.0*	*B*	*31.7*	*C*	*12.7*	*B*	*16.6*	*B*	*23.9*	*C*	*28.4*	*C*	*30.8*	*C*	*45.7*	*D*
			SOUTHBOUND	**9.9**	**A**	**14.5**	**B**	**14.7**	**B**	**14.8**	**B**	**17.0**	**B**	**19.7**	**B**	**15.2**	**B**	**19.7**	**B**	**22.7**	**C**	**14.3**	**B**	**16.9**	**B**	**20.4**	**C**
			SB Left	*15.4*	*B*	*46.2*	*D*	*141.7*	*E*	*13.2*	*B*	*15.4*	*B*	*39.2*	*D*	*11.1*	*B*	*24.1*	*B*	*26.2*	*C*	*15.5*	*B*	*18.5*	*B*	*27.7*	*C*
			SB Thru	*9.0*	*A*					*14.4*	*B*	*16.1*	*B*	*16.9*	*B*	*15.6*	*B*	*20.3*	*C*	*23.2*	*C*	*14.0*	*B*	*15.7*	*B*	*19.3*	*B*
			SB Right							*18.1*	*B*					*12.9*	*B*					*15.0*	*B*	*20.9*	*C*	*21.3*	*C*
4	Alpha Drive	Stop	**WESTBOUND**	**23.2**	**C**	**36.2**	**E**	**180.3**	**F**	**47.3**	**E**	**102.3**	**F**	**534.8**	**F**	**43.8**	**E**	**109.9**	**F**	**999.9**	**F**	**24.9**	**C**	**35.4**	**E**	**166.3**	**F**
			WB Left/Thru/Right	*26.1*	*D*	*40.5*	*E*	*318.5*	*F*	*47.3*	*E*	*102.3*	*F*	*534.8*	*F*	*43.8*	*E*	*109.9*	*F*	*999.9*	*F*	*24.9*	*C*	*35.4*	*E*	*166.3*	*F*
			SOUTHBOUND	**13.2**	**B**	**17.5**	**C**	**37.7**	**E**	**11.8**	**B**	**13.9**	**B**	**25.9**	**D**	**10.6**	**B**	**11.5**	**B**	**15.6**	**C**	**11.0**	**B**	**12.4**	**B**	**18.3**	**C**
			SB Left	*13.2*	*B*	*17.5*	*C*	*37.7*	*E*	*11.8*	*B*	*13.9*	*B*	*25.9*	*D*	*10.6*	*B*	*11.5*	*B*	*15.6*	*C*	*11.0*	*B*	*12.4*	*B*	*18.3*	*C*
5	Century Court	Signal	**OVERALL**	**14.2**	**B**	**15.9**	**B**	**24.0**	**C**	**17.8**	**B**	**22.2**	**C**	**42.6**	**D**	**15.6**	**B**	**19.5**	**B**	**35.7**	**D**	**7.4**	**A**	**8.8**	**A**	**29.8**	**C**
			EASTBOUND	**55.9**	**E**	**57.1**	**E**	**57.9**	**E**	**55.0**	**E**	**55.5**	**E**	**56.3**	**E**												
			EB Left	*60.2*	*E*	*62.8*	*E*	*65.2*	*E*	*60.1*	*E*	*62.8*	*E*	*65.9*	*F*	*58.7*	*E*	*59.9*	*E*	*60.1*	*E*	*48.2*	*D*	*48.3*	*D*	*48.3*	*D*
			EB Thru/Right																								
			WESTBOUND																								
			WB Left/Thru/Right																								
			NORTHBOUND	**10.9**	**B**	**12.0**	**B**	**18.0**	**B**	**8.6**	**A**	**12.2**	**B**	**22.2**	**C**	**7.3**	**A**	**8.7**	**A**	**13.4**	**B**	**2.9**	**A**	**3.6**	**A**	**8.2**	**A**
			NB Left	*8.6*	*A*	*11.7*	*B*	*24.9*	*C*	*10.3*	*B*	*18.4*	*B*	*55.6*	*E*	*12.6*	*B*	*25.3*	*C*	*36.5*	*D*	*6.2*	*A*	*12.0*	*B*	*82.6*	*F*
			NB Thru/Right	*11.2*	*B*	*12.1*	*B*	*17.1*	*B*	*8.4*	*A*	*11.5*	*B*	*18.0*	*B*	*7.0*	*A*	*7.8*	*A*	*12.1*	*B*	*2.8*	*A*	*3.3*	*A*	*5.5*	*A*
			SOUTHBOUND	**9.4**	**A**	**11.7**	**B**	**24.4**	**C**	**18.3**	**B**	**25.1**	**C**	**62.3**	**E**	**15.7**	**B**	**22.5**	**C**	**51.7**	**D**	**8.3**	**A**	**9.9**	**A**	**36.3**	**D**
			SB Left	*4.8*	*A*	*5.1*	*A*	*9.4*	*A*	*8.1*	*A*											*2.0*	*A*	*2.1*	*A*	*3.4*	*A*
			SB Thru/Right	*9.4*	*A*	*11.7*	*B*	*24.4*	*C*	*18.3*	*B*	*25.2*	*B*	*62.4*	*E*	*15.7*	*B*	*22.5*	*C*	*51.8*	*D*	*8.4*	*A*	*10.0*	*A*	*36.4*	*D*
6	Beasley Drive / Lumber Drive	Two-Way Stop Control (TWSC)	**EASTBOUND**	**17.7**	**C**	**21.8**	**C**	**999.9**	**F**	**28.1**	**C**	**36.8**	**E**	**45.0**	**E**	**22.2**	**C**	**30.6**	**D**	**57.5**	**F**	**24.7**	**C**	**39.3**	**E**	**141.7**	**F**
			EB Left/Thru/Right	*17.7*	*C*	*21.8*	*C*	*999.9*	*F*	*28.1*	*C*	*36.8*	*E*	*45.0*	*E*	*22.2*	*C*	*30.6*	*D*	*57.5*	*F*	*24.7*	*C*	*39.3*	*E*	*141.7*	*F*
			WESTBOUND	**19.2**	**C**	**24.7**	**C**	**64.7**	**F**	**29.1**	**D**	**55.5**	**F**	**83.8**	**F**	**30.6**	**D**	**61.8**	**F**	**92.1**	**F**	**26.3**	**D**	**52.3**	**F**	**999.9**	**F**
			WB Left/Thru/Right	*19.2*	*C*	*24.7*	*C*	*64.7*	*F*	*29.1*	*D*	*55.5*	*F*	*83.8*	*F*	*30.6*	*D*	*61.8*	*F*	*92.1*	*F*	*26.3*	*D*	*52.3*	*F*	*999.9*	*F*
			NORTHBOUND	**10.0**	**B**	**10.6**	**B**	**12.8**	**B**	**10.4**	**B**	**11.2**	**B**	**20.5**	**C**	**10.3**	**B**	**11.5**	**B**	**18.6**	**C**	**10.9**	**B**	**12.6**	**B**	**22.8**	**C**
			NB Left	*10.0*	*B*	*10.6*	*B*	*12.8*	*B*	*10.4*	*B*	*11.2*	*B*	*20.5*	*C*	*10.3*	*B*	*11.5*	*B*	*18.6*	*C*	*10.9*	*B*	*12.6*	*B*	*22.8*	*C*
			SOUTHBOUND	**10.8**	**B**	**12.7**	**B**	**22.6**	**C**	**10.8**	**B**	**12.7**	**B**	**22.4**	**D**	**10.3**	**B**	**11.2**	**B**	**21.3**	**C**	**10.9**	**B**	**18.8**	**C**	**27.8**	**D**
			SB Left	*10.8*	*B*	*12.7*	*B*	*22.6*	*C*	*10.8*	*B*	*12.7*	*B*	*22.4*	*D*	*10.3*	*B*	*11.2*	*B*	*21.3*	*C*	*10.9*	*B*	*18.8*	*C*	*27.8*	*D*
7	Franklin Business Park (North) / Future Werthan Circle	Signal	**OVERALL**	**8.2**	**A**	**9.0**	**A**	**18.6**	**B**	**9.8**	**A**	**10.2**	**B**	**15.9**	**B**	**8.5**	**A**	**10.0**	**A**	**14.0**	**B**	**15.5**	**B**	**18.1**	**B**	**36.0**	**D**
			WESTBOUND	**61.0**	**E**									**59.4**	**E**									**45.9**	**D**	**46.2**	**D**
			WB Left	*62.8*	*E*									*62.0*	*E*					*61.1*	*E*	*48.5*	*D*	*48.9*	*D*	*52.8*	*D*
			WB Right					*57.2*	*E*																		
			NORTHBOUND	**10.6**	**B**	**11.7**	**B**	**27.7**	**C**					**16.8**	**B**					**15.4**	**B**	**13.7**	**B**	**17.6**	**B**	**48.1**	**D**
			NB Thru/Right	*10.6*	*B*	*11.7*	*B*	*27.7*	*C*					*16.8*	*B*					*15.4*	*B*	*13.7*	*B*	*17.6*	*B*	*48.1*	*D*
			SOUTHBOUND	**2.9**	**A**	**3.3**	**A**	**5.5**	**A**	**3.6**	**A**	**4.8**	**A**	**10.0**	**B**	**3.6**	**A**	**5.8**	**A**	**12.0**	**B**	**11.1**	**B**	**15.9**	**B**	**22.6**	**C**
			SB Left	*5.9*	*A*	*9.6*	*A*	*28.8*	*C*	*4.1*	*A*	*8.9*	*A*	*24.7*	*C*	*5.1*	*A*	*8.5*	*A*	*24.9*	*C*	*15.0*	*B*	*26.0*	*C*	*28.8*	*C*
			SB Thru	*2.8*	*A*	*3.1*	*A*	*4.7*	*A*	*3.5*	*A*	*4.7*	*A*	*9.8*	*A*	*3.5*	*A*	*5.7*	*A*	*11.3*	*B*	*10.8*	*B*	*15.0*	*B*	*22.1*	*C*
8	Confederate Drive / Werthan Circle	TWSC	**EASTBOUND**	**23.8**	**C**	**49.3**	**E**	**999.0**	**F**	**16.3**	**C**	**27.4**	**D**	**181.8**	**F**	**18.8**	**C**	**23.0**	**C**	**39.6**	**E**	**20.6**	**C**	**33.1**	**D**	**163.3**	**F**
			EB Left	*31.2*	*D*	*81.8*	*F*	*999.0*	*F*	*29.3*	*C*	*42.4*	*E*	*465.6*	*F*	*20.4*	*C*	*26.7*	*D*	*50.4*	*F*	*25.3*	*D*	*45.4*	*E*	*343.5*	*F*
			EB Thru/Right	*15.0*	*C*	*20.2*	*C*	*868.3*	*F*	*15.7*	*C*	*19.5*	*C*	*42.8*	*E*	*16.1*	*C*	*20.0*	*C*	*30.0*	*D*	*19.0*	*C*	*25.1*	*D*	*49.0*	*E*
			WESTBOUND	**24.0**	**C**	**38.8**	**E**	**249.3**	**F**	**20.3**	**C**	**29.6**	**D**	**83.0**	**F**	**18.0**	**C**	**22.5**	**C**	**36.8**	**E**	**20.1**	**C**	**28.9**	**D**	**78.6**	**F**
			WB Left	*29.6*	*D*	*58.3*	*F*	*431.1*	*F*	*24.1*	*C*	*39.0*	*E*	*139.8*	*F*	*20.2*	*C*	*26.8*	*D*	*49.3*	*E*	*24.6*	*C*	*41.9*	*E*	*138.1*	*F*
			WB Thru/Right	*16.3*	*C*	*22.1*	*C*	*37.8*	*E*	*16.6*	*C*	*21.7*	*C*	*35.1*	*E*	*15.9*	*C*	*19.2*	*C*	*26.8*	*D*	*17.7*	*C*	*23.3*	*C*	*49.2*	*E*
			NORTHBOUND	**9.8**	**A**	**10.4**	**B**	**12.2**	**B**	**9.6**	**A**	**10.4**	**B**	**12.3**	**B**	**10.0**	**B**	**11.4**	**B**	**14.1**	**B**	**10.3**	**B**	**11.7**	**B**	**15.2**	**C**
			NB Left	*9.8*	*A*	*10.4*	*B*	*12.2*	*B*	*9.6*	*A*	*10.4*	*B*	*12.3*	*B*	*10.0*	*B*	*11.4*	*B*	*14.1*	*B*	*10.3*	*B*	*11.7*	*B*	*15.2*	*C*
			SOUTHBOUND	**11.0**	**B**	**12.7**	**B**	**19.9**	**C**	**10.9**	**B**	**12.6**	**B**	**19.6**	**C**	**10.2**	**B**	**11.0**	**B**	**14.9**	**B**	**11.4**	**B**	**13.1**	**B**	**19.5**	**C**
			SB Left	*11.0*	*B*	*12.7*	*B*	*19.9*	*C*	*10.9*	*B*	*12.6*	*B*	*19.6*	*C*	*10.2*	*B*	*11.0*	*B*	*14.9*	*B*	*11.4*	*B*	*13.1*	*B*	*19.5*	*C*
9	Carr Avenue	Stop	**WESTBOUND**	**19.0**	**C**	**22.5**	**C**	**31.8**	**D**	**20.3**	**C**	**25.2**	**D**	**44.6**	**E**	**21.0**	**C**	**25.6**	**D**	**47.4**	**E**	**21.3**	**C**	**26.2**	**D**	**47.9**	**E**
			WB Left/Thru/Right	*19.0*	*C*	*22.5*	*C*	*31.8*	*D*	*20.3*	*C*	*25.2*	*D*	*44.6*	*E*	*21.0*	*C*	*25.6*	*D*	*47.4*	*E*	*21.3*	*C*	*26.2*	*D*	*47.9*	*E*
			SOUTHBOUND	**10.0**	**B**	**10.7**	**B**	**11.9**	**B**	**10.0**	**B**	**10.7**	**B**	**11.9**	**B**	**9.9**	**A**	**10.3**	**B**	**11.5**	**B**	**10.1**	**B**	**10.7**	**B**	**12.0**	**B**
			SB Left	*10.0*	*B*	*10.7*	*B*	*11.9*	*B*	*10.0*	*B*	*10.7*	*B*	*11.9*	*B*	*9.9*	*A*	*10.3*	*B*	*11.5*	*B*	*10.1*	*B*	*10.7*	*B*	*12.0*	*B*
10	Downs Boulevard	Signal	**OVERALL**	**22.3**	**C**	**22.4**	**C**	**52.5**	**C**	**20.1**	**C**	**24.4**	**C**	**99.3**	**C**	**26.7**	**C**	**29.8**	**C**	**57.2**	**E**	**22.0**	**C**	**26.3**	**C**	**65.5**	**E**
			EASTBOUND					**66.9**	**E**													**44.0**	**D**	**45.2**	**D**	**81.1**	**F**
			EB Left/Thru											*62.6*	*E*												
			EB Right					*69.5*	*E*													*43.3*	*D*	*44.6*	*D*	*88.2*	*F*
			WESTBOUND																								
			WB Left/Thru/Right																								
			NORTHBOUND	**8.2**	**A**	**8.8**	**A**	**17.0**	**B**	**8.0**	**A**	**12.4**	**B**	**15.9**	**B**					**17.9**	**B**	**12.1**	**B**	**17.0**	**B**	**63.3**	**E**
			NB Left	*6.9*	*A*	*8.0*	*A*	*22.3*	*C*	*9.1*	*A*	*20.2*	*C*	*25.6*	*C*					*28.3*	*C*	*18.7*	*B*	*27.5*	*C*	*123.3*	*F*
			NB Thru/Right	*8.9*	*A*	*9.1*	*A*	*14.2*	*B*	*7.5*	*A*	*8.0*	*A*	*10.5*	*A*	*7.8*	*A*	*8.1*	*A*	*9.5*	*A*	*6.8*	*A*	*8.4*	*A*	*14.2*	*A*
			SOUTHBOUND	**9.8**	**A**	**12.3**	**B**	**26.5**	**C**	**13.4**	**B**	**21.9**	**C**	**45.9**	**D**	**19.1**	**B**	**30.3**	**C**	**117.7**	**F**	**15.1**	**B**	**22.1**	**C**	**53.0**	**D**
			SB Left	*6.5*	*A*	*7.8*	*A*	*14.7*	*B*	*7.8*	*A*	*13.8*	*B*	*16.8*	*B*	*13.3*	*B*	*15.7*	*B*	*23.9*	*C*	*9.5*	*A*	*12.7*	*B*	*18.3*	*B*
			SB Thru/Right	*9.8*	*A*	*12.3*	*B*	*26.5*	*C*	*13.5*	*B*	*21.9*	*B*	*46.1*	*D*	*19.1*	*B*	*30.4*	*C*	*118.2*	*F*	*15.1*	*B*	*22.2*	*C*	*53.1*	*D*
11	James Avenue	Stop	**WESTBOUND**	**14.7**	**B**	**16.0**	**B**	**19.9**	**C**	**15.4**	**C**	**16.9**	**C**	**21.1**	**C**	**14.5**	**B**	**15.6**	**C**	**19.0**	**C**	**14.8**	**B**	**16.1**	**C**	**20.0**	**C**
			WB Left/Thru/Right	*14.7*	*B*	*16.0*	*C*	*19.9*	*C*	*15.4*	*C*	*16.9*	*C*	*21.1*	*C*	*14.5*	*B*	*15.6*	*C*	*19.0*	*C*	*14.8*	*B*	*16.1*	*C*	*20.0*	*C*
			SOUTHBOUND	**9.2**	**A**	**9.5**	**A**	**10.5**	**B**	**9.1**	**A**	**9.5**	**A**	**10.4**	**B**	**8.7**	**A**	**8.9**	**A**	**9.5**	**A**	**9.0**	**A**	**9.3**	**A**	**10.2**	**B**
			SB Left	*9.2*	*A*	*9.5*	*A*	*10.5*	*B*	*9.1*	*A*	*9.5*	*A*	*10.4*	*B*	*8.7*	*A*	*8.9*	*A*	*9.5*	*A*	*9.0*	*A*	*9.3*	*A*	*10.2*	*B*

Delay Reduction Color Code: Reduced Green Time Increases

NOTES : (1) No-Build results updated 8/25/2017 to assume consistent signal timings/offsets with 2016 existing conditions. Previous data had assumed improvements to signal timings in future conditions.

(2) Delay of "999.9" seconds indicates maximum limit of model.

Level of Service (LOS) for Five-Lane (Traditional) Concept

	Cross-Street	Traffic Control Device	Geometry	[AM] Peak Hour				[MID] Peak Hour				[PM] Peak Hour				[SAT] Peak Hour			
				2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	OVERALL	20.5	C	23.2	C	21.8	C	22.7	C	29.1	C	30.3	C	21.8	C	23.6	C
			EASTBOUND (EB)									95.1	D	85.7	D	30.8	C	30.8	C
			EB Left									32.8	C	32.9	C				
			EB Thru									39.5	D	40.9	D	31.9	C	32.3	C
			EB Right									32.6	C	32.8	C				
			WESTBOUND (WB)					21.5	C	21.7	C	26.0	C	29.6	C	18.8	B	19.0	B
			WB Left					25.1	C	25.2	C	31.8	C	41.3	D	21.2	C	21.2	C
			WB Thru									32.2	C	32.7	C	26.9	C	26.9	C
			WB Right					18.2	B	18.4	B	21.0	C	21.4	C	15.8	B	15.9	B
			NORTHBOUND (NB)	16.6	B	21.0	C	20.5	C	24.1	C	17.5	B	19.7	B	22.9	C	25.5	C
			NB Left	11.8	B	13.2	B	16.1	B	18.5	B	15.2	B	19.6	B	18.7	B	21.6	C
			NB Thru	19.1	B	24.5	C	22.7	C	26.8	C	19.0	B	21.2	C	25.4	C	28.4	C
			NB Right	9.0	A	11.0	B	14.9	B	17.4	B	10.7	B	13.5	B	16.2	B	17.3	B
			SOUTHBOUND (SB)	20.5	C	24.0	C	19.8	B	20.4	C	22.5	C	36.0	D	20.5	C	23.5	C
			SB Left	25.1	C	27.2	C	31.9	C	32.5	C	48.8	D	49.8	D	25.2	C	28.8	C
			SB Thru	16.9	B	21.7	C	8.5	A	8.3	A	12.7	B	31.6	C	17.2	B	19.6	B
			SB Right	8.1	A	9.6	A	11.8	B	13.0	B	10.7	B	10.8	B	13.9	B	14.3	B
2	Parkway Commons / Cemetery	Signal	OVERALL	7.6	A	8.4	A	19.9	B	23.9	C	14.4	B	17.9	B	18.2	B	18.9	B
			EASTBOUND					36.9	D	42.6	D								
			EB Left					40.5	D	48.5	D	37.9	D	38.0	D	37.2	D	37.9	D
			EB Thru/Right																
			WESTBOUND	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			WB Left/Thru/Right	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			NORTHBOUND	6.4	A	7.6	A	22.1	C	24.6	C	18.2	B	21.4	C	20.8	C	23.3	C
			NB Left	54.1	D	54.7	D	36.7	D	39.4	D	36.5	D	37.2	D	32.1	C	32.6	C
			NB Thru/Right	3.6	A	4.9	A	20.5	C	23.0	C	16.2	B	19.5	B	19.9	B	22.6	C
			SOUTHBOUND	4.1	A	4.6	A	10.6	B	16.7	B	6.2	A	11.1	B	6.8	A	10.5	B
			SB Left	29.3	C	29.8	C												
			SB Thru/Right	4.0	A	4.6	A	10.5	B	16.6	B	6.1	A	11.1	B	6.8	A	10.5	B
3	Southeast Parkway / Shadow Green Drive	Signal	OVERALL	14.5	B	17.6	B	16.4	B	19.2	B	16.8	B	19.2	B	14.8	B	16.2	B
			EASTBOUND	27.7	C	28.7	C	30.6	C	32.5	C	29.9	C	30.1	C	26.0	C	28.3	C
			EB Left	29.3	C	32.6	C	31.7	C	36.0	D	32.4	C	33.5	C	27.4	C	31.2	C
			EB Thru									35.9	D	35.4	D	30.5	C	32.1	C
			EB Right					29.1	C	29.4	C					24.7	C	26.3	C
			WESTBOUND	35.9	D	36.0	D	34.7	C	35.1	D	35.3	D	35.8	D	35.4	D	36.2	D
			WB Left	33.3	C	33.3	C	29.4	C	29.6	C	30.1	C	30.2	C				
			WB Thru/Right	36.2	D	36.9	D	37.0	D	37.6	D	36.6	D	37.1	D	35.9	D	36.9	D
			NORTHBOUND	7.9	A	10.8	B	9.7	A	12.4	B	17.2	B	19.0	B	9.5	A	12.4	B
			NB Left	3.8	A	4.5	A	8.2	A	22.0	C	27.8	C	45.1	D	15.8	B	29.4	C
			NB Thru/Right	8.3	A	11.5	B	9.9	A	10.9	B					8.0	A	8.6	A
			SOUTHBOUND	13.4	B	18.7	B	12.1	B	16.2	B	10.9	B	14.1	B	12.6	B	12.7	B
			SB Left	16.3	B	27.2	C	11.4	B	20.0	C	7.5	A	8.5	A	8.4	A	10.5	B
			SB Thru	13.2	B	17.8	B	14.3	B	18.4	B	11.7	B	16.0	B	13.4	B	14.3	B
			SB Right	10.1	A	11.4	B	0.3	A	0.4	A	0.1	A	0.1	A				
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			EB Left/Thru/Right	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			WESTBOUND	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			WB Left/Thru/Right	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			NORTHBOUND	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			NB Left	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			SOUTHBOUND	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
			SB Left	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
5	Century Court	Signal	OVERALL	7.7	A	9.6	A	7.8	A	9.6	A	6.1	A	7.1	A	4.1	A	5.8	A
			EASTBOUND	35.8	D	36.9	D	36.1	D	36.8	D								
			EB Left	38.3	D	39.9	D	39.8	D	42.0	D	38.5	D	39.0	D				
			EB Thru/Right																
			WESTBOUND																
			WB Left/Thru/Right																
			NORTHBOUND	2.3	A	3.5	A	2.6	A	5.2	A	1.7	A	2.4	A	1.2	A	1.9	A
			NB Left	2.8	A	11.1	B	5.1	A	18.5	B	2.1	A	4.4	A	1.5	A	3.3	A
			NB Thru/Right	2.2	A	2.4	A	2.3	A	3.5	A	1.7	A	2.3	A	1.2	A	1.9	A
			SOUTHBOUND	8.5	A	11.8	B	6.1	A	7.7	A	4.6	A	6.0	A	3.8	A	5.6	A
			SB Left	6.3	A	7.8	A	4.5	A	4.7	A	3.0	A	3.3	A	2.0	A	2.6	A
			SB Thru/Right	8.5	A	11.8	B	6.1	A	7.7	A	4.6	A	6.0	A	3.8	A	5.6	A
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND	13.5	B	14.5	B	15.3	C	17.8	C	15.0	C	17.3	C	15.5	C	18.1	C
			EB Left/Thru/Right	13.5	B	14.5	B	15.3	C	17.8	C	15.0	C	17.3	C	15.5	C	18.1	C
			WESTBOUND	13.9	B	14.7	B	17.1	C	22.0	C	18.0	C	23.0	C	15.6	C	19.0	C
			WB Left/Thru/Right	13.9	B	14.7	B	17.1	C	22.0	C	18.0	C	23.0	C	15.6	C	19.0	C
			NORTHBOUND	10.3	B	11.4	B	10.6	B	11.8	B	10.4	B	11.5	B	10.5	B	11.6	B
			NB Left	10.3	B	11.4	B	10.6	B	11.8	B	10.4	B	11.5	B	10.5	B	11.6	B
			SOUTHBOUND	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
			SB Left	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
7	Franklin Business Park (North) / Future Werthan Circle	Signal	OVERALL	4.1	A	4.6	A	5.0	A	6.3	A	4.1	A	5.1	A	7.5	A	9.0	A
			WESTBOUND	41.0	D	41.0	D					41.2	D	41.4	D				
			WB Left	42.0	D	42.2	D	40.4	D	40.6	D	42.6	D	43.0	D				
			WB Right	40.4	D	40.4	D												
			NORTHBOUND	3.4	A	4.4	A	5.0	A	6.3	A	4.5	A	6.3	A	6.1	A	7.8	A
			NB Thru/Right	3.4	A	4.4	A	5.0	A	8.3	A	4.5	A	6.3	A	6.1	A	7.8	A
			SOUTHBOUND	3.2	A	3.1	A	2.2	A	2.5	A	1.7	A	2.1	A	3.4	A	5.2	A
			SB Left	3.9	A	4.9	A	2.2	A	2.7	A	1.9	A	2.8	A	3.9	A	13.4	B
			SB Thru					2.2	A	2.5	A	1.7	A	2.0	A	3.3	A	4.5	A
8	Confederate Drive / Werthan Circle	Signal	OVERALL					6.6	A	7.0	A	4.8	A	5.0	A	5.6	A	6.5	A
			EASTBOUND	40.1	D	40.3	D					41.7	D	41.7	D				
			EB Left	42.3	D	43.1	D					42.7	D	42.9	D				
			EB Thru/Right																
			WESTBOUND	39.4	D	39.4	D					41.3	D	41.4	D				
			WB Left	40.6	D	40.9	D	43.8	D	42.0	D	42.0	D	42.2	D				
			WB Thru/Right																
			NORTHBOUND	1.8	A	1.8	A	4.2	A	4.4	A	2.5	A	2.5	A	3.0	A	4.0	A
			NB Left					2.3	A	2.4	A	1.4	A	1.5	A	2.5	A	3.6	A
			NB Thru/Right	1.9	A	1.9	A	4.2	A	4.5	A	2.5	A	2.5	A	3.0	A	4.0	A
			SOUTHBOUND					3.6	A	4.5	A	3.9	A	4.5	A	4.5	A	5.9	A
			SB Left	3.0	A	3.4	A	1.7	A	2.8	A					2.8	A	3.5	A
			SB Thru/Right					3.7	A	4.6	A	3.9	A	4.5	A	4.6	A	6.0	A
9	Carr Avenue	Stop	WESTBOUND	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			WB Left/Thru/Right	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			SOUTHBOUND	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
			SB Left	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
10	Downs Boulevard	Signal	OVERALL	19.7	B	21.0	C	18.9	B	22.8	C	18.6	B	22.2	C	22.2	C	25.2	C
			EASTBOUND	32.9	C	34.1	C	30.0	C	32.5	C	30.1	C	33.8	C	32.5	C	35.4	D
			EB Left	46.8	D	53.9	D	42.7	D	45.5	D	45.4	D	52.1	D				
			EB Thru																
			EB Right	30.7	C	31.1	C	27.5	C	29.9	C	27.1	C	30.2	C	29.9	C	34.1	C
			WESTBOUND																
			WB Left																
			WB Thru/Right																
			NORTHBOUND					16.4	B	19.2	B	14.3	B	16.7	B				
			NB Left					35.4	D	42.0	D	28.7	C	32.8	C				
			NB Thru/Right	2.1	A	2.8	A	5.9	A	6.7	A	2.8	A	3.7	A	3.1	A	5.2	A
			SOUTHBOUND	14.3	B	23.5	C	15.0	B	20.1	C	16.5	B	22.0	C	19.0	B	30.1	C
			SB Left	10.0	B	14.3	B	9.0	A	9.9	A	10.0	B	11.0	B	12.4	B	15.5	B
			SB Thru/Right	14.9	B	25.0	C	15.8	B	21.4	C	17.4	B	23.7	C	20.0	C	32.4	C
			SB Right	10.3	B	14.7	B	9.3	A	10.3	B	10.3	B	11.4	B	12.7	B	15.9	B
11	James Avenue	Stop	WESTBOUND	16.2	C	20.4	C	16.4	C	20.6	C	14.5	B	17.2	C	15.5	C	19.2	C
			WB Right	16.2	C	20.4	C	16.4	C	20.6	C	14.5	B	17.2	C	15.5	C	19.2	C

Delay Reduction Color Code: [illegible]

Level of Service (LOS) for Five-Lane (Access Management) Concept

	Cross-Street	Traffic Control Device	Geometry	[AM] Peak Hour				[MID] Peak Hour				[PM] Peak Hour				[SAT] Peak Hour			
				2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	OVERALL	20.5	C	23.2	C	21.8	C	22.7	C	28.1	C	30.2	C	21.7	C	23.6	C
			EASTBOUND (EB)									35.1	D	35.7	D	30.8	C	30.8	C
			EB Left									32.8	C	32.9	C				
			EB Thru									39.5	D	40.9	D	31.9	C	32.3	C
			EB Right									32.6	C	32.8	C				
			WESTBOUND (WB)					21.5	C	21.7	C	26.0	C	29.6	C	18.8	B	19.0	B
			WB Left					25.1	C	25.2	C	31.8	C	41.3	D	21.2	C	21.2	C
			WB Thru									32.2	C	32.7	C	26.9	C	26.9	C
			WB Right					18.2	B	18.4	B	21.0	C	21.4	C	15.8	B	15.9	B
			NORTHBOUND (NB)	16.6	B	21.0	C	20.5	C	24.1	C	17.5	B	19.7	B	22.9	C	25.5	C
			NB Left	11.8	B	13.2	B	16.1	B	18.5	B	15.2	B	19.6	B	18.7	B	21.6	C
			NB Thru	19.1	B	24.5	C	22.7	C	26.8	C	19.0	B	21.2	C	25.4	C	28.4	C
			NB Right	9.0	A	11.0	B	14.9	B	17.4	B	10.7	B	11.5	B	16.2	B	17.3	B
			SOUTHBOUND (SB)	20.5	C	24.0	C	19.8	B	20.4	C	22.4	C	35.9	D	20.3	C	23.3	C
			SB Left	25.1	C	27.2	C	32.0	C	32.5	C	46.7	D	49.8	D	24.8	C	28.8	C
			SB Thru	16.9	B	21.6	C	8.5	A	9.3	A	12.7	B	31.6	C	17.2	B	19.6	B
			SB Right	8.1	A	9.6	A	11.8	B	13.0	B	10.7	B	10.8	B	13.9	B	14.3	B
2	Parkway Commons / Cemetery	Signal	OVERALL	7.6	A	8.4	A	19.8	B	23.0	C	14.4	B	17.9	B	16.2	B	18.9	B
			EASTBOUND					36.9	D	42.6	D								
			EB Left					40.5	D	48.5	D	37.9	D	38.0	D	37.2	D	37.9	D
			EB Thru/Right																
			WESTBOUND	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			WB Left/Thru/Right	41.9	D	41.9	D					41.9	D	41.9	D	41.7	D	41.8	D
			NORTHBOUND	6.4	A	7.6	A	22.1	C	24.6	C	18.2	B	24.1	C	20.8	C	23.3	C
			NB Left	54.1	D	54.7	D	36.7	D	39.4	D	36.5	D	37.2	D	32.1	C	32.6	C
			NB Thru/Right	3.6	A	4.9	A	20.5	C	23.0	C	16.2	B	19.5	B	19.9	B	22.6	C
			SOUTHBOUND	4.1	A	4.6	A	10.6	B	16.7	B	6.1	A	11.1	B	6.8	A	10.5	B
			SB Left	29.3	C	29.7	C												
			SB Thru/Right	4.0	A	4.6	A	10.5	B	16.6	B	6.1	A	11.0	B	6.8	A	10.5	B
3	Southeast Parkway / Shadow Green Drive	Signal	OVERALL	14.5	B	17.6	B	18.4	B	19.2	B	16.8	B	19.0	B	15.1	B	16.9	B
			EASTBOUND	27.7	C	28.7	C	30.6	C	32.3	C	29.9	C	30.1	C	26.0	C	28.3	C
			EB Left	29.3	C	32.6	C	31.7	C	36.0	D	32.4	C	33.5	C	27.4	C	31.2	C
			EB Thru									35.3	D	35.4	D	30.5	C	32.1	C
			EB Right					29.1	C	29.4	C					24.7	C	26.3	C
			WESTBOUND	35.9	D	36.0	D	34.7	C	35.1	D	35.9	D	35.8	D	35.4	D	36.2	D
			WB Left	33.3	C	33.3	C	29.4	C	29.6	C	30.1	C	30.2	C				
			WB Thru/Right	36.2	D	36.3	D	37.0	D	37.6	D	36.6	D	37.1	D	35.9	D	36.9	D
			NORTHBOUND	7.9	A	10.8	B	9.7	A	12.4	B	17.2	B	19.0	B	9.5	A	12.4	B
			NB Left	3.8	A	4.5	A	8.2	A	22.0	C	27.8	C	45.1	D	15.8	B	29.4	C
			NB Thru/Right	8.3	A	11.5	B	9.9	A	10.9	B					8.0	A	8.6	A
			SOUTHBOUND	13.4	B	18.7	B	12.0	B	16.1	B	10.2	B	13.7	B				
			SB Left	16.3	B	27.3	C	11.3	B	20.0	C	7.5	A	8.3	A	8.8	A	10.6	B
			SB Thru	13.2	B	17.9	B	14.2	B	18.4	B	11.6	B	15.7	B	14.1	B	14.6	B
			SB Right	9.9	A	11.3	B	0.3	A	0.4	A	0.1	A	0.1	A				
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			EB Left/Thru/Right	14.6	B	16.4	C	12.6	B	13.9	B	14.9	B	17.1	C	15.2	C	18.0	C
			WESTBOUND	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			WB Left/Thru/Right	12.8	B	14.7	B	16.8	C	22.4	C	17.7	C	24.1	C	12.8	B	14.4	B
			NORTHBOUND	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			NB Left	9.0	A	9.4	A	10.0	B	10.8	B	10.6	B	11.9	B	10.4	B	11.6	B
			SOUTHBOUND	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
			SB Left	10.9	B	12.2	B	10.6	B	11.7	B	9.8	A	10.7	B	9.9	A	10.8	B
5	Century Court	Signal	OVERALL	7.7	A	9.6	A	7.7	A	9.6	A	6.2	A	7.2	A	4.9	A	5.2	A
			EASTBOUND	35.8	D	36.3	D	36.1	D	36.8	D								
			EB Left	38.5	D	39.9	D	38.8	D	42.0	D	38.5	D	39.0	D				
			EB Thru/Right																
			WESTBOUND																
			WB Left/Thru/Right																
			NORTHBOUND	2.3	A	3.5	A	2.6	A	5.2	A	1.7	A	2.4	A	1.2	A	1.9	A
			NB Left	2.8	A	11.1	B	5.1	A	18.5	B	2.1	A	4.4	A	1.5	A	3.3	A
			NB Thru/Right	2.2	A	2.4	A	2.3	A	3.5	A	1.7	A	2.3	A	1.2	A	1.9	A
			SOUTHBOUND	8.6	A	11.8	B	6.2	A	7.8	A	4.7	A	6.2	A	3.6	A	5.5	A
			SB Left	6.4	A	7.8	A	4.7	A	4.7	A	3.2	A	3.5	A	1.9	A	2.7	A
			SB Thru/Right	8.6	A	11.8	B	6.2	A	7.8	A	4.7	A	6.2	A	3.6	A	5.5	A
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND	13.5	B	14.5	B	15.2	C	17.6	C	15.0	C	16.7	C	15.1	C	18.0	C
			EB Left/Thru/Right	13.5	B	14.5	B	15.2	C	17.6	C	15.0	C	16.7	C	15.1	C	18.0	C
			WESTBOUND	13.9	B	14.7	B	17.0	C	21.9	C	18.0	C	22.6	C	15.6	C	18.9	C
			WB Left/Thru/Right	13.9	B	14.7	B	17.0	C	21.9	C	18.0	C	22.6	C	15.6	C	18.9	C
			NORTHBOUND	10.3	B	11.4	B	10.6	B	11.7	B	10.4	B	11.4	B	10.4	B	11.5	B
			NB Left	10.3	B	11.4	B	10.6	B	11.7	B	10.4	B	11.4	B	10.4	B	11.5	B
			SOUTHBOUND	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
			SB Left	10.6	B	11.7	B	10.8	B	12.0	B	10.1	B	11.2	B	10.6	B	11.9	B
7	Franklin Business Park (North) / Future Werthan Circle	Signal	OVERALL	4.4	A	4.8	A	5.6	A	7.2	A	4.4	A	5.9	A	8.4	A	10.0	B
			WESTBOUND	41.4	D	41.7	D												
			WB Left	42.4	D	43.5	D	40.6	D	40.6	D								
			WB Right	40.3	D	40.4	D												
			NORTHBOUND	3.8	A	4.4	A	5.8	A	8.6	A	4.9	A	7.3	A	7.0	A	8.1	A
			NB Thru/Right	3.8	A	4.4	A	5.8	A	8.6	A	4.9	A	7.3	A	7.0	A	8.1	A
			SOUTHBOUND					2.3	A	2.6	A	1.7	A	2.4	A	4.1	A	5.8	A
			SB Left	4.1	A	5.0	A	2.3	A	2.9	A	1.9	A	3.2	A	5.0	A	16.6	B
			SB Thru					2.3	A	2.6	A	1.7	A	2.4	A	4.0	A	4.8	A
8	Confederate Drive / Werthan Circle	Signal	OVERALL					6.6	A	7.1	A	4.8	A	5.0	A	5.6	A	6.5	A
			EASTBOUND	40.1	D	40.3	D					41.7	D	41.7	D				
			EB Left	42.3	D	43.1	D					42.7	D	42.9	D				
			EB Thru/Right																
			WESTBOUND	39.4	D	39.4	D					41.5	D	41.4	D				
			WB Left	40.6	D	40.9	D	41.8	D	42.0	D	42.0	D	42.2	D				
			WB Thru/Right																
			NORTHBOUND	1.4	A	1.8	A	4.2	A	4.6	A	2.5	A	2.5	A	3.0	A	4.0	A
			NB Left	0.4	A	0.6	A	2.3	A	2.7	A	1.4	A	1.5	A	2.5	A	3.6	A
			NB Thru/Right	1.5	A	1.9	A	4.2	A	4.7	A	2.5	A	2.6	A	3.0	A	4.0	A
			SOUTHBOUND					3.6	A	4.5	A	3.9	A	4.5	A	4.5	A	5.9	A
			SB Left	3.0	A	3.4	A	3.7	A	2.8	A					2.8	A	3.5	A
			SB Thru/Right					3.7	A	4.6	A	3.9	A	4.5	A	4.6	A	6.0	A
9	Carr Avenue	Stop	WESTBOUND	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			WB Left/Thru/Right	14.1	B	15.7	C	13.8	B	15.6	C	14.6	B	17.4	C	13.4	B	14.8	B
			SOUTHBOUND	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
			SB Left	10.1	B	11.1	B	10.1	B	11.0	B	10.0	B	11.0	B	10.2	B	11.3	B
10	Downs Boulevard	Signal	OVERALL	19.7	B	21.0	C	19.1	B	22.9	C	18.6	B	22.1	C	22.1	C	25.2	C
			EASTBOUND	32.9	C	34.1	C	30.0	C	32.5	C	30.1	C	33.8	C	32.5	C	35.4	D
			EB Left	46.8	D	53.9	D	42.7	D	45.5	D	45.4	D	52.1	D				
			EB Thru																
			EB Right	30.7	C	31.1	C	27.5	C	29.9	C	27.1	C	30.2	C	29.9	C	34.1	C
			WESTBOUND																
			WB Left																
			WB Thru/Right																
			NORTHBOUND					16.9	B	19.2	B	14.4	B	16.4	B				
			NB Left					38.5	D	42.3	D	28.8	C	32.6	C				
			NB Thru/Right	2.1	A	2.8	A	4.9	A	6.6	A	2.8	A	3.3	A	3.1	A	5.2	A
			SOUTHBOUND	14.3	B	23.5	C	15.0	B	20.1	C	16.5	B	22.0	C	19.0	B	30.1	C
			SB Left	10.0	B	14.3	B	9.0	A	9.9	A	10.0	B	11.0	B	12.4	B	15.5	B
			SB Thru/Right	14.9	B	25.0	C	15.8	B	21.4	C	17.4	B	23.7	C	20.0	C	32.4	C
			SB Right	10.3	B	14.7	B	9.3	A	10.3	B	10.3	B	11.4	B	12.7	B	15.9	B
11	James Avenue	Stop	WESTBOUND	15.3	C	18.9	C	15.2	C	18.6	C	15.2	B	15.4	C	14.3	B	17.3	C
			WB Left/Thru/Right	15.3	C	18.9	C	15.2	C	18.6	C	13.2	B	15.4	C	14.3	B	17.3	C

Delay Reduction Color Code: Actuated Green Time Increases

Level of Service (LOS) for Roundabout Concept

	Cross-Street	Traffic Control Device	Geometry	[AM] Peak Hour				[MID] Peak Hour				[PM] Peak Hour				[SAT] Peak Hour			
				2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design		2021 Future		2041 Design	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mack Hatcher Parkway / Hillview Lane	Signal	**OVERALL**	**20.7**	**C**	**22.6**	**C**	**23.6**	**C**	**25.0**	**C**	**25.7**	**C**	**33.9**	**C**	**25.9**	**C**	**28.4**	**C**
			EASTBOUND (EB)									**35.1**	**D**	**56.7**	**D**	**28.7**	**C**	**28.9**	**C**
			EB Left									*32.8*	*C*	*33.7*	*C*				
			EB Thru									*39.5*	*D*	*42.7*	*D*	*32.0*	*C*	*32.6*	*C*
			EB Right									*32.6*	*C*	*33.4*	*C*				
			WESTBOUND (WB)					**21.7**	**C**	**21.7**	**C**	**26.0**	**C**	**31.3**	**C**	**18.9**	**B**	**19.1**	**B**
			WB Left					*25.1*	*C*	*25.1*	*C*	*31.8*	*C*	*45.3*	*D*	*21.2*	*C*	*21.3*	*C*
			WB Thru									*32.2*	*C*	*33.6*	*C*	*27.0*	*C*	*27.0*	*C*
			WB Right					*18.5*	*B*	*18.5*	*B*	*21.0*	*C*	*22.0*	*C*	*15.8*	*B*	*16.0*	*B*
			NORTHBOUND (NB)	**15.9**	**B**	**19.9**	**B**	**19.6**	**B**	**23.1**	**C**	**17.5**	**B**	**19.1**	**B**	**23.2**	**C**	**25.9**	**C**
			NB Left	*11.6*	*B*	*13.0*	*B*	*15.5*	*B*	*18.0*	*B*	*15.2*	*B*	*19.4*	*B*	*18.1*	*B*	*21.4*	*C*
			NB Thru	*18.2*	*B*	*23.1*	*C*	*21.7*	*C*	*25.6*	*C*	*19.0*	*B*	*20.6*	*C*	*25.9*	*C*	*29.1*	*C*
			NB Right	*8.8*	*A*	*10.8*	*B*	*14.4*	*B*	*16.9*	*B*	*10.7*	*B*	*11.1*	*B*	*16.4*	*B*	*17.4*	*B*
			SOUTHBOUND (SB)	**22.2**	**C**	**23.9**	**C**	**24.8**	**C**	**26.8**	**C**	**28.7**	**C**	**43.7**	**D**	**29.7**	**C**	**35.8**	**D**
			SB Left	*35.3*	*D*	*35.6*	*D*	*33.8*	*C*	*34.1*	*C*					*35.3*	*D*	*37.1*	*D*
			SB Thru	*10.8*	*B*	*13.9*	*B*	*17.0*	*B*	*20.9*	*C*	*27.1*	*C*	*48.7*	*D*	*26.3*	*C*	*36.0*	*D*
			SB Right	*8.0*	*A*	*9.6*	*B*	*11.7*	*B*	*12.9*	*B*					*14.9*	*B*	*15.4*	*B*
2	Parkway Commons / Cemetery	Roundabout	**OVERALL**	**7.2**	**A**	**8.8**	**A**	**8.5**	**A**	**11.2**	**B**	**7.9**	**A**	**10.3**	**B**	**7.1**	**A**	**8.9**	**A**
			EASTBOUND	**7.0**	**A**	**8.5**	**A**	**11.9**	**B**	**18.5**	**C**	**11.2**	**B**	**17.0**	**C**	**9.3**	**A**	**13.1**	**B**
			EB Left/Thru/U-Turn	*7.1*	*A*	*8.7*	*A*	*12.9*	*B*	*20.7*	*C*	*11.7*	*B*	*18.2*	*C*	*9.8*	*A*	*14.1*	*B*
			EB Right	*6.6*	*A*	*7.7*	*A*	*8.9*	*A*	*11.4*	*B*	*10.4*	*B*	*14.7*	*B*	*8.4*	*A*	*11.1*	*B*
			WESTBOUND	**8.6**	**A**	**10.9**	**B**	**8.4**	**A**	**10.7**	**B**	**7.0**	**A**	**8.5**	**A**	**6.8**	**A**	**8.4**	**A**
			WB Left/Thru/Right/U-Turn	*8.6*	*A*	*10.9*	*B*	*8.4*	*A*	*10.7*	*B*	*7.0*	*A*	*8.5*	*A*	*6.8*	*A*	*8.4*	*A*
			NORTHBOUND	**8.1**	**A**	**10.3**	**B**	**8.2**	**A**	**10.6**	**B**	**7.3**	**A**	**9.0**	**A**	**7.0**	**A**	**8.7**	**A**
			NB Left/Thru/U-Turn	*8.1*	*A*	*10.3*	*B*	*8.2*	*A*	*10.6*	*B*	*7.3*	*A*	*9.0*	*A*	*7.0*	*A*	*8.7*	*A*
			NB Thru/Right	*8.1*	*A*	*10.3*	*B*	*8.2*	*A*	*10.6*	*B*	*7.3*	*A*	*9.0*	*A*	*7.0*	*A*	*8.7*	*A*
			SOUTHBOUND	**5.9**	**A**	**6.8**	**A**	**7.7**	**A**	**9.3**	**A**	**7.6**	**A**	**9.5**	**A**	**6.6**	**A**	**7.8**	**A**
			SB Left/Thru/U-Turn	*5.9*	*A*	*6.8*	*A*	*7.7*	*A*	*9.3*	*A*	*7.6*	*A*	*9.5*	*A*	*6.6*	*A*	*7.8*	*A*
			SB Thru/Right	*5.9*	*A*	*6.8*	*A*	*7.7*	*A*	*9.3*	*A*	*7.6*	*A*	*9.5*	*A*	*6.6*	*A*	*7.8*	*A*
3	Southeast Parkway / Shadow Green Drive	Roundabout	**OVERALL**	**10.3**	**B**	**15.0**	**C**	**13.0**	**B**	**20.9**	**C**	**10.7**	**B**	**15.8**	**C**	**10.0**	**B**	**14.2**	**B**
			EASTBOUND	**10.2**	**B**	**13.7**	**B**	**18.6**	**C**	**35.2**	**E**	**13.2**	**B**	**20.7**	**C**	**12.7**	**B**	**20.4**	**C**
			EB Left/Thru/U-Turn	*10.5*	*B*	*14.2*	*B*	*19.9*	*C*	*39.0*	*E*	*13.3*	*B*	*20.0*	*C*	*12.0*	*B*	*18.2*	*C*
			EB Right	*10.0*	*B*	*13.3*	*B*	*17.4*	*C*	*31.9*	*D*	*13.2*	*B*	*21.2*	*C*	*13.1*	*B*	*21.9*	*C*
			WESTBOUND	**14.4**	**B**	**23.5**	**C**	**15.3**	**C**	**25.5**	**D**	**10.8**	**B**	**15.4**	**C**	**10.0**	**B**	**13.8**	**B**
			WB Left/Thru/U-Turn	*12.0*	*B*	*16.4*	*C*	*16.1*	*C*	*26.9*	*D*	*10.7*	*B*	*14.5*	*B*	*10.0*	*B*	*13.4*	*B*
			WB Right	*15.1*	*C*	*25.3*	*D*	*14.6*	*B*	*24.3*	*C*	*11.0*	*B*	*15.9*	*C*	*10.0*	*B*	*14.1*	*B*
			NORTHBOUND	**12.1**	**B**	**18.8**	**C**	**11.7**	**B**	**17.7**	**C**	**8.2**	**A**	**10.4**	**B**	**9.0**	**A**	**12.1**	**B**
			NB Left/Thru/U-Turn	*12.1*	*B*	*18.8*	*C*	*11.7*	*B*	*17.7*	*C*	*8.2*	*A*	*10.4*	*B*	*9.0*	*A*	*12.1*	*B*
			NB Thru/Right	*12.1*	*B*	*18.8*	*C*	*11.7*	*B*	*17.7*	*C*	*8.2*	*A*	*10.4*	*B*	*9.0*	*A*	*12.1*	*B*
			SOUTHBOUND	**7.0**	**A**	**8.5**	**A**	**11.4**	**B**	**17.2**	**C**	**12.1**	**B**	**19.0**	**C**	**9.9**	**A**	**14.0**	**B**
			SB Left/Thru/U-Turn	*7.0*	*A*	*8.5*	*A*	*11.4*	*B*	*17.2*	*C*	*12.1*	*B*	*19.0*	*C*	*9.9*	*A*	*14.0*	*B*
			NB Thru/Right	*7.0*	*A*	*8.5*	*A*	*11.4*	*B*	*17.2*	*C*	*12.1*	*B*	*19.0*	*C*	*9.9*	*A*	*14.0*	*B*
4	Alpha Drive	Two-Way Stop Control (TWSC)	**EASTBOUND**	**11.2**	**B**	**12.1**	**B**	**13.0**	**B**	**14.7**	**B**	**14.1**	**B**	**16.3**	**C**	**13.6**	**B**	**15.5**	**C**
			EB Left/Thru/Right	*11.2*	*B*	*12.1*	*B*	*13.0*	*B*	*14.7*	*B*	*14.1*	*B*	*16.3*	*C*	*13.6*	*B*	*15.5*	*C*
			WESTBOUND	**15.0**	**C**	**18.4**	**C**	**17.9**	**C**	**26.5**	**D**	**14.8**	**B**	**18.7**	**C**	**14.5**	**B**	**17.9**	**C**
			WB Left/Thru/Right	*15.0*	*C*	*18.4*	*C*	*17.9*	*C*	*26.5*	*D*	*14.8*	*B*	*18.7*	*C*	*14.5*	*B*	*17.9*	*C*
5	Century Court	Roundabout	**OVERALL**	**9.0**	**A**	**12.0**	**B**	**10.9**	**B**	**16.0**	**C**	**8.7**	**A**	**11.6**	**B**	**7.7**	**A**	**9.8**	**A**
			EASTBOUND	**8.3**	**A**	**10.8**	**B**	**13.3**	**B**	**20.8**	**C**	**12.2**	**B**	**18.6**	**C**	**9.6**	**A**	**13.0**	**B**
			EB Left/Thru/U-Turn	*8.2*	*A*	*10.6*	*B*	*13.7*	*B*	*21.1*	*C*	*12.5*	*B*	*18.5*	*C*	*9.2*	*A*	*12.4*	*B*
			EB Right	*8.5*	*A*	*11.0*	*B*	*13.0*	*B*	*20.6*	*C*	*12.1*	*B*	*18.7*	*C*	*10.2*	*B*	*13.9*	*B*
			WESTBOUND	**10.3**	**B**	**13.4**	**B**	**11.0**	**B**	**14.5**	**B**	**8.0**	**A**	**10.1**	**B**	**7.7**	**A**	**9.6**	**A**
			WB Left/Thru/Right/U-Turn	*10.3*	*B*	*13.4*	*B*	*11.0*	*B*	*14.5*	*B*	*8.0*	*A*	*10.1*	*B*	*7.7*	*A*	*9.6*	*A*
			NORTHBOUND	**10.0**	**B**	**13.8**	**B**	**11.2**	**B**	**16.7**	**C**	**7.9**	**A**	**10.1**	**B**	**7.6**	**A**	**9.5**	**A**
			NB Left/Thru/U-Turn	*10.0*	*B*	*13.8*	*B*	*11.2*	*B*	*16.7*	*C*	*7.9*	*A*	*10.1*	*B*	*7.6*	*A*	*9.5*	*A*
			NB Thru/Right	*10.0*	*B*	*13.8*	*B*	*11.2*	*B*	*16.7*	*C*	*7.9*	*A*	*10.1*	*B*	*7.6*	*A*	*9.5*	*A*
			SOUTHBOUND	**7.8**	**A**	**9.7**	**A**	**10.0**	**B**	**14.1**	**B**	**8.8**	**A**	**11.8**	**B**	**7.7**	**A**	**9.7**	**A**
			SB Left/Thru/U-Turn	*7.8*	*A*	*9.7*	*A*	*10.0*	*B*	*14.1*	*B*	*8.8*	*A*	*11.8*	*B*	*7.7*	*A*	*9.7*	*A*
			SB Thru/Right	*7.8*	*A*	*9.7*	*A*	*10.0*	*B*	*14.1*	*B*	*8.8*	*A*	*11.8*	*B*	*7.7*	*A*	*9.7*	*A*
6	Beasley Drive / Lumber Drive	TWSC	**EASTBOUND**	**13.0**	**B**	**15.1**	**C**	**15.2**	**C**	**19.8**	**C**	**16.7**	**C**	**23.0**	**C**	**16.3**	**C**	**21.5**	**C**
			EB Right	*13.0*	*B*	*15.1*	*C*	*15.2*	*C*	*19.8*	*C*	*16.7*	*C*	*23.0*	*C*	*16.3*	*C*	*21.5*	*C*
			WESTBOUND	**13.3**	**B**	**15.1**	**C**	**14.9**	**B**	**18.2**	**C**	**13.5**	**B**	**15.7**	**C**	**14.6**	**B**	**17.5**	**C**
			WB Right	*13.3*	*B*	*15.1*	*C*	*14.9*	*B*	*18.2*	*C*	*13.5*	*B*	*15.7*	*C*	*14.6*	*B*	*17.5*	*C*
7	Franklin Business Park (North) / Future Werthan Circle	Roundabout	**OVERALL**	**7.4**	**A**	**9.1**	**A**	**7.6**	**A**	**9.4**	**A**	**6.8**	**A**	**8.0**	**A**	**7.9**	**A**	**10.3**	**B**
			WESTBOUND	**9.7**	**A**	**12.9**	**B**	**10.5**	**B**	**14.5**	**B**	**7.7**	**A**	**9.4**	**A**	**12.2**	**B**	**20.0**	**C**
			WB Left/Right/U-Turn	*9.7*	*A*	*12.9*	*B*	*10.5*	*B*	*14.5*	*B*	*7.7*	*A*	*9.4*	*A*	*12.2*	*B*	*20.0*	*C*
			NORTHBOUND	**7.7**	**A**	**9.4**	**A**	**7.4**	**A**	**8.9**	**A**	**6.6**	**A**	**7.5**	**A**	**6.9**	**A**	**8.4**	**A**
			NB Thru/U-Turn	*7.7*	*A*	*9.4*	*A*	*7.4*	*A*	*8.9*	*A*	*6.6*	*A*	*7.5*	*A*	*6.9*	*A*	*8.4*	*A*
			NB Thru/Right	*7.7*	*A*	*9.4*	*A*	*7.4*	*A*	*8.9*	*A*	*6.6*	*A*	*7.5*	*A*	*6.9*	*A*	*8.4*	*A*
			SOUTHBOUND	**6.9**	**A**	**8.4**	**A**	**7.6**	**A**	**9.5**	**A**	**7.0**	**A**	**8.5**	**A**	**8.0**	**A**	**10.3**	**B**
			SB Left/Thru/U-Turn	*6.9*	*A*	*8.4*	*A*	*7.6*	*A*	*9.5*	*A*	*7.0*	*A*	*8.5*	*A*	*8.0*	*A*	*10.3*	*B*
			SB Thru	*6.9*	*A*	*8.4*	*A*	*7.6*	*A*	*9.5*	*A*	*7.0*	*A*	*8.5*	*A*	*8.0*	*A*	*10.3*	*B*
8	Confederate Drive / Werthan Circle	Roundabout	**OVERALL**	**8.2**	**A**	**10.3**	**B**	**7.8**	**A**	**9.7**	**A**	**6.5**	**A**	**7.7**	**A**	**7.0**	**A**	**7.9**	**A**
			EASTBOUND	**9.1**	**A**	**12.0**	**B**	**8.6**	**A**	**10.9**	**B**	**7.6**	**A**	**9.4**	**A**	**8.3**	**A**	**8.7**	**A**
			EB Left/Thru/Right/U-Turn	*9.1*	*A*	*12.0*	*B*	*8.6*	*A*	*10.9*	*B*	*7.6*	*A*	*9.4*	*A*	*8.3*	*A*	*8.7*	*A*
			WESTBOUND	**10.3**	**B**	**14.0**	**B**	**10.6**	**B**	**14.8**	**B**	**7.7**	**A**	**9.8**	**A**	**8.1**	**A**	**10.4**	**B**
			WB Left/Thru/Right/U-Turn	*10.3*	*B*	*14.0*	*B*	*10.6*	*B*	*14.8*	*B*	*7.7*	*A*	*9.8*	*A*	*8.1*	*A*	*10.4*	*B*
			NORTHBOUND	**8.6**	**A**	**11.0**	**B**	**8.1**	**A**	**10.0**	**B**	**6.3**	**A**	**7.5**	**A**	**6.9**	**A**	**8.3**	**A**
			NB Left/Thru/U-Turn	*8.6*	*A*	*11.0*	*B*	*8.1*	*A*	*10.0*	*B*	*6.3*	*A*	*7.5*	*A*	*6.9*	*A*	*8.3*	*A*
			NB Thru/Right	*8.6*	*A*	*11.0*	*B*	*8.1*	*A*	*10.0*	*B*	*6.3*	*A*	*7.5*	*A*	*6.9*	*A*	*8.3*	*A*
			SOUTHBOUND	**7.4**	**A**	**9.0**	**A**	**7.2**	**A**	**8.6**	**A**	**6.6**	**A**	**7.8**	**A**	**6.9**	**A**	**7.2**	**A**
			SB Left/Thru/U-Turn	*7.4*	*A*	*9.0*	*A*	*7.2*	*A*	*8.6*	*A*	*6.6*	*A*	*7.8*	*A*	*6.9*	*A*	*7.2*	*A*
			SB Thru/Right	*7.4*	*A*	*9.0*	*A*	*7.2*	*A*	*8.6*	*A*	*6.6*	*A*	*7.8*	*A*	*6.9*	*A*	*7.2*	*A*
9	Carr Avenue	Stop	**WESTBOUND**	**10.8**	**B**	**11.5**	**B**	**11.0**	**B**	**11.9**	**B**	**10.9**	**B**	**11.8**	**B**	**11.4**	**B**	**12.4**	**B**
			WB Right	*10.8*	*B*	*11.5*	*B*	*11.0*	*B*	*11.9*	*B*	*10.9*	*B*	*11.8*	*B*	*11.4*	*B*	*12.4*	*B*
10	Downs Boulevard	Signal	**OVERALL**	**17.7**	**B**	**19.2**	**B**	**17.6**	**B**	**19.4**	**B**	**19.8**	**B**	**22.2**	**C**	**21.6**	**C**	**25.6**	**C**
			EASTBOUND					**29.6**	**C**	**30.7**	**C**	**29.1**	**C**	**30.4**	**C**	**32.2**	**C**	**35.4**	**D**
			EB Left	*42.7*	*D*	*44.6*	*D*	*42.4*	*D*	*43.6*	*D*	*43.0*	*D*	*44.8*	*D*				
			EB Thru																
			EB Right					*27.1*	*C*	*28.1*	*C*	*26.4*	*C*	*27.5*	*C*	*29.9*	*C*	*34.4*	*C*
			WESTBOUND																
			WB Left	*36.4*	*D*	*36.6*	*D*												
			WB Thru/Right																
			NORTHBOUND					**15.6**	**B**	**16.3**	**B**	**18.5**	**B**	**18.7**	**B**	**16.9**	**B**	**17.3**	**B**
			NB Left					*37.1*	*D*	*37.3*	*D*								
			NB Thru/Right	*3.9*	*A*	*5.2*	*A*	*3.7*	*A*	*4.8*	*A*	*3.4*	*A*	*4.4*	*A*	*4.2*	*A*	*6.2*	*A*
			SOUTHBOUND	**17.4**	**B**	**32.6**	**C**	**12.3**	**B**	**16.3**	**B**	**14.9**	**B**	**21.3**	**C**	**18.2**	**B**	**29.8**	**C**
			SB Left	*12.5*	*B*	*18.7*	*B*	*7.8*	*A*	*8.9*	*A*	*9.0*	*A*	*10.7*	*B*	*11.6*	*B*	*14.8*	*B*
			SB Thru/Right	*18.1*	*B*	*34.9*	*C*	*12.9*	*B*	*17.2*	*B*	*15.7*	*B*	*22.8*	*C*	*19.1*	*B*	*32.1*	*C*
			SB Right	*12.8*	*B*	*19.1*	*B*	*8.1*	*A*	*9.2*	*A*	*9.4*	*A*	*11.1*	*B*	*11.9*	*B*	*15.2*	*B*
14	James Avenue	Stop	**WESTBOUND**	**15.0**	**C**	**18.5**	**C**	**14.8**	**B**	**18.0**	**C**	**13.3**	**B**	**15.5**	**C**	**14.7**	**B**	**18.0**	**C**
			WB Left/Thru/Right	*15.0*	*C*	*18.5*	*C*	*14.8*	*B*	*18.0*	*C*	*13.3*	*B*	*15.5*	*C*	*14.7*	*B*	*18.0*	*C*

Delay Reduction Color Code: [illegible] Increase (Red)

Queue Length for No-Build Condition

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)			[MID] Peak Hour Queue Length (Feet)			[PM] Peak Hour Queue Length (Feet)			[SAT] Peak Hour Queue Length (Feet)		
						2016	2021	2041	2016	2021	2041	2016	2021	2041	2016	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)														
			EB Left	150'	(6 veh)	13'	13'	15'	56'	62'	73'	28'	29'	32'	28'	29'	33'
			EB Thru/Right	450'	(18 veh)	58'	60'	68'	205'	266'	353'	211'	234'	321'	202'	212'	305'
			WESTBOUND (WB)														
			WB Left	640'	(25 veh)	147'	155'	185'	96'	107'	127'	214'	224'	349'	86'	89'	106'
			WB Thru	999'	(40 veh)	81'	86'	98'	110'	116'	139'	108'	112'	133'	109'	113'	136'
			WB Right	325'	(13 veh)	60'	116'	230'	39'	45'	154'	42'	79'	167'	32'	35'	73'
			NORTHBOUND (NB)														
			NB Left	200'	(8 veh)	36'	37'	44'	57'	55'	61'	53'	53'	61'	81'	84'	100'
			NB Thru	775'	(31 veh)	587'	678'	1012'	325'	362'	419'	416'	493'	643'	355'	468'	613'
			NB Right	200'	(8 veh)	15'	18'	27'	15'			14'	14'	19'	15'	15'	21'
			SOUTHBOUND (SB)														
			SB Left	300'	(12 veh)	161'	214'	277'	210'	252'	323'	164'	184'	214'	169'	194'	204'
			SB Thru	560'	(22 veh)	9'	17'	75'	392'	476'	556'	762'	823'	1117'	420'	474'	607'
			SB Right	400'	(16 veh)	0'	0'	0'			1'	0'	0'	0'	0'		
2	Parkway Commons / Cemetery	Signal	EASTBOUND														
			EB Left/Thru	175'	(7 veh)	108'	112'	131'	292'	313'	413'	198'	218'	276'	176'	185'	224'
			EB Right	175'	(7 veh)	0'	0'	0'	21'	28'	38'	32'	36'	43'	25'	30'	33'
			WESTBOUND														
			WB Left/Thru/Right	250'	(10 veh)	12'	12'	12'	45'	47'	52'	12'	12'	12'	18'	18'	20'
			NORTHBOUND														
			NB Left	50'	(2 veh)	23'	23'	23'	41'	46'	55'	41'	42'	48'	25'	26'	27'
			NB Thru/Right	150'	(6 veh)	1003'	1188'	1590'	266'	306'	955'	245'	292'	1046'	217'	761'	900'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	0'					0'			1'			3'
			SB Thru/Right	150'	(6 veh)	290'	354'	364'	385'	476'	589'	465'	656'	700'	378'	422'	519'
3	Southeast Parkway / Shadow Green Drive	Signal	EASTBOUND														
			EB Left	100'	(4 veh)	83'	190'	208'	146'	227'	286'	77'	111'	128'	97'	132'	155'
			EB Thru	200'	(8 veh)	41'	68'	73'	44'	70'	77'	31'	47'	48'	35'	48'	52'
			EB Right	75'	(3 veh)	47'	66'	70'	53'	99'	186'	49'	57'	121'	53'	82'	157'
			WESTBOUND														
			WB Left	125'	(5 veh)	35'	36'	41'	110'	114'	135'	62'	65'	75'	38'	38'	44'
			WB Thru/Right	300'	(12 veh)	79'	86'	98'	112'	176'	262'	87'	164'	225'	66'	78'	87'
			NORTHBOUND														
			NB Left	150'	(6 veh)	41'			20'			27'	82'	164'	87'	150'	161'
			NB Thru/Right	150'	(6 veh)	612'	1030'	1360'	188'	382'	1131'	292'	349'	434'	602'	666'	956'
			SOUTHBOUND														
			SB Left	120'	(4 veh)	9'	20'	101'			39'	22'					61'
			SB Thru	580'	(23 veh)				252'	273'	288'	250'	402'	447'	209'	283'	244'
			SB Right	100'	(4 veh)							3'	25'	27'	29'		
4	Alpha Drive	Stop	WESTBOUND														
			WB Left/Thru/Right	200'	(8 veh)	26'	43'	167'	116'	192'	457'	84'	158'	9999'	37'	55'	174'
			SOUTHBOUND														
			SB Left	75'	(3 veh)	5'	9'	26'	6'	8'	22'	3'	4'	7'	3'	3'	7'
5	Century Court	Signal	EASTBOUND														
			EB Left	125'	(5 veh)	124'	151'	178'	121'	147'	172'	99'	114'	132'	59'	73'	82'
			EB Thru/Right	225'	(9 veh)	46'	47'	51'	59'	80'	66'	57'	57'	61'	32'	32'	34'
			WESTBOUND														
			WB Left/Thru/Right	50'	(2 veh)	11'	11'	11'	11'	11'	11'	11'	11'	11'	12'	12'	13'
			NORTHBOUND														
			NB Left	75'	(3 veh)			55'			93'			22'	6'	6'	6'
			NB Thru/Right	200'	(8 veh)	590'	676'	677'	583'	702'	953'	539'	616'	974'	120'	158'	174'
			SOUTHBOUND														
			SB Left	100'	(4 veh)	1'	1'	0'			2'	1'	1'	1'			1'
			SB Thru/Right	225'	(9 veh)	227'	482'	1111'	821'	1048'	1393'	957'	1204'	1640'	171'	1014'	1390'
6	Beasley Drive / Lumber Drive	Two-Way Stop Control (TWSC)	EASTBOUND														
			EB Left/Thru/Right	325'	(13 veh)	16'	19'	9999'	80'	55'	101'	42'	64'	151'	29'	44'	183'
			WESTBOUND														
			WB Left/Thru/Right	200'	(8 veh)	3'	4'	15'	35'	68'	104'	26'	52'	82'	23'	49'	9999'
			NORTHBOUND														
			NB Left	75'	(3 veh)	9'	10'	18'	9'	11'	32'	4'	5'	13'	3'	4'	10'
			SOUTHBOUND														
			SB Left	25'	(1 veh)	1'	2'	5'	5'	7'	19'	3'	3'	11'	4'	9'	17'
7	Franklin Business Park (North) / Future Werthan Circle	Signal	WESTBOUND														
			WB Left	150'	(6 veh)	33'	33'	37'	62'	66'	76'	48'	50'	58'	124'	129'	153'
			WB Right	150'	(6 veh)	30'	31'	34'	33'	33'	37'	31'	31'	34'	41'	42'	46'
			NORTHBOUND														
			NB Thru/Right	275'	(11 veh)	363'	556'	1328'	638'	795'	1325'	696'	817'	1156'	508'	651'	1158'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	7'			3'	5'	5'	4'	5'	10'			
			SB Thru	999'	(40 veh)	193'	214'	319'	205'	310'	553'	248'	409'	463'	661'	774'	848'
8	Confederate Drive / Werthan Circle	TWSC	EASTBOUND														
			EB Left	100'	(4 veh)	16'	61'	9999'	0'	18'	78'	3'	10'	21'	0'	20'	75'
			EB Thru/Right	150'	(6 veh)	5'	18'	175'	2'	13'	35'	1'	8'	14'	1'	16'	34'
			WESTBOUND														
			WB Left	100'	(4 veh)	17'	32'	117'	15'	26'	81'	5'	7'	17'	5'	10'	37'
			WB Thru/Right	200'	(8 veh)	6'	11'	24'	9'	16'	34'	4'	6'	11'	7'	12'	31'
			NORTHBOUND														
			NB Left	100'	(4 veh)	5'	8'	13'	0'	4'	5'	0'	3'	4'	0'	5'	7'
			SOUTHBOUND														
			SB Left	100'	(4 veh)	7'	9'	22'	7'	9'	21'	1'	1'	2'	4'	5'	11'
9	Carr Avenue	Stop	WESTBOUND														
			WB Left/Thru/Right	175'	(7 veh)	9'	11'	20'	22'	29'	64'	20'	27'	59'	20'	26'	58'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	3'	3'	5'	3'	4'	6'	3'	3'	5'	2'	3'	4'
10	Downs Boulevard	Signal	EASTBOUND														
			EB Left/Thru	350'	(14 veh)	104'	107'	119'	101'	105'	120'	118'	114'	132'	108'	113'	135'
			EB Right	350'	(14 veh)	107'	111'	274'	92'	96'	104'	95'	99'	107'	101'	149'	412'
			WESTBOUND														
			WB Left/Thru/Right	50'	(2 veh)	14'	14'	16'	23'	23'	27'	22'	22'	26'	21'	21'	25'
			NORTHBOUND														
			NB Left	150'	(6 veh)	166'	195'	245'	148'	198'	303'	311'	387'	586'	289'	347'	464'
			NB Thru/Right	175'	(7 veh)	490'	572'	627'	425'	493'	674'	355'	414'	581'	316'	350'	352'
			SOUTHBOUND														
			SB Left	50'	(2 veh)	5'	5'	8'	6'	8'	10'	7'	9'	10'	7'	8'	8'
			SB Thru/Right	125'	(5 veh)	301'	374'	596'	460'	685'	1031'	554'	826'	1093'	418'	493'	716'
11	James Avenue	Stop	WESTBOUND														
			WB Left/Thru/Right	125'	(5 veh)	7'	9'	15'	8'	10'	16'	8'	9'	14'	9'	11'	17'
			SOUTHBOUND														
			SB Left	200'	(8 veh)	0'	0'	1'	1'	1'	1'	1'	1'	1'	1'	1'	2'

Queue Reduction Color Code: [redacted]

NOTES: (1) No-Build results updated 8/25/2017 to assume consistent signal timings/offsets with 2016 existing conditions. Previous data had assumed improvements to signal timings in future conditions.

(2) Queue length of "9999" feet indicates maximum limit of model.

Queue Length for Five-Lane (Traditional) Concept

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)		[MID] Peak Hour Queue Length (Feet)		[PM] Peak Hour Queue Length (Feet)		[SAT] Peak Hour Queue Length (Feet)	
						2021	2041	2021	2041	2021	2041	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)										
			EB Left	150'	(6 veh)	10'	11'	44'	52'	23'	26'	27'	30'
			EB Thru	450'	(18 veh)	38'	48'	106'	126'	85'	99'	118'	141'
			EB Right	40'	(1 veh)	0'	0'	0'	0'	17'	34'	0'	0'
			WESTBOUND (WB)										
			WB Left	640'	(25 veh)	109'	129'	75'	89'	178'	198'	82'	97'
			WB Thru	999'	(40 veh)	64'	73'	87'	104'	91'	107'	104'	124'
			WB Right	325'	(13 veh)	109'	182'	66'	145'	87'	161'	74'	144'
			NORTHBOUND (NB)										
			NB Left	200'	(8 veh)	20'	24'	27'	32'	22'	26'	42'	50'
			NB Thru	775'	(31 veh)	228'	291'	135'	162'	160'	196'	157'	190'
			NB Right	40'	(1 veh)	40'	57'	6'	17'	1'	8'	11'	29'
			SOUTHBOUND (SB)										
			SB Left	300'	(12 veh)	153'	175'	100'	114'	116'	127'	91'	140'
			SB Thru	560'	(22 veh)	265'	315'	184'	242'	608'	804'	418'	509'
			SB Right	400'	(16 veh)	0'	0'	0'	0'	0'	0'	0'	0'
2	Parkway Commons / Cemetery	Signal	EASTBOUND										
			EB Left	175'	(7 veh)	102'	120'	229'	308'	175'	242'	189'	244'
			EB Thru/Right	175'	(7 veh)	0'	0'	0'	0'	0'	9'	0'	8'
			WESTBOUND										
			WB Left/Thru/Right	250'	(10 veh)	10'	10'	35'	39'	10'	10'	17'	18'
			NORTHBOUND										
			NB Left	150'	(6 veh)	74'	74'	93'	119'	105'	140'	80'	92'
			NB Thru/Right	150'	(6 veh)	95'	125'	234'	274'	275'	315'	254'	291'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	1'	1'	3'	3'	0'	1'	2'	2'
			SB Thru/Right	150'	(6 veh)	52'	57'	132'	448'	60'	78'	79'	98'
3	Southeast Parkway / Shadow Green Drive	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	99'	124'	121'	137'	78'	86'	108'	119'
			EB Thru	200'	(8 veh)	48'	52'	47'	52'	35'	37'	40'	43'
			EB Right	75'	(3 veh)	46'	48'	82'	124'	50'	80'	78'	121'
			WESTBOUND										
			WB Left	125'	(5 veh)	24'	28'	70'	83'	46'	54'	32'	36'
			WB Thru/Right	300'	(12 veh)	66'	73'	86'	104'	87'	103'	68'	75'
			NORTHBOUND										
			NB Left	200'	(8 veh)	4'	4'	24'	61'	102'	177'	70'	120'
			NB Thru/Right	385'	(15 veh)	50'	59'	92'	119'	32'	44'	72'	91'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	73'	114'	43'	73'	21'	22'	32'	46'
			SB Thru	580'	(23 veh)	147'	209'	145'	193'	113'	176'	101'	127'
			SB Right	100'	(4 veh)	0'	0'	0'	0'	1'	1'	7'	7'
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND										
			EB Left/Thru/Right	50'	(2 veh)	1'	1'	2'	3'	2'	4'	2'	3'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	11'	16'	43'	74'	34'	60'	16'	28'
			NORTHBOUND										
			NB Left	175'	(7 veh)	1'	1'	2'	2'	2'	3'	0'	1'
			SOUTHBOUND										
			SB Left	75'	(3 veh)	4'	6'	3'	7'	3'	4'	2'	3'
5	Century Court	Signal	EASTBOUND										
			EB Left	125'	(5 veh)	107'	124'	107'	125'	84'	98'	64'	70'
			EB Thru/Right	225'	(9 veh)	37'	40'	50'	54'	47'	52'	29'	31'
			WESTBOUND										
			WB Left/Thru/Right	50'	(2 veh)	8'	8'	9'	9'	9'	9'	11'	12'
			NORTHBOUND										
			NB Left	75'	(3 veh)	23'	47'	37'	66'	8'	15'	4'	8'
			NB Thru/Right	200'	(8 veh)	71'	82'	82'	137'	43'	100'	45'	111'
			SOUTHBOUND										
			SB Left	100'	(4 veh)			2'	2'	1'	1'	1'	1'
			SB Thru/Right	225'	(9 veh)	262'	327'	130'	152'	97'	128'	265'	384'
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND										
			EB Left/Thru/Right	325'	(13 veh)	11'	15'	18'	24'	23'	31'	14'	29'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	2'	3'	20'	32'	14'	24'	13'	20'
			NORTHBOUND										
			NB Left	25'	(1 veh)	10'	14'	10'	14'	4'	6'	3'	4'
			SOUTHBOUND										
			SB Left	200'	(8 veh)	1'	2'	3'	8'	3'	4'	4'	5'
7	Franklin Business Park (North) / Future Werthan Circle	Signal	WESTBOUND										
			WB Left	150'	(6 veh)	26'	28'	48'	55'	37'	43'	108'	128'
			WB Right	150'	(6 veh)	25'	28'	27'	30'	25'	28'	37'	41'
			NORTHBOUND										
			NB Thru/Right	275'	(11 veh)	72'	170'	235'	358'	118'	255'	157'	193'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	9'	9'	4'	4'	9'	12'	23'	55'
			SB Thru	999'	(40 veh)	90'	91'	70'	76'	50'	69'	121'	137'
8	Confederate Drive / Werthan Circle	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	62'	68'	36'	36'	35'	37'	39'	39'
			EB Thru/Right	150'	(6 veh)	37'	39'	35'	36'	26'	27'	34'	34'
			WESTBOUND										
			WB Left	100'	(4 veh)	47'	53'	52'	60'	28'	31'	26'	30'
			WB Thru/Right	200'	(8 veh)	29'	31'	36'	39'	25'	26'	31'	32'
			NORTHBOUND										
			NB Left	100'	(4 veh)	0'	0'			3'	3'		
			NB Thru/Right	115'	(4 veh)	8'	12'	78'	95'	84'	96'	101'	128'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	6'	10'	5'	10'				
			SB Thru/Right	325'	(13 veh)	154'	224'	116'	193'	116'	155'	135'	225'
9	Carr Avenue	Stop	WESTBOUND										
			WB Left/Thru/Right	175'	(7 veh)	6'	8'	13'	20'	13'	20'	11'	15'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	3'	4'	4'	5'	3'	5'	2'	4'
10	Downs Boulevard	Signal	EASTBOUND										
			EB Left	150'	(6 veh)	85'	100'	76'	89'	86'	102'	100'	119'
			EB Thru	350'	(14 veh)	8'	10'	5'	5'	8'	10'	5'	5'
			EB Right	350'	(14 veh)	192'	334'	115'	218'	163'	269'	279'	503'
			WESTBOUND										
			WB Left	100'	(4 veh)	8'	10'	9'	11'	12'	13'	14'	16'
			WB Thru/Right	250'	(10 veh)	9'	10'	14'	18'	13'	15'	11'	14'
			NORTHBOUND										
			NB Left	300'	(12 veh)	94'	102'	134'	195'	103'	159'	145'	184'
			NB Thru/Right	175'	(7 veh)	32'	38'	106'	569'	75'	98'	108'	366'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	5'	7'	5'	7'	6'	7'	7'	8'
			SB Thru	450'	(18 veh)	292'	416'	346'	482'	377'	551'	370'	529'
			SB Right	300'	(12 veh)	24'	28'	21'	23'	24'	27'	27'	29'
11	James Avenue	Stop	WESTBOUND										
			WB Right	125'	(5 veh)	9'	15'	9'	15'	8'	12'	10'	16'

Queue Reduction Color Code:

Queue Length for Five-Lane (Access Management) Concept

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)		[MID] Peak Hour Queue Length (Feet)		[PM] Peak Hour Queue Length (Feet)		[SAT] Peak Hour Queue Length (Feet)	
						2021	2041	2021	2041	2021	2041	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)										
			EB Left	150'	(6 veh)	10'	11'	44'	52'	23'	26'	27'	30'
			EB Thru	450'	(18 veh)	38'	43'	106'	126'	85'	99'	118'	141'
			EB Right	40'	(1 veh)	0'	0'	0'	0'	17'	34'	0'	0'
			WESTBOUND (WB)										
			WB Left	640'	(25 veh)	109'	129'	75'	89'	178'	198'	82'	97'
			WB Thru	999'	(40 veh)	64'	73'	87'	104'	91'	107'	104'	124'
			WB Right	325'	(13 veh)	109'	182'	66'	145'	87'	161'	74'	144'
			NORTHBOUND (NB)										
			NB Left	200'	(8 veh)	20'	24'	27'	32'	22'	26'	42'	50'
			NB Thru	775'	(31 veh)	228'	291'	135'	162'	160'	196'	157'	190'
			NB Right	40'	(1 veh)	40'	57'	6'	17'	1'	8'	11'	23'
			SOUTHBOUND (SB)										
			SB Left	300'	(12 veh)	135'	175'	100'	114'	116'	127'	91'	140'
			SB Thru	560'	(22 veh)	265'	314'	184'	243'	603'	804'	418'	509'
			SB Right	400'	(16 veh)	0'	0'	0'	0'	0'	0'	0'	0'
2	Parkway Commons / Cemetery	Signal	EASTBOUND										
			EB Left	175'	(7 veh)	102'	120'	229'	308'	175'	242'	189'	244'
			EB Thru/Right	175'	(7 veh)	0'	0'	0'	0'	0'	9'	0'	8'
			WESTBOUND										
			WB Left/Thru/Right	250'	(10 veh)	10'	10'	95'	39'	10'	10'	17'	18'
			NORTHBOUND										
			NB Left	150'	(6 veh)	74'	74'	93'	119'	105'	140'	80'	92'
			NB Thru/Right	150'	(6 veh)	95'	125'	234'	274'	275'	315'	254'	291'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	1'	1'	3'	3'	0'	1'	2'	2'
			SB Thru/Right	150'	(6 veh)	52'	57'	132'	448'	60'	78'	79'	98'
3	Southeast Parkway / Shadow Green Drive	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	99'	124'	121'	137'	78'	86'	105'	119'
			EB Thru	200'	(8 veh)	48'	52'	47'	52'	35'	37'	40'	43'
			EB Right	75'	(3 veh)	46'	48'	82'	124'	50'	80'	78'	121'
			WESTBOUND										
			WB Left	125'	(5 veh)	24'	28'	70'	83'	46'	54'	32'	36'
			WB Thru/Right	300'	(12 veh)	66'	73'	86'	104'	87'	109'	68'	75'
			NORTHBOUND										
			NB Left	200'	(8 veh)	4'	4'	24'	61'	102'	177'	70'	120'
			NB Thru/Right	385'	(15 veh)	50'	59'	92'	113'	32'	44'	72'	91'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	75'	114'	43'	73'	21'	21'	34'	46'
			SB Thru	580'	(23 veh)	147'	205'	143'	193'	112'	174'	116'	127'
			SB Right	100'	(4 veh)	0'	0'	0'	0'	1'	1'	7'	7'
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND										
			EB Left/Thru/Right	50'	(2 veh)	1'	1'	2'	8'	2'	4'	2'	5'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	11'	18'	43'	74'	34'	60'	16'	23'
			NORTHBOUND										
			NB Left	175'	(7 veh)	1'	1'	2'	2'	2'	3'	0'	1'
			SOUTHBOUND										
			SB Left	75'	(3 veh)	4'	6'	5'	7'	3'	4'	2'	3'
5	Century Court	Signal	EASTBOUND										
			EB Left	125'	(5 veh)	107'	124'	107'	125'	84'	98'	64'	70'
			EB Thru/Right	225'	(9 veh)	37'	40'	50'	54'	47'	52'	29'	31'
			WESTBOUND										
			WB Left/Thru/Right	50'	(2 veh)	8'	8'	9'	9'	9'	9'	11'	12'
			NORTHBOUND										
			NB Left	75'	(3 veh)	23'	47'	37'	66'	8'	15'	4'	8'
			NB Thru/Right	200'	(8 veh)	71'	82'	82'	137'	43'	100'	45'	111'
			SOUTHBOUND										
			SB Left	100'	(4 veh)			1'	2'	1'	1'	0'	1'
			SB Thru/Right	225'	(9 veh)	261'	325'	131'	153'	99'	130'	253'	374'
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND										
			EB Left/Thru/Right	325'	(13 veh)	11'	15'	18'	24'	22'	29'	14'	25'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	2'	5'	20'	32'	14'	23'	13'	20'
			NORTHBOUND										
			NB Left	25'	(1 veh)	10'	14'	10'	14'	4'	6'	3'	4'
			SOUTHBOUND										
			SB Left	200'	(8 veh)	1'	2'	5'	8'	3'	4'	4'	5'
7	Franklin Business Park (North) / Future Werthan Circle	Signal	WESTBOUND										
			WB Left	150'	(6 veh)	33'	37'	55'	62'	45'	52'	132'	157'
			WB Right	150'	(6 veh)	25'	28'	27'	29'	25'	28'	37'	41'
			NORTHBOUND										
			NB Thru/Right	275'	(11 veh)	72'	170'	252'	359'	118'	260'	137'	193'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	9'	9'	6'	6'	10'	14'	24'	65'
			SB Thru	999'	(40 veh)	89'	91'	70'	76'	49'	68'	121'	136'
8	Confederate Drive / Werthan Circle	Signal	EASTBOUND										
			EB Left	100'	(4 veh)	62'	68'	36'	36'	35'	37'	39'	39'
			EB Thru/Right	150'	(6 veh)	37'	39'	35'	36'	26'	27'	34'	34'
			WESTBOUND										
			WB Left	100'	(4 veh)	47'	55'	52'	60'	28'	31'	26'	30'
			WB Thru/Right	200'	(8 veh)	29'	31'	36'	39'	25'	26'	31'	32'
			NORTHBOUND										
			NB Left	100'	(4 veh)	0'	0'	8'	8'			8'	8'
			NB Thru/Right	115'	(4 veh)	8'	12'	78'	106'	84'	100'	101'	128'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	6'	10'	5'	10'				
			SB Thru/Right	325'	(13 veh)	154'	224'	116'	193'	116'	155'	135'	223'
9	Carr Avenue	Stop	WESTBOUND										
			WB Left/Thru/Right	175'	(7 veh)	6'	8'	13'	20'	13'	20'	11'	15'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	3'	4'	4'	5'	3'	5'	2'	4'
10	Downs Boulevard	Signal	EASTBOUND										
			EB Left	150'	(6 veh)	85'	100'	76'	89'	86'	102'	100'	119'
			EB Thru	350'	(14 veh)	8'	10'	5'	5'	8'	10'	5'	5'
			EB Right	350'	(14 veh)	192'	334'	115'	218'	163'	269'	279'	503'
			WESTBOUND										
			WB Left	100'	(4 veh)	8'	10'	9'	11'	12'	13'	14'	16'
			WB Thru/Right	250'	(10 veh)	9'	10'	14'	18'	13'	15'	11'	14'
			NORTHBOUND										
			NB Left	300'	(12 veh)	94'	102'	137'	193'	104'	159'	144'	184'
			NB Thru/Right	175'	(7 veh)	32'	38'	106'	569'	78'	100'	109'	566'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	5'	7'	5'	7'	6'	7'	7'	8'
			SB Thru	450'	(18 veh)	292'	416'	346'	482'	377'	551'	370'	529'
			SB Right	300'	(12 veh)	24'	28'	21'	23'	24'	27'	27'	29'
11	James Avenue	Stop	WESTBOUND										
			WB Left/Thru/Right	125'	(5 veh)	5'	9'	6'	9'	4'	7'	6'	9'

Queue Reduction Color Code: [redacted]

Queue Length for Roundabout Concept

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour Queue Length (Feet)		[MID] Peak Hour Queue Length (Feet)		[PM] Peak Hour Queue Length (Feet)		[SAT] Peak Hour Queue Length (Feet)	
						2021	2041	2021	2041	2021	2041	2021	2041
1	Mack Hatcher Parkway / Hillview Lane	Signal	EASTBOUND (EB)										
			EB Left	150'	(6 veh)	10'	11'	43'	51'	23'	26'	27'	30'
			EB Thru	450'	(18 veh)	38'	43'	104'	123'	85'	101'	121'	144'
			EB Right	40'	(1 veh)	0'	0'	0'	0'	17'	34'	6'	19'
			WESTBOUND (WB)										
			WB Left	640'	(25 veh)	108'	128'	73'	87'	178'	215'	83'	99'
			WB Thru	999'	(40 veh)	64'	73'	86'	102'	91'	108'	106'	126'
			WB Right	325'	(13 veh)	106'	176'	61'	134'	87'	163'	82'	155'
			NORTHBOUND (NB)										
			NB Left	200'	(8 veh)	20'	24'	26'	31'	22'	25'	43'	53'
			NB Thru	999'	(40 veh)	223'	282'	131'	158'	160'	192'	162'	196'
			NB Right	40'	(1 veh)	40'	56'	5'	16'	1'	8'	12'	24'
			SOUTHBOUND (SB)										
			SB Left	300'	(12 veh)	130'	153'	152'	182'	114'	135'	158'	189'
			SB Thru	560'	(22 veh)	182'	222'	267'	333'	547'	784'	358'	513'
			SB Right	400'	(16 veh)	0'	0'	0'	0'	0'	0'	0'	0'
2	Parkway Commons / Cemetery	Roundabout	EASTBOUND										
			EB Left/Thru/U-Turn	175'	(7 veh)	13'	18'	47'	78'	35'	57'	33'	52'
			EB Right	175'	(7 veh)	4'	6'	13'	19'	19'	30'	16'	23'
			WESTBOUND										
			WB Left/Thru/Right/U-Turn	250'	(10 veh)	1'	1'	5'	7'	1'	1'	2'	2'
			NORTHBOUND										
			NB Left/Thru/U-Turn	150'	(6 veh)	70'	99'	53'	79'	55'	74'	52'	71'
			NB Thru/Right	150'	(6 veh)	70'	99'	53'	79'	55'	74'	52'	71'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	150'	(6 veh)	40'	52'	63'	86'	73'	104'	60'	83'
			SB Thru/Right	150'	(6 veh)	40'	52'	63'	86'	73'	104'	60'	83'
3	Southeast Parkway / Shadow Green Drive	Roundabout	EASTBOUND										
			EB Left/Thru/U-Turn	200'	(8 veh)	27'	37'	55'	93'	23'	36'	32'	49'
			EB Right	200'	(8 veh)	29'	41'	54'	87'	32'	50'	48'	77'
			WESTBOUND										
			WB Left/Thru/U-Turn	125'	(5 veh)	8'	12'	32'	53'	16'	24'	11'	16'
			WB Right	300'	(12 veh)	31'	52'	34'	56'	25'	40'	18'	28'
			NORTHBOUND										
			NB Left/Thru/U-Turn	450'	(18 veh)	102'	185'	89'	153'	65'	95'	71'	119'
			NB Thru/Right	450'	(18 veh)	102'	185'	89'	153'	65'	95'	71'	119'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	450'	(18 veh)	48'	66'	96'	175'	123'	230'	92'	164'
			SB Thru/Right	450'	(18 veh)	48'	66'	96'	175'	123'	230'	92'	164'
4	Alpha Drive	Two-Way Stop Control (TWSC)	EASTBOUND										
			EB Left/Thru/Right	50'	(2 veh)	0'	0'	2'	3'	2'	3'	1'	2'
			WESTBOUND										
			WB Left/Thru/Right	150'	(6 veh)	13'	21'	46'	87'	27'	44'	19'	31'
5	Century Court	Roundabout	EASTBOUND										
			EB Left/Thru/U-Turn	125'	(5 veh)	17'	23'	24'	39'	17'	27'	10'	14'
			EB Right	225'	(9 veh)	13'	19'	29'	47'	23'	38'	8'	12'
			WESTBOUND										
			WB Left/Thru/Right/U-Turn	50'	(2 veh)	1'	1'	1'	1'	1'	1'	1'	1'
			NORTHBOUND										
			NB Left/Thru/U-Turn	200'	(8 veh)	90'	146'	98'	187'	71'	101'	71'	101'
			NB Thru/Right	200'	(8 veh)	90'	146'	98'	187'	71'	101'	71'	101'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	275'	(11 veh)	56'	76'	79'	141'	85'	128'	82'	120'
			SB Thru/Right	275'	(11 veh)	56'	76'	79'	141'	85'	128'	82'	120'
6	Beasley Drive / Lumber Drive	TWSC	EASTBOUND										
			EB Right	325'	(13 veh)	16'	24'	30'	52'	39'	70'	29'	50'
			WESTBOUND										
			WB Right	200'	(8 veh)	2'	3'	16'	25'	9'	14'	12'	18'
7	Franklin Business Park (North) / Future Werthan Circle	Roundabout	WESTBOUND										
			WB Left/Right/U-Turn	150'	(6 veh)	9'	13'	15'	22'	9'	13'	39'	66'
			NORTHBOUND										
			NB Thru/U-Turn	275'	11'	73'	103'	70'	97'	59'	75'	63'	88'
			NB Thru/Right	275'	11'	73'	103'	70'	97'	59'	75'	63'	88'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	999'	(40 veh)	50'	69'	55'	76'	60'	83'	71'	102'
			SB Thru	999'	(40 veh)	50'	69'	55'	76'	60'	83'	71'	102'
8	Confederate Drive / Werthan Circle	Roundabout	EASTBOUND										
			EB Left/Thru/Right/U-Turn	150'	(6 veh)	17'	23'	11'	14'	7'	9'	11'	11'
			WESTBOUND										
			WB Left/Thru/Right/U-Turn	200'	(8 veh)	14'	21'	19'	30'	9'	12'	9'	13'
			NORTHBOUND										
			NB Left/Thru/U-Turn	115'	(4 veh)	71'	100'	66'	90'	54'	73'	65'	90'
			NB Thru/Right	115'	(4 veh)	71'	100'	66'	90'	54'	73'	65'	90'
			SOUTHBOUND										
			SB Left/Thru/U-Turn	325'	(13 veh)	56'	76'	54'	74'	59'	80'	66'	71'
			SB Thru/Right	325'	(13 veh)	56'	76'	54'	74'	59'	80'	66'	71'
9	Carr Avenue	Stop	WESTBOUND										
			WB Right	175'	(7 veh)	2'	3'	6'	9'	5'	7'	6'	9'
10	Downs Boulevard	Signal	EASTBOUND										
			EB Left	150'	(6 veh)	82'	94'	76'	88'	83'	96'	100'	116'
			EB Thru	150'	(6 veh)	7'	9'	5'	5'	7'	9'	5'	5'
			EB Right	350'	(14 veh)	203'	237'	101'	191'	152'	257'	283'	517'
			WESTBOUND										
			WB Left	80'	(3 veh)	7'	9'	9'	11'	11'	12'	13'	16'
			WB Thru/Right	80'	(3 veh)	8'	10'	14'	17'	12'	14'	11'	14'
			NORTHBOUND										
			NB Left	900'	(36 veh)	100'	106'	138'	167'	175'	252'	182'	227'
			NB Thru/Right	900'	(36 veh)	192'	287'	176'	264'	150'	217'	198'	283'
			SOUTHBOUND										
			SB Left	150'	(6 veh)	6'	9'	5'	7'	5'	7'	7'	8'
			SB Thru	450'	(18 veh)	332'	547'	327'	433'	359'	480'	377'	541'
			SB Right	300'	(12 veh)	27'	36'	20'	23'	23'	25'	27'	29'
11	James Avenue	Roundabout	WESTBOUND										
			WB Left/Thru/Right	125'	(5 veh)	5'	9'	5'	8'	4'	7'	6'	10'

Queue Reduction Color Code: (none)