



City of Franklin

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

Meeting Agenda

Work Session

Wednesday, August 30, 2017

4:30 PM

Board Room

SPECIAL WORKSESSION - Columbia Avenue

Call to Order

WORKSESSION DISCUSSION ITEMS

1. [17-0765](#) Consideration of Resolution 2017-43, A Resolution to Select The Corridor Design Concept for the Columbia Avenue Widening & Improvements Project (Referred from 06/13/17, 6/27/17, 7/11/2017 WS, and 08/30/17 WS)

Sponsors: Engineering

Attachments: [ColumbiaAveWidening BOMA 170830](#)
[ColumbiaAveWidening LOS 170830](#)
[ColumbiaAveWidening Queue 170830](#)
[Res 2017-43 Columbia Ave Concept Approval_with Exhibit A.pdf](#)

Other Business

Adjournment

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

— CITY OF FRANKLIN, TENNESSEE —

Columbia Avenue

Widening & Improvements Project

Special BOMA Work Session | August 30, 2017



Regional Context





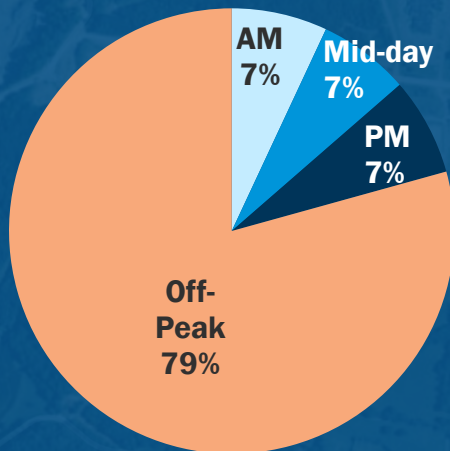
Project Location

May 2016

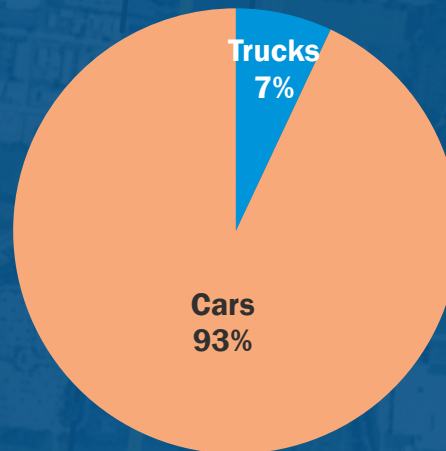
18,900

vehicles/day

DAILY
TRAFFIC

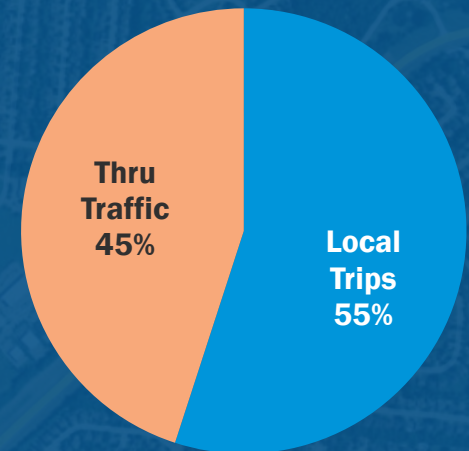


TRAFFIC
COMPOSITION



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)

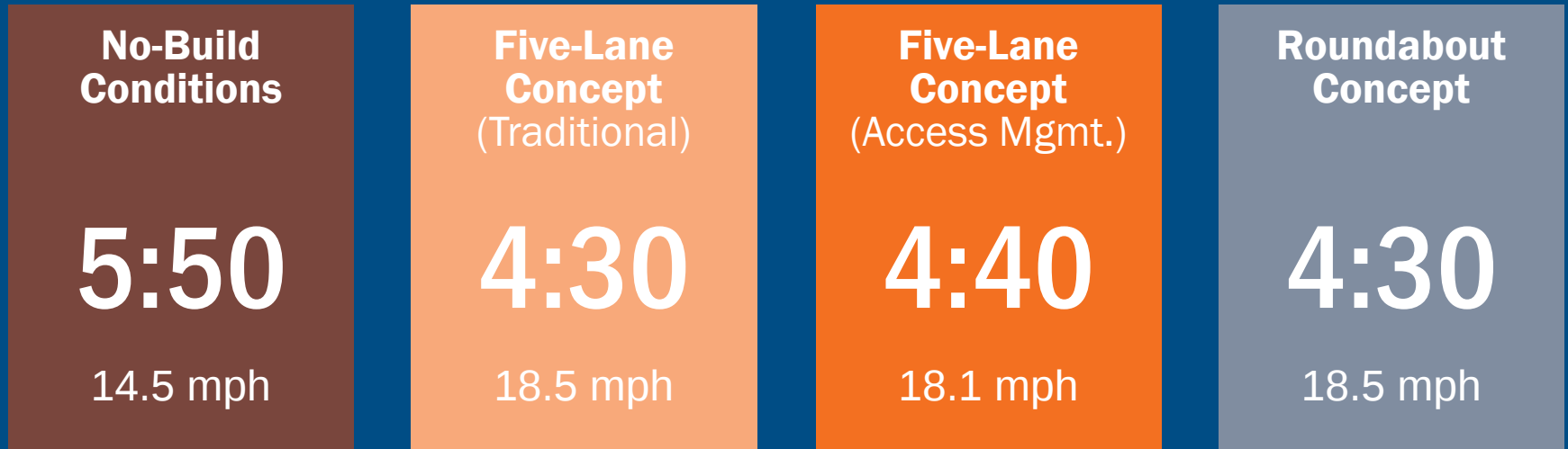


**Roundabout
Concept**

(Access Management)

Operations

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

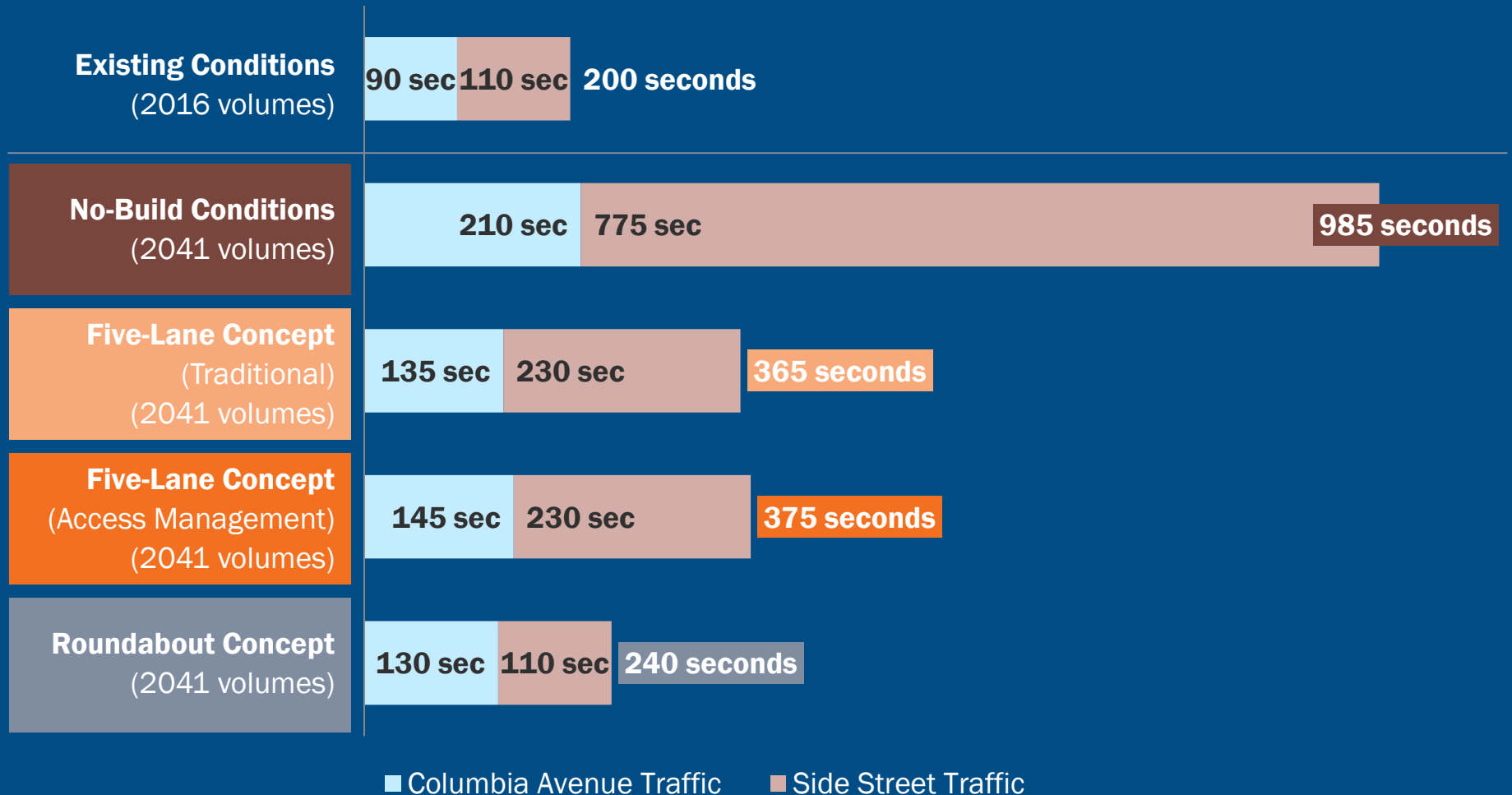


Covers one week of simulated rush hours (20 hours total)

Results are average travel time of all 35,000+ simulated vehicles
between Fairground Street and Winstead Hill Park

Operations

Corridor Delay



Operations

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

Signalized Intersections		
Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤ 10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 – 35	Stable Flow (acceptable delays)
D	>35 – 55	Approaching Unstable Flow (tolerable delay, occasionally wait through more than one cycle before proceeding)
E	>55 – 80	Unstable Flow (intolerable delay)
F	>80	Forced Flow (congested and queues fail to clear)

Operations

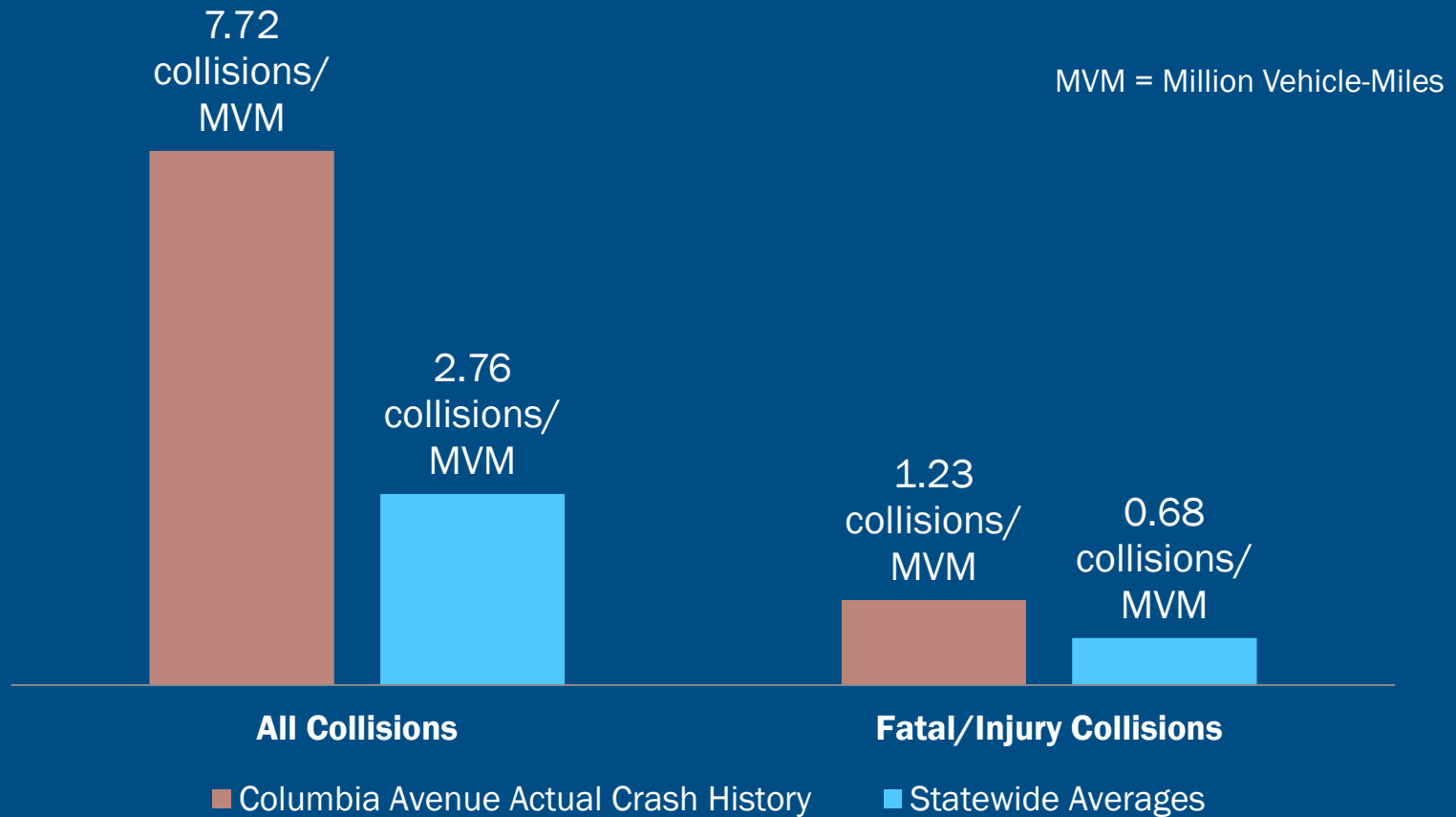
Delay, Level of Service (LOS), and Queue Length

Unsignalized Intersections <i>(i.e. All-Way Stop, Two-Way Stop, Roundabout)</i>		
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 wait through more than one cycle before proceeding)
E	>35 – 50	Unstable Flow (intolerable delay)
F	>50	Forced Flow (congested and queues fail to clear)

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

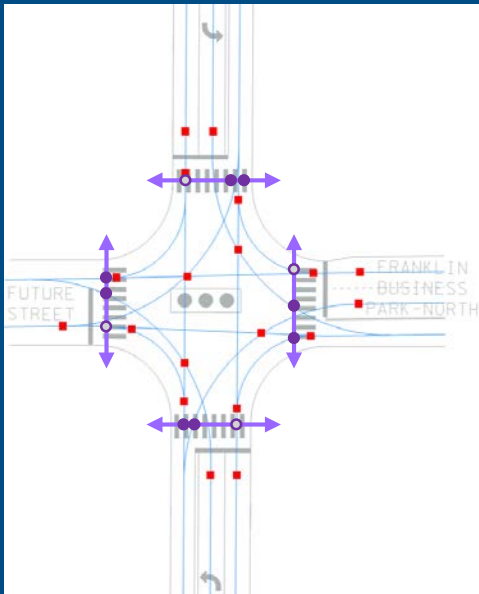
Safety

Collision Data (2013–2016)



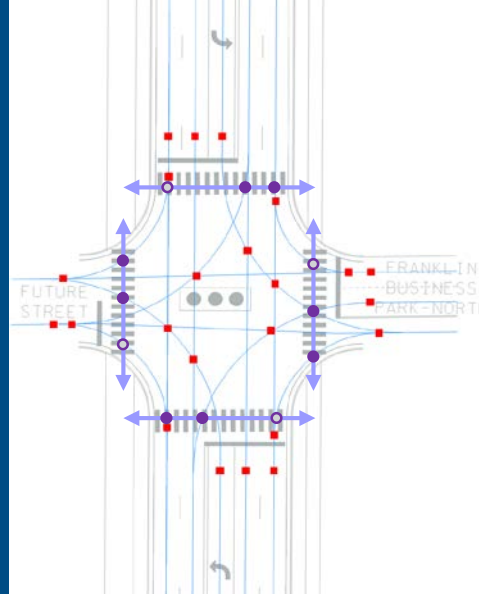
Safety

Columbia Avenue Conflict Points



**No-Build
Conditions**

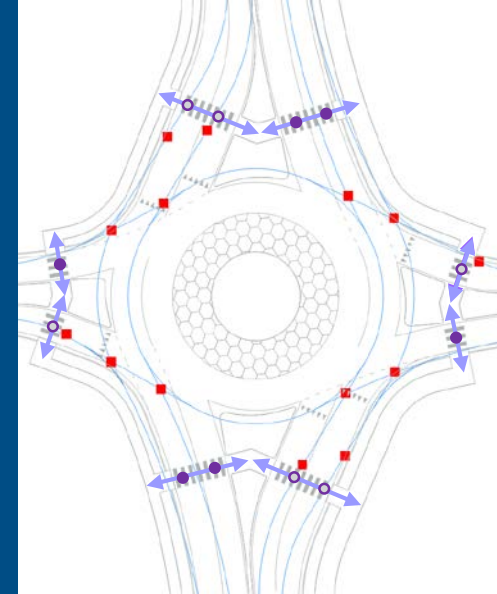
504*



Five-Lane Concepts

(Traditional) (Acc. Mgmt.)

583* 385*



**Roundabout
Concept**

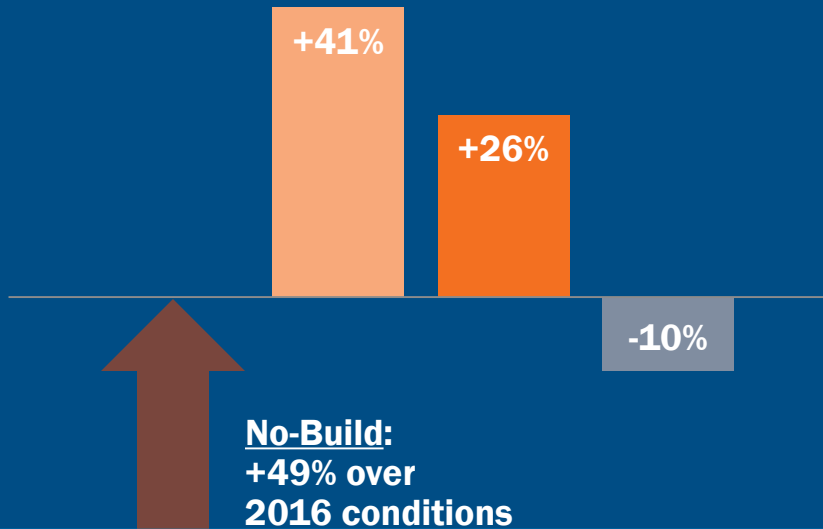
258*

*NOTE: Vehicle Conflict Points

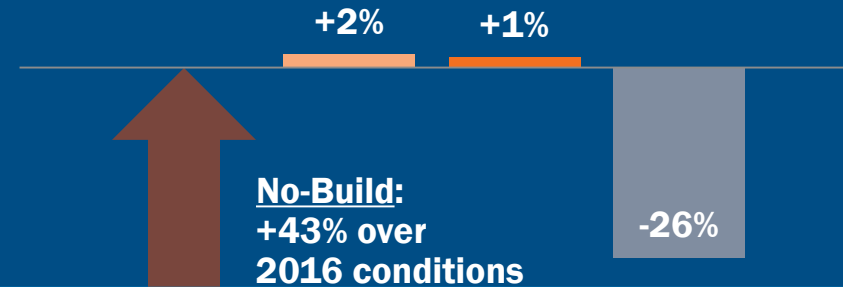
Safety

2041 Anticipated Change in Traffic Collisions

Between Intersections



At Intersections



No-Build Condition (2041)

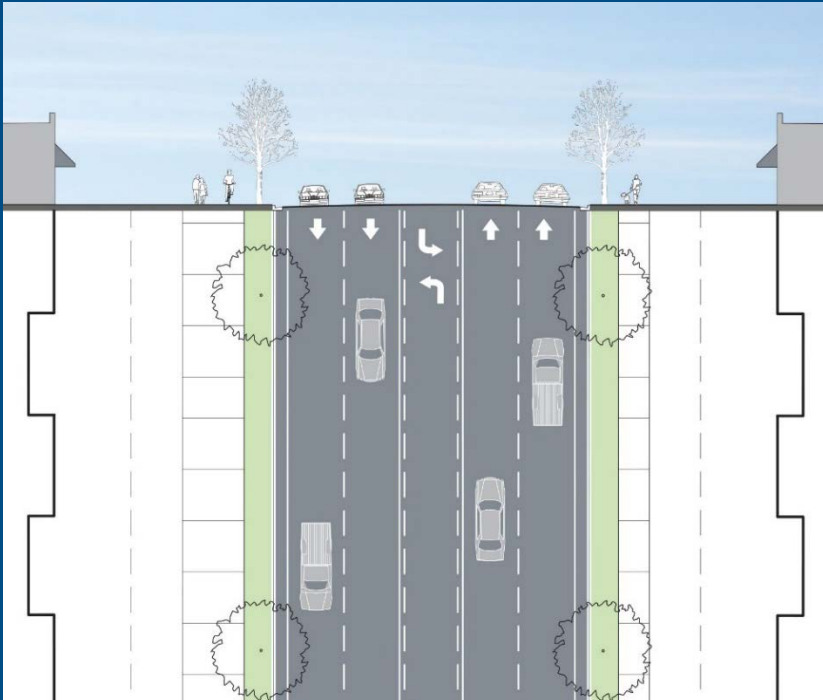
Five-Lane Concept (Traditional)

Five-Lane Concept (Access Management)

Roundabout Concept

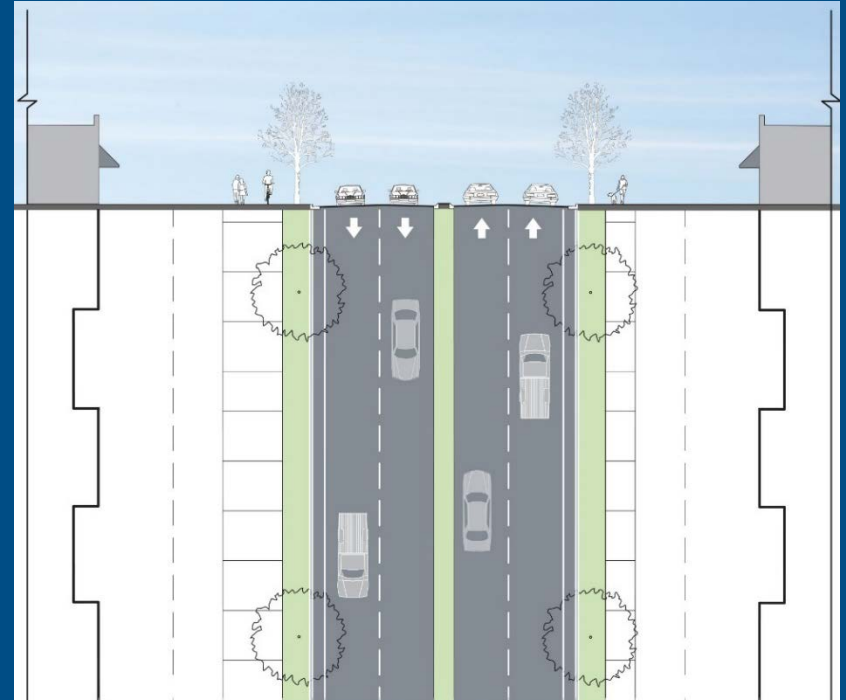
Physical Impact

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	210 (sec/veh)	135 (sec/veh)	145 (sec/veh)	130 (sec/veh)
	Side Street Delay	775 (sec/veh)	230 (sec/veh)	230 (sec/veh)	110 (sec/veh)
	Average Travel Time	5:50	4:30	4:40	4:30
Safety Performance	Between Intersections	BASELINE (+49% from 2016)	+41% (from BASELINE)	+26% (from BASELINE)	-10% (from BASELINE)
	At Intersections	BASELINE (+43% from 2016)	+2% (from BASELINE)	+1% (from BASELINE)	-26% (from BASELINE)
Physical Impact	Between Intersections	~70' (ditch-to-ditch)	91' (total width)	91' (total width)	83' (total width)
	At Intersections	BASELINE impact	AVERAGE footprint	AVERAGE footprint	INCREASED 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	Delay	LOS		
1 Mack Hatcher Parkway / Hillview Lane	Signal	OVERALL	27.8	C	29.3	C	40.9	D	33.6	C	34.3	C	36.5	D	40.9	D	40.2	D	49.1	D	27.3	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	43.3	D	43.0	D	29.9	C	30.2	C	29.4	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	31.2	C	29.7	C	31.9	C	28.0	C	29.5	C	43.8	D	20.9	C	20.3	C	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	43.3	D	42.8	D	42.6	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	27.3	C	25.3	C	28.3	C	20.2	C	22.2	C	26.3	C	17.1	B	16.5	B	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	33.0	C	32.4	C	32.1	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	10.0	B	9.8	A	16.0	B	17.3	B	16.3	B	16.3	B	15.7	B	15.5	B	17.0	B	18.0	B	19.1	B				
		SOUTHBOUND (SB)	23.4	C	22.0	C	27.9	C	34.7	C	34.7	C	34.7	C	48.7	D	44.4	D	51.0	D	26.7	C	28.9	C	27.3	C				
		SB Left	45.9	D	44.1	D	53.8	D	54.9	D	53.2	D	56.6	E	59.3	E	53.7	D	47.2	D	36.4	D	36.7	D	30.0	C				
		SB Thru	3.7	A	2.1	A	5.0	A	17.1	B	18.3	B	15.0	A	46.1	D	41.9	D	53.9	D	20.3	C	23.6	C	25.8	C				
		SB Right	9.7	A	9.6	A	9.8	A	14.3	B	14.3	B	14.5	B	16.1	B	15.7	B	14.9	B	17.1	B	17.1	B	18.3	B				
2 Parkway Commons / Cemetery	Signal	OVERALL	15.3	B	17.9	B	36.6	C	22.0	C	21.5	C	31.1	C	17.4	B	17.0	B	19.4	B	15.8	B	17.2	C	25.1	C				
		EASTBOUND	52.7	D	50.8	D	52.8	D	53.5	D	53.4	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	58.1	E	55.9	E	60.2	D	60.1	E	72.5	E	55.5	E	58.3	E	59.7	E	43.1	D	43.4	D	44.5	D				
		EB Right	38.7	D	32.1	C	45.2	D	34.1	C	34.6	C	35.3	D	37.8	D	38.3	D	37.9	D	28.8	C	29.0	C	27.7	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	42.8	D	38.8	C	61.8	E	38.7	D	38.5	D	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	16.8	C	11.5	B	17.2	B	16.5	B	27.3	C	12.5	B	10.6	B	13.1	B	13.8	B	15.7	B	27.3	C				
		SB Left	100.4	E	98.8	E	62.4	E	74.0	E	73.9	E	79.2	E	71.1	E	74.7	E	78.4	E	63.5	E	64.6	E	64.1	E				
		SB Thru/Right	11.8	B	16.7	C	11.5	B	17.0	B	16.3	B	27.1	C	12.5	B	10.6	B	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	23.0	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	54.9	D	50.5	D	53.0	D	35.0	D	38.4	D	45.3	D		
				EB Left	52.9	D	84.6	F	109.5	F	70.5	E	187.8	F	249.6	F	57.8	E	55.6	E	60.2	E	36.5	D	43.2	D	60.4	E		
				EB Thru	53.9	D	52.3	D	54.6	D	55.9	E	58.1	E	57.6	E	60.4	E	55.1	E	54.7	D	39.5	D	41.1	D	41.3	D		
EB Right	47.5			D	45.9	D	47.6	D	48.8	D	50.6	D	58.5	E	52.7	D	47.1	D	48.9	D	33.7	C	35.5	D	37.7	D				
WESTBOUND	57.0			E	56.2	E	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	54.0			D	52.9	D	52.5	D	50.9	D	49.1	D	47.8	D	47.0	D	46.6	D	45.5	D	41.1	D	40.2	D	40.2	D				
WB Thru/Right	57.4			E	56.6	E	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	30.9	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	80.7	E	13.2	B	15.4	B	39.2	D	11.1	B	14.1	B	26.2	C	15.5	B	18.5	B	27.2	C				
SB Thru	9.0			A	9.4	A	3.7	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	9.1			A	8.2	A	2.4	A	18.1	B	23.3	C	21.4	C	12.9	B	18.1	B	16.0	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		

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	23.1	C	30.3	C	21.8	C	23.6	C			
			EASTBOUND (EB)	42.0	D	38.7	D	32.8	C	30.5	C	35.1	D	35.7	D	30.8	C	30.8	C			
			EB Left	38.6	D	36.6	D	28.9	C	25.9	C	32.8	C	32.9	C	26.0	C	25.6	C			
			EB Thru	45.0	D	41.2	D	36.7	D	34.5	C	39.5	D	40.9	D	31.9	C	32.3	C			
			EB Right	39.1	D	36.1	D	29.4	C	27.4	C	32.6	C	32.8	C	30.6	C	30.2	C			
			WESTBOUND (WB)	25.8	C	24.8	C	21.5	C	21.7	C	26.0	C	29.6	C	18.8	B	19.0	B			
			WB Left	30.3	C	29.0	C	25.1	C	25.2	C	31.8	C	41.3	D	21.2	C	21.2	C			
			WB Thru	33.7	C	31.8	C	31.8	C	31.7	C	32.2	C	32.7	C	26.9	C	26.9	C			
			WB Right	22.7	C	21.9	C	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	22.5	C	36.0	D	20.5	C	23.3	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	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	19.3	B	23.9	C	14.4	B	17.9	B	16.2	B	18.9	B			
			EASTBOUND	37.0	D	35.2	D	36.9	D	42.6	D	33.7	C	33.1	C	33.8	C	33.4	C			
			EB Left	38.8	D	37.1	D	40.5	D	48.5	D	37.9	D	38.0	D	37.2	D	37.9	D			
			EB Thru/Right	31.2	C	29.2	C	25.5	C	24.1	C	25.9	C	24.1	C	26.9	C	24.3	C			
			WESTBOUND	41.9	D	41.9	D	42.3	D	41.0	D	41.9	D	41.9	D	41.7	D	41.8	D			
			WB Left/Thru/Right	41.9	D	41.9	D	42.3	D	41.0	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	28.7	C	27.9	C	28.7	C	25.7	C	28.8	C	26.7	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	32.3	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	31.8	C				31.7	C	34.3	C	33.9	C	35.3	D	35.4	D	30.5	C	32.1	C			
EB Right	25.9	C				25.6	C	29.1	C	29.4	C	27.8	C	27.6	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	33.1	C	32.8	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	14.5	B	12.7	B	8.0	A	8.6	A			
SOUTHBOUND	13.4	B				18.7	B	12.1	B	16.2	B	10.3	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	11.5	B	7.1	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	7.6	A	9.6	A	6.1	A	7.1	A	4.1	A	5.3	A			
			EASTBOUND	35.8	D	36.3	D	36.1	D	36.8	D	36.4	D	36.2	D	38.7	D	38.5	D			
			EB Left	38.3	D	39.9	D	39.8	D	42.0	D	38.5	D	39.0	D	40.1	D	40.0	D			
			EB Thru/Right	32.3	C	31.6	C	33.4	C	32.9	C	35.0	D	34.5	C	36.8	D	36.4	D			
			WESTBOUND	32.0	C	31.1	C	32.7	C	32.1	C	34.5	C	33.9	C	36.8	D	36.3	D			
			WB Left/Thru/Right	32.0	C	31.1	C	32.7	C	32.1	C	34.5	C	33.9	C	36.8	D	36.3	D			
			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	6.8	A	4.1	A	5.1	A	7.5	A	9.0	A			
			WESTBOUND	41.0	D	41.0	D	39.2	D	39.1	D	41.2	D	41.4	D	39.6	D	37.5	D			
			WB Left	42.0	D	42.2	D	40.4	D	40.6	D	42.6	D	43.0	D	42.2	D	39.9</				

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	23.1	C	30.2	C	21.7	C	23.6	C			
			EASTBOUND (EB)	42.0	D	38.7	D	32.8	C	30.5	C	35.1	D	35.7	D	30.8	C	30.8	C			
			EB Left	38.6	D	36.6	D	28.9	C	25.9	C	32.8	C	32.9	C	26.0	C	25.6	C			
			EB Thru	45.0	D	41.2	D	36.7	D	34.5	C	39.5	D	40.9	D	31.9	C	32.3	C			
			EB Right	39.1	D	36.1	D	29.4	C	27.4	C	32.6	C	32.8	C	30.6	C	30.2	C			
			WESTBOUND (WB)	25.8	C	24.8	C	21.5	C	21.7	C	26.0	C	29.6	C	18.8	B	19.0	B			
			WB Left	30.3	C	29.0	C	25.1	C	25.2	C	31.8	C	41.3	D	21.2	C	21.2	C			
			WB Thru	33.7	C	31.8	C	31.8	C	31.7	C	32.2	C	32.7	C	26.9	C	26.9	C			
			WB Right	22.7	C	21.9	C	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	48.7	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	19.3	B	23.9	C	14.4	B	17.9	B	16.2	B	18.9	B			
			EASTBOUND	37.0	D	35.2	D	36.9	D	42.6	D	33.7	C	33.1	C	33.8	C	33.4	C			
			EB Left	38.8	D	37.1	D	40.5	D	48.5	D	37.9	D	38.0	D	37.2	D	37.9	D			
			EB Thru/Right	31.2	C	29.2	C	25.5	C	24.1	C	25.9	C	24.1	C	26.9	C	24.3	C			
			WESTBOUND	41.9	D	41.9	D	42.3	D	41.0	D	41.9	D	41.9	D	41.7	D	41.8	D			
			WB Left/Thru/Right	41.9	D	41.9	D	42.3	D	41.0	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	28.7	C	27.9	C	28.7	C	25.7	C	28.9	C	26.7	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	16.4	B	19.2	B	16.8	B	19.0	B	15.1	B	16.3	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	31.8	C	31.7	C	34.3	C	33.9	C	35.3	D	35.4	D	30.5	C	32.1	C
						EB Right	25.9	C	25.6	C	29.1	C	29.4	C	27.8	C	27.6	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	33.1	C	32.8	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	14.5	B	12.7	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	13.2	B	12.8	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	11.9	B	6.8	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	4.0	A	5.2	A			
			EASTBOUND	35.8	D	36.3	D	36.1	D	36.8	D	36.4	D	36.2	D	38.7	D	38.5	D			
			EB Left	38.3	D	39.9	D	39.8	D	42.0	D	38.5	D	39.0	D	40.1	D	40.0	D			
			EB Thru/Right	32.3	C	31.6	C	33.4	C	32.9	C	35.0	D	34.5	C	36.8	D	36.4	D			
			WESTBOUND	32.0	C	31.1	C	32.7	C	32.1	C	34.5	C	33.9	C	36.8	D	36.3	D			
			WB Left/Thru/Right	32.0	C	31.1	C	32.7	C	32.1	C	34.5	C	33.9	C	36.8	D	36.3	D			
			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	39.3	D	39.1	D	41.6	D	39.8	D	37.8	D	39.6	D			
			WB Left	42.8	D	43.5	D	40.6	D	40.6	D	43.2	D	41.1	D							

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	25.3	C	28.4	C			
			EASTBOUND (EB)	41.7	D	38.5	D	32.7	C	30.4	C	35.1	D	36.7	D	28.7	C	28.9	C			
			EB Left	38.6	D	36.6	D	28.9	C	25.9	C	32.8	C	33.7	C	25.9	C	25.6	C			
			EB Thru	44.5	D	40.8	D	36.4	D	34.2	C	39.5	D	42.7	D	32.0	C	32.6	C			
			EB Right	39.1	D	36.1	D	29.6	C	27.5	C	32.6	C	33.4	C	25.3	C	25.1	C			
			WESTBOUND (WB)	25.8	C	24.6	C	21.7	C	21.7	C	26.0	C	31.3	C	18.9	B	19.1	B			
			WB Left	30.1	C	28.7	C	25.1	C	25.1	C	31.8	C	45.3	D	21.2	C	21.3	C			
			WB Thru	33.6	C	31.7	C	31.8	C	31.5	C	32.2	C	33.6	C	27.0	C	27.0	C			
			WB Right	22.8	C	21.8	B	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			
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			
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	1												

Queue Length for No-Build Condition

Cross-Street		Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour			[MID] Peak Hour			[PM] Peak Hour			[SAT] Peak Hour		
						Queue Length (Feet)			Queue Length (Feet)			Queue Length (Feet)			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'	16'	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'	4'	1'	1'	0'	0'	0'	0'	1'	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'	25'	41'	46'	55'	41'	42'	48'	25'	26'	27'
			NB Thru/Right	150'	(6 veh)	1003'	1188'	1530'	266'	306'	955'	245'	292'	1046'	217'	761'	900'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	0'	4'	1'	7'	0'	0'	2'	0'	1'	4'	3'	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'	93'	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'	51'	49'	20'	34'	41'	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'	32'	29'	39'	22'	24'	22'	45'	44'	61'			
SB Thru	580'	(23 veh)	96'	61'	58'	252'	273'	288'	250'	402'	447'	209'	233'	244'			
SB Right	100'	(4 veh)	6'	4'	2'	28'	26'	23'	3'	25'	27'	29'	30'	26'			
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'	60'	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)	46'	44'	55'	42'	37'	93'	19'	18'	22'	6'	6'	6'
			NB Thru/Right	200'	(8 veh)	590'	676'	677'	583'	702'	953'	533'	616'	974'	120'	158'	174'
			SOUTHBOUND														
			SB Left	100'	(4 veh)	1'	1'	0'	2'	1'	2'	1'	1'	1'	1'	0'	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'	30'	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'	503'	651'	1158'
			SOUTHBOUND														
			SB Left	150'	(6 veh)	7'	7'	6'	3'	5'	5'	4'	5'	10'	32'	28'	25'
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'
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'	113'	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: Actuated Green Time Increases

Progression Factor Improves

Approach Volumes Metered by Upstream Signal

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		[MID] Peak Hour		[PM] Peak Hour		[SAT] Peak Hour	
						Queue Length (Feet)		Queue Length (Feet)		Queue Length (Feet)		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)	153'	175'	100'	114'	116'	127'	91'	140'
SB Thru	560'	(22 veh)	265'	315'	184'	242'	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'	183'	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'	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'	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'	113'	32'	44'	72'	91'
			SOUTHBOUND										
			SB Left	100'	(4 veh)	75'	114'	43'	73'	21'	22'	32'	46'
			SB Thru	580'	(23 veh)	147'	205'	143'	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'	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'	0'	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'	25'
			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'	5'	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'	137'	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'	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'	7'	3'	3'	9'	8'
			NB Thru/Right	115'	(4 veh)	8'	12'	78'	95'	84'	96'	101'	128'
			SOUTHBOUND										
SB Left	100'	(4 veh)	6'	10'	5'	10'	2'	1'	5'	4'			
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'	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 Length for Five-Lane (Access Management) Concept													
Cross-Street		Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour		[MID] Peak Hour		[PM] Peak Hour		[SAT] Peak Hour	
						Queue Length (Feet)		Queue Length (Feet)		Queue Length (Feet)		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)	153'	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'	183'	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'	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'	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'	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'	3'	2'	4'	2'	3'
			WESTBOUND										
			WB Left/Thru/Right	200'	(8 veh)	11'	16'	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'	0'	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'	3'	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'	3'	2'	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'	2'	1'	5'	4'			
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'	195'	104'	159'	144'	184'
			NB Thru/Right	175'	(7 veh)	32'	38'	106'	569'	78'	100'	109'	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 Left/Thru/Right	125'	(5 veh)	5'	9'	6'	9'	4'	7'	6'	9'

Queue Length for Roundabout Concept

	Cross-Street	Traffic Control Device	Geometry	Storage Length		[AM] Peak Hour		[MID] Peak Hour		[PM] Peak Hour		[SAT] Peak Hour		
						Queue Length (Feet)		Queue Length (Feet)		Queue Length (Feet)		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'	

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____ 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 _____ day of _____, 2017

ATTEST:

CITY OF FRANKLIN, TENNESSEE:

By: _____

Eric S. Stuckey
City Administrator

By: _____

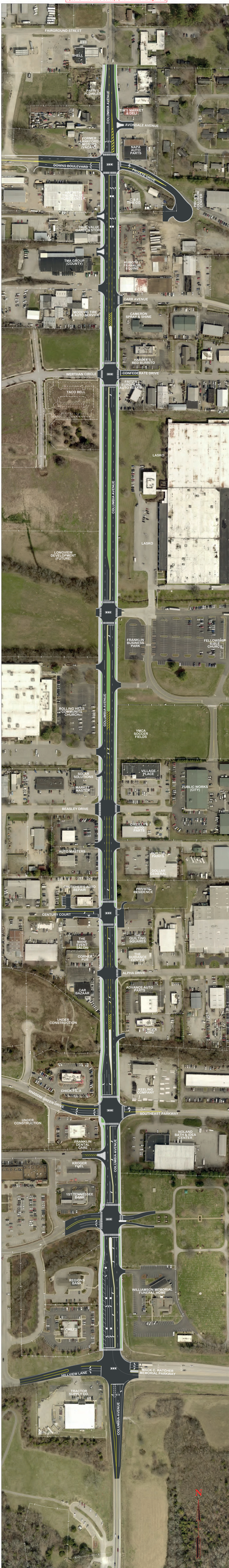
Dr. Ken Moore
Mayor

Approved as to Form:

By: _____

Sauna R. Billingsley
City Attorney

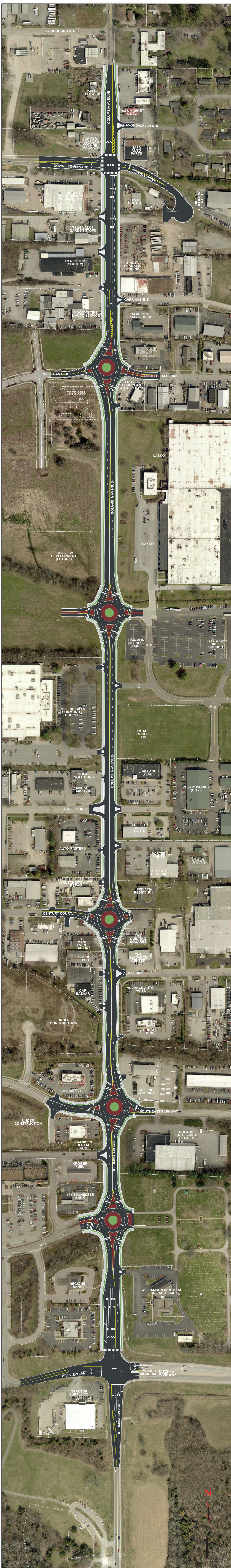
Option 1 - Five Lane Concept (With Access Management)



5-Lane Concept
(Access Management)

Columbia Avenue Roadway Concept
Franklin, Tennessee

Option 2 - Roundabout Concept



Roundabout Concept

Columbia Avenue Roadway Concept

Franklin, Tennessee