

PREPARED FOR:



APPENDIX G:

McCordsville RSA



CORRADINO LLC

ABBREVIATED ENGINEERING REVIEW FOR TRAFFIC SAFETY

				Date: 6/25/2026	
				Des. No.: n/a	
Reviewer Information:			Agency/Firm Name: Corradino LLC		
Primary Author: James Mark Rinehart			Agency: Indianapolis Metropolitan Planning Organization		
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Purpose of Review:					
Corradino LLC was hired by the Indianapolis MPO (IMPO) to conduct a series of roadway safety audits at preselected intersections within its urbanized area. The goal was to identify existing safety issues and recommend near-term and long-term improvements to address them. Improvements may range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements, including intersection upgrades, multimodal infrastructure, and upgraded traffic signals, as needed. This form is suitable for Level 1 review. Of the three available levels of engineering review, this represents the least refined, lowest-intensity degree of analysis, development of essential project intent (outline of the certified course of action), scoring, and process documentation.					
Project Location:					
Route: CR W 600 N & CR N 700 W		District: Greenfield		City: McCordsville	
				County: Hancock	
Lat & Long (BOP)	39.869855	-85.934933	Lat & Long (EOP):	39.869855	-85.934933
			Inside Urban Area Boundary: <u>Yes</u> or No (circle)		
IMPO: Indianapolis Metropolitan Planning Organization			Project Type: Roadway Safety Audit		
Location: The intersection of CR W 600 N & CR N 700 W					
Existing Conditions:					
The CR W 600 N & CR N 700 W intersection is a two-way stop-controlled intersection with stop signs on the NB and SB approaches. The NB and SB approaches have a single shared left/through/right lane. The EB and WB approaches each have one through lane and a passing blister that serves as a through lane when a downstream vehicle is turning left or as a right-turn lane. Corradino's team observed, in the field, both passing blisters being used by through movements and right-turning vehicles. The SB approach is a single-family residential neighborhood entrance with a grass median. There are shared-use paths with grass buffers along the NW, SW, and NE quadrants. There are ADA pedestrian ramps in the NW and NE quadrants for crossing the SB approach, and an ADA pedestrian ramp in the SW quadrant, but no aligned receiving ramp in the NW quadrant for N-S pedestrians. There are also no marked crosswalks at the intersection. All four quadrants are designated for single-family residential homes, with the NW quadrant having the least open space. Corradino staff held a virtual meeting with IMPO and McCordsville staff on April 17, 2026, to review the Preliminary Findings Report, discuss past or upcoming projects at or near the intersection, and identify potential near- and long-term solutions for Corradino to test before the field check. Meeting minutes from the virtual meeting are available in Attachment D. Corradino held a field check with the representatives from the Town of McCordsville and the McCordsville Police Department on May 7, 2026, to provide a recap of the discussion held during the virtual meeting, share test results for the near-term and long-term solutions, and build consensus around a series of countermeasures for Corradino to cost as part of the final recommendations. The field check meeting minutes are available in Attachment D					

Traffic Operations:

- a) **Mobility/Congestion Performance:** According to AM Peak hour traffic hand count data collected on April 15, 2026, EB traffic entering the intersection was **371**. The WB traffic entering the intersection was **361**. The NB traffic entering the intersection was **311**. The SB traffic entering the intersection was **67**. According to PM, peak-hour traffic was hand-counted on the same day; EB traffic entering the intersection was **667**. The WB traffic entering the intersection was **411**. The NB traffic entering the intersection was **476**. The SB traffic entering the intersection was **29**. Corradino adjusted the traffic counts seasonally by applying INDOT's most recent 2025 Traffic Adjustment Factors to account for seasonal and day-of-week variations and normalize the data. A **2.3%** forecasted annual growth rate, derived from the IMPO's TDM, was used to develop a future no-build traffic scenario and to test long-term build alternatives at the intersection. The design year for the long-term build alternatives was **2050**. Peak hour hand counts are available for review in **Attachment B**. Results from the traffic analysis are available in **Attachment C**.

	Eastbound		Westbound		Northbound		Southbound	
Alternative	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
AM Peak – 2026	A	7.6	A	7.8	C	15.4	B	12.3
PM Peak - 2026	A	7.7	A	8.4	D	31.3	C	15.8
AM Peak - 2050	A	7.9	A	8.3	E	47.3	C	16.6
PM Peak - 2050	A	8.0	A	9.5	F	525.4	D	28.5

- b) **Safety Performance / Crash Analysis:** According to available crash data from January 1, 2022, to December 31, 2024, there were **11** crashes associated with the study area. Of those crashes, **1** resulted in a fatality, **0** resulted in incapacitating injuries, and **1** resulted in non-incapacitating injuries. See attached Crash Summary and output from RoadHAT 4.1 in **Attachment A**.

According to the collision diagram created for the CR 600 N & CR 700 W intersection, 7 (64%) of reported crashes were Right Angle crashes involving NB vehicles colliding with either EB (4 crashes) or WB (3 crashes) vehicles. Additionally, the fatal and injury-related crashes reported at the intersection were Right Angle crashes.

When Corradino was at the intersection collecting peak-hour traffic counts on April 15, 2026, and during the field check on May 7, 2026, the team observed several crashes that almost occurred at the intersection due to the large number of EB-to-SB right-turning vehicles, as well as EB vehicles using the EB right-turn lane as a passing blister at the intersection. NB vehicles appeared to get impatient waiting for a gap in EB traffic or misjudge EB vehicles using the EB right-turn lane as a passing blister and then cross over traffic.

RoadHAT 4.1 was used to develop crash cost (ICC) and crash frequency (ICF) scores for the CR W 600 N & CR N 700 W Intersection. Results from the RoadHAT 4.1 analysis were as follows: $I_{CC} = 1.09$, $I_{CF} = 1.99$. The RoadHAT 4.1 analysis results are available in **Attachment A**.

Alternatives & Recommendations

During the field check, Corradino shared that they completed an All-Way Stop (AWS) warrant analysis for the intersection. The results indicated that the CR 600 N & CR 700 W intersection did meet the warrant criteria, per FHWA's MUTCD, 11th Edition, Section 2B. McCordsville staff agreed that an AWS would provide a safety benefit at the intersection as a near-term solution. McCordsville staff were also interested in the idea of a roundabout at the intersection. A roundabout would address the safety concerns at the intersection by removing the conflict points that create Right Angle crashes, while also maintaining efficient traffic capacity. Additionally, McCordsville staff believed there might be sufficient pavement and right-of-way at the intersection to make a roundabout project cost-effective. These concepts became the recommended near-and long-term improvements for the CR 600 N & CR 700 W intersection. Field Check notes for this project are available for review in **Attachment D**.

Near-Term

Near-term solutions will include:

- Modify the intersection from a two-way stop-controlled intersection to an All-Way Stop Controlled intersection, which would include:
 - o Update striping at the intersection to identify turn and through lanes, as well as stop bars for the EB and WB approaches.
 - o Stop signs on all four corners of the intersection, with the placards indicating everyone now stops at the intersection.
 - o New LED flashing "Stop Approach" signs for the EB and WB approaches at the intersection.
 - o Add retroreflective tape to all existing and new signposts at the intersection and intersection approaches.

Long-Term

- Convert the intersection into a single-lane roundabout.

<u>Future Consideration</u> N/A
Near-Term & Long-Term Cost Estimates for the Proposed Safety Improvements
Cost estimates for the near- and long-term improvements are available in Attachment E. <u>Near-Term Recommendation</u> PE - \$10,000 ROW - \$0 Utility CN - \$500 Railroad CN - \$0 Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$0 CN (including 10% Contingency) - \$31,000 Near-Term Total - \$41,500 <u>Long-Term Recommendation</u> PE - \$391,440 ROW - \$45,000 Utility CN - \$275,000 Railroad CN - \$0 Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$326,200 CN (including 10% Contingency) - \$3,262,000 Long-Term Total - \$4,299,640
Project Score: (for INDOT use)
Safety Program Score =
Miscellaneous Notes:
Attachments:
Attachment A: Preliminary Findings Report Attachment B: Traffic Counts Attachment C: Traffic Analysis Attachment D: Virtual Meeting Minutes & Field Check Minutes Attachment E: Cost Estimates & Schematics

Attachment A

Preliminary Findings

PRELIMINARY FINDINGS

Safety Analysis at CR W 600 N & CR N 700 W

Report Prepared for: IMPO & Town of McCordsville

1. Safety Analysis

A crash data analysis was completed for the intersection of County Road W 600 N & County Road N 700 W (Study Area) in McCordsville, IN. Before beginning the crash analysis, the project team followed these steps to clean the data:

- Received 2022-2024 crash data from the IMPO. Serious Injury and Fatal crashes had been cleaned by IMPO staff.
- Placed a 250' buffer around the Study Area to identify reported crashes near the intersection.
- Reviewed the police reports for each crash record identified within the 250' buffer.
- Identified and removed any crash records from the analysis that involved a collision with an animal in the roadway or occurred in a parking lot near the intersection.
- Reviewed the description in the reports to confirm the selected Manner of Collision & Crash Severity accurately reflected how the police officer described the crash.
- Exported the results from ArcGIS Pro into MS Excel.
- Created a collision diagram of the Study Area as well as summary tables of the crash records.
- Developed a crash cost (Icc) and crash frequency (Icf) for the Study Area using RoadHat 4.1.

11 crashes were identified within the Study Area. There were two injury-related crashes reported at the intersection. One of the injury-related crashes was a Non-Incapacitating crash, and the other was a Possible Injury crash. There was one reported Fatal crash in the Study Area. It was a Right Angle crash where a northbound vehicle, avoiding law enforcement, was traveling at a high rate of speed, disregarded a stop sign, and collided with an eastbound vehicle before running off the road north of the Study Area.

Other notable results near the Study Area include:

- 64% of the reported crashes within the Study Area were Right Angle crashes.
 - All injury-related and Fatal crashes were reported as Right Angle crashes.
- 36% of reported crashes occurred during Off-Peak travel times. 36% of reported crashes occurred during the evening peak hours (4 pm-7 pm), and 27% during the morning peak hours (6 am-9 am).
- 45% of reported crashes occurred in daylight hours and 45% in dark (lighted) conditions. The remaining 9% of crashes listed lighting conditions as "Dawn/Dusk" in the police report.
- 18% of reported crashes occurred in wet roadway surface conditions. The remaining 82% of reported crashes occurred on dry roadways.
- 81% of reported crashes occurred when the weather conditions were clear. The remaining 19% of reported crashes occurred in either Rainy or Snowy weather conditions.

Attached are the crash summary tables, a collision diagram, images of the intersection, and the results of the RoadHAT 4.1 analysis.

2022-2024 Crash Summary	
TOTAL CRASHES	11
TOTAL INJURIES	9
PROPERTY DAMAGE ONLY	7
REFUSED TREATMENT	1
POSSIBLE INJURY	1
NON-INCAPACITATING	1
INCAPACITATING	0
FATAL	1

Summary of Primary Factors per Manner of Collision		
Primary Factors per Manner of Collision	Crashes	Percent
RIGHT ANGLE	7	64%
FAILURE TO YIELD RIGHT OF WAY	6	
DISREGARD SIGNAL/REG SIGN	1	
SAME DIRECTION SIDESWIPE	1	9%
IMPROPER TURNING	1	
COLLISION WITH OBJECT IN ROAD	1	9%
OTHER (DRIVER) - EXPLAIN IN NARRATIVE	1	
HEAD ON BETWEEN TWO MOTOR VEHICLES	1	9%
UNSAFE LANE MOVEMENT	1	
RIGHT TURN	1	9%
FAILURE TO MAINTAIN LANE	1	
Total Crashes	11	100%

Summary of Crashes per Time of Day		
Time of Day	Crashes	Percent
Peak AM (6:00-9:00 AM)	3	27%
Peak PM (4:00-7:00 PM)	4	36%
Off Peak	4	36%
Total Crashes	11	100%

Summary of Crashes per Light Conditions		
Light Conditions	Crashes	Percent
DAWN/DUSK	1	9%
DARK (NOT LIGHTED)	5	45%
DAYLIGHT	5	45%
Total Crashes	11	100%

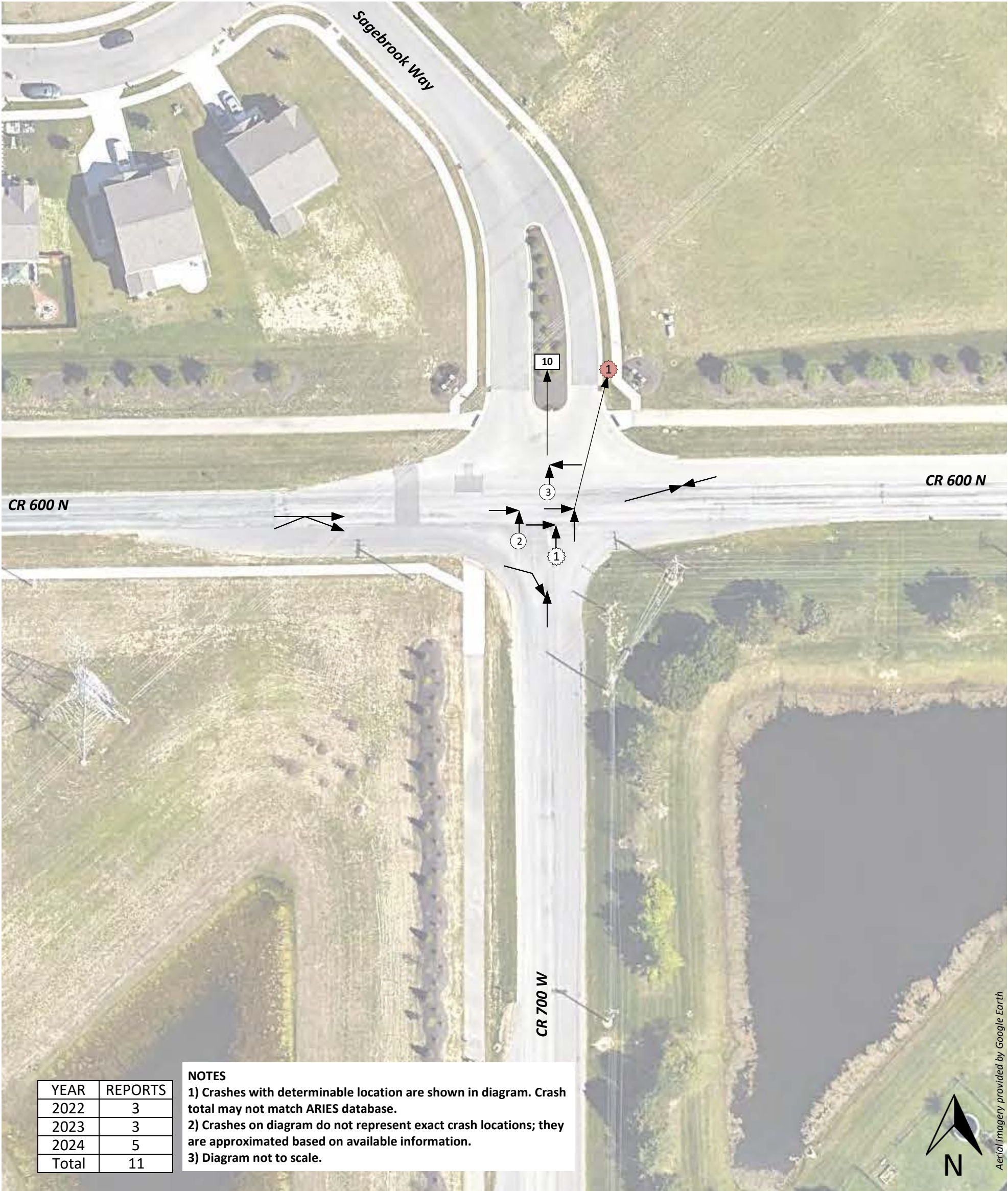
Summary of Roadway Surface Conditions			
Manner of Collision	DRY	WET	Total Crashes
RIGHT ANGLE	5	2	7
SAME DIRECTION SIDESWIPE	1		1
RIGHT TURN	1		1
HEAD ON BETWEEN TWO MOTOR VEHICLES	1		1
COLLISION WITH OBJECT IN ROAD	1		1
Total Crashes	9	2	11

Summary of Weather Conditions				
Manner of Collision	CLEAR	RAIN	BLOWING SAND/ SOIL/SNOW	Total Crashes
RIGHT ANGLE	5	1	1	7
SAME DIRECTION SIDESWIPE	1			1
RIGHT TURN	1			1
HEAD ON BETWEEN TWO MOTOR VEHICLES	1			1
COLLISION WITH OBJECT IN ROAD	1			1
Total Crashes	9	1	1	11

DIAGRAM OF
COLLISION
REPORTS

CR W 600 N & CR N 700 W

Study Period: 1/1/2022 to 12/31/2024 Location: McCordsville
INDOT District: Greenfield County: Hancock City/Town: McCordsville
Analyst: JMR QC: DC Date: 3/26/2026



YEAR	REPORTS
2022	3
2023	3
2024	5
Total	11

NOTES
1) Crashes with determinable location are shown in diagram. Crash total may not match ARIES database.
2) Crashes on diagram do not represent exact crash locations; they are approximated based on available information.
3) Diagram not to scale.

- Object Symbols**
- MOVING VEHICLE
 - TURNING VEHICLE
 - BACKING VEHICLE
 - OUT OF CONTROL
 - PARKED VEHICLE
 - PEDESTRIAN
 - BICYCLE
 - ANIMAL
 - DEBRIS IN ROADWAY
 - DRIVEWAY CRASH

- FATAL CRASH
- INJURY CRASH – INCAPACITATING
- INJURY CRASH – NONINCAPACITATING
- PDO CRASHES (IF > 1)

- SIGNALIZED INTERSECTION
- FIXED OBJECT (See table for # codes)

- Collision Symbols**
- REAR END
 - HEAD ON
 - OTHER
 - SIDESWIPE – SAME
 - SIDESWIPE – OPPOSITE
 - RIGHT ANGLE
 - LEFT/RIGHT TURN
 - RAN OFF ROAD

- Fixed Object Codes**
- 01 – BRIDGE or OVERPASS
 - 02 – BUILDING
 - 03 – CULVERT or DITCH
 - 04 – CURB
 - 05 – GUARDRAIL or BARRIER
 - 06 – EMBANKMENT
 - 07 – FENCE
 - 08 – TRAFFIC POLE
 - 09 – UTILITY POLE
 - 10 – SIGN
 - 11 – TREE / SHRUB
 - 12 – CONSTRUCTION BARRIER
 - 13 – CRASH ATTENUATOR
 - 88 – OTHER
 - 99 – UNKNOWN

Intersection Images	CR N 600 W & CR W 700 N	
	Study Period: <u>1/1/2022 to 12/31/2024</u> INDOT District: <u>Greenfield</u> County: <u>Hancock</u>	Location: <u>McCordsville</u> City/Town: <u>McCordsville</u>



West Leg – Looking West



West Leg – Looking East



East Leg – Looking West



East Leg – Looking East



South Leg – Looking South



South Leg – Looking North



North Leg – Looking South



North Leg – Looking North

RoadHAT 4D		Index of Crash Frequency and Cost - Form F1		Page 1/2
Settings: Indiana local settings		Version: Version 4.1		
Location		CR W 600 N & CR N 700 W		
GIS				
Post				
Analyst				
Date		3/27/2026		
INPUT				
Road Facility Type		City Non- Arterial Intersection		
Busiest Road AADT (veh/day)		5588		
Crossing Road AADT (veh/day)		2400		
First Year with Crash Data (yyyy)		2022		
Last Year with Crash Data (yyyy)		2024		
Number of Crashes (crash/period)				
Fatal and Incapacitating Injury Crashes		1		
Non-Incapacitating and Possible Injury Crashes		2		
Property Damage Only Crashes		8		
Route or Road Type		City Non- Arterial Intersection		
Average Crash Costs (\$)				
Fatal and Incapacitating Injury Crashes		1699800		
Non-Incapacitating and Possible Injury Crashes		363300		
Property Damage Only Crashes		37300		
Crash Cost Year (yyyy)		2017		
OUTPUT				
Expected Crash Frequency (crash/year)				
Fatal and Incapacitating Injury Crashes		0.067		
Non-Incapacitating and Possible Injury Crashes		0.11		
Property Damage Only Crashes		0.67		
All Crashes		0.84		
Index of Crash Frequency		1.99		
Index of Crash Cost		1.09		

RoadHAT 4D		Index of Crash Frequency and Cost - Form F1		Page 2/2
Settings: Indiana local settings		Version: Version 4.1		
Location		CR W 600 N & CR N 700 W		
GIS				
Post				
Analyst				
Date		3/27/2026		
Comments: Traffic Data: INDOT TCDS Crash Data: ARIES provided by IMPO				

Attachment B Traffic Counts

CR 600 N & CR 700 W AM Peak (7:00-8:30 am)

Time	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
7:00-7:15	26	1	13	5	7	2	1	15	26	10	54	0
7:15-7:30	51	2	13	2	8	4	0	29	38	7	55	0
7:30-7:45	41	2	15	3	5	3	4	27	38	9	59	1
7:45-8:00	34	0	13	1	5	3	2	25	32	14	45	1
8:00-8:15	40	0	18	3	5	3	3	34	45	5	34	0
8:15-8:30	28	1	13	1	4	3	2	13	37	17	49	1
Total	220	6	85	15	34	18	12	143	216	62	296	3

Total 1,110

CR 600 N & CR 700 W PM Peak (4:00-5:30pm)

Time	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
4:00-4:15	70	7	13	1	2	1	3	45	30	15	47	2
4:15-4:30	50	1	8	1	0	2	1	47	50	14	49	2
4:30-4:45	60	4	10	0	2	1	4	62	58	14	44	4
4:45-5:00	47	3	10	1	5	3	3	60	65	14	53	0
5:00-5:15	56	3	22	2	3	2	4	58	64	20	63	2
5:15-5:30	83	5	24	1	1	1	6	63	44	14	51	3
Total	366	23	87	6	13	10	21	335	311	91	307	13

Total 1,583

Attachment C Traffic Analysis

			Existing 2026									
Intersection	Type	MOE	2026 AM Peak Hour					2026 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
CR 600 N & CR 700 W	TWSC	LOS	A	A	C	B	N/A	A	A	D	C	N/A
		Delay (sec/veh)	7.6	7.8	15.4	12.3	5.2	7.7	8.4	31.3	15.8	8.5
		Queue Length 95th (ft)	0	2	28	4		0	4.0	88	0	
		v/c Ratio	0.01	0.03	0.32	0.07		0.01	0.06	0.65	0.01	
		LOS-F Movements	---	---	---	---		---	---	---	---	

			No-Build 2050									
Intersection	Type	MOE	2050 AM Peak Hour					2050 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
CR 600 N & CR 700 W	TWSC	LOS	A	A	E	C	N/A	A	A	F	D	N/A
		Delay (sec/veh)	7.9	8.3	47.3	16.6	12.3	8.0	9.5	525.4	28.5	117.2
		Queue Length 95th (ft)	0	2	126	10		2	8	570	2	
		v/c Ratio	0.01	0.05	0.79	0.15		0.02	0.11	2.03	0.04	
		LOS-F Movements	---	---	---	---		---	---	NBL	---	

			Build 1 - 2050									
Intersection	Type	MOE	2050 AM Peak Hour					2050 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
CR 600 N & CR 700 W	AWS	LOS	B	C	C	B	C	D	E	E	B	E
		Delay (sec/veh)	12.5	20.5	15.6	11.0	15.7	30.2	49.7	36.4	12.7	36.6
		Queue Length 95th (ft)	36	90	58	8		162	202	172	4	
		v/c Ratio	0.38	0.64	0.52	0.11		0.83	0.90	0.86	0.07	
		LOS-F Movements	---	---	---	---		---	WBT/L	---	---	

			Build 2 - 2050									
Intersection	Type	MOE	2050 AM Peak Hour					2050 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
CR 600 N & CR 700 W	RAB	LOS	A	A	B	A	A	A	A	B	A	A
		Delay (sec/veh)	5.4	7.0	10.9	5.4	7.5	5.8	8.4	12.6	6.7	8.4
		Queue Length 95th (ft)	49	45	42	10		128	72	85	6	
		v/c Ratio	0.32	0.30	0.29	0.07		0.57	0.41	0.47	0.04	
		LOS-F Movements	---	---	---	---		---	---	---	---	

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	105	140	32	176	2	151	4	54	8	21	12
Future Vol, veh/h	8	105	140	32	176	2	151	4	54	8	21	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	350	0	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	0	0	0	0	7	0	0	0
Mvmt Flow	9	113	151	34	189	2	162	4	58	9	23	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	191	0	0	263	0	0	399	390	113	390	539	189
Stage 1	-	-	-	-	-	-	130	130	-	258	258	-
Stage 2	-	-	-	-	-	-	269	260	-	132	281	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.27	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.363	3.5	4	3.3
Pot Cap-1 Maneuver	1394	-	-	1312	-	-	565	548	927	572	452	858
Stage 1	-	-	-	-	-	-	878	792	-	751	698	-
Stage 2	-	-	-	-	-	-	741	696	-	876	682	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1394	-	-	1312	-	-	509	528	927	513	436	858
Mov Cap-2 Maneuver	-	-	-	-	-	-	509	528	-	513	436	-
Stage 1	-	-	-	-	-	-	872	787	-	729	677	-
Stage 2	-	-	-	-	-	-	685	676	-	811	677	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.24			1.19			13.7			12.24		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	509	881	127	-	-	277	-	-	513	531
HCM Lane V/C Ratio	0.319	0.071	0.006	-	-	0.026	-	-	0.017	0.067
HCM Ctrl Dly (s/v)	15.4	9.4	7.6	0	-	7.8	0	-	12.1	12.3
HCM Lane LOS	C	A	A	A	-	A	A	-	B	B
HCM 95th %tile Q(veh)	1.4	0.2	0	-	-	0.1	-	-	0.1	0.2

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	222	211	57	192	8	224	14	60	4	10	6
Future Vol, veh/h	16	222	211	57	192	8	224	14	60	4	10	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	350	0	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	0	0	0	0	0	7	0	0	0
Mvmt Flow	17	236	224	61	204	9	238	15	64	4	11	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	213	0	0	461	0	0	601	604	236	603	820	204
Stage 1	-	-	-	-	-	-	270	270	-	326	326	-
Stage 2	-	-	-	-	-	-	331	334	-	278	495	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.27	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.363	3.5	4	3.3
Pot Cap-1 Maneuver	1370	-	-	1111	-	-	415	415	791	414	312	841
Stage 1	-	-	-	-	-	-	740	689	-	691	652	-
Stage 2	-	-	-	-	-	-	687	647	-	733	549	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1370	-	-	1111	-	-	367	383	791	338	288	841
Mov Cap-2 Maneuver	-	-	-	-	-	-	367	383	-	338	288	-
Stage 1	-	-	-	-	-	-	727	678	-	648	612	-
Stage 2	-	-	-	-	-	-	628	607	-	648	540	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.27			1.87			26.31			15.05		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	367	658	121	-	-	412	-	-	338	382
HCM Lane V/C Ratio	0.65	0.12	0.012	-	-	0.055	-	-	0.013	0.045
HCM Ctrl Dly (s/v)	31.3	11.2	7.7	0	-	8.4	0	-	15.8	14.9
HCM Lane LOS	D	B	A	A	-	A	A	-	C	B
HCM 95th %tile Q(veh)	4.4	0.4	0	-	-	0.2	-	-	0	0.1

Intersection												
Int Delay, s/veh	12.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	164	218	50	274	3	235	6	84	12	33	19
Future Vol, veh/h	12	164	218	50	274	3	235	6	84	12	33	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	350	0	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	0	0	0	0	7	0	0	0
Mvmt Flow	13	176	234	54	295	3	253	6	90	13	35	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	298	0	0	411	0	0	622	608	176	608	839	295
Stage 1	-	-	-	-	-	-	202	202	-	402	402	-
Stage 2	-	-	-	-	-	-	420	405	-	205	437	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.27	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.363	3.5	4	3.3
Pot Cap-1 Maneuver	1275	-	-	1159	-	-	402	413	854	411	304	749
Stage 1	-	-	-	-	-	-	804	738	-	629	604	-
Stage 2	-	-	-	-	-	-	615	602	-	801	583	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1275	-	-	1159	-	-	321	385	854	337	283	749
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	385	-	337	283	-
Stage 1	-	-	-	-	-	-	793	728	-	594	570	-
Stage 2	-	-	-	-	-	-	530	568	-	700	575	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.24			1.26			37.04			16.48		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	321	790	123	-	-	278	-	-	337	367
HCM Lane V/C Ratio	0.786	0.123	0.01	-	-	0.046	-	-	0.038	0.152
HCM Ctrl Dly (s/v)	47.3	10.2	7.9	0	-	8.3	0	-	16.1	16.6
HCM Lane LOS	E	B	A	A	-	A	A	-	C	C
HCM 95th %tile Q(veh)	6.3	0.4	0	-	-	0.1	-	-	0.1	0.5

Intersection												
Int Delay, s/veh	117.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔	↔	↔		↔	↔	
Traffic Vol, veh/h	25	346	329	89	299	12	349	22	93	6	16	9
Future Vol, veh/h	25	346	329	89	299	12	349	22	93	6	16	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	350	0	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	0	0	0	0	0	7	0	0	0
Mvmt Flow	27	368	350	95	318	13	371	23	99	6	17	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	331	0	0	718	0	0	937	941	368	940	1279	318
Stage 1	-	-	-	-	-	-	421	421	-	507	507	-
Stage 2	-	-	-	-	-	-	516	520	-	433	771	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.27	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.363	3.5	4	3.3
Pot Cap-1 Maneuver	1240	-	-	892	-	-	~ 247	265	666	246	168	727
Stage 1	-	-	-	-	-	-	614	592	-	551	542	-
Stage 2	-	-	-	-	-	-	546	535	-	605	412	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1240	-	-	892	-	-	~ 183	222	666	159	140	727
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 183	222	-	159	140	-
Stage 1	-	-	-	-	-	-	591	570	-	480	472	-
Stage 2	-	-	-	-	-	-	451	466	-	475	397	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.28			2.12			\$ 398.89			26.52		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	183	482	121	-	-	413	-	-	159	198
HCM Lane V/C Ratio	2.033	0.254	0.021	-	-	0.106	-	-	0.04	0.135
HCM Ctrl Dly (s/v)	\$ 525.4	15	8	0	-	9.5	0	-	28.5	26
HCM Lane LOS	F	B	A	A	-	A	A	-	D	D
HCM 95th %tile Q(veh)	28.5	1	0.1	-	-	0.4	-	-	0.1	0.5

Notes												
~: Volume exceeds capacity			\$: Delay exceeds 300s									
+: Computation Not Defined			*: All major volume in platoon									

Intersection

Intersection Delay, s/veh	15.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	164	218	50	274	3	235	6	84	12	33	19
Future Vol, veh/h	12	164	218	50	274	3	235	6	84	12	33	19
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	0	2	0	0	0	0	0	0	7	0	0	0
Mvmt Flow	13	176	234	54	295	3	253	6	90	13	35	20
Number of Lanes	0	1	1	0	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay, s/veh	12.5	20.5	15.6	11
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	7%	0%	15%	0%	100%	0%
Vol Thru, %	0%	7%	93%	0%	85%	0%	0%	63%
Vol Right, %	0%	93%	0%	100%	0%	100%	0%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	235	90	176	218	324	3	12	52
LT Vol	235	0	12	0	50	0	12	0
Through Vol	0	6	164	0	274	0	0	33
RT Vol	0	84	0	218	0	3	0	19
Lane Flow Rate	253	97	189	234	348	3	13	56
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.514	0.165	0.344	0.38	0.64	0.005	0.029	0.114
Departure Headway (Hd)	7.325	6.149	6.544	5.832	6.617	5.826	8.124	7.347
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	490	579	545	612	543	608	443	491
Service Time	5.115	3.939	4.338	3.625	4.409	3.617	5.824	5.047
HCM Lane V/C Ratio	0.516	0.168	0.347	0.382	0.641	0.005	0.029	0.114
HCM Control Delay, s/veh	17.7	10.2	12.8	12.2	20.6	8.6	11.1	11
HCM Lane LOS	C	B	B	B	C	A	B	B
HCM 95th-tile Q	2.9	0.6	1.5	1.8	4.5	0	0.1	0.4

Intersection

Intersection Delay, s/veh	36.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	346	329	89	299	12	349	22	93	6	16	9
Future Vol, veh/h	25	346	329	89	299	12	349	22	93	6	16	9
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	2	0	0	0	0	0	0	7	0	0	0
Mvmt Flow	27	368	350	95	318	13	371	23	99	6	17	10
Number of Lanes	0	1	1	0	1	1	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay, s/veh	30.2	49.7	36.4	12.7
HCM LOS	D	E	E	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	7%	0%	23%	0%	100%	0%
Vol Thru, %	0%	19%	93%	0%	77%	0%	0%	64%
Vol Right, %	0%	81%	0%	100%	0%	100%	0%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	349	115	371	329	388	12	6	25
LT Vol	349	0	25	0	89	0	6	0
Through Vol	0	22	346	0	299	0	0	16
RT Vol	0	93	0	329	0	12	0	9
Lane Flow Rate	371	122	395	350	413	13	6	27
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.858	0.245	0.828	0.664	0.909	0.025	0.018	0.067
Departure Headway (Hd)	8.321	7.223	7.55	6.83	7.924	7.086	9.918	9.13
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	497	478	529	458	505	360	391
Service Time	6.066	4.967	5.305	4.584	5.678	4.839	7.699	6.91
HCM Lane V/C Ratio	0.855	0.245	0.826	0.662	0.902	0.026	0.017	0.069
HCM Control Delay, s/veh	44.3	12.3	37.4	22.1	50.9	10	12.9	12.6
HCM Lane LOS	E	B	E	C	F	A	B	B
HCM 95th-tile Q	8.6	1	8.1	4.9	10.1	0.1	0.1	0.2

LANE SUMMARY

 **Site: [22.3] 2050 AM** (CR 600 N & CR 700 W)
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance															
	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh Dist] ft		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: CR 700 W															
Lane 1 ^d	349	1.8	349	1.8	1227	0.285	100	10.9	LOS B	1.7	42.1	Full	1600	0.0	0.0
Approach	349	1.8	349	1.8		0.285		10.9	LOS B	1.7	42.1				
East: CR 600 N															
Lane 1 ^d	352	0.0	352	0.0	1189	0.296	100	7.0	LOS A	1.8	44.9	Full	1600	0.0	0.0
Approach	352	0.0	352	0.0		0.296		7.0	LOS A	1.8	44.9				
North: Sagebrook Way															
Lane 1 ^d	69	0.0	69	0.0	948	0.073	100	5.4	LOS A	0.4	10.0	Full	300	0.0	0.0
Approach	69	0.0	69	0.0		0.073		5.4	LOS A	0.4	10.0				
West: CR 600 N															
Lane 1 ^d	424	0.8	424	0.8	1341	0.316	100	5.4	LOS A	1.9	48.6	Full	1600	0.0	0.0
Approach	424	0.8	424	0.8		0.316		5.4	LOS A	1.9	48.6				
All Vehicles	1194	0.8	1194	0.8		0.316		7.5	LOS A	1.9	48.6				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)											
South: CR 700 W											
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From S						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	W	N	E			veh/h	v/c	%	%	No.	
Lane 1	253	6	90	349	1.8	1227	0.285	100	NA	NA	
Approach	253	6	90	349	1.8		0.285				
East: CR 600 N											
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From E						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	S	W	N			veh/h	v/c	%	%	No.	
Lane 1	54	295	3	352	0.0	1189	0.296	100	NA	NA	
Approach	54	295	3	352	0.0		0.296				
North: Sagebrook Way											
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	

From N To Exit:	E	S	W			Cap. veh/h	Satn v/c	Util. %	SL Ov. %	Lane No.
Lane 1	13	35	20	69	0.0	948	0.073	100	NA	NA
Approach	13	35	20	69	0.0		0.073			
West: CR 600 N										
Mov.	L2	T1	R2	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
From W To Exit:	N	E	S			Cap. veh/h				
Lane 1	13	176	234	424	0.8	1341	0.316	100	NA	NA
Approach	13	176	234	424	0.8		0.316			
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	1194	0.8	0.316							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis													
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec	Merge Queue [Veh Dist] ft
There are no Exit Short Lanes for Merge Analysis at this Site.													

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: CR 700 W				
Lane 1	0.0	0.0	0.0	0.0
East: CR 600 N				
Lane 1	0.0	0.0	0.0	0.0
North: Sagebrook Way				
Lane 1	0.0	0.0	0.0	0.0
West: CR 600 N				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

 Site: [22.4] 2050 PM (CR 600 N & CR 700 W)
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance															
	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %	
South: CR 700 W															
Lane 1 ^d	494	1.4	494	1.4	1049	0.471	100	12.6	LOS B	3.4	84.7	Full	1600	0.0	0.0
Approach	494	1.4	494	1.4		0.471		12.6	LOS B	3.4	84.7				
East: CR 600 N															
Lane 1 ^d	426	0.0	426	0.0	1041	0.409	100	8.4	LOS A	2.9	72.2	Full	1600	0.0	0.0
Approach	426	0.0	426	0.0		0.409		8.4	LOS A	2.9	72.2				
North: Sagebrook Way															
Lane 1 ^d	33	0.0	33	0.0	800	0.041	100	6.7	LOS A	0.2	6.2	Full	300	0.0	0.0
Approach	33	0.0	33	0.0		0.041		6.7	LOS A	0.2	6.2				
West: CR 600 N															
Lane 1 ^d	745	1.0	745	1.0	1312	0.568	100	5.8	LOS A	5.1	128.2	Full	1600	0.0	0.0
Approach	745	1.0	745	1.0		0.568		5.8	LOS A	5.1	128.2				
All Vehicles	1697	0.8	1697	0.8		0.568		8.4	LOS A	5.1	128.2				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)											
South: CR 700 W											
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From S						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	W	N	E			veh/h	v/c	%	%	No.	
Lane 1	371	23	99	494	1.4	1049	0.471	100	NA	NA	
Approach	371	23	99	494	1.4		0.471				
East: CR 600 N											
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From E						Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	S	W	N			veh/h	v/c	%	%	No.	
Lane 1	95	318	13	426	0.0	1041	0.409	100	NA	NA	
Approach	95	318	13	426	0.0		0.409				
North: Sagebrook Way											
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	

From N To Exit:	E	S	W			Cap. veh/h	Satn v/c	Util. %	SL Ov. %	Lane No.
Lane 1	6	17	10	33	0.0	800	0.041	100	NA	NA
Approach	6	17	10	33	0.0		0.041			
West: CR 600 N										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	27	368	350	745	1.0	1312	0.568	100	NA	NA
Approach	27	368	350	745	1.0		0.568			
Total %HV Deg.Satn (v/c)										
All Vehicles	1697	0.8		0.568						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis													
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec	Merge Queue [Veh Dist] ft
There are no Exit Short Lanes for Merge Analysis at this Site.													

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: CR 700 W				
Lane 1	0.0	0.0	0.0	0.0
East: CR 600 N				
Lane 1	0.0	0.0	0.0	0.0
North: Sagebrook Way				
Lane 1	0.0	0.0	0.0	0.0
West: CR 600 N				
Lane 1	0.0	0.0	0.0	0.0

Attachment D

Virtual Meeting Minutes & Field Check Minutes

IMPO Safety Study: McCordsville RSA Location

Date: April 17, 2026

Time: 10:00 – 10:30 AM

Location: MS Teams

Attendees:

Tim Gropp, Town of McCordsville

Ryan Crum, Town of McCordsville

Mark Witsman, Town of McCordsville

Jennifer Dunn, IMPO

James Mark Rinehart, Corradino LLC

David Cleveland, Corradino LLC

Agenda

1. Introductions

- a. Corradino staff kicked off the meeting with a round of introductions for all the participants on the Teams call.
- b. Corradino staff then shared that the purpose of the kick-off meeting was to spend some time talking with the Town of McCordsville about the RSA location they selected to study as part of the Indianapolis MPO's (IMPO) Safety Study. The information from the kick-off meeting will be considered as Corradino completes the safety and traffic analysis and begins identifying potential countermeasures for the RSA location. Corradino then asked McCordsville staff to provide an overview of why they selected their RSA location, such as observed safety concerns, changes in traffic related to new development, or existing plans or studies that have identified long-term improvements at the RSA sites.

2. Overview of RSA location

- a. **CR 600 N & CR 700 W**
 - i. McCordsville staff noted there are new single-family neighborhoods underway and planned northeast of the intersection. Traffic from those neighborhoods may not significantly impact the 600 N & 700 W intersection, but it is worth noting, since this part of McCordsville is growing quickly. Additionally, McCordsville staff noted that a multifamily residential and commercial development is underway at the intersection of CR 600 W and Mt. Comfort Road, located about a mile east of the study intersection. McCordsville recently converted the CR 600 W & Mt Comfort Road intersection to a dual-lane roundabout.
 - ii. McCordsville staff noted the intersection at CR 600 N & 700 W used to be a "T" intersection before the entrance to the Sagebrook neighborhood

was developed on the north side of the intersection. However, the traffic patterns at the intersection have not changed much. Eastbound and westbound remain the highest, with a heavy southbound to westbound right-turn and northbound to westbound left-turn movement.

1. McCordsville staff noted that CR 700 W shifts ~800' to the west at CR 600 N, creating a paired intersection. Because of the shift, several vehicles traveling north or south along CR 700 W must make the "jog" between the two CR 700 W segments.
2. McCordsville staff noted they have considered making improvements at both intersections between CR 600 W & 700 N. Still, the easternmost intersection is the county line with Marion County, and that segment of CR 700 N is under the City of Lawrence's jurisdiction.
 - a. Corradino staff noted they are conducting RSAs in Lawrence as part of this IMPO Safety Study. It would inform Lawrence staff of the McCordsville project, with the hopes of collaborating with them in the future.
- iii. McCordsville staff noted there has been an increase in crashes at the intersection over recent years. They noted that one fatality recently occurred at the intersection after the driver stole a vehicle from a Carvana storage facility and fled from the police. The vehicle traveled northbound and struck an eastbound vehicle before losing control and landing in an open field in the northeast corner of the intersection.
 1. Other than the fatal crash, McCordsville staff noted they see right-angle and left-turn crashes at the intersection, due to the heavy turning movements to continue on CR 700 W.

3. Preliminary Findings Reports

- a. Corradino staff shared a draft of the Preliminary Findings Report with McCordsville staff during the meeting, and intend to finalize it before the field check.
- b. Corradino shared the observations that McCordsville staff reflect what was documented in the police reports. Additionally, Corradino staff observed traffic at the intersection during the AM and PM peak hours. It noted multiple "near-misses," in which northbound left-turning vehicles believed they had enough time to cross traffic.
- c. McCordsville staff shared they thought there might be ways to improve the existing intersection through striping, signage, and possibly modifying existing turn lanes. Additionally, McCordsville staff were interested in the idea of a single-lane roundabout at the intersection.

- i. McCordsville noted that there is a lot of existing pavement and available right-of-way currently at the intersection, which may be beneficial to a potential roundabout solution.
 - ii. Corradino staff noted the intersection basically has an eastbound and a westbound passing blister for the approaches, which means the left turning movements are not directly opposing, potentially making sight lines around an approaching left turning vehicle challenging. One alternative could be to develop opposing eastbound and westbound left turn lanes with proper transitions and tapers. This would not be a traffic-calming improvement and might not reduce severe crashes as much as a roundabout. Still, it might be a less expensive alternative and warrant further investigation. The group was not opposed.
- d. Corradino staff agreed that all the ideas McCordsville shared could be good solutions, and would test these ideas before the field check.

4. Traffic Counts

- a. Corradino staff asked McCordsville staff if they had recent traffic counts for the intersection. They said they did not have recent counts available.
- b. Indianapolis MPO noted that they have a license with the SaaS, Replica, which will be able to provide traffic counts. Corradino said they would also go and collect peak-hour traffic counts at the intersection to compare with the Replica data.

5. Next Steps

- a. The field check to look at the intersection with McCordsville staff and local law enforcement was scheduled for May 7, 2026.

Field Check Notes for RSA at CR 600 N & CR 700 W

				Date: 6/25/2026	
				Des. No.: n/a	
Reviewer Information:				Agency/Firm Name: Corradino LLC	
Primary Author: James Mark Rinehart				Agency: Indianapolis Metropolitan Planning Organization	
Phone Numbers: (317) 488-2363				Email Address: jrinehart@corradino.com	
Attendees:					
- Tim Gropp, McCordsville - Mark Whitsman, McCordsville - Aaron Watts, McCordsville PD - James Mark Rinehart, Corradino - David Cleveland, Corradino					
Purpose of Field Check:					
The purpose of this field check was to review the crash history at the CR 600 N & CR 700 W intersection, evaluate the current roadway conditions, observe traffic patterns, and collaborate with representatives from Local Public Agencies (LPA) and Law Enforcement to identify safety countermeasures. Participants in the field check were provided with a packet of information containing the reported crash history at the intersection, peak-hour traffic turning movement counts, and a Google Earth image of the radius for both a single-lane and a dual-lane roundabout, if a roundabout were selected as the long-term recommended improvement. The goal of the field check was to identify near-term and long-term improvements and build consensus with the LPAs and Local Law Enforcement on the recommendations. Recommendations from the field check will serve as the final recommendations for the RSA and will be included in IMPO's Safety Study.					
Project Location:					
Location: Intersection of CR 600 N & CR 700 W					
INDOT District: Greenfield				City: McCordsville	County: Hancock
Lat & Long (BOP)	39.869855	-85.934933	Urban/Rural - URBAN	Functional Class of Major Roadway: Major Collector	
Traffic Control Type: Two-Way Stop Controlled				Posted Speed Limit: CR 600 N – 45mph; CR 700 W – 50mph	
Site Observations					
- Corradino reviewed the reported crash history with the Town of McCordsville and McCordsville PD, reemphasizing that seven of the 11 crashes at the intersection were right-angle crashes between an NB vehicle and either an EB or WB vehicle. Corradino did mention during the field check that their team collected Peak AM and PM traffic counts manually at the intersection in April. During that time, Corradino staff observed multiple near-miss incidents between NB and EB vehicles. - Additionally, the peak-hour counts indicated that 20-23% of vehicles entering the intersection during the AM or PM peak hours completed an NB left turn movement. - There is a predominant NB to WB left-turn and an EB to SB right-turn movement through the intersection as motorists likely use this as an alternate north-south route to CR 600 W. Because 64% of crashes involved NB to WB left-turn vehicles, and 20-23% of traffic at the intersection made the NB to WB left-turn movement, Corradino suggested that proposed improvements should include options that create sight lines and channelize these movements, to reduce the uncertainty of the NB motorists at a stop condition regarding the oncoming EB motorists speed and intentions. The EB and WB approaches have a single travel lane and a passing blister, which creates two free-flow approaching lanes (shared left/through and shared through/right) in each direction. With left turn lanes that are not opposing, and faded striping on CR 600N, understanding lane assignments and the intentions of EB /WB motorists can be challenging for a motorist					

stopped at the stop bar on CR 700 W. This is especially true as a stopped CR 700 W motorist is looking at the approaching EB CR 600 N traffic and waiting for a suitable gap. The EB passing blister only has approximately 100' of tangent on the west side of the intersection. If a stream of EB vehicles is approaching the intersection, and one of the vehicles decides to make an EB to NB left turn into the subdivision, a trailing EB vehicle could use the passing blister and continue EB through the intersection. The vehicle stopped on the NB CR 700 W approach, looking for a gap in EB approaching traffic, might not see an EB, though the vehicle is using the passing blister with adequate time, if the vehicle is moving at a high rate of speed.

- o McCordsville staff agreed with the plan to identify solutions for both the near-and long-term that address the NB to WB left-turn movement. They also wanted to consider alternatives to help address speeding on CR 600 W.
- During the field check, Corradino noticed that the WB right-turn lane appeared to be longer than needed for the entrance into the Sage Brook residential subdivision. McCordsville staff agreed and noted that Hancock County approved the Sage Brook residential subdivision before the area was annexed into the Town of McCordsville, and that Hancock County had different guidelines for the length of a new right-turn lane.
- Corradino shared with McCordsville staff that they reviewed both the All-Way Stop (AWS) and Traffic Signal Warrant criteria in chapters two and four of the MUTCD.
 - o An AWS-controlled intersection is warranted at the intersection based on reported crash data (Warrant Criteria A), the intent of transitioning the intersection to a signal in the future (Warrant Criteria C), and to support pedestrian activity and reduce left-turn conflicts (Warrant Criteria E).
 - o A traffic signal warrant was met, but because of the number of right-angle crashes reported at the intersection (Warrant Criteria 08).
- McCordsville said that they believe there might be some pushback from the community for converting the intersection to an AWS. Having the results from the AWS Warrant Analysis and the RSA recommending the AWS would provide justification for the improvement.
- Regarding the signal warrant, McCordsville was not as interested in this as a traffic signal alternative because:
 - o From a Safety perspective, a signalized intersection can help channelize traffic but does not reduce the conflict points at the intersection.
 - o From a cost perspective, McCordsville believed the cost to make the intersection signalized would not be much less expensive than converting it into a roundabout. The excess pavement and large amount of existing right-of-way at the intersection could accommodate a roundabout with minimal impact on adjacent properties. Whereas a traffic signal would require installing all new signal equipment and poles, along with the roadway improvements.
- Corradino noted that, per the peak-hour traffic volumes, a single-lane roundabout could be a good long-term alternative, which would also address the right-angle crashes more effectively than a traffic signal.
 - o Additionally, Corradino provided a Google Earth image of the intersection and a circle drawn in the intersection that was the radius of a typical single-lane roundabout. The image shows that a single-lane roundabout could fit at the intersection without significantly impacting the existing right-of-way and utilities, suggesting it might be less expensive than a typical roundabout.
 - o McCordsville staff agreed that, for the long term, a roundabout seemed to be the best choice when considering safety, traffic capacity, and cost.

Potential Alternatives Discussed

Near-Term

- Modify the intersection from a two-way stop-controlled intersection to an All-Way Stop Controlled intersection, which would include:
 - o Update striping at the intersection to identify turn and through lanes, as well as stop bars for the EB and WB approaches.
 - o Stop signs on all four corners of the intersection, with the placards indicating everyone now stops at the intersection.
 - o New LED flashing “Stop Approach” signs for the EB and WB approaches at the intersection.
 - o Add retroreflective tape to all existing and new signposts at the intersection and intersection approaches.

Long-Term

- Convert the intersection into a single-lane roundabout.

Future Consideration

- N/A

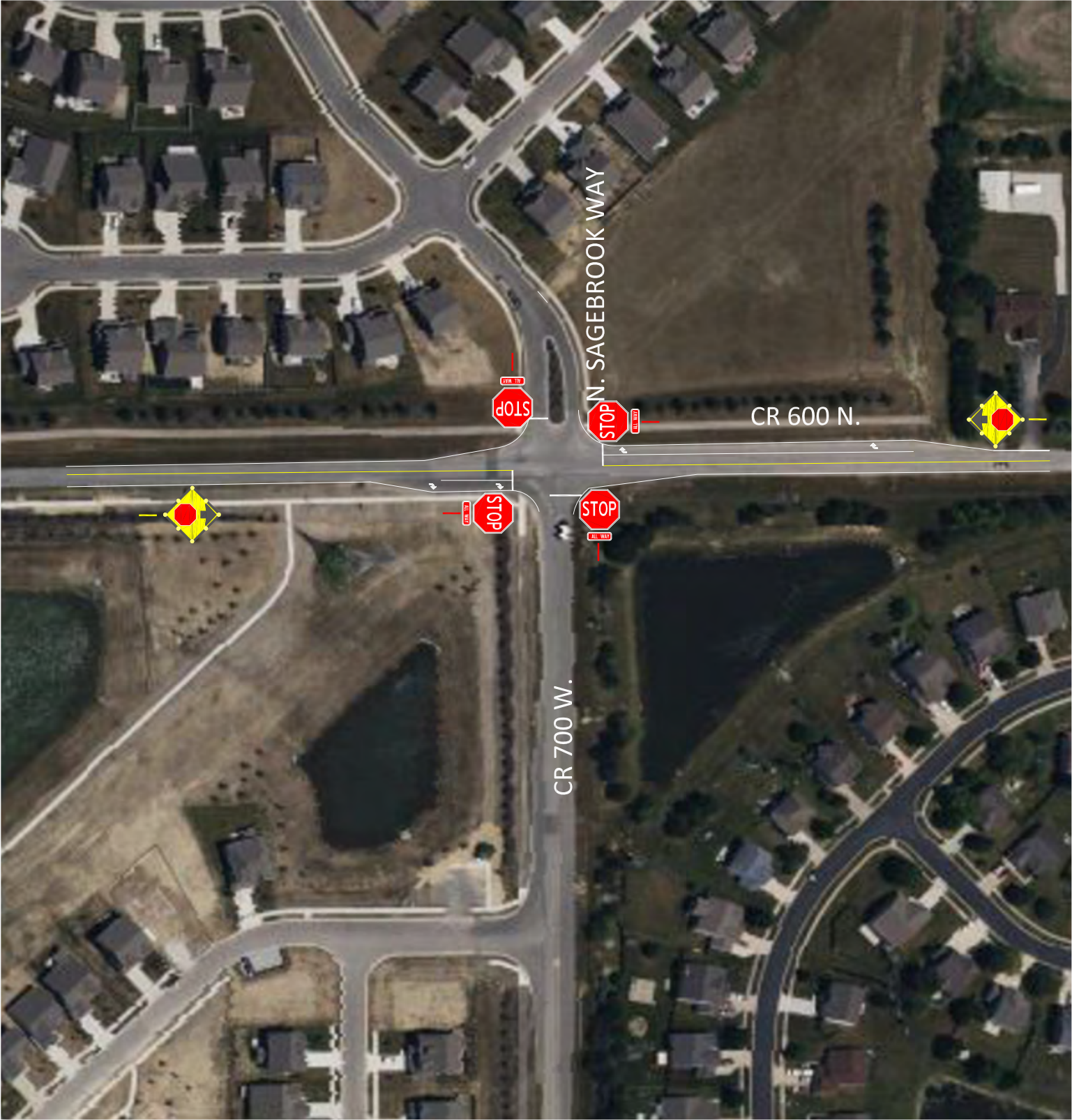
Consensus on Key Items for Alternatives

- Consensus was met to have the AWS and Single Lane Roundabout be the near-and long-term recommendations for the RSA.

Attachment E

Cost Estimates & Schematics

Near-Term Improvements
CR 600 N & CR 700 W



PRELIMINARY COST ESTIMATE - NEAR TERM
CR 600 N & CR 700 W

LINE ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	110-01001	MOBILIZATION AND DEMOBILIZATION	1	LS	\$ 5,000.00	\$ 5,000.00
2	801-06775	MAINTAINING TRAFFIC	1	LS	\$ 3,000.00	\$ 3,000.00
3	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	52	LFT	\$ 31.00	\$ 1,612.00
4	802-07058	SIGN, SHEET ASSEMBLY, RELOCATE	2	EACH	\$ 315.00	\$ 630.00
5	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	24	SFT	\$ 32.00	\$ 768.00
6	802-11648	SIGN POST, TYPE	6	EACH	\$ 125.00	\$ 750.00
7	805-11965	SOLAR POWERED FLASHING LED SIGN ASSEMBLY	2	EACH	\$ 3,500.00	\$ 7,000.00
8	808-06703	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	2,875	LFT	\$ 1.25	\$ 3,593.75
9	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	2,750	LFT	\$ 1.25	\$ 3,437.50
10	808-75297	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN.	110	LFT	\$ 14.00	\$ 1,540.00
TOTAL						\$ 27,331.25

CONSTRUCTION TOTAL	\$28,000.00
CONTINGENCY (10%)	\$3,000.00
OVERALL PROJECT TOTAL	\$31,000.00

This cost estimate makes the following assumptions:
1.) Unit price estimates based on stand-alone project

Project Phases		
Task No.	Task	Cost
1	Preliminary Engineering	\$ 10,000
2	Right of Way	\$ -
3	Utility CN	\$ 500
4	Railroad CN	\$ -
5	Construction Inspection/Testing	\$ -
TOTAL		\$ 10,500

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

Gary L. Yellig

Signature

Todd Johnson

Estimate Completed By
6/5/2026

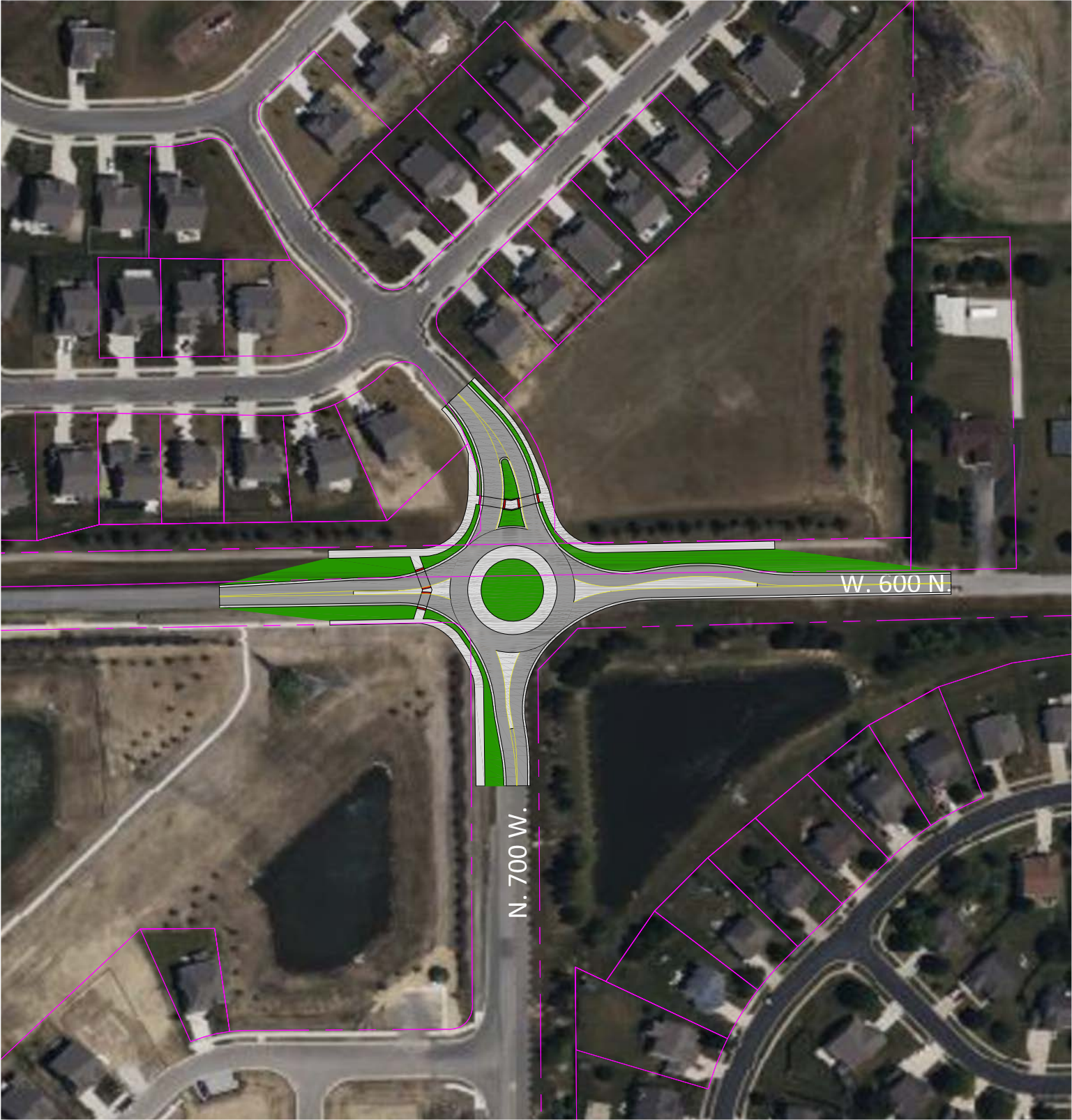
Date



ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - NEAR TERM
CR 600 N & CR 700 W

LINE ITEM	ITEM NO.	DESCRIPTION	NOTES
1	110-01001	MOBILIZATION AND DEMOBILIZATION	
2	801-06775	MAINTAINING TRAFFIC	
3	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	this is for 4 Stop signs (2 new and 2 replacement). Use 13' each or 52 LFT
4	802-07058	SIGN, SHEET ASSEMBLY, RELOCATE	this is to relocate the existing Street name signs to the new Stop sign
5	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	4 new Stop signs (R1-1 at 5.18 sft ea) and 4 new All Way (R1-3P) plaques at 18" by 6" or 0.75 sft ea
6	802-11648	SIGN POST, TYPE	for reflective strips - 4-Red and 2-Yellow = 6 each
7	805-11965	SOLAR POWERED FLASHING LED SIGN ASSEMBLY	this is for the 2 new Stop Ahead signs with LED. Includes the sign, post, and LED units all in one
8	808-06703	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	restripe 500' from Stop line on east and west legs and 370' on north leg. By CAD = 2875 LFT
9	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	restripe 500' from Stop line on east and west legs and 370' on north leg. By CAD = 2,750
10	808-75297	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN.	new Stop lines 110 LFT by CAD

Long-Term Improvements
CR 600 N & CR 700 W



PRELIMINARY COST ESTIMATE - LONG TERM
CR 600 N & CR 700 W

LINE ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	105-06845	CONSTRUCTION ENGINEERING	1	LS	\$ 60,000.00	\$ 60,000.00
2	110-01001	MOBILIZATION AND DEMOBILIZATION	1	LS	\$ 164,500.00	\$ 164,500.00
3	201-52370	CLEARING RIGHT-OF-WAY	1	LS	\$ 25,000.00	\$ 25,000.00
4	202-02240	PAVEMENT REMOVAL	3,921	SYS	\$ 70.00	\$ 274,470.00
5	202-02279	CURB AND GUTTER, REMOVE	2,222	LFT	\$ 20.00	\$ 44,440.00
6	202-52710	SIDEWALK CONCRETE, REMOVE	1,023	SYS	\$ 125.00	\$ 127,875.00
7	202-91385	INLET, REMOVE	2	EACH	\$ 1,200.00	\$ 2,400.00
8	202-96133	PIPE, REMOVE	100	LFT	\$ 65.00	\$ 6,500.00
9	203-02000	EXCAVATION, COMMON	1,500	CYS	\$ 80.00	\$ 120,000.00
10	205-12108	STORMWATER MANAGEMENT BUDGET	60,000	DOL	\$ 1.00	\$ 60,000.00
11	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	1	LS	\$ 15,000.00	\$ 15,000.00
12	205-12618	SWQCP PREPARATION	1	LS	\$ 10,000.00	\$ 10,000.00
13	207-09935	SUBGRADE TREATMENT, TYPE IC	3,921	SYS	\$ 45.00	\$ 176,445.00
14	211-09264	STRUCTURE BACKFILL, TYPE 1	1,150	CYS	\$ 84.00	\$ 96,600.00
15	306-08043	MILLING, TRANSITION	670	SYS	\$ 10.00	\$ 6,700.00
16	401-000005	QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm	324	TON	\$ 100.00	\$ 32,400.00
17	401-000032	QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm	540	TON	\$ 110.00	\$ 59,400.00
18	401-000046	QC/QA-HMA, 2, 58S, BASE, 25.0 mm	1,294	TON	\$ 110.00	\$ 142,340.00
19	401-000062	QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm	647	TON	\$ 150.00	\$ 97,050.00
20	401-11526	JOINT ADHESIVE	3,314	LFT	\$ 1.00	\$ 3,314.00
21	401-12439	VOID REDUCING ASPHALT MEMBRANE FOR HMA	3,314	LFT	\$ 7.00	\$ 23,198.00
22	406-05520	ASPHALT FOR TACK COAT	1	TON	\$ 750.00	\$ 750.00
23	502-06327	PCCP, 10 IN.	445	SYS	\$ 200.00	\$ 89,000.00
24	604-06070	SIDEWALK, CONCRETE	1,023	SYS	\$ 240.00	\$ 245,520.00
25	604-08086	CURB RAMP, CONCRETE	64	SYS	\$ 280.00	\$ 17,920.00
26	604-12083	DETECTABLE WARNING SURFACES	12	SYS	\$ 325.00	\$ 3,900.00
27	605-02493	CURB, ISLAND CONCRETE	417	SYS	\$ 150.00	\$ 62,550.00
28	605-06120	CURB, CONCRETE	680	LFT	\$ 100.00	\$ 68,000.00
29	605-06121	CURB, CONCRETE, TYPE B	315	LFT	\$ 75.00	\$ 23,625.00
30	605-06140	CURB AND GUTTER, CONCRETE	2,222	LFT	\$ 90.00	\$ 199,980.00
31	621-01004	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	4	EACH	\$ 800.00	\$ 3,200.00
32	621-06545	FERTILIZER	1	TON	\$ 1,200.00	\$ 1,200.00
33	621-06553	SEED MIXTURE, TYPE R	210	LBS	\$ 40.00	\$ 8,400.00
34	621-06565	MULCHING MATERIAL	2	TON	\$ 600.00	\$ 1,200.00
35	621-06575	SODDING, NURSERY	2,049	SYS	\$ 65.00	\$ 133,185.00
36	622-05640	PLANT, DECIDUOUS SHRUB, 24 IN. TO 36 IN.	12	EACH	\$ 130.00	\$ 1,560.00
37	626-000206	STORMWATER TREATMENT UNIT, TYPE D	1	EACH	\$ 100,000.00	\$ 100,000.00
38	715-05048	PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.	2,600	LFT	\$ 18.00	\$ 46,800.00
39	715-05053	PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.	160	LFT	\$ 35.00	\$ 5,600.00
40	715-05149	PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.	240	LFT	\$ 95.00	\$ 22,800.00
41	715-05151	PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.	800	LFT	\$ 115.00	\$ 92,000.00
42	715-05152	PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.	800	LFT	\$ 130.00	\$ 104,000.00
43	715-05154	PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.	200	LFT	\$ 140.00	\$ 28,000.00
44	718-12306	GEOTEXTILE FOR UNDERDRAINS, TYPE 1B	1,785	SYS	\$ 7.00	\$ 12,495.00
45	718-52610	AGGREGATE FOR UNDERDRAINS	670	CYS	\$ 110.00	\$ 73,700.00
46	720-45045	INLET, TYPE J10	16	EACH	\$ 4,500.00	\$ 72,000.00
47	720-45410	MANHOLE, TYPE C4	8	EACH	\$ 6,500.00	\$ 52,000.00
48	720-90349	MANHOLE, TYPE C8	4	EACH	\$ 6,500.00	\$ 26,000.00
49	801-06775	MAINTAINING TRAFFIC	1	LS	\$ 160,000.00	\$ 160,000.00
50	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	336	LFT	\$ 31.00	\$ 10,416.00
51	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	110	SFT	\$ 45.00	\$ 4,950.00
52	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	12	SFT	\$ 50.00	\$ 600.00
53	807-02191	HANDHOLE, LIGHTING	18	EACH	\$ 2,000.00	\$ 36,000.00
54	807-02352	WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/C	2,600	LFT	\$ 30.00	\$ 78,000.00
55	807-06592	CONDUIT, STEEL, GALVANIZED, 2 IN.	280	LFT	\$ 40.00	\$ 11,200.00
56	807-12199	LUMINAIRE, HIGH LUMEN ROADWAY	18	EACH	\$ 800.00	\$ 14,400.00
57	807-12791	LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING	18	EACH	\$ 2,500.00	\$ 45,000.00
58	807-83502	LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, ANCHOR BASE	18	EACH	\$ 5,000.00	\$ 90,000.00
59	807-86810	SERVICE POINT, TYPE II	1	EACH	\$ 10,600.00	\$ 10,600.00
60	807-86889	CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C	630	LFT	\$ 2.00	\$ 1,260.00
61	807-86910	CONNECTOR KIT, UNFUSED	18	EACH	\$ 71.00	\$ 1,278.00
62	807-86915	CONNECTOR KIT, FUSED	18	EACH	\$ 71.00	\$ 1,278.00
63	808-03439	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, WHITE, 24 IN.	96	LFT	\$ 15.00	\$ 1,440.00
64	808-11478	LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.	80	LFT	\$ 4.50	\$ 360.00
65	808-11698	TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.	100	LFT	\$ 18.00	\$ 1,800.00
66	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	2,020	LFT	\$ 1.25	\$ 2,525.00
TOTAL						\$ 2,965,017.00

CONSTRUCTION TOTAL	\$2,965,000.00
CONTINGENCY (10%)	\$297,000.00
OVERALL PROJECT TOTAL	\$3,262,000.00

This cost estimate makes the following assumptions:
1.) Unit price estimates based on stand-alone project

Project Phases		
Task No.	Task	Cost
1	Preliminary Engineering	\$ 391,440
2	Right of Way	\$ 45,000
3	Utility CN	\$ 275,000
4	Railroad CN	\$ -
5	Construction Inspection/Testing	\$ 326,200
TOTAL		\$ 1,037,640

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

Signature Gary L. Yellig

Todd Johnson
Estimate Completed By
6/5/2026
Date



ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - LONG TERM
CR 600 N & CR 700 W

LINE ITEM	ITEM NO.	DESCRIPTION	NOTES
1	105-06845	CONSTRUCTION ENGINEERING	
2	110-01001	MOBILIZATION AND DEMOBILIZATION	
3	201-52370	CLEARING RIGHT-OF-WAY	
4	202-02240	PAVEMENT REMOVAL	
5	202-02279	CURB AND GUTTER, REMOVE	
6	202-52710	SIDEWALK CONCRETE, REMOVE	
7	202-91385	INLET, REMOVE	2 existing inlet on north leg wil be removed
8	202-96133	PIPE, REMOVE	existing storm sewer crosses under north leg. Remove it where under proposed pavement/walk say 100 LFT
9	203-02000	EXCAVATION, COMMON	assume under new pavement in open area or 12,000 sft * 1.5' + 800 CYS potential detention area say 1,500 CYS
10	205-12108	STORMWATER MANAGEMENT BUDGET	assume \$ 10,000 each in the NE and NW and \$ 20,000 each in the SE and SW due to the lakes. Use \$ 60,000
11	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	
12	205-12618	SWQCP PREPARATION	assume a cost of \$ 10,000
13	207-09935	SUBGRADE TREATMENT, TYPE IC	See right for math
14	211-09264	STRUCTURE BACKFILL, TYPE 1	3921
15	306-08043	MILLING, TRANSITION	Used on existing pavement at tie into to new pavement. Use a average length of 50' and average width of 30' and get say 670 SYS
16	401-000005	QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm	324
17	401-000032	QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm	540
18	401-000046	QC/QA-HMA, 2, 58S, BASE, 25.0 mm	1294
19	401-000062	QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm	647
20	401-11526	JOINT ADHESIVE	3314
21	401-12439	VOID REDUCING ASPHALT MEMBRANE FOR HMA	3314
22	406-05520	ASPHALT FOR TACK COAT	1
23	502-06327	PCCP, 10 IN.	Used for truck overrun apron. Area by cad is 4,005 sft or 445 SYS
24	604-06070	SIDEWALK, CONCRETE	1023
25	604-08086	CURB RAMP, CONCRETE	There are 8 locations requiring these. Assume 8 SYS each or 64 SYS
26	604-12083	DETECTABLE WARNING SURFACES	There are 8 locations requiring these. Assume 1.5 SYS each or 12 SYS
27	605-02493	CURB, ISLAND CONCRETE	417
28	605-06120	CURB, CONCRETE	680
29	605-06121	CURB, CONCRETE, TYPE B	roll curb at truck overrun apron. By cad the length is 315 LFT
30	605-06140	CURB AND GUTTER, CONCRETE	2222
31	621-01004	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	Assume 4 each - one for each quadrant
32	621-06545	FERTILIZER	Use 800 LBS or roundup to say 1 Ton
33	621-06553	SEED MIXTURE, TYPE R	Length of project on both sides is about 2,600' and say a disturbed area averaging 15' wide or round up and say 1 acre. Use say 210 LBS
34	621-06565	MULCHING MATERIAL	
35	621-06575	SODDING, NURSERY	2049
36	622-05640	PLANT, DECIDUOUS SHRUB, 24 IN. TO 36 IN.	replaces landscaping on north leg. Assume 12 shrubs
37	626-000206	STORMWATER TREATMENT UNIT, TYPE D	
38	715-05048	PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.	assume underdrains use a length of 2,600 LFT
39	715-05053	PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.	connector pipe from underdrain to inlet. Say 10' per each J10 Inlet or 160 LFT
40	715-05149	PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.	use an average of 30 per each pair of inlets or 8 * 30' = 240 LFT
41	715-05151	PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.	say 200' per leg or 800 LFT
42	715-05152	PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.	say 200' per leg or 800 LFT
43	715-05154	PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.	used near outlet end of storm sewer say 200 LFT
44	718-12306	GEOTEXTILE FOR UNDERDRAINS, TYPE 1B	assume 6.1667' per ft and get 6.1667' * 2,600' = say 1,785 SYS
45	718-52610	AGGREGATE FOR UNDERDRAINS	use IDM factor of 0.257 CYS/LFT and get 2,600 * 0.257 = say 670 CYS
46	720-45045	INLET, TYPE J10	assume 2 pairs of inlets on each leg or 2 * 2 * 4 = 16 Each
47	720-45410	MANHOLE, TYPE C4	assume one each per each pair of inlets or 8 each
48	720-90349	MANHOLE, TYPE C8	assume 4 each of these manhole/inlets used around the circle
49	801-06775	MAINTAINING TRAFFIC	15,000 per leg for 60000 plus 100000 for temp paving and etc. total = 160,0000
50	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	assume Yield signs and RAB Warning signs on each leg and Pedestrian Warning sign on the north and west legs and One Way in circle. Use 24 signs total and 14' per sign or 336 LFT
51	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	Assume 110 SFT for all signs
52	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	assume one way signs needed in center of RAB and each is 3 SFT and 4 required or 12 SFT
53	807-02191	HANDHOLE, LIGHTING	18 each - see Luminaire
54	807-02352	WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/C	based on project length assume 2,600 LFT
55	807-06592	CONDUIT, STEEL, GALVANIZED, 2 IN.	crossing under pavement - say 4 crossings at an average of 70 each = 280 LFT
56	807-12199	LUMINAIRE, HIGH LUMEN ROADWAY	assume 4 on west leg; 4 on east leg; 4 on south leg and 2 on north leg; and 1 each on each quad or 18 each
57	807-12791	LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING	18 each - see Luminaire
58	807-83502	LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, ANCHOR BASE	18 each - see Luminaire
59	807-86810	SERVICE POINT, TYPE II	assume 1 each
60	807-86889	CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C	assume 35' per pole and 18 poles = 630 LFT
61	807-86910	CONNECTOR KIT, UNFUSED	18 each - see Luminaire
62	807-86915	CONNECTOR KIT, FUSED	18 each - see Luminaire
63	808-03439	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, WHITE, 24 IN.	used on the north and west legs. Use 48' per leg of 96 LFT total
64	808-11478	LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.	use at each leg - say 40' per leg total length of 160' assume a 2' on 2' off pattern and get 80 LFT
65	808-11698	TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.	assume yield lines on each approach at 25' each or 100 LFT
66	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	2020

Economic Evaluation - Form F5		Form 1 2 3 4 5 6 7 CDB Tool	
Alternative	600N & 700W - Long-Term Recommendation		
INPUT Collapse			
Number of Crashes (crash/period)			
Fatal and Incapacitating Injury Crashes	1		
Non-Incapacitating and Possible Injury Crashes	2		
Property Damage Only Crashes	8		
Road Type	City Non- Arterial Intersectic v		
Average Crash Costs (\$)			
Fatal and Incapacitating Injury Crashes	1699800		
Non-Incapacitating and Possible Injury Crashes	363300		
Property Damage Only Crashes	37300		
Crash Cost Year (yyyy)	2017		
First Year with Crash Data (yyyy)	2022		
Last Year with Crash Data (yyyy)	2024		
Present Year (yyyy)	2026		
Implementation Year (yyyy)	2030		
Inflation Rate (%)	2		
Interest Rate (%)	4		
Annual Traffic Growth Rate (%)	2		
Total Traffic Growth Factor	1.73		
Future Traffic Growth Period (years)	24		
COUNTERMEASURES Collapse All			
Countermeasure 1	[C] Copy		
Description	Single Lane Roundabout		
Crash Reduction Factors (%)			
Fatal and Incapacitating Injury Crashes	78		
Non-Incapacitating and Possible Injury Crashes	78		
Property Damage Only Crashes	78		
Number of Target Crashes (crash/period)			
Fatal and Incapacitating Injury Crashes	1		
Non-Incapacitating and Possible Injury Crashes	2		
Calculate New Save Reports Guidelines Equations General Improvements Table Service Life Table Load Crashes Open Save As Exit Help			
Alternatives Save Current Alternative Read Alternative 600N & 700W - Long-Term Recommendation			
Notes: The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes			
Location CR W 600 N & CR N 700 W GIS Post Analyst Date 3/27/2026 15 Comments Traffic Data: INDOT TCDS Crash Data: ARIES provided by IMPO			
Settings: Indiana local settings Version 4.1 600 & 700			

Property Damage Only Crashes	8
Countermeasure Service Life (years)	20
Countermeasure Capital Cost (\$)	4,299,640
Countermeasure Annual Maintenance Cost (\$)	0
Countermeasure Salvage Value (\$)	0
[+] Add	
OUTPUT	
Total Crashes Saved	2.463
FI Crashes Saved	0.131
NI Crashes Saved	0.318
PDO Crashes Saved	2.014
Equivalent Annual Benefit (\$)	620,759
Equivalent Annual Cost (\$)	270,439
Present Worth Benefit (\$)	15,518,985
Present Worth Cost (\$)	6,760,968
Net Annual Benefit (\$)	350,321
Present Worth Net Benefit (\$)	8,758,017
Benefit-Cost Ratio	2.30

Notes:

The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes

Location: CR W 600 N & CR N 700 W

GIS:

Post:

Analyst:

Date: 3/27/2026

Comments: Traffic Data: INDOT TCDS
Crash Data: ARIES provided by IMPO

Settings: Indiana local settings

Version 4.1 600 & 700

PREPARED FOR:



APPENDIX H:

Greenwood RSAs



CORRADINO LLC

ABBREVIATED ENGINEERING REVIEW FOR TRAFFIC SAFETY

		Date:	7/22/2026
		Des. No.:	n/a

Reviewer Information:	Agency/Firm Name: Corradino LLC
Primary Author: James Mark Rinehart	Agency: Indianapolis Metropolitan Planning Organization
Phone Numbers: (317) 488-2363	Email Address: jrinehart@corradino.com

Purpose of Review:

Corradino LLC was hired by the Indianapolis MPO (IMPO) to conduct a series of roadway safety audits at preselected intersections within its urbanized area. The goal was to identify existing safety issues and recommend near-term and long-term improvements to address them. Improvements may range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements, including intersection upgrades, multimodal infrastructure, and upgraded traffic signals, as needed. This form is suitable for Level 1 review. Of the three available levels of engineering review, this represents the least refined, lowest-intensity degree of analysis, development of essential project intent (outline of the certified course of action), scoring, and process documentation.

Project Location:

Route: Main St & Five Points Rd	District: Seymour	City: Greenwood	County: Johnson
Lat & Long (BOP)	39.615159 -86.044656	Lat & Long (EOP):	39.615159 -86.044656
IMPO: Indianapolis Metropolitan Planning Organization		Project Type: Roadway Safety Audit	

Location: The intersection of Main Street & Five Points Road

Existing Conditions:

The Main Street & Five Points Road intersection is an unsignalized T intersection with Five Points Rd "T-ing" into Main St from the north. All approaches have one travel lane. There are no designated turn lanes at the intersection. The SB approach has a Stop sign and a Stop Ahead sign with a flashing beacon approximately 500' north of the intersection. There is also a double yellow arrow sign with flashing beacons, located on the south side of the intersection, to notify SB vehicles of the "T" intersection. The posted speed limit for Main St at the intersection is 40mph. The posted speed limit for Five Points Rd at the intersection is 35mph.

There are no pedestrian facilities present at any of the approaches to the intersection.

Located in each quadrant of the intersection are:

- NW Quadrant: Agricultural field.
- NE Quadrant: Agricultural field and tree line.
- S Half: Single-family residency.

Corradino staff held a virtual meeting with IMPO and Greenwood staff on April 7, 2026, to review the Preliminary Findings Report, discuss past or upcoming projects at or near the intersection, and identify potential near- and long-term solutions for Corradino to test before the field check. Meeting minutes from the virtual meeting are available in **Attachment D**.

Corradino held a field check with the representatives from the City of Greenwood and the Greenwood Police Department on May 5, 2026, to provide a recap of the discussion held during the virtual meeting, share test results for the near-term and long-term solutions, and build consensus around a series of countermeasures for Corradino to cost as part of the final recommendations. The field check meeting minutes are available in **Attachment D**. During both the virtual kickoff meeting and field check, Greenwood staff noted the NW corner of the intersection is being considered for residential development. Discussions of it being both single-family and multifamily have been held, but no plans have been submitted.

Additionally, Greenwood staff noted that a large single-family neighborhood is being developed north of the intersection along Five Points Road. The new development is anticipated to significantly increase traffic on both Five Points Road and Main Street.

Traffic Operations:

- a) **Mobility/Congestion Performance:** According to AM Peak hour traffic hand count data collected on April 16, 2026, EB traffic entering the intersection was **235**. The WB traffic entering the intersection was **295**. The SB traffic entering the intersection was **117**. According to PM Peak hour traffic hand count data collected on April 16, 2026, EB traffic entering the intersection was **563**. The WB traffic entering the intersection was **309**. The SB traffic entering the intersection was **122**. Corradino adjusted the traffic counts seasonally by applying INDOT's most recent 2025 Traffic Adjustment Factors to account for seasonal and day-of-week variations and normalize the data. A **4.0%** forecasted annual growth rate, derived from the IMPO's TDM, was used to develop a future no-build traffic scenario and to test long-term build alternatives at the intersection. The design year for the long-term build alternatives was **2050**. Peak hour hand counts are available for review in **Attachment B**. Results from the traffic analysis are available in **Attachment C**.

	Eastbound		Westbound		Northbound		Southbound	
Alternative	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
AM Peak – 2026	A	7.9	A	0.0	-	-	B	10.6
PM Peak - 2026	A	7.8	A	0.0	-	-	B	12.0
AM Peak - 2050	A	8.6	A	0.0	-	-	C	16.4
PM Peak - 2050	A	8.6	A	0.0	-	-	D	33.2

- b) **Safety Performance / Crash Analysis:** According to available crash data from January 1, 2022, to December 31, 2024, there were **9** crashes associated with the study area. Of those crashes, **0** resulted in fatality, **1** resulted in incapacitating injuries, and **0** resulted in non-incapacitating injuries. See attached Crash Summary and output from RoadHAT 4.1 in **Attachment A**.

According to the collision diagram, the most notable trend at the intersection was the number of Rear End crashes (44%). Three of the four Rear End crashes were reported as EB vehicles slowing down to turn left onto Five Points Road when another vehicle struck them from behind. Per conversations with Greenwood staff, the number of vehicles turning left onto Five Points Road from Main Street is expected to increase due to the construction of a new single-family neighborhood north of the intersection.

There was one Right Angle crash reported at the intersection. It was the only reported injury-related crash. The collision diagram is available in **Attachment A**.

RoadHAT 4.1 was used to develop crash cost (ICC) and crash frequency (ICF) scores for the Main Street & Five Points Road Intersection. Results from the RoadHAT 4.1 analysis were as follows: ICC = **0.80**, ICF = **1.76**. The RoadHAT 4.1 analysis results are available in **Attachment A**.

Alternatives & Recommendations

During the field check with representatives from the City of Greenwood and Greenwood PD, crash data and traffic data were discussed while observing traffic patterns. Multiple maintenance-type improvements were identified in the field to address near-term safety needs at the intersection (striping, signage, etc.). Below are the Near- and Long-Term improvements discussed for the Main Street & Five Points Road intersection. Notes from the field check summarizing conversations are available for review in **Attachment D**.

Near-Term

- Add a second Stop sign on the left side of the SB approach, which would include a new stop sign, signpost, retroreflective tape for the signpost, and a new "Cross Traffic Does Not Stop" mounted on the signpost below the stop sign.
- Add a "Cross Traffic Does Not Stop" placard to the existing stop sign.
- Add retroreflective tape to the existing Stop sign post,
- Add Intersection Ahead signage along Main Street for both EB and WB traffic, notifying vehicles they are approaching the intersection with Five Points Road. Add retroreflective tape to the signposts.
- Restripe the intersection approaches and stop bar on Five Points Road.

Long-Term

- Construct a single-lane roundabout at the intersection.

Future Consideration

- No future considerations were discussed for the intersection.

Near-Term & Long-Term Cost Estimates for the Proposed Safety Improvements
Cost estimates for the near- and long-term improvements are available in Attachment E. <u>Near-Term Recommendation</u> PE - \$10,000 ROW - \$0 Utility CN - \$1,000 Railroad CN - \$0 Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$0 CN (including 10% contingency) - \$18,000 Near-Term Total - \$29,000 <u>Long-Term Recommendation</u> PE - \$399,000 ROW - \$40,000 Utility CN - \$575,000 Railroad CN - \$0 Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$332,500 CN (including 10% contingency) - \$3,325,000 Long-Term Total - \$4,671,500
Project Score: (for INDOT use)
Safety Program Score =
Miscellaneous Notes:
Attachments:
Attachment A: Preliminary Findings Report Attachment B: Traffic Counts Attachment C: Traffic Analysis Attachment D: Virtual Meeting Minutes & Field Check Minutes Attachment E: Cost Estimates & Schematics

Attachment A

Preliminary Findings

PRELIMINARY FINDINGS

Safety Analysis at Main St. & Five Points Rd.

Report Prepared for: IMPO & City of Greenwood

1. **Safety Analysis**

A crash data analysis was completed for the intersection of Main Street & Five Points Road (Study Area) in Greenwood, IN. This intersection is located on the easternmost city limits and will require coordination between the City of Greenwood and the Johnson County Highway Department. Before beginning the crash analysis, the project team followed these steps to clean the data:

- Received 2022-2024 crash data from the IMPO. Serious Injury and Fatal crashes had been cleaned by IMPO staff.
- Placed a 250' buffer around the Study Area to identify reported crashes near the intersection.
- Reviewed the police reports for each crash record identified within the 250' buffer.
- Identified and removed any crash records from the analysis that involved a collision with an animal in the roadway or occurred in a parking lot near the intersection.
- Reviewed the description in the reports to confirm the selected Manner of Collision & Crash Severity accurately reflected how the police officer described the crash.
- Exported the results from ArcGIS Pro into MS Excel.
- Created a collision diagram of the Study Area as well as summary tables of the crash records.
- Developed a crash cost (Icc) and crash frequency (Icf) for the Study Area using RoadHat 4.1.

Nine crashes were identified within the Study Area. One of the reported crashes resulted in Incapacitating injuries. There were no reported fatal crashes. The reported Incapacitating crash was a Right Angle crash where a southbound vehicle did not observe westbound traffic before entering the intersection and striking the oncoming vehicle. Other notable results near the Study Area include:

- 44% of the reported crashes within the Study Area were Rear End crashes.
- 33% of the reported crashes within the Study Area were Ran Off Road crashes.
- 56% of reported crashes occurred during the evening peak hours (4 pm-7 pm). 33% of report crashes occurred during Off-Peak travel times, and 11% of reported crashes occurred during the morning peak hours (6 am-9 am).
- 78% of reported crashes occurred in daylight hours and 22% in dark (not lighted) conditions.
- 67% of reported crashes occurred in wet or icy roadway surface conditions. The remaining 33% of reported crashes occurred on dry roadways.
- 44% of reported crashes occurred when the weather conditions were clear. The remaining 56% of reported crashes occurred in either Rainy or Sleet/Hail/Freezing Rain weather conditions.

Attached are the crash summary tables, a collision diagram, images of the intersection, and the results of the RoadHAT 4.1 analysis.

Crash Data Summary

Main Street & Five Points Road

2022-2024 Crash Summary	
TOTAL CRASHES	9
TOTAL INJURIES	2
PROPERTY DAMAGE ONLY	7
REFUSED TREATMENT	1
NON-INCAPACITATING	0
INCAPACITATING	1
FATAL	0

Summary of Primary Factors per Manner of Collision		
Primary Factors per Manner of Collision	Crashes	Percent
REAR END	4	44%
DRIVER DISTRACTED - EXPLAIN IN NARRATIVE	2	
OTHER (DRIVER) - EXPLAIN IN NARRATIVE	1	
FOLLOWING TOO CLOSELY	1	
RAN OFF ROAD	3	33%
SPEED TOO FAST FOR WEATHER CONDITIONS	1	
OVERCORRECTING/OVERSTEERING	1	
ROADWAY SURFACE CONDITION	1	
RIGHT TURN	1	11%
FAILURE TO YIELD RIGHT OF WAY	1	
RIGHT ANGLE	1	11%
DISREGARD SIGNAL/REG SIGN	1	
Total Crashes	9	100%

Summary of Crashes per Time of Day		
Time of Day	Crashes	Percent
Peak AM (6:00-9:00 AM)	1	11%
Peak PM (4:00-7:00 PM)	5	56%
Off Peak	3	33%
Total Crashes	9	100%

Summary of Crashes per Light Conditions		
Light Conditions	Crashes	Percent
DARK (NOT LIGHTED)	2	22%
DAYLIGHT	7	78%
Total Crashes	9	100%

Summary of Roadway Surface Conditions				
Manner of Collision	DRY	ICE	WET	Total Crashes
REAR END	2	1	1	4
RAN OFF ROAD			3	3
RIGHT TURN			1	1
RIGHT ANGLE	1			1
Total Crashes	3	1	5	9

Summary of Weather Conditions				
Manner of Collision	CLEAR	RAIN	SLEET/HAIL/ FREEZING RAIN	Total Crashes
REAR END	2	1	1	4
RAN OFF ROAD	1	2		3
RIGHT TURN		1		1
RIGHT ANGLE	1			1
Total Crashes	4	4	1	9

DIAGRAM OF
COLLISION
REPORTS

Main Street & Five Points Road

Study Period: 1/1/2022 to 12/31/2024

Location: Greenwood

INDOT District: SeymourCounty: Johnson

City/Town: Greenwood

Analyst: JMRQC: DC

Date: 3/18/2026



Intersection Images	Main Street & Five Points Road		
	Study Period: <u>1/1/2022 to 12/31/2024</u>	Location: <u>Greenwood</u>	
	INDOT District: <u>Seymour</u>	County: <u>Johnson</u>	City/Town: <u>Greenwood</u>



West Leg – Looking West



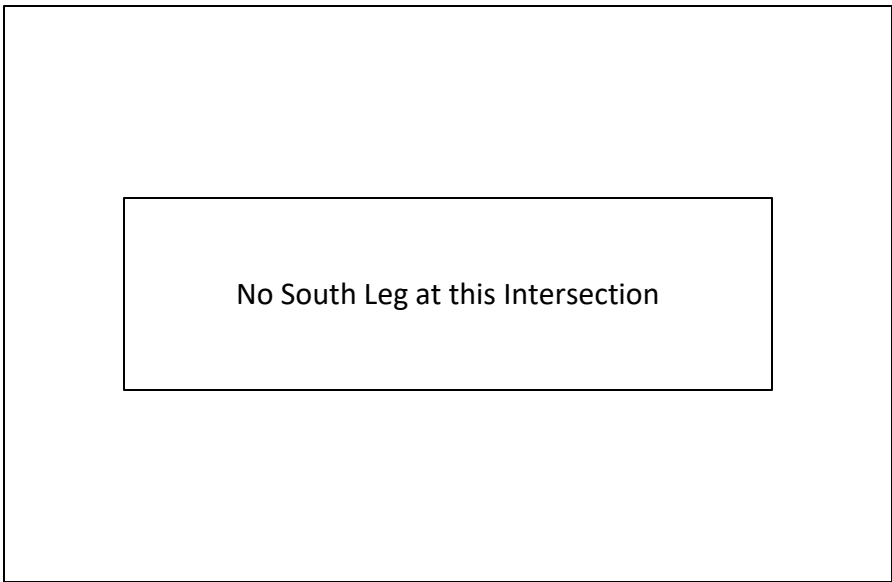
West Leg – Looking East



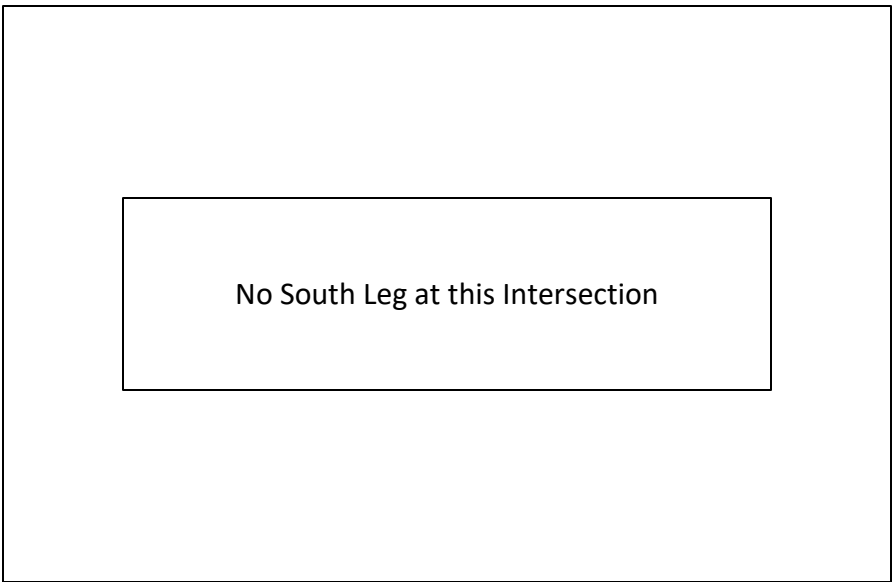
East Leg – Looking West



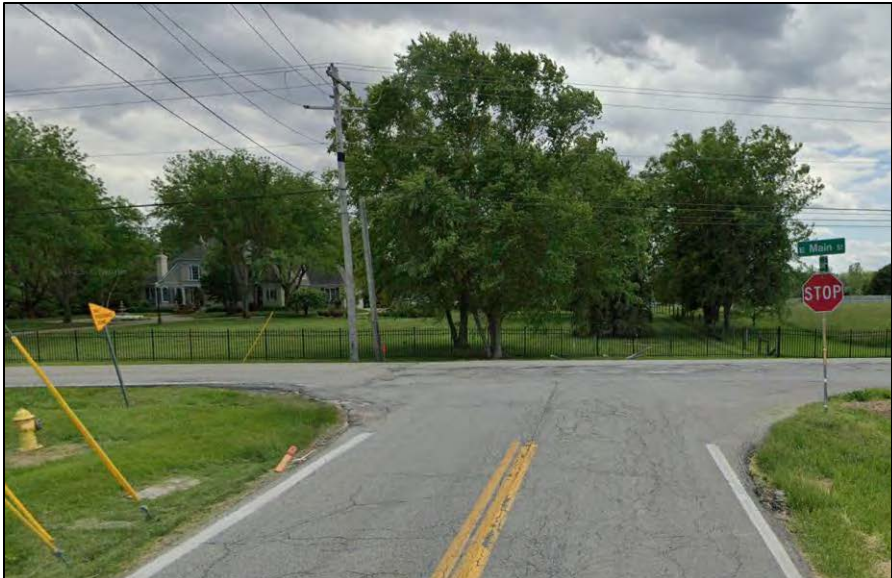
East Leg – Looking East



South Leg – Looking South



South Leg – Looking North



North Leg – Looking South



North Leg – Looking North

RoadHAT 4D	Index of Crash Frequency and Cost - Form F1		Page 1/2
Settings: Indiana local settings		Version: Version 4.1	
Location	Main Street & Five Points Road		
GIS			
Post			
Analyst	JMR		
Date	3/19/2026		
INPUT			
Road Facility Type	City Non- Arterial Intersection		
Busiest Road AADT (veh/day)	5150		
Crossing Road AADT (veh/day)	2166		
First Year with Crash Data (yyyy)	2022		
Last Year with Crash Data (yyyy)	2024		
Number of Crashes (crash/period)			
Fatal and Incapacitating Injury Crashes	1		
Non-Incapacitating and Possible Injury Crashes	0		
Property Damage Only Crashes	8		
Route or Road Type	City Non- Arterial Intersection		
Average Crash Costs (\$)			
Fatal and Incapacitating Injury Crashes	1699800		
Non-Incapacitating and Possible Injury Crashes	363300		
Property Damage Only Crashes	37300		
Crash Cost Year (yyyy)	2017		
OUTPUT			
Expected Crash Frequency (crash/year)			
Fatal and Incapacitating Injury Crashes	0.060		
Non-Incapacitating and Possible Injury Crashes	0.09		
Property Damage Only Crashes	0.59		
All Crashes	0.75		
Index of Crash Frequency	1.76		
Index of Crash Cost	0.80		

RoadHAT 4D	Index of Crash Frequency and Cost - Form F1		Page 2/2
Settings: Indiana local settings		Version: Version 4.1	
Location	Main Street & Five Points Road		
GIS			
Post			
Analyst	JMR		
Date	3/19/2026		
Comments: Traffic Counts: INDOT TCDS Crash Data: ARIES provided by IMPO Functional Class: IMPO FC Web Map			

Attachment B Traffic Counts

Main St & Five Points Rd

AM Peak (Thursday April 16th, 2026)

Time	Type	Southbound			Eastbound			Westbound			INT Total
		Left	Right	App Total	Left	Through	App Total	Through	Right	App Total	
7:15 - 7:30	Total	9	10	19	9	30	39	44	5	49	107
	Pass-Car	9	10	19	8	28	36	43	5	48	103
	Trucks	0	0	0	1	2	3	1	0	1	4
7:30 - 7:45	Total	4	15	19	20	30	50	41	6	47	116
	Pass-Car	4	14	18	19	26	45	39	6	45	108
	Trucks	0	1	1	1	4	5	2	0	2	8
7:45 - 8:00	Total	7	24	31	8	23	31	66	5	71	133
	Pass-Car	6	22	28	6	19	25	65	5	70	123
	Trucks	1	2	3	2	4	6	1	0	1	10
8:00 - 8:15	Total	3	11	14	15	23	38	41	3	44	96
	Pass-Car	3	11	14	15	21	36	41	3	44	94
	Trucks	0	0	0	0	2	2	0	0	0	2
8:15 - 8:30	Total	4	12	16	8	25	33	40	5	45	94
	Pass-Car	4	11	15	7	24	31	38	5	43	89
	Trucks	0	1	1	1	1	2	2	0	2	5
8:30 - 8:45	Total	6	12	18	10	34	44	31	8	39	101
	Pass-Car	6	12	18	8	28	36	31	8	39	93
	Trucks	0	0	0	2	6	8	0	0	0	8
Total											647

PM Peak (Thursday April 16th, 2026)

Time	Type	Southbound			Eastbound			Westbound			INT Total
		Left	Right	App Total	Left	Through	App Total	Through	Right	App Total	
4:15 - 4:30	Total	5	13	18	14	63	77	35	10	45	140
	Pass-Car	5	12	17	14	61	75	33	10	43	135
	Trucks	0	1	1	0	2	2	2	0	2	5
4:30 - 4:45	Total	7	13	20	24	75	99	35	8	43	162
	Pass-Car	7	9	16	24	72	96	35	8	43	155
	Trucks	0	4	4	0	3	3	0	0	0	7
4:45 - 5:00	Total	9	11	20	22	68	90	33	10	43	153
	Pass-Car	9	11	20	22	64	86	30	10	40	146
	Trucks	0	0	0	0	4	4	3	0	3	7
5:00 - 5:15	Total	8	13	21	16	86	102	44	8	52	175
	Pass-Car	8	13	21	16	85	101	43	7	50	172
	Trucks	0	0	0	0	1	1	1	1	2	3
5:15 - 5:30	Total	10	17	27	19	67	86	48	12	60	173
	Pass-Car	9	17	26	19	66	85	47	12	59	170
	Trucks	1	0	1	0	1	1	1	0	1	3
5:30 - 5:45	Total	4	12	16	27	82	109	55	11	66	191
	Pass-Car	4	12	16	27	78	105	55	11	66	187
	Trucks	0	0	0	0	4	4	0	0	0	4
Total											994

Attachment C Traffic Analysis

			Existing 2026									
Intersection	Type	MOE	2026 AM Peak Hour					2026 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Main Street & Five Points Rd	TWSC	LOS	A	A	---	B	N/A	A	A	---	B	N/A
		Delay (sec/veh)	7.9	0.0	---	10.6	2.8	7.8	0.0	---	12.0	2.4
		Queue Length 95th (ft)	2	0	---	8		4	0.0	---	10	
		v/c Ratio	0.04	0.00	---	0.12		0.06	0.00	---	0.14	
		LOS-F Movements	---	---	---	---		---	---	---	---	

			No-Build 2050									
Intersection	Type	MOE	2050 AM Peak Hour					2050 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Main Street & Five Points Rd	TWSC	LOS	A	A	---	C	N/A	A	A	---	D	N/A
		Delay (sec/veh)	8.6	0.0	---	16.4	4.0	8.6	0.0	---	33.2	5.1
		Queue Length 95th (ft)	6	0.0	---	30		10	0.0	---	66	
		v/c Ratio	0.10	0.00	---	0.35		0.14	0.00	---	0.57	
		LOS-F Movements	---	---	---	---		---	---	---	---	

			Build 2050									
Intersection	Type	MOE	2050 AM Peak Hour					2050 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Main Street & Five Points Rd	RAB	LOS	A	A	---	A	A	A	A	---	A	A
		Delay (sec/veh)	6.1	4.4	---	6.5	5.4	5.6	4.7	---	6.6	5.4
		Queue Length 95th (ft)	42	50	---	23		125	53	---	20	
		v/c Ratio	0.25	0.33	---	0.17		0.55	0.34	---	0.15	
		LOS-F Movements	---	---	---	---		---	---	---	---	

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	46	94	171	17	20	53
Future Vol, veh/h	46	94	171	17	20	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	8	11	2	0	4	5
Mvmt Flow	54	111	201	20	24	62
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	221	0	-	0	430	211
Stage 1	-	-	-	-	211	-
Stage 2	-	-	-	-	219	-
Critical Hdwy	4.18	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.272	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	1313	-	-	-	578	821
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	813	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1313	-	-	-	553	821
Mov Cap-2 Maneuver	-	-	-	-	553	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	813	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	2.58	0		10.63		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	591	-	-	-	725	
HCM Lane V/C Ratio	0.041	-	-	-	0.118	
HCM Ctrl Dly (s/v)	7.9	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	270	160	36	28	47
Future Vol, veh/h	75	270	160	36	28	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	3	2	3	0
Mvmt Flow	82	297	176	40	31	52

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	215	0	0 657 196
Stage 1	-	-	- 196 -
Stage 2	-	-	- 462 -
Critical Hdwy	4.1	-	- 6.43 6.2
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.2	-	- 3.527 3.3
Pot Cap-1 Maneuver	1367	-	- 428 851
Stage 1	-	-	- 835 -
Stage 2	-	-	- 632 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1367	-	- 397 851
Mov Cap-2 Maneuver	-	-	- 397 -
Stage 1	-	-	- 775 -
Stage 2	-	-	- 632 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	1.7	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	391	-	-	-	596
HCM Lane V/C Ratio	0.06	-	-	-	0.138
HCM Ctrl Dly (s/v)	7.8	0	-	-	12
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	90	184	334	33	39	104
Future Vol, veh/h	90	184	334	33	39	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	8	11	2	0	4	5
Mvmt Flow	106	216	393	39	46	122

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	432	0	0 841 412
Stage 1	-	-	- 412 -
Stage 2	-	-	- 428 -
Critical Hdwy	4.18	-	- 6.44 6.25
Critical Hdwy Stg 1	-	-	- 5.44 -
Critical Hdwy Stg 2	-	-	- 5.44 -
Follow-up Hdwy	2.272	-	- 3.536 3.345
Pot Cap-1 Maneuver	1096	-	- 332 633
Stage 1	-	-	- 664 -
Stage 2	-	-	- 653 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1096	-	- 296 633
Mov Cap-2 Maneuver	-	-	- 296 -
Stage 1	-	-	- 591 -
Stage 2	-	-	- 653 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	2.84	0	16.38
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	591	-	-	-	483
HCM Lane V/C Ratio	0.097	-	-	-	0.348
HCM Ctrl Dly (s/v)	8.6	0	-	-	16.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.5

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	146	527	312	70	55	92
Future Vol, veh/h	146	527	312	70	55	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	3	2	3	0
Mvmt Flow	160	579	343	77	60	101

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	420	0	0 1281 381
Stage 1	-	-	- - 381 -
Stage 2	-	-	- - 900 -
Critical Hdwy	4.1	-	- - 6.43 6.2
Critical Hdwy Stg 1	-	-	- - 5.43 -
Critical Hdwy Stg 2	-	-	- - 5.43 -
Follow-up Hdwy	2.2	-	- - 3.527 3.3
Pot Cap-1 Maneuver	1150	-	- - 182 670
Stage 1	-	-	- - 688 -
Stage 2	-	-	- - 395 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1150	-	- - 144 670
Mov Cap-2 Maneuver	-	-	- - 144 -
Stage 1	-	-	- - 547 -
Stage 2	-	-	- - 395 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	1.87	0	33.24
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	390	-	-	-	284
HCM Lane V/C Ratio	0.139	-	-	-	0.57
HCM Ctrl Dly (s/v)	8.6	0	-	-	33.2
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.5	-	-	-	3.3

LANE SUMMARY

 **Site: [3.3] 2050 AM (Main St & Five Points Rd)**
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance															
	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh Dist] ft		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Main St															
Lane 1 ^d	432	1.8	432	1.8	1318	0.328	100	4.4	LOS A	2.0	50.2	Full	1600	0.0	0.0
Approach	432	1.8	432	1.8		0.328		4.4	LOS A	2.0	50.2				
North: Five Points Rd															
Lane 1 ^d	168	4.7	168	4.7	1016	0.166	100	6.5	LOS A	0.9	23.0	Full	1600	0.0	0.0
Approach	168	4.7	168	4.7		0.166		6.5	LOS A	0.9	23.0				
West: Main St															
Lane 1 ^d	322	10.0	322	10.0	1273	0.253	100	6.1	LOS A	1.6	42.0	Full	1600	0.0	0.0
Approach	322	10.0	322	10.0		0.253		6.1	LOS A	1.6	42.0				
All Vehicles	922	5.2	922	5.2		0.328		5.4	LOS A	2.0	50.2				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)										
East: Main St										
Mov.	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From E					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	W	N			veh/h	v/c	%	%	No.	
Lane 1	393	39	432	1.8	1318	0.328	100	NA	NA	
Approach	393	39	432	1.8		0.328				
North: Five Points Rd										
Mov.	L2	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From N					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	E	W			veh/h	v/c	%	%	No.	
Lane 1	46	122	168	4.7	1016	0.166	100	NA	NA	
Approach	46	122	168	4.7		0.166				
West: Main St										
Mov.	L2	T1	Total	%HV		Deg.	Lane	Prob.	Ov.	
From W					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	N	E			veh/h	v/c	%	%	No.	
Lane 1	106	216	322	10.0	1273	0.253	100	NA	NA	

Approach	106	216	322	10.0	0.253
	Total	%HV	Deg.Satn (v/c)		
All Vehicles	922	5.2	0.328		

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis													
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec	Merge Queue [Veh	Queue Dist] ft
There are no Exit Short Lanes for Merge Analysis at this Site.													

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
East: Main St				
Lane 1	0.0	0.0	0.0	0.0
North: Five Points Rd				
Lane 1	0.0	0.0	0.0	0.0
West: Main St				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

 **Site: [3.4] 2050 PM (Main St & Five Points Rd)**
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance															
	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh Dist] ft		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Main St															
Lane 1 ^d	420	2.8	420	2.8	1251	0.335	100	4.7	LOS A	2.1	53.4	Full	1600	0.0	0.0
Approach	420	2.8	420	2.8		0.335		4.7	LOS A	2.1	53.4				
North: Five Points Rd															
Lane 1 ^d	162	1.1	162	1.1	1104	0.146	100	6.6	LOS A	0.8	20.0	Full	1600	0.0	0.0
Approach	162	1.1	162	1.1		0.146		6.6	LOS A	0.8	20.0				
West: Main St															
Lane 1 ^d	740	2.3	740	2.3	1357	0.545	100	5.6	LOS A	4.9	124.9	Full	1600	0.0	0.0
Approach	740	2.3	740	2.3		0.545		5.6	LOS A	4.9	124.9				
All Vehicles	1321	2.3	1321	2.3		0.545		5.4	LOS A	4.9	124.9				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)										
East: Main St										
Mov.	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From E					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	W	N			veh/h	v/c	%	%	No.	
Lane 1	343	77	420	2.8	1251	0.335	100	NA	NA	
Approach	343	77	420	2.8		0.335				
North: Five Points Rd										
Mov.	L2	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From N					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	E	W			veh/h	v/c	%	%	No.	
Lane 1	60	101	162	1.1	1104	0.146	100	NA	NA	
Approach	60	101	162	1.1		0.146				
West: Main St										
Mov.	L2	T1	Total	%HV		Deg.	Lane	Prob.	Ov.	
From W					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	N	E			veh/h	v/c	%	%	No.	
Lane 1	160	579	740	2.3	1357	0.545	100	NA	NA	

Approach	160	579	740	2.3	0.545
	Total	%HV	Deg.Satn (v/c)		
All Vehicles	1321	2.3	0.545		

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis													
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec	Merge Queue [Veh	Queue Dist] ft
There are no Exit Short Lanes for Merge Analysis at this Site.													

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
East: Main St				
Lane 1	0.0	0.0	0.0	0.0
North: Five Points Rd				
Lane 1	0.0	0.0	0.0	0.0
West: Main St				
Lane 1	0.0	0.0	0.0	0.0

Attachment D

Virtual Meeting Minutes & Field Check Minutes

IMPO Safety Study: City of Greenwood RSA Location

Date: April 7, 2026

Time: 1:30 – 2:00 PM

Location: MS Teams

Attendees:

Paul Peoni – City of Greenwood

Deputy Chief Holtzleiter – City of Greenwood PD (*not present*)

Jennifer Dunn, IMPO

James Mark Rinehart, Corradino LLC

David Cleveland, Corradino LLC

Agenda

1. Introductions

- a. Corradino staff kicked off the meeting with a round of introductions for all the participants on the Teams call.
- b. Corradino staff then shared that the purpose of the kick-off meeting was to spend some time talking with City of Greenwood staff about the two RSA locations they selected to study as part of the Indianapolis MPO's (IMPO) Safety Study. The information from the kick-off meeting will be considered as Corradino completes the safety and traffic analysis and begins identifying potential countermeasures for the two RSA locations. Corradino then asked the Greenwood staff to provide an overview of why they selected their two RSA locations, such as observed safety concerns, changes in traffic related to new development, or existing plans or studies that have identified long-term improvements at the RSA sites.

2. Overview of RSA locations

a. Main Street & Five Points Road Intersection

- i. Greenwood staff shared that the majority of the City of Greenwood has been built to its western and northern city limits. There is some development in the southwest portions of the city, but most new development is on the east side of Greenwood, centered on the Main Street & Five Points Road intersection.
 1. Greenwood staff referenced multiple residential planned unit developments that were either currently under construction, in the planning phases, or have been discussed between Main Street & County Line Road along Five Points Road. These planned unit developments were mostly single-family neighborhoods. Still, the northwest corner of the Main Street & Five Points Road

intersection was being proposed for both single-family and multifamily residential development.

- a. There are approximately 500 homes currently approved for construction, with another 100-150 homes or more under consideration.
2. Greenwood staff anticipates traffic will grow significantly at the Main Street & Five Points Road intersection over the next 5-10 years.
3. Greenwood staff also noted there has been an initiative from the Mayor's office to improve Main Street from the eastern limits of the City into downtown Greenwood. The City will make many improvements to Main Street from downtown to just east of the I-65 interchange, and Greenwood staff noted a potential INDOT interchange project that would include improvements to Main Street at the interchange.
4. Greenwood staff noted that the City's Comprehensive plan identified Main Street & Five Points Road as a potential location for a roundabout, to accommodate the forecasted population growth on the east side of Greenwood.
5. Greenwood staff noted that they were not familiar with the crash history at the Main Street & Five Points Road intersection. Because the land use changes from urban/suburban to rural as one travels east on Main Street, Greenwood staff believed speeding may be an issue near the intersection with Five Points Road.
 - a. Corradino staff shared a draft copy of the Preliminary Findings Report with Greenwood staff to show the crash history at the Main Street & Five Points Road intersection for the years 2022-2024. Results showed that crash patterns were increasing at the intersection each year, and the most common crash type was Rear-End crashes, in which eastbound vehicles stopped at the intersection to turn north were struck by a vehicle.
 - b. Greenwood staff agreed this increase in crashes, and the crash pattern makes sense, because several new single-family homes were constructed in late 2023 and 2024. So, the increase in traffic at the Main Street & Five Points Road intersection has started.
 - c. Corradino staff noted the Preliminary Findings Report is still in draft form, but will be finalized and shared with Greenwood staff before the field check for their review.

b. Worthsville Road & Emerson Avenue Intersection

- i. Greenwood staff shared that Worthsville Road had been identified as a key east/west corridor in the northern portion of Johnson County. Worthsville Road was reconstructed from Honey Creek Road to CR 200 E by the City of Greenwood over the last 10-15 years. Additionally, INDOT reconstructed Worthsville Road from CR 200 E to Collins Road as part of an I-65 interchange project.
- ii. The improvements along Worthsville Road have included three roundabouts, a diverging diamond interchange at I-65, Road widening to include two travel lanes, a center median, and a shared-use path and/or sidewalk along both sides of the roadway.
- iii. Greenwood staff noted there are approximately 300 single-family homes planned for development south of Worthsville Road along Emerson Avenue and Pushville Road. They believe the new residential development will increase traffic along Emerson Avenue as people try to access the I-65 interchange at Worthsville Road.
- iv. Additionally, Greenwood staff noted that they observe local traffic using Emerson Avenue as a cut-through to access either the I-65 interchange or Endress+Hauser USA, a major employer in Greenwood, versus going north on US 31 and turning east on Worthsville Road. The cut-through traffic is also believed to be another factor contributing to congestion on Emerson Avenue.
 1. Another factor contributing to the growing traffic is Endress+Hauser USA, a major employer in Greenwood located along Worthsville Road, a half-mile west of Emerson Avenue. Endress+Hauser USA's property has a south entrance/exit onto Pushville Road, which is used to access Emerson Avenue and avoid traffic on Worthsville Road.
 2. Another influencing factor is the two public schools located a quarter-mile east, at the Worthsville Road & Sheek Road intersection.
- v. Greenwood staff noted that the City's Comprehensive plan identified Worthsville Road & Emerson Avenue as a potential location for a roundabout, to accommodate the forecasted population growth on the south side of Greenwood.
- vi. Corradino shared draft results from the Preliminary Findings report with Greenwood staff for the Worthsville Road & Emerson Avenue intersection. The preliminary results indicated several crashes involved traffic trying to turn west from Emerson Avenue, which were unable to cross over traffic safely, or attempting to turn east onto Worthsville Road, and misjudging the amount of time they had to make the right

turn. In summary, the crash history appeared to accurately reflect the traffic patterns Greenwood staff noted, due to the increase in residential development along Emerson Avenue, and the use of Emerson Avenue as a cut-through route.

1. Corradino did note there was one injury-related crash involving a southbound left-turning vehicle and a pedestrian crossing over Emerson Avenue in the crosswalk.

3. Preliminary Findings Reports

- a. Corradino staff walked through the preliminary findings reports, summarizing the crash history and patterns about both RSA locations. The draft report was shared with IMPO staff for review and will then be updated and shared with Greenwood staff before the field check.

4. Traffic Counts

- a. Corradino staff asked Greenwood staff if they had recent traffic counts available for either RSA location.
- b. Greenwood staff said they did not have any recent traffic counts at either location.
- c. Indianapolis MPO noted that they have a license with the SaaS, Replica, which will be able to provide traffic counts, in case traffic capacity analysis is needed for either RSA site.

5. Next Steps

- a. Finalize Preliminary Findings Reports.
- b. Schedule Field Checks.
 - i. Corradino sent a follow-up email to Greenwood staff on 4/8/2026 to schedule a field check with them between 5/1/2026 and 5/8/2026.

Field Check Notes for RSA at Main Street & Five Points Road

				Date: 7/22/2026	
				Des. No.: n/a	
Reviewer Information:			Agency/Firm Name: Corradino LLC		
Primary Author: James Mark Rinehart			Agency: Indianapolis Metropolitan Planning Organization		
Phone Numbers: (317) 488-2363			Email Address: jrinehart@corradino.com		
Attendees:					
- Paul Peoni, Greenwood - James Mark Rinehart, Corradino - Jason Holtzleiter, Greenwood, PD - David Cleveland, Corradino					
Purpose of Field Check:					
The purpose of this field check was to review the crash history at the Main Street & Five Points Road intersection, evaluate the current roadway conditions, observe traffic patterns, and collaborate with representatives from Local Public Agencies (LPA) and Law Enforcement to identify safety countermeasures. Participants at the field check were provided with a packet summarizing crash patterns at the intersection, peak-hour traffic volumes with turning movement counts, and a Google Earth image estimating the impact of a roundabout at the intersection, if selected as a recommended long-term improvement. The goal of the field check was to identify near-term and long-term improvements and build consensus with the LPAs and Local Law Enforcement on the recommendations. Recommendations from the field check will be used as the final recommendations for the RSA and included in the IMPO's Safety Study.					
Project Location:					
Location: Intersection of Main Street & Five Points Road					
INDOT District: Seymour			City: Greenwood	County: Johnson	
Lat & Long (BOP)	39.615159	-86.044656	Urban/Rural – URBAN		Functional Class of Major Roadway: Minor Arterial
Traffic Control Type: Stop Controlled "T" Intersection			Posted Speed Limit: Main St. – 40mph; Five Points Rd. – 35mph		
Site Observations					
- Corradino provided an overview of the crash history at the intersection. The most notable crash types reported were rear-end crashes and run-off-road crashes. These two crash types accounted for seven of the nine crashes at the intersection. - Greenwood staff and Greenwood PD present at the field check confirmed that the running off-road crashes are more common, especially when traveling south to the intersection, due to it being a "T" intersection. They confirmed that rear-end crashes are due to cars not slowing down or stopping when following an EB or WB vehicle that is turning onto Five Points Road. - For the SB approach, there is a Stop Ahead sign with a flashing beacon approximately 500' north of the intersection. There is also a double arrow sign with a flashing beacon, along the south side of Main Street and centered for the "T" intersection, further warning SB Five Points Road motorists of the stop condition. A suggestion provided by Greenwood staff was to include Intersection Ahead signs notifying of the upcoming intersection along the EB and WB intersection approaches. - Other near-term improvements suggested were to update the worn-out roadway striping along the intersection and include a second SB stop sign in the NE corner of the intersection. - Greenwood staff provided a printout of their Comprehensive Plan map that identified roadway improvements throughout the City of Greenwood. The intersection at Main Street & Five Point Road was identified as a future					

roundabout location. Greenwood staff noted that the northwest corner of the intersection is available for redevelopment. Over 500 new homes have been constructed in a new subdivision just north of the intersection. Traffic volumes at the intersection are expected to continue growing quickly, which could require a long-term infrastructure improvement project.

Potential Alternatives Discussed

Near-Term

- Add a second Stop sign on the left side of the SB approach, which would include a new stop sign, signpost, retroreflective tape for the signpost, and a new “Cross Traffic Does Not Stop” mounted on the signpost below the stop sign.
- Add “Cross Traffic Does Not Stop” placard to the existing stops sign.
- Add retroreflective tape to the existing Stop signpost,
- Add Intersection Ahead signage along Main Street for both EB and WB traffic notifying vehicles they are approaching the intersection with Five Points Road. Add retroreflective tape to the signposts.
- Restripe the intersection approaches and stop bar on Five Points Road

Long-Term

- Construct a roundabout at the intersection. Further traffic analysis will determine the size of the roundabout (i.e., single-lane or dual-lane).

Future Consideration

- No future considerations discussed for the intersection.

Consensus on Key Items for Alternatives

- Consensus was met with City of Greenwood staff during the field check to recommend the Near – and Long-Term improvements for the RSA.

Attachment E

Cost Estimates & Schematics

Near-Term Improvements
Main Street & Five Point Road



PRELIMINARY COST ESTIMATE - NEAR TERM
Main Street & Five Points Road

LINE ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	110-01001	MOBILIZATION AND DEMOBILIZATION	1	LS	\$ 5,000.00	\$ 5,000.00
2	801-06775	MAINTAINING TRAFFIC	1	LS	\$ 2,250.00	\$ 2,250.00
3	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	42	LFT	\$ 31.00	\$ 1,302.00
4	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	26	SFT	\$ 45.00	\$ 1,170.00
5	802-11648	SIGN POST, TYPE	3	EACH	\$ 125.00	\$ 375.00
6	808-06703	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	2450	LFT	\$ 1.25	\$ 3,062.50
7	808-75240	LINE, THERMOPLASTIC, BROKEN, YELLOW, 4 IN.	100	LFT	\$ 2.50	\$ 250.00
8	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	2150	LFT	\$ 1.25	\$ 2,687.50
9	808-75297	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN.	12	LFT	\$ 14.00	\$ 168.00
TOTAL						\$ 16,265.00

CONSTRUCTION TOTAL	\$16,000.00
CONTINGENCY (10%)	\$2,000.00
OVERALL PROJECT TOTAL	\$18,000.00

This cost estimate makes the following assumptions:
1.) Unit price estimates based on stand-alone project

Project Phases		
Task No.	Task	Cost
1	Preliminary Engineering	\$ 10,000
2	Right of Way	\$ -
3	Utility CN	\$ 1,000
4	Railroad CN	\$ -
5	Construction Inspection/Testing	\$ -
TOTAL		\$ 11,000

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

Signature Gary L. Yellig

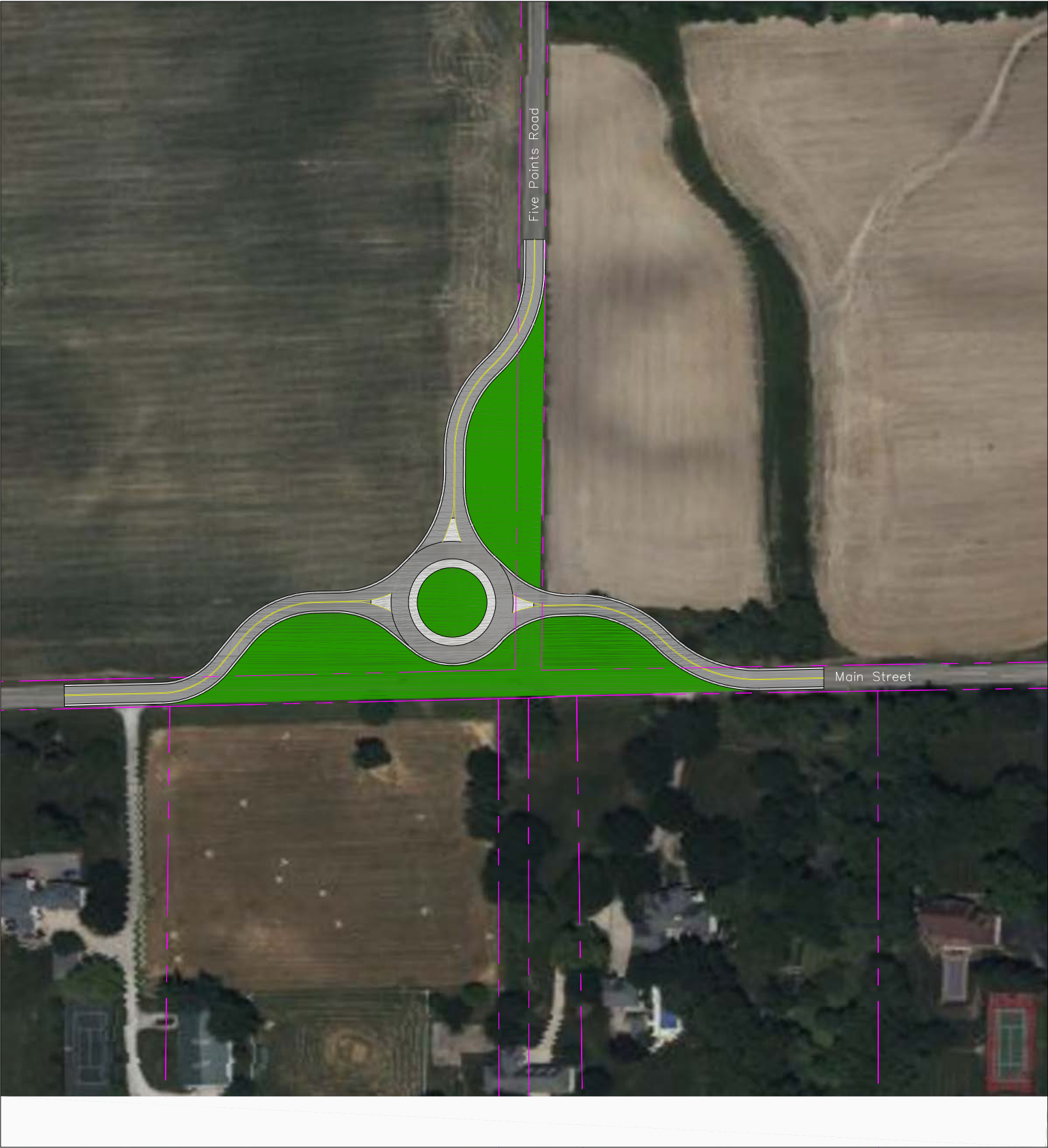
Todd Johnson
Estimate Completed By
6/5/2026
Date



ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - NEAR TERM
Main Street & Five Points Road

LINE ITEM	ITEM NO.	DESCRIPTION	NOTES
1	110-01001	MOBILIZATION AND DEMOBILIZATION	
2	801-06775	MAINTAINING TRAFFIC	
3	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	for the Stop sign. And 2 for the T Intersection say 42 LFT
4	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	for W4-4P Cross Traffic Does Not Stop (24" by 12") and T Intersection sign (W2-2) 30" by 30"; Stop sign(R1-1) 30" by 30" = 5.18 sft; (W16-8P) Five Point Rd sign (8"x3'-4") total say 26 SFT
5	802-11648	SIGN POST, TYPE	use this item for reflective strips on existing and new sign posts (assume 7 ft per each post) 12-Red and 4-Yellow for a total of 16 each
6	808-06703	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	main e=880 main w=880 5points=780 =2540
7	808-75240	LINE, THERMOPLASTIC, BROKEN, YELLOW, 4 IN.	5 points=100 skips
8	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	main e=880 main w=880 5points=390 =2150
9	808-75297	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN.	TOTAL =12

Long-Term Improvements (Possible Roundabout Layout) Main Street & Five Point Road



PRELIMINARY COST ESTIMATE - LONG TERM
Main Street & Five Points Road

LINE ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	105-06845	CONSTRUCTION ENGINEERING	1	LS	\$ 60,000.00	\$ 60,000.00
2	110-01001	MOBILIZATION AND DEMOBILIZATION	1	LS	\$ 187,000.00	\$ 187,000.00
3	201-52370	CLEARING RIGHT-OF-WAY	1	LS	\$ 40,000.00	\$ 40,000.00
4	202-02240	PAVEMENT REMOVAL	5,600	SYS	\$ 70.00	\$ 392,000.00
5	203-02000	EXCAVATION, COMMON	1,500	CYS	\$ 80.00	\$ 120,000.00
6	203-02055	EMBANKMENT	8,000	CYS	\$ 50.00	\$ 400,000.00
7	205-12108	STORMWATER MANAGEMENT BUDGET	40,000	DOL	\$ 1.00	\$ 40,000.00
8	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	1	LS	\$ 15,000.00	\$ 15,000.00
9	205-12618	SWQCP PREPARATION	1	LS	\$ 10,000.00	\$ 10,000.00
10	207-08264	SUBGRADE TREATMENT, TYPE II	97	SYS	\$ 30.00	\$ 2,910.00
11	207-09935	SUBGRADE TREATMENT, TYPE IC	3,712	SYS	\$ 45.00	\$ 167,040.00
12	211-09264	STRUCTURE BACKFILL, TYPE 1	1,150	CYS	\$ 84.00	\$ 96,600.00
13	214-11796	GEOGRID, TYPE IB	44	SYS	\$ 4.00	\$ 176.00
14	302-07455	DENSE GRADED SUBBASE	16	CYS	\$ 140.00	\$ 2,240.00
15	306-08043	MILLING, TRANSITION	670	SYS	\$ 10.00	\$ 6,700.00
16	401-000005	QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm	307	TON	\$ 100.00	\$ 30,700.00
17	401-000032	QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm	511	TON	\$ 110.00	\$ 56,210.00
18	401-000046	QC/QA-HMA, 2, 58S, BASE, 25.0 mm	1,225	TON	\$ 110.00	\$ 134,750.00
19	401-000062	QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm	871	TON	\$ 150.00	\$ 130,650.00
20	401-11526	JOINT ADHESIVE	3,314	LFT	\$ 1.00	\$ 3,314.00
21	401-12439	VOID REDUCING ASPHALT MEMBRANE FOR HMA	3,314	LFT	\$ 7.00	\$ 23,198.00
22	406-05520	ASPHALT FOR TACK COAT	1	TON	\$ 750.00	\$ 750.00
23	502-06327	PCCP, 10 IN.	315	SYS	\$ 200.00	\$ 63,000.00
24	605-02493	CURB, ISLAND CONCRETE	92	SYS	\$ 150.00	\$ 13,800.00
25	605-06120	CURB, CONCRETE	240	LFT	\$ 100.00	\$ 24,000.00
26	605-06121	CURB, CONCRETE, TYPE B	315	LFT	\$ 75.00	\$ 23,625.00
27	605-06140	CURB AND GUTTER, CONCRETE	4,040	LFT	\$ 90.00	\$ 363,600.00
28	610-08446	PCCP FOR APPROACHES, 6 IN.	53	SYS	\$ 113.00	\$ 5,989.00
29	610-09108	PCCP FOR APPROACHES, 9 IN.	44	SYS	\$ 120.00	\$ 5,280.00
30	611-08232	MAILBOX ASSEMBLY, RESET, SINGLE	1	EACH	\$ 400.00	\$ 400.00
31	616-06451	RIPRAP, UNIFORM	45	TON	\$ 140.00	\$ 6,300.00
32	616-12248	GEOTEXTILE FOR RIPRAP, TYPE 2A	70	SYS	\$ 7.00	\$ 490.00
33	621-01004	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	4	EACH	\$ 800.00	\$ 3,200.00
34	621-06545	FERTILIZER	1	TON	\$ 1,200.00	\$ 1,200.00
35	621-06553	SEED MIXTURE, TYPE R	420	LBS	\$ 40.00	\$ 16,800.00
36	621-06565	MULCHING MATERIAL	4	TON	\$ 600.00	\$ 2,400.00
37	621-06575	SODDING, NURSERY	1,170	SYS	\$ 65.00	\$ 76,050.00
38	621-06570	TOPSOIL	1,075	CYS	\$ 140.00	\$ 150,500.00
39	626-000206	STORMWATER TREATMENT UNIT, TYPE D	1	EACH	\$ 100,000.00	\$ 100,000.00
40	715-05048	PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.	3,500	LFT	\$ 18.00	\$ 63,000.00
41	715-05053	PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.	260	LFT	\$ 35.00	\$ 9,100.00
42	715-05149	PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.	390	LFT	\$ 95.00	\$ 37,050.00
43	715-05151	PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.	1,200	LFT	\$ 115.00	\$ 138,000.00
44	715-05152	PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.	1,200	LFT	\$ 130.00	\$ 156,000.00
45	715-05154	PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.	400	LFT	\$ 140.00	\$ 56,000.00
46	718-12306	GEOTEXTILE FOR UNDERDRAINS, TYPE 1B	2,400	SYS	\$ 7.00	\$ 16,800.00
47	718-52610	AGGREGATE FOR UNDERDRAINS	900	CYS	\$ 110.00	\$ 99,000.00
48	720-45045	INLET, TYPE J10	13	EACH	\$ 4,500.00	\$ 58,500.00
49	720-45410	MANHOLE, TYPE C4	13	EACH	\$ 6,500.00	\$ 84,500.00
50	720-90349	MANHOLE, TYPE C8	4	EACH	\$ 6,500.00	\$ 26,000.00
51	801-06775	MAINTAINING TRAFFIC	1	LS	\$ 145,000.00	\$ 145,000.00
52	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	168	LFT	\$ 31.00	\$ 5,208.00
53	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	65	SFT	\$ 45.00	\$ 2,925.00
54	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	12	SFT	\$ 50.00	\$ 600.00
55	807-02191	HANDHOLE, LIGHTING	17	EACH	\$ 2,000.00	\$ 34,000.00
56	807-02352	WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/2	3,500	LFT	\$ 30.00	\$ 105,000.00
57	807-06592	CONDUIT, STEEL, GALVANIZED, 2 IN.	280	LFT	\$ 40.00	\$ 11,200.00
58	807-12199	LUMINAIRE, HIGH LUMEN ROADWAY	17	EACH	\$ 800.00	\$ 13,600.00
59	807-12791	LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING	17	EACH	\$ 2,500.00	\$ 42,500.00
60	807-85502	LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, BREAKAWAY BASE	17	EACH	\$ 5,000.00	\$ 85,000.00
61	807-86810	SERVICE POINT, TYPE II	1	EACH	\$ 10,600.00	\$ 10,600.00
62	807-86889	CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C	595	LFT	\$ 2.00	\$ 1,190.00
63	807-86910	CONNECTOR KIT, UNFUSED	17	EACH	\$ 71.00	\$ 1,207.00
64	807-86915	CONNECTOR KIT, FUSED	17	EACH	\$ 71.00	\$ 1,207.00
65	808-11478	LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.	80	LFT	\$ 4.50	\$ 360.00
66	808-11698	TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.	100	LFT	\$ 18.00	\$ 1,800.00
67	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	3,580	LFT	\$ 1.25	\$ 4,475.00
TOTAL						\$ 3,023,022.00

CONSTRUCTION TOTAL	\$3,023,000.00
CONTINGENCY (10%)	\$302,000.00
OVERALL PROJECT TOTAL	\$3,325,000.00

This cost estimate makes the following assumptions:
1.) Unit price estimates based on stand-alone project

Project Phases		
Task No.	Task	Cost
1	Preliminary Engineering	\$ 399,000
2	Right of Way	\$ 40,000
3	Utility CN	\$ 575,000
4	Railroad CN	\$ -
5	Construction Inspection/Testing	\$ 332,500
TOTAL		\$ 1,346,500

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

Gary L. Yellig
Signature

Todd Johnson
Estimate Completed By
6/5/2026
Date



ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - LONG TERM

Main Street & Five Points Road

LINE ITEM	ITEM NO.	DESCRIPTION	NOTES
1	105-06845	CONSTRUCTION ENGINEERING	assumed values
2	110-01001	MOBILIZATION AND DEMOBILIZATION	assumed values
3	201-52370	CLEARING RIGHT-OF-WAY	assumed values
4	202-02240	PAVEMENT REMOVAL	Whiteland Road = 22' * 1200'; CR 75 W = 20' * 750'; Existing Drives 1,500 sft; Site Paving SE parcel = 7,500 sft. Total = 5,600 SYS
5	203-02000	EXCAVATION, COMMON	assume under new pavement in open area or 12,000 sft * 1.5' + 800 CYS potential detention area say 1,500 CYS
6	203-02055	EMBANKMENT	area of embankment in NE quad is about 70,700 sft by cad. Assume an average depth of 3' and get say 8,000 CYS
7	205-12108	STORMWATER MANAGEMENT BUDGET	assumed values
8	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	assumed values
9	205-12618	SWQCP PREPARATION	assumed values
10	207-08264	SUBGRADE TREATMENT, TYPE II	
11	207-09935	SUBGRADE TREATMENT, TYPE IC	3712
12	211-09264	STRUCTURE BACKFILL, TYPE 1	used for storm sewers. 2,040' of storm sewer and say an average of 15 sft per ft or say 1,150 CYS
13	214-11796	GEOGRID, TYPE IB	
14	302-07455	DENSE GRADED SUBBASE	
15	306-08043	MILLING, TRANSITION	Used on existing pavement at tie into to new pavement. Use a average length of 50' and average width of 30' and get say 670 SYS
16	401-000005	QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm	307
17	401-000032	QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm	511
18	401-000046	QC/QA-HMA, 2, 58S, BASE, 25.0 mm	1225
19	401-000062	QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm	613
20	401-11526	JOINT ADHESIVE	Total length from AutoCAD (x2 for intermediate):
21	401-12439	VOID REDUCING ASPHALT MEMBRANE FOR HMA	3314
22	406-05520	ASPHALT FOR TACK COAT	3314
23	502-06327	PCCP, 10 IN.	Used for truck overrun apron. Area by cad is 2,827 sft or say 315 SYS
24	605-02493	CURB, ISLAND CONCRETE	used at islands N = 307 sft; W = 263 sft; E = 258 sft Total = 92 SYS
25	605-06120	CURB, CONCRETE	used at islands N = 84'; W = 76'; E = 76' Total = say 240 LFT
26	605-06121	CURB, CONCRETE, TYPE B	roll curb at truck overrun apron. By cad the length is 315 LFT
27	605-06140	CURB AND GUTTER, CONCRETE	used on outside edges. NW = 843'; NE = '; SE = 1,010'; Island in SW = 397'. Total = say 4,040 LFT
28	610-08446	PCCP FOR APPROACHES, 6 IN.	
29	610-09108	PCCP FOR APPROACHES, 9 IN.	
30	611-08232	MAILBOX ASSEMBLY, RESET, SINGLE	1 each - drive on south side of Main St just east of Five Points
31	616-06451	RIPRAP, UNIFORM	
32	616-12248	GEOTEXTILE FOR RIPRAP, TYPE 2A	
33	621-01004	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	Assume 4 each - one for each quadrant
34	621-06545	FERTILIZER	Use 1,600 LBS or roundup to say 1 Ton
35	621-06553	SEED MIXTURE, TYPE R	Length of project on both sides is about 3,500' and say a disturbed area averaging 15' wide or
36	621-06565	MULCHING MATERIAL	2 tons per acre or 4 tons
37	621-06575	SODDING, NURSERY	used in grass medians. Area is 10,507 sft by cad assume 1,170 SYS
38	621-06570	TOPSOIL	
39	626-000206	STORMWATER TREATMENT UNIT, TYPE D	assume 1 each is needed to treat stormwater quality before runoff enters existing pond
40	715-05048	PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.	assume underdrains use a length of 3,500 LFT
41	715-05053	PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.	connector pipe from underdrain to inlet. Say 10' per each J10 Inlet or 260 LFT
42	715-05149	PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.	use an average of 30 per each pair of inlets or 13 * 30' = 390 LFT
43	715-05151	PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.	say 200'/leg for south and west and 400'/leg for north and east or 1,200 LFT
44	715-05152	PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.	say 200'/leg for south and west and 400'/leg for north and east or 1,200 LFT
45	715-05154	PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.	used near outlet end of storm sewer say 400 LFT
46	718-12306	GEOTEXTILE FOR UNDERDRAINS, TYPE 1B	assume 6.1667' per ft and get 6.1667' * 3,500' = say 2,400 SYS
47	718-52610	AGGREGATE FOR UNDERDRAINS	use IDM factor of 0.257 CYS/LFT and get 3,500 * 0.257 = say 900 CYS
48	720-45045	INLET, TYPE J10	assume 2 pairs of inlets on south leg; 3 on west; 3 on north; and 5 on east or 13 pairs * 2 = 26 Each
49	720-45410	MANHOLE, TYPE C4	assume one each per each pair of inlets or 13 each
50	720-90349	MANHOLE, TYPE C8	assume 4 each of these manhole/inlets used around the circle
51	801-06775	MAINTAINING TRAFFIC	
52	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	assume Yield signs and RAB Warning signs on each leg and One Way in circle. Use 12 signs total and 14' per sign or 168 LFT
53	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	Assume 65 SFT for all signs
54	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	assume one way signs needed in center of RAB and each is 3 SFT and 4 required or 12 SFT
55	807-02191	HANDHOLE, LIGHTING	17 each - see Luminaire
56	807-02352	WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/C	based on project length assume 3,500 LFT
57	807-06592	CONDUIT, STEEL, GALVANIZED, 2 IN.	crossing under pavement - say 4 crossings at an average of 70 each = 280 LFT
58	807-12199	LUMINAIRE, HIGH LUMEN ROADWAY	assume 5 on north side; 4 on west side; 3 on southwest side; and 5 on southeast side or 17 each
59	807-12791	LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING	17 each - see Luminaire
60	807-85502	LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, BREAKAWAY BASE	17 each - see Luminaire
61	807-86810	SERVICE POINT, TYPE II	assume 1 each
62	807-86889	CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C	assume 35' per pole and 17 poles = 595 LFT
63	807-86910	CONNECTOR KIT, UNFUSED	17 each - see Luminaire
64	807-86915	CONNECTOR KIT, FUSED	17 each - see Luminaire
65	808-11478	LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.	use at each leg - say 40' per leg total length of 160' assume a 2' on 2' off pattern and get 80 LFT
66	808-11698	TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.	assume yield lines on each approach at 25' each or 100 LFT
67	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	3580

Economic Evaluation - Form F5		Form 1 2 3 4 5 6 7 CDB Tool
Alternative	Main Street & Five Points Road - Long-Term Recommendation	Calculate Load Crashes New Open Save Save As Reports Exit Guidelines Help Equations General Improvements Table Service Life Table
INPUT Collapse		Alternatives
Number of Crashes (crash/period)		Save Current Alternative
Fatal and Incapacitating Injury Crashes	1	Read Alternative
Non-Incapacitating and Possible Injury Crashes	0	Main Street & Five Points Road - Long-Term
Property Damage Only Crashes	8	
Road Type	City Non- Arterial Intersectic	
Average Crash Costs (\$)		
Fatal and Incapacitating Injury Crashes	1699800	
Non-Incapacitating and Possible Injury Crashes	363300	
Property Damage Only Crashes	37300	
Crash Cost Year (yyyy)	2017	
First Year with Crash Data (yyyy)	2022	
Last Year with Crash Data (yyyy)	2024	
Present Year (yyyy)	2026	
Implementation Year (yyyy)	2030	
Inflation Rate (%)	2	
Interest Rate (%)	4	
Annual Traffic Growth Rate (%)	2	
Total Traffic Growth Factor	2.56	
Future Traffic Growth Period (years)	24	
COUNTERMEASURES Collapse All		Notes:
Countermeasure 1 Collapse	[C] Copy	The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes
Description	Single Lane Roundabout	
Crash Reduction Factors (%)		
Fatal and Incapacitating Injury Crashes	78	
Non-Incapacitating and Possible Injury Crashes	78	
Property Damage Only Crashes	78	
Number of Target Crashes (crash/period)		
Fatal and Incapacitating Injury Crashes	1	
Non-Incapacitating and Possible Injury Crashes	0	
		Location: Main Street & Five Points Road GIS: Post: Analyst: JMR Date: 3/19/2026 15 Comments: Traffic Counts: INDOT TCDS Crash Data: ARIES provided by IMPO Functional Class: IMPO FC Settings: Indiana local settings Version 4.1 Main & Five Points

Property Damage Only Crashes	8
Countermeasure Service Life (years)	20
Countermeasure Capital Cost (\$)	4,671,500
Countermeasure Annual Maintenance Cost (\$)	0
Countermeasure Salvage Value (\$)	0
[+] Add	
OUTPUT	
Total Crashes Saved	2.072
FI Crashes Saved	0.121
NI Crashes Saved	0.000
PDO Crashes Saved	1.951
Equivalent Annual Benefit (\$)	409,004
Equivalent Annual Cost (\$)	293,828
Present Worth Benefit (\$)	10,225,098
Present Worth Cost (\$)	7,345,699
Net Annual Benefit (\$)	115,176
Present Worth Net Benefit (\$)	2,879,400
Benefit-Cost Ratio	1.39

Notes:

The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes

Location	Main Street & Five Points Road	
GIS		
Post		
Analyst	JMR	
Date	3/19/2026	15
Comments	Traffic Counts: INDOT TCDS Crash Data: ARIES provided by IMPO Functional Class: IMPO FC.	

Settings: Indiana local settings

Version 4.1 Main & Five Points

ABBREVIATED ENGINEERING REVIEW FOR TRAFFIC SAFETY

		Date:	7/22/2026
		Des. No.:	n/a

Reviewer Information:	Agency/Firm Name: Corradino LLC
Primary Author: James Mark Rinehart	Agency: Indianapolis Metropolitan Planning Organization
Phone Numbers: (317) 488-2363	Email Address: jrinehart@corradino.com

Purpose of Review:

Corradino LLC was hired by the Indianapolis MPO (IMPO) to conduct a series of roadway safety audits at preselected intersections within its urbanized area. The goal was to identify existing safety issues and recommend near-term and long-term improvements to address them. Improvements may range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements, including intersection upgrades, multimodal infrastructure, and upgraded traffic signals, as needed. This form is suitable for Level 1 review. Of the three available levels of engineering review, this represents the least refined, lowest-intensity degree of analysis, development of essential project intent (outline of the certified course of action), scoring, and process documentation.

Project Location:

Route: Worthsville Rd & Emerson Ave	District: Seymour	City: Greenwood	County: Johnson
Lat & Long (BOP)	39.587068 -86.082967	Lat & Long (EOP):	39.587068 -86.082967
IMPO: Indianapolis Metropolitan Planning Organization		Project Type: Roadway Safety Audit	

Location: The intersection of Worthsville Road & Emerson Avenue

Existing Conditions:

The Worthsville Road & Emerson Avenue intersection is an unsignalized T-intersection, with Emerson Avenue “T-ing” into Worthsville Road from the south. The NB approach has one lane for left- and right-turning traffic, a Stop sign, and a “Cross Traffic Does Not Stop” sign. Worthsville Road has two travel lanes on each approach, with the WB approach also including a dedicated left-turn lane that yields to EB traffic. The north side of the intersection has a two-way arrow sign facing the NB approach. The posted speed limits for Worthsville Road and Emerson Avenue at the intersection are 40mph.

Shared-use paths run along all streets and sides of the intersection, with grass buffers in the SW and SE quadrants. There are ADA pedestrian ramps at the SW and SE corners, and one uncontrolled crosswalk across the NB approach with parallel striped crosswalk markings.

Located in each quadrant of the intersection are:

- N Half: Single-family residential subdivision.
- SW Quadrant: Small residential farm.
- SE Quadrant: Friendship Church.

Corradino staff held a virtual meeting with IMPO and Greenwood staff on April 7, 2026, to review the Preliminary Findings Report, discuss past or upcoming projects at or near the intersection, and identify potential near- and long-term solutions for Corradino to test before the field check. Meeting minutes from the virtual meeting are available in **Attachment D**.

Corradino held a field check with the representatives from the City of Greenwood and the Greenwood Police Department on May 5, 2026, to provide a recap of the discussion held during the virtual meeting, share test results for the near-term and long-term solutions, and build consensus around a series of countermeasures for Corradino to cost as part of the final recommendations. The field check meeting minutes are available in **Attachment D**.

Traffic Operations:

- a) **Mobility/Congestion Performance:** According to AM Peak Hour traffic hand count data collected on April 14, 2026, EB traffic entering the intersection was **1,370**. The WB traffic entering the intersection was **1,634**. The NB traffic entering the intersection was **363**. According to PM peak hour traffic hand-count data collected on April 15, 2026, EB traffic entering the intersection totaled **1,530**. The WB traffic entering the intersection was **2,555**. The NB traffic entering the intersection was **407**. Corradino seasonally adjusted the traffic counts by applying INDOT's most recent 2025 Traffic Adjustment Factors to account for seasonal and day-of-week variations and normalize the data. A **1.0%** forecasted annual growth rate, derived from the IMPO's TDM, was used to develop a future no-build traffic scenario and to test long-term build alternatives at the intersection. The design year for the long-term build alternatives was 2050. Peak hour hand counts are available for review in **Attachment B**. Results from the traffic analysis are available in **Attachment C**.

	Eastbound		Westbound		Northbound		Southbound	
Alternative	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
AM Peak – 2026	A	0.0	B	13.2	D	33.2	-	-
PM Peak - 2026	A	0.0	B	11.6	D	30.1	-	-
AM Peak - 2050	A	0.0	C	18.3	F	254.8	-	-
PM Peak - 2050	A	0.0	C	15.0	F	258.5	-	-

- b) **Safety Performance / Crash Analysis:** According to available crash data from January 1, 2022, to December 31, 2024, there were **15** crashes associated with the study area. Of those crashes, **0** resulted in fatality, **2** resulted in incapacitating injuries, and **2** resulted in non-incapacitating injuries. See attached Crash Summary and output from RoadHAT 4.1 in **Attachment A**.

The most notable crash pattern identified in the collision diagram was that five (33%) of the crashes were Right Angle crashes. Four of the five reported Right Angle crashes were between an NB and an EB vehicle at the intersection. Additionally, one of the three injury-related crashes reported at the intersection was a Right Angle crash. Another notable crash was the reported pedestrian crash at the intersection. The pedestrian was reported to be walking in the crosswalk on the NB approach when a WB-to-SB left-turning vehicle struck the pedestrian. The pedestrian experienced non-incapacitating injuries due to the crash. The collision diagram illustrating the reported crashes at the Worthsville Road & Emerson Avenue intersection is available in **Attachment A**.

RoadHAT 4.1 was used to develop crash cost (ICC) and crash frequency (ICF) scores for the Worthsville Road & Emerson Avenue Intersection. Results from the RoadHAT 4.1 analysis were as follows: ICC = **0.47**, ICF = **0.13**. The RoadHAT 4.1 analysis results are available in **Attachment A**.

Alternatives & Recommendations

During the field check with representatives from the City of Greenwood and Greenwood PD, crash data and traffic data were discussed while observing traffic patterns. Multiple maintenance-type improvements were identified in the field to address near-term safety needs at the intersection (striping, signage, tree pruning, etc.). Below are the Near- and Long-Term improvements discussed for the Worthsville Road & Emerson Avenue intersection. Notes from the field check summarizing conversations are available for review in **Attachment D**.

Near-Term

- Add a second Stop sign on the left side of the NB approach, which would include a new stop sign, signpost, retroreflective tape for the signpost, and a new "Cross Traffic Does Not Stop" mounted on the signpost below the stop sign.
- Add retroreflective tape to the existing stop sign post located in the southeast corner of the intersection.
- Add retroreflective tape to the two-way arrow signpost, located on the north side of the "T" intersection.
- Prune the evergreen shrubs located in the median on the west leg of the intersection.
- Install a "No Left Turn. Included with the new sign would be a signpost and retroreflective tape attached to it.

Long-Term

- Convert the intersection into a dual-lane roundabout.

Future Consideration

- No future considerations were discussed for the intersection.

Near-Term & Long-Term Cost Estimates for the Proposed Safety Improvements
Cost estimates for the near- and long-term improvements are available in Attachment E. <u>Near-Term Recommendation</u> PE - \$10,000 ROW - \$0 Utility CN - \$500 Railroad CN - \$0 Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$0 CN (including 10% contingency) - \$12,000 Near-Term Total - \$22,500 <u>Long-Term Recommendation</u> PE - \$522,840 ROW - \$75,000 Utility CN - \$450,000 Railroad CN - \$0 Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$435,700 CN (including 10% contingency) - \$4,357,000 Long-Term Total - \$5,840,540
Project Score: (for INDOT use)
Safety Program Score =
Miscellaneous Notes:
Attachments:
Attachment A: Preliminary Findings Report Attachment B: Traffic Counts Attachment C: Traffic Analysis Attachment D: Virtual Meeting Minutes & Field Check Minutes Attachment E: Cost Estimates & Schematics

Attachment A

Preliminary Findings

PRELIMINARY FINDINGS

Safety Analysis at Worthsville Rd. & Emerson Ave.

Report Prepared for: IMPO & Indianapolis DPW

1. Safety Analysis

A crash data analysis was completed for the intersection of Worthsville Road & Emerson Avenue (Study Area) in Greenwood, IN. Before beginning the crash analysis, the project team followed these steps to clean the data:

- Received 2022-2024 crash data from the IMPO. Serious Injury and Fatal crashes had been cleaned by IMPO staff.
- Placed a 250' buffer around the Study Area to identify reported crashes near the intersection.
- Reviewed the police reports for each crash record identified within the 250' buffer.
- Identified and removed any crash records from the analysis that involved a collision with an animal in the roadway or occurred in a parking lot near the intersection.
- Reviewed the description in the reports to confirm the selected Manner of Collision & Crash Severity accurately reflected how the police officer described the crash.
- Exported the results from ArcGIS Pro into MS Excel.
- Created a collision diagram of the Study Area as well as summary tables of the crash records.
- Developed a crash cost (Icc) and crash frequency (Icf) for the Study Area using RoadHat 4.1.

15 crashes were identified within the Study Area. Two of the reported crashes resulted in Incapacitating injuries, and two Non-Incapacitating crashes. There were no reported fatal crashes. One of the Non-Incapacitating crashes involved a southbound left-turning vehicle hitting a pedestrian crossing over Emerson Avenue in the crosswalk.

Other notable results near the Study Area include:

- 33% of the reported crashes within the Study Area were Right Angle crashes.
- 60% of reported crashes occurred during Off-Peak travel times. 40% of reported crashes occurred during the evening peak hours (4 pm-7 pm). There were no reported crashes during the morning peak hours (6 am-9 am).
- 73% of reported crashes occurred in daylight hours and 20% in dark (lighted) conditions. The remaining 7% of crashes listed lighting conditions as "Dawn/Dusk" in the police report.
- 27% of reported crashes occurred in wet or icy roadway surface conditions. The remaining 73% of reported crashes occurred on dry roadways.
- 80% of reported crashes occurred when the weather conditions were clear. The remaining 20% of reported crashes occurred in either Cloudy or Snowy weather conditions.

Attached are the crash summary tables, a collision diagram, images of the intersection, and the results of the RoadHAT 4.1 analysis.

2022-2024 Crash Summary	
TOTAL CRASHES	15
TOTAL INJURIES	4
PROPERTY DAMAGE ONLY	11
POSSIBLE INJURY	0
NON-INCAPACITATING	2
INCAPACITATING	2
FATAL	0

Summary of Primary Factors per Manner of Collision		
Primary Factors per Manner of Collision	Crashes	Percent
RIGHT ANGLE	5	33%
FAILURE TO YIELD RIGHT OF WAY	5	
RIGHT TURN	3	20%
SPEED TOO FAST FOR WEATHER CONDITIONS	1	
FAILURE TO YIELD RIGHT OF WAY	1	
IMPROPER LANE USAGE	1	
REAR END	3	20%
UNSAFE SPEED	1	
FAILURE TO YIELD RIGHT OF WAY	1	
SPEED TOO FAST FOR WEATHER CONDITIONS	1	
COLLISION WITH OBJECT IN ROAD	1	7%
IMPROPER TURNING/STRUCK PEDESTRIAN	1	
OPPOSITE DIRECTION SIDESWIPE	1	7%
FAILURE TO MAINTAIN LANE	1	
SAME DIRECTION SIDESWIPE	1	7%
UNSAFE LANE MOVEMENT	1	
RAN OFF ROAD	1	7%
UNSAFE SPEED	1	
Total Crashes	15	100%

Summary of Crashes per Time of Day		
Time of Day	Crashes	Percent
Peak AM (6:00-9:00 AM)	0	0%
Peak PM (4:00-7:00 PM)	6	40%
Off Peak	9	60%
Total Crashes	15	100%

Summary of Crashes per Light Conditions		
Light Conditions	Crashes	Percent
DAWN/DUSK	1	7%
DARK (LIGHTED)	3	20%
DAYLIGHT	11	73%
Total Crashes	15	100%

Summary of Roadway Surface Conditions				
Manner of Collision	DRY	ICE	WET	Total Crashes
RIGHT ANGLE	4		1	5
RIGHT TURN	1	1	1	3
REAR END	2	1		3
SAME DIRECTION SIDESWIPE	2			2
RAN OFF ROAD	1			1
COLLISION WITH OBJECT IN ROAD	1			1
Total Crashes	11	2	2	15

Summary of Weather Conditions				
Manner of Collision	CLEAR	CLOUDY	SNOW	Total Crashes
RIGHT ANGLE	3	2		5
RIGHT TURN	3			3
REAR END	2		1	3
SAME DIRECTION SIDESWIPE	2			2
RAN OFF ROAD	1			1
COLLISION WITH OBJECT IN ROAD	1			1
Total Crashes	12	2	1	15

DIAGRAM OF
COLLISION
REPORTS

Worthsville Road & Emerson Avenue

Study Period: 1/1/2022 to 12/31/2024

Location: Greenwood

INDOT District: SeymourCounty: Johnson

City/Town: Greenwood

Analyst: JMR

QC: DC

Date: 3/18/2026



YEAR	REPORTS
2022	6
2023	3
2024	6
Total	15

NOTES

1) Crashes with determinable location are shown in diagram. Crash total may not match ARIES database.

2) Crashes on diagram do not represent exact crash locations; they are approximated based on available information.

3) Diagram not to scale.

- Object Symbols**
- MOVING VEHICLE
 - TURNING VEHICLE
 - BACKING VEHICLE
 - OUT OF CONTROL
 - PARKED VEHICLE
 - PEDESTRIAN
 - BICYCLE
 - ANIMAL
 - DEBRIS IN ROADWAY
 - DRIVEWAY CRASH

- FATAL CRASH
- INJURY CRASH – INCAPACITATING
- INJURY CRASH – NONINCAPACITATING
- PDO CRASHES (IF > 1)

- SIGNALIZED INTERSECTION
- FIXED OBJECT (See table for # codes)

- Collision Symbols**
- REAR END
 - HEAD ON
 - OTHER
 - SIDESWIPE – SAME
 - SIDESWIPE – OPPOSITE
 - RIGHT ANGLE
 - LEFT/RIGHT TURN
 - RAN OFF ROAD

- Fixed Object Codes**
- 01 – BRIDGE or OVERPASS
 - 02 – BUILDING
 - 03 – CULVERT or DITCH
 - 04 – CURB
 - 05 – GUARDRAIL or BARRIER
 - 06 – EMBANKMENT
 - 07 – FENCE
 - 08 – TRAFFIC POLE
 - 09 – UTILITY POLE
 - 10 – SIGN
 - 11 – TREE / SHRUB
 - 12 – CONTRUCTION BARRIER
 - 13 – CRASH ATTENUATOR
 - 88 – OTHER
 - 99 - UNKNOWN

Intersection Images	Worthsville Road & Emerson Avenue		
	Study Period: <u>1/1/2022 to 12/31/2024</u>	Location: <u>Greenwood</u>	
	INDOT District: <u>Seymour</u>	County: <u>Johnsonf</u>	City/Town: <u>Greenwood</u>



West Leg – Looking West



West Leg – Looking East



East Leg – Looking West



East Leg – Looking East



South Leg – Looking South



South Leg – Looking North

No North Leg at this Intersection

North Leg – Looking South

No North Leg at this Intersection

North Leg – Looking North

RoadHAT 4D	Index of Crash Frequency and Cost - Form F1		Page 1/2
Settings: Indiana local settings		Version: Version 4.1	
Location	Worthsville Road & Emerson Avenue		
GIS			
Post			
Analyst	JMR		
Date	3/19/2026		
INPUT			
Road Facility Type	City Arterial Intersection One AADT		
Busiest Road AADT (veh/day)	22532		
Crossing Road Principal Arterial Indicator (1 if present, 0 otherwise)	0		
Crossing Road Minor Arterial Indicator (1 if present, 0 otherwise)	0		
Crossing Road Major Collector Indicator (1 if present, 0 otherwise)	1		
Crossing Road Minor Collector Indicator (1 if present, 0 otherwise)	0		
First Year with Crash Data (yyyy)	2022		
Last Year with Crash Data (yyyy)	2024		
Number of Crashes (crash/period)			
Fatal and Incapacitating Injury Crashes	2		
Non-Incapacitating and Possible Injury Crashes	2		
Property Damage Only Crashes	11		
Route or Road Type	City Arterial Intersection One AADT		
Average Crash Costs (\$)			
Fatal and Incapacitating Injury Crashes	1840100		
Non-Incapacitating and Possible Injury Crashes	393200		
Property Damage Only Crashes	40200		
Crash Cost Year (yyyy)	2017		
OUTPUT			
Expected Crash Frequency (crash/year)			
Fatal and Incapacitating Injury Crashes	0.315		
Non-Incapacitating and Possible Injury Crashes	0.71		
Property Damage Only Crashes	3.40		
All Crashes	4.42		
Index of Crash Frequency	0.13		
Index of Crash Cost	0.47		

RoadHAT 4D	Index of Crash Frequency and Cost - Form F1		Page 2/2
Settings: Indiana local settings		Version: Version 4.1	
Location	Worthsville Road & Emerson Avenue		
GIS			
Post			
Analyst	JMR		
Date	3/19/2026		
Comments: Traffic Counts: INDOT TCDS Crash Data: ARIES provided by IMPO Functional Class: IMPO Data FC Web Map.			

Attachment B Traffic Counts

Worthville Rd & Emerson Ave

AM Peak (Tuesday April 14th, 2026)

Time	Type	Northbound			Eastbound			Westbound			INT Total
		Left	Right	App Total	Through	Right	App Total	Left	Through	App Total	
7:00 - 7:15	Total	4	63	67	215	3	218	38	151	189	474
	Pass-Car	4	62	66	205	3	208	36	147	183	457
	Trucks	0	1	1	10	0	10	2	4	6	17
7:15 - 7:30	Total	2	73	75	244	3	247	68	243	311	633
	Pass-Car	2	70	72	236	3	239	65	238	303	614
	Trucks	0	3	3	8	0	8	3	5	8	19
7:30 - 7:45	Total	2	65	67	210	6	216	77	301	378	661
	Pass-Car	2	64	66	204	6	210	55	290	345	621
	Trucks	0	1	1	6	0	6	22	11	33	40
7:45 - 8:00	Total	5	44	49	239	9	248	33	301	334	631
	Pass-Car	5	42	47	233	9	242	27	297	324	613
	Trucks	0	2	2	6	0	6	6	4	10	18
8:00 - 8:15	Total	2	48	50	213	5	218	32	186	218	486
	Pass-Car	2	45	47	206	5	211	30	183	213	471
	Trucks	0	3	3	7	0	7	2	3	5	15
8:15 - 8:30	Total	3	52	55	215	8	223	21	183	204	482
	Pass-Car	3	42	45	205	8	213	20	177	197	455
	Trucks	0	10	10	10	0	10	1	6	7	27
										Total	3,367

PM Peak (Wednesday April 15th, 2026)

Time	Type	Northbound			Eastbound			Westbound			INT Total
		Left	Right	App Total	Through	Right	App Total	Left	Through	App Total	
4:15 - 4:30	Total	2	54	56	179	16	195	78	311	389	640
	Pass-Car	2	53	55	170	15	185	78	306	384	624
	Trucks	0	1	1	9	1	10	0	5	5	16
4:30 - 4:45	Total	5	63	68	187	8	195	76	331	407	670
	Pass-Car	5	60	65	173	8	181	74	323	397	643
	Trucks	0	3	3	14	0	14	2	8	10	27
4:45 - 5:00	Total	3	40	43	189	14	203	68	298	366	612
	Pass-Car	3	38	41	185	14	199	68	293	361	601
	Trucks	0	2	2	4	0	4	0	5	5	11
5:00 - 5:15	Total	1	47	48	224	16	240	71	300	371	659
	Pass-Car	1	45	46	219	15	234	70	295	365	645
	Trucks	0	2	2	5	1	6	1	5	6	14
5:15 - 5:30	Total	3	53	56	202	8	210	77	317	394	660
	Pass-Car	3	53	56	194	8	202	75	312	387	645
	Trucks	0	0	0	8	0	8	2	5	7	15
5:30 - 5:45	Total	3	69	72	227	19	246	64	262	326	644
	Pass-Car	3	66	69	212	19	231	60	261	321	621
	Trucks	0	3	3	15	0	15	4	1	5	23
5:45 - 6:00	Total	9	55	64	232	9	241	50	252	302	607
	Pass-Car	8	53	61	223	9	232	50	252	302	595
	Trucks	1	2	3	9	0	9	0	0	0	12
										Total	3,885

Attachment C

Traffic Analysis

			Existing 2026									
Intersection	Type	MOE	2026 AM Peak Hour					2026 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Worthsville Rd & Emerson Ave	TWSC	LOS	A	B	D	---	N/A	A	B	D	---	N/A
		Delay (sec/veh)	0.0	13.2	33.2	---	4.5	0.0	11.6	30.1	---	3.8
		Queue Length 95th (ft)	0	28	94	---		0	30	72	---	
		v/c Ratio	0.00	0.32	0.67	---		0.00	0.33	0.60	---	
		LOS-F Movements	---	---	---	---		---	---	---	---	

			No-Build 2050									
Intersection	Type	MOE	2050 AM Peak Hour					2050 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Worthsville Rd & Emerson Ave	TWSC	LOS	A	C	F	---	N/A	A	C	F	---	N/A
		Delay (sec/veh)	0.0	18.3	254.8	---	27.1	0.0	15.0	258.5	---	23.0
		Queue Length 95th (ft)	0	54	348	---		0	54	302	---	
		v/c Ratio	0.00	0.49	1.41	---		0.00	0.49	1.40	---	
		LOS-F Movements	---	---	NBL/R	---		---	---	NBL/R	---	

			Build 2050									
Intersection	Type	MOE	2050 AM Peak Hour					2050 PM Peak Hour				
			EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Worthsville Rd & Emerson Ave	RAB	LOS	A	A	A	---	A	A	A	A	---	A
		Delay (sec/veh)	5.5	4.8	7.9	---	5.4	5.7	4.9	6.8	---	5.3
		Queue Length 95th (ft)	75	120	52	---		65	146	34	---	
		v/c Ratio	0.45	0.51	0.42	---		0.40	0.58	0.32	---	
		LOS-F Movements	---	---	---	---		---	---	---	---	

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	
Traffic Vol, veh/h	826	21	191	940	10	210
Future Vol, veh/h	826	21	191	940	10	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	0	16	2	0	4
Mvmt Flow	908	23	210	1033	11	231
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	931	0	1855	465
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	936	-
Critical Hdwy	-	-	4.42	-	6.8	6.98
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.36	-	3.5	3.34
Pot Cap-1 Maneuver	-	-	650	-	67	538
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	347	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	650	-	45	538
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	347	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		2.22		33.23	
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	360	-	-	650	-	
HCM Lane V/C Ratio	0.672	-	-	0.323	-	
HCM Ctrl Dly (s/v)	33.2	-	-	13.2	-	
HCM Lane LOS	D	-	-	B	-	
HCM 95th %tile Q(veh)	4.7	-	-	1.4	-	

Intersection

Int Delay, s/veh 3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	
Traffic Vol, veh/h	731	42	266	1136	11	185
Future Vol, veh/h	731	42	266	1136	11	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	4	2	2	2	0	3
Mvmt Flow	754	43	274	1171	11	191

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	797
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	821
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	821
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.2	30.12
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	339	-	-	821	-
HCM Lane V/C Ratio	0.596	-	-	0.334	-
HCM Ctrl Dly (s/v)	30.1	-	-	11.6	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	3.6	-	-	1.5	-

Intersection						
Int Delay, s/veh	27.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	
Traffic Vol, veh/h	1025	26	237	1166	12	261
Future Vol, veh/h	1025	26	237	1166	12	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	0	16	2	0	4
Mvmt Flow	1126	29	260	1281	13	287
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1155	0	2302	577
Stage 1	-	-	-	-	1141	-
Stage 2	-	-	-	-	1162	-
Critical Hdwy	-	-	4.42	-	6.8	6.98
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.36	-	3.5	3.34
Pot Cap-1 Maneuver	-	-	527	-	33	454
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	264	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	527	-	17	454
Mov Cap-2 Maneuver	-	-	-	-	17	-
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	264	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.1		254.75	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	212	-	-	527	-	
HCM Lane V/C Ratio	1.414	-	-	0.494	-	
HCM Ctrl Dly (s/v)	254.8	-	-	18.3	-	
HCM Lane LOS	F	-	-	C	-	
HCM 95th %tile Q(veh)	17.4	-	-	2.7	-	

Intersection

Int Delay, s/veh 23

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	
Traffic Vol, veh/h	907	52	330	1409	14	229
Future Vol, veh/h	907	52	330	1409	14	229
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	4	2	2	2	0	3
Mvmt Flow	935	54	340	1453	14	236

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	989
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	695
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	695
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.86	258.47
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	179	-	-	695	-
HCM Lane V/C Ratio	1.398	-	-	0.49	-
HCM Ctrl Dly (s/v)	258.5	-	-	15	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	15.1	-	-	2.7	-

LANE SUMMARY

 **Site: [2.3] 2050 AM** (Worthsville Rd & Emerson Ave)
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance															
	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh Dist] ft		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Emerson Ave															
Lane 1 ^d	300	3.8	300	3.8	712	0.421	100	7.9	LOS A	2.0	51.6	Full	1600	0.0	0.0
Approach	300	3.8	300	3.8		0.421		7.9	LOS A	2.0	51.6				
East: Worthsville Rd															
Lane 1	702	7.2	702	7.2	1381	0.508	100	6.0	LOS A	4.5	120.3	Full	600	0.0	0.0
Lane 2 ^d	840	2.0	840	2.0	1653	0.508	100	3.7	LOS A	4.6	117.7	Full	600	0.0	0.0
Approach	1542	4.4	1542	4.4		0.508		4.8	LOS A	4.6	120.3				
West: Worthsville Rd															
Lane 1	524	3.0	524	3.0	1158	0.452	100	5.7	LOS A	2.8	72.2	Full	600	0.0	0.0
Lane 2 ^d	631	2.9	631	2.9	1394	0.452	100	5.3	LOS A	2.9	74.9	Full	600	0.0	0.0
Approach	1155	2.9	1155	2.9		0.452		5.5	LOS A	2.9	74.9				
All Vehicles	2997	3.8	2997	3.8		0.508		5.4	LOS A	4.6	120.3				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)										
South: Emerson Ave										
Mov.	L2	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From S					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	W	E			veh/h	v/c	%	%	No.	
Lane 1	13	287	300	3.8	712	0.421	100	NA	NA	
Approach	13	287	300	3.8		0.421				
East: Worthsville Rd										
Mov.	L2	T1	Total	%HV		Deg.	Lane	Prob.	Ov.	
From E					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	S	W			veh/h	v/c	%	%	No.	
Lane 1	260	441	702	7.2	1381	0.508	100	NA	NA	
Lane 2	-	840	840	2.0	1653	0.508	100	NA	NA	
Approach	260	1281	1542	4.4		0.508				
West: Worthsville Rd										
Mov.	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From W	Appendix H - 59				Cap.	Satn	Util.	SL Ov.	Lane	
					veh/h					

To Exit:	E	S			v/c	%	%	No.
Lane 1	524	-	524	3.0	1158	0.452	100	NA
Lane 2	602	29	631	2.9	1394	0.452	100	NA
Approach	1126	29	1155	2.9	0.452			
	Total	%HV	Deg.Satn (v/c)					
All Vehicles	2997	3.8	0.508					

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis														
	Exit Lane Number	Short Lane Length	Percent Opng in Lane	Opposing Flow Rate	Critical Gap	Follow-up Headway	Lane Flow Rate	Capacity	Deg. Satn	Min. Delay	Merge Delay	Merge Queue [Veh	Queue Dist]	
		ft	%	veh/h	pcu/h	sec	sec	veh/h	veh/h	v/c	sec	sec		ft
There are no Exit Short Lanes for Merge Analysis at this Site.														

Variable Demand Analysis				
	Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	sec
South: Emerson Ave				
Lane 1	0.0	0.0	0.0	0.0
East: Worthsville Rd				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Worthsville Rd				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

 **Site: [2.4] 2050 PM** (Worthsville Rd & Emerson Ave)
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Use and Performance															
	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh Dist] ft		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Emerson Ave															
Lane 1 ^d	251	2.8	251	2.8	788	0.318	100	6.8	LOS A	1.3	33.8	Full	1600	0.0	0.0
Approach	251	2.8	251	2.8		0.318		6.8	LOS A	1.3	33.8				
East: Worthsville Rd															
Lane 1	841	2.0	841	2.0	1458	0.577	100	6.2	LOS A	5.7	145.5	Full	600	0.0	0.0
Lane 2 ^d	952	2.0	952	2.0	1652	0.577	100	3.7	LOS A	5.8	146.1	Full	600	0.0	0.0
Approach	1793	2.0	1793	2.0		0.577		4.9	LOS A	5.8	146.1				
West: Worthsville Rd															
Lane 1	446	4.0	446	4.0	1103	0.404	100	5.9	LOS A	2.4	61.9	Full	600	0.0	0.0
Lane 2 ^d	543	3.8	543	3.8	1342	0.404	100	5.5	LOS A	2.5	64.7	Full	600	0.0	0.0
Approach	989	3.9	989	3.9		0.404		5.7	LOS A	2.5	64.7				
All Vehicles	3032	2.7	3032	2.7		0.577		5.3	LOS A	5.8	146.1				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)										
South: Emerson Ave										
Mov.	L2	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From S					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	W	E			veh/h	v/c	%	%	No.	
Lane 1	14	236	251	2.8	788	0.318	100	NA	NA	
Approach	14	236	251	2.8		0.318				
East: Worthsville Rd										
Mov.	L2	T1	Total	%HV		Deg.	Lane	Prob.	Ov.	
From E					Cap.	Satn	Util.	SL Ov.	Lane	
To Exit:	S	W			veh/h	v/c	%	%	No.	
Lane 1	340	500	841	2.0	1458	0.577	100	NA	NA	
Lane 2	-	952	952	2.0	1652	0.577	100	NA	NA	
Approach	340	1453	1793	2.0		0.577				
West: Worthsville Rd										
Mov.	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.	
From W	Appendix H - 61				Cap.	Satn	Util.	SL Ov.	Lane	
					veh/h					

To Exit:	E	S			v/c	%	%	No.
Lane 1	446	-	446	4.0	1103	0.404	100	NA
Lane 2	489	54	543	3.8	1342	0.404	100	NA
Approach	935	54	989	3.9	0.404			
	Total	%HV	Deg.Satn (v/c)					
All Vehicles	3032	2.7	0.577					

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis													
	Exit Lane Number	Short Lane Length	Percent Opng in Lane	Opposing Flow Rate	Critical Gap	Follow-up Headway	Lane Flow Rate	Capacity	Deg. Satn	Min. Delay	Merge Delay	Merge Queue [Veh	Queue Dist]
		ft	% veh/h	pcu/h	sec	sec	veh/h	veh/h	v/c	sec	sec		ft
There are no Exit Short Lanes for Merge Analysis at this Site.													

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Emerson Ave				
Lane 1	0.0	0.0	0.0	0.0
East: Worthsville Rd				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Worthsville Rd				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

Attachment D

Virtual Meeting Minutes & Field Check Minutes

IMPO Safety Study: City of Greenwood RSA Location

Date: April 7, 2026

Time: 1:30 – 2:00 PM

Location: MS Teams

Attendees:

Paul Peoni – City of Greenwood

Deputy Chief Holtzleiter – City of Greenwood PD (*not present*)

Jennifer Dunn, IMPO

James Mark Rinehart, Corradino LLC

David Cleveland, Corradino LLC

Agenda

1. Introductions

- a. Corradino staff kicked off the meeting with a round of introductions for all the participants on the Teams call.
- b. Corradino staff then shared that the purpose of the kick-off meeting was to spend some time talking with City of Greenwood staff about the two RSA locations they selected to study as part of the Indianapolis MPO's (IMPO) Safety Study. The information from the kick-off meeting will be considered as Corradino completes the safety and traffic analysis and begins identifying potential countermeasures for the two RSA locations. Corradino then asked the Greenwood staff to provide an overview of why they selected their two RSA locations, such as observed safety concerns, changes in traffic related to new development, or existing plans or studies that have identified long-term improvements at the RSA sites.

2. Overview of RSA locations

a. Main Street & Five Points Road Intersection

- i. Greenwood staff shared that the majority of the City of Greenwood has been built to its western and northern city limits. There is some development in the southwest portions of the city, but most new development is on the east side of Greenwood, centered on the Main Street & Five Points Road intersection.
 1. Greenwood staff referenced multiple residential planned unit developments that were either currently under construction, in the planning phases, or have been discussed between Main Street & County Line Road along Five Points Road. These planned unit developments were mostly single-family neighborhoods. Still, the northwest corner of the Main Street & Five Points Road

intersection was being proposed for both single-family and multifamily residential development.

- a. There are approximately 500 homes currently approved for construction, with another 100-150 homes or more under consideration.
2. Greenwood staff anticipates traffic will grow significantly at the Main Street & Five Points Road intersection over the next 5-10 years.
3. Greenwood staff also noted there has been an initiative from the Mayor's office to improve Main Street from the eastern limits of the City into downtown Greenwood. The City will make many improvements to Main Street from downtown to just east of the I-65 interchange, and Greenwood staff noted a potential INDOT interchange project that would include improvements to Main Street at the interchange.
4. Greenwood staff noted that the City's Comprehensive plan identified Main Street & Five Points Road as a potential location for a roundabout, to accommodate the forecasted population growth on the east side of Greenwood.
5. Greenwood staff noted that they were not familiar with the crash history at the Main Street & Five Points Road intersection. Because the land use changes from urban/suburban to rural as one travels east on Main Street, Greenwood staff believed speeding may be an issue near the intersection with Five Points Road.
 - a. Corradino staff shared a draft copy of the Preliminary Findings Report with Greenwood staff to show the crash history at the Main Street & Five Points Road intersection for the years 2022-2024. Results showed that crash patterns were increasing at the intersection each year, and the most common crash type was Rear-End crashes, in which eastbound vehicles stopped at the intersection to turn north were struck by a vehicle.
 - b. Greenwood staff agreed this increase in crashes, and the crash pattern makes sense, because several new single-family homes were constructed in late 2023 and 2024. So, the increase in traffic at the Main Street & Five Points Road intersection has started.
 - c. Corradino staff noted the Preliminary Findings Report is still in draft form, but will be finalized and shared with Greenwood staff before the field check for their review.

b. Worthsville Road & Emerson Avenue Intersection

- i. Greenwood staff shared that Worthsville Road had been identified as a key east/west corridor in the northern portion of Johnson County. Worthsville Road was reconstructed from Honey Creek Road to CR 200 E by the City of Greenwood over the last 10-15 years. Additionally, INDOT reconstructed Worthsville Road from CR 200 E to Collins Road as part of an I-65 interchange project.
- ii. The improvements along Worthsville Road have included three roundabouts, a diverging diamond interchange at I-65, Road widening to include two travel lanes, a center median, and a shared-use path and/or sidewalk along both sides of the roadway.
- iii. Greenwood staff noted there are approximately 300 single-family homes planned for development south of Worthsville Road along Emerson Avenue and Pushville Road. They believe the new residential development will increase traffic along Emerson Avenue as people try to access the I-65 interchange at Worthsville Road.
- iv. Additionally, Greenwood staff noted that they observe local traffic using Emerson Avenue as a cut-through to access either the I-65 interchange or Endress+Hauser USA, a major employer in Greenwood, versus going north on US 31 and turning east on Worthsville Road. The cut-through traffic is also believed to be another factor contributing to congestion on Emerson Avenue.
 1. Another factor contributing to the growing traffic is Endress+Hauser USA, a major employer in Greenwood located along Worthsville Road, a half-mile west of Emerson Avenue. Endress+Hauser USA's property has a south entrance/exit onto Pushville Road, which is used to access Emerson Avenue and avoid traffic on Worthsville Road.
 2. Another influencing factor is the two public schools located a quarter-mile east, at the Worthsville Road & Sheek Road intersection.
- v. Greenwood staff noted that the City's Comprehensive plan identified Worthsville Road & Emerson Avenue as a potential location for a roundabout, to accommodate the forecasted population growth on the south side of Greenwood.
- vi. Corradino shared draft results from the Preliminary Findings report with Greenwood staff for the Worthsville Road & Emerson Avenue intersection. The preliminary results indicated several crashes involved traffic trying to turn west from Emerson Avenue, which were unable to cross over traffic safely, or attempting to turn east onto Worthsville Road, and misjudging the amount of time they had to make the right

turn. In summary, the crash history appeared to accurately reflect the traffic patterns Greenwood staff noted, due to the increase in residential development along Emerson Avenue, and the use of Emerson Avenue as a cut-through route.

1. Corradino did note there was one injury-related crash involving a southbound left-turning vehicle and a pedestrian crossing over Emerson Avenue in the crosswalk.

3. Preliminary Findings Reports

- a. Corradino staff walked through the preliminary findings reports, summarizing the crash history and patterns about both RSA locations. The draft report was shared with IMPO staff for review and will then be updated and shared with Greenwood staff before the field check.

4. Traffic Counts

- a. Corradino staff asked Greenwood staff if they had recent traffic counts available for either RSA location.
- b. Greenwood staff said they did not have any recent traffic counts at either location.
- c. Indianapolis MPO noted that they have a license with the SaaS, Replica, which will be able to provide traffic counts, in case traffic capacity analysis is needed for either RSA site.

5. Next Steps

- a. Finalize Preliminary Findings Reports.
- b. Schedule Field Checks.
 - i. Corradino sent a follow-up email to Greenwood staff on 4/8/2026 to schedule a field check with them between 5/1/2026 and 5/8/2026.

Field Check Notes for RSA at Worthsville Road & Emerson Avenue

				Date: 6/16/2026	
				Des. No.: n/a	
Reviewer Information:			Agency/Firm Name: Corradino LLC		
Primary Author: James Mark Rinehart			Agency: Indianapolis Metropolitan Planning Organization		
Phone Numbers: (317) 488-2363			Email Address: jrinehart@corradino.com		
Attendees:					
- Paul Peoni, Greenwood - James Mark Rinehart, Corradino - Jason Holtzleiter, Greenwood PD - David Cleveland, Corradino					
Purpose of Field Check:					
The purpose of this field check was to review the crash history at the Worthsville Road & Emerson Avenue intersection, evaluate the current roadway conditions, observe traffic patterns, and collaborate with representatives from Local Public Agencies (LPA) and Law Enforcement to identify safety countermeasures. Participants at the field check were provided with a packet summarizing crash patterns at the intersection, peak-hour traffic volumes with turning movement counts, and a Google Earth image estimating the impact of a roundabout at the intersection, if selected as a recommended long-term improvement. The goal of the field check was to identify near-term and long-term improvements and build consensus with the LPAs and Local Law Enforcement on the recommendations. Recommendations from the field check will serve as the final recommendations for the RSA and will be included in IMPO's Safety Study.					
Project Location:					
Location: Intersection of Worthsville Road & Emerson Avenue					
INDOT District: Seymour			City: Greenwood	County: Johnson	
Lat & Long (BOP)	39.587068	-86.082967	Urban/Rural - URBAN	Functional Class of Major Roadway: Other Principal Arterial	
Traffic Control Type: Stop-Controlled "T" Intersection			Posted Speed Limit: Worthsville Rd. – 40mph; Emerson Ave. – 40mph		
Site Observations					
- Corradino provided an overview of the crash history at the intersection. The most notable crash type was right-angle crashes for NB vehicles turning west. 33% of crashes were of this type. Corradino also shared that, according to peak-hour traffic counts, only 6% of vehicles make an NB left turn at the intersection. This indicates an overrepresentation of crashes at that particular turning movement at the intersection, which should be addressed as part of the recommendations. - Both Greenwood staff and Greenwood PD agreed that the NB left turns are the main problem at the intersection that they would like to address. However, Greenwood staff noted that the Greenwood Community School Corporation's school buses use Emerson at this location, and closing the median at the intersection would impact their bus routing. It was decided not to recommend closing the median as one of the project's alternatives. - Discussions of adding "No Left Turn" signage for the NB left turns were discussed. The group liked this idea but was not certain where the sign could be placed at the intersection to be visible. Corradino said they would review the MUTCD guidelines for "No Left Turn" signage to determine whether this sign could be placed at the intersection. - Greenwood staff provided a printout of their Comprehensive Plan map that identified roadway					

improvements throughout the City of Greenwood. The intersection at Worthsville Road & Emerson Avenue was identified as a future roundabout location. The group agreed that a roundabout would address concerns about NB left-turns and provide additional traffic calming along Worthsville Road.

- Corradino shared an aerial image from Google Earth with the circumference of a dual-lane roundabout drawn on the intersection, as illustrative information for the field check to identify impacts if a roundabout were the recommended long-term improvement. Greenwood noted that moving the roundabout farther into the southeast quadrant of the intersection would allow easier land acquisition from a church and prevent the need to relocate major utility poles.
- Other observations noted during the field check included:
 - The landscape in the median on the west leg of the intersection is starting to become overgrown. It is creating sight-distance concerns for SB left-turning vehicles, as they see oncoming EB traffic in the inside lane.
 - Greenwood staff agreed and would have the landscape pruned.
 - There is currently only one stop sign on the NB intersection approach.
 - It was discussed to add a second stop sign and retroreflective tape on the signpost for the new and existing signs.
 - The two-way arrow sign notifying vehicles that it is a “T” intersection does not have retroreflective tape on the signpost.
 - Greenwood staff agreed that adding retroreflective tape to the signposts would be a good idea.

Potential Alternatives Discussed

Near-Term

- Add a second Stop sign on the left side of the NB approach, which would include a new stop sign, signpost, retroreflective tape for the signpost, and a new “Cross Traffic Does Not Stop” mounted on the signpost below the stop sign.
- Add retroreflective tape to the existing stop sign post located in the southeast corner of the intersection.
- Add retroreflective tape to the two-way arrow signpost, located on the north side of the “T” intersection.
- Prune the evergreen shrubs located in the median on the west leg of the intersection.
- Evaluate MUTCD guidelines to see if a “No Left Turn Sign” can be added at the intersection and where it should be located. If added, the New sign, signpost, and retroreflective tape will be included at the intersection.

Long-Term

- Because the City of Greenwood has identified the Worthsville Road & Emerson Avenue intersection as a future roundabout intersection in the adopted comprehensive plan, and the crash patterns identified at the intersection are 33% right-angle crashes, it was agreed that there is sufficient data to support recommending a roundabout for the long-term intersection improvement. Further traffic analysis will determine the size of the roundabout needed for the intersection (i.e., single-lane or dual-lane).

Future Consideration

- No future considerations were discussed for the intersection.

Consensus on Key Items for Alternatives

- Consensus was met with City of Greenwood staff during the field check to recommend the Near – and Long-Term improvements for the RSA.

Attachment E

Cost Estimates & Schematics

Near-Term Improvements Worthsville Road & Emerson Avenue



PRELIMINARY COST ESTIMATE - NEAR TERM
Worthsville Road & Emerson Avenue

LINE ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	110-01001	MOBILIZATION AND DEMOBILIZATION	1	LS	\$ 5,000.00	\$ 5,000.00
2	201-52370	CLEARING RIGHT-OF-WAY	1	LS	\$ 750.00	\$ 750.00
3	202-74035	SIGN, REMOVE	2	EACH	\$ 100.00	\$ 200.00
4	801-06775	MAINTAINING TRAFFIC	1	LS	\$ 2,250.00	\$ 2,250.00
5	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	14	LFT	\$ 31.00	\$ 434.00
6	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	14	SFT	\$ 45.00	\$ 630.00
7	802-11648	SIGN POST, TYPE	3	EACH	\$ 125.00	\$ 375.00
8	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	100	LFT	\$ 1.25	\$ 125.00
9	808-75274	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 8 IN.	60	LFT	\$ 5.00	\$ 300.00
10	808-75297	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN.	20	LFT	\$ 14.00	\$ 280.00
11	808-75300	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, WHITE, 6 IN.	100	LFT	\$ 4.00	\$ 400.00
12	808-75320	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, LANE INDICATION ARROW	1	EACH	\$ 250.00	\$ 250.00
						\$ -
TOTAL						\$ 10,994.00

CONSTRUCTION TOTAL	\$11,000.00
CONTINGENCY (10%)	\$1,000.00
OVERALL PROJECT TOTAL	\$12,000.00

This cost estimate makes the following assumptions:
1.) Unit price estimates based on stand-alone project

Project Phases		
Task No.	Task	Cost
1	Preliminary Engineering	\$ 10,000
2	Right of Way	\$ -
3	Utility CN	\$ 500
4	Railroad CN	\$ -
5	Construction Inspection/Testing (10%)	\$ -
TOTAL		\$ 10,500

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

Gary L. Yellig

Signature

Todd Johnson

Estimate Completed By

6/5/2026

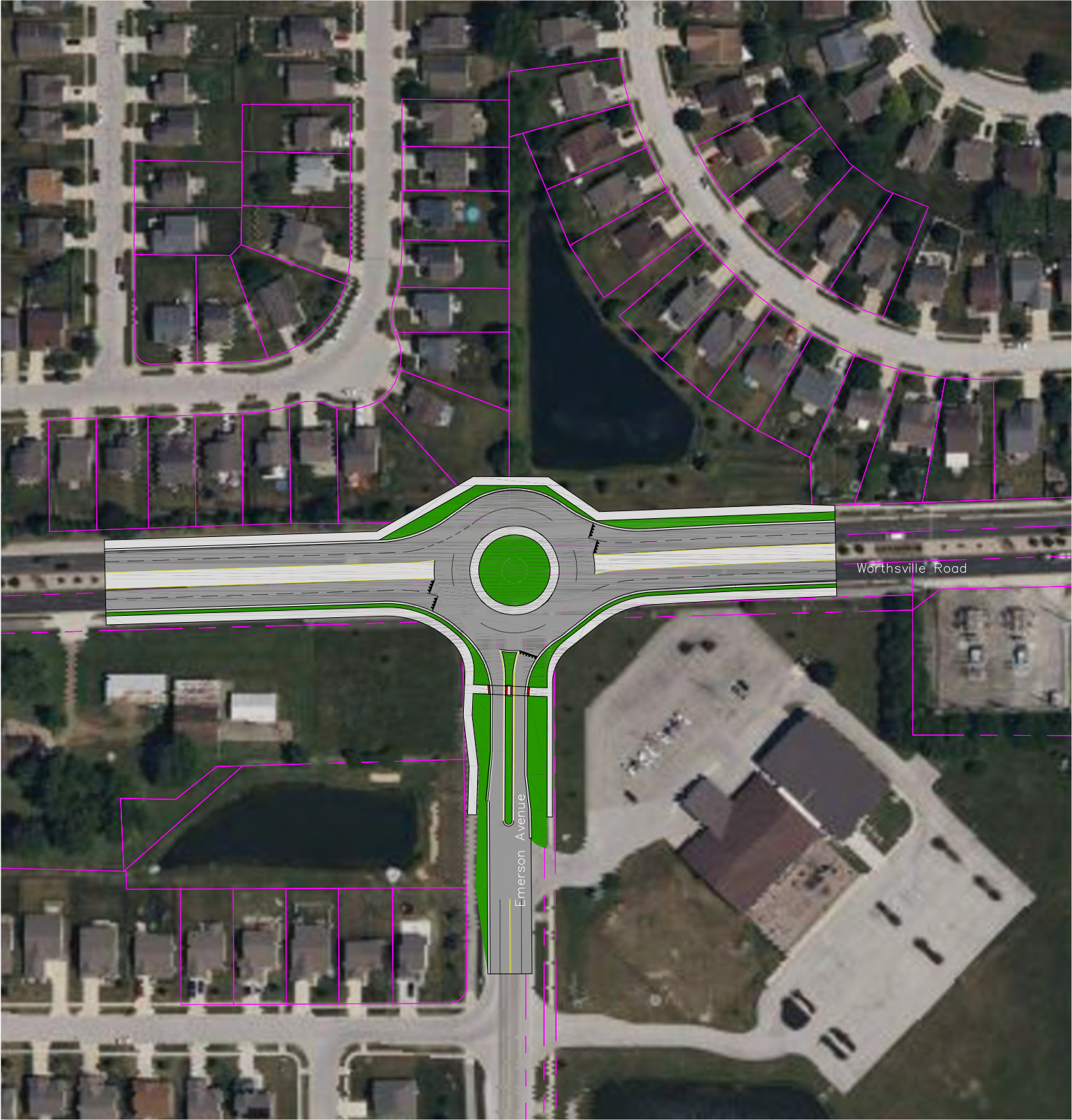
Date



ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - NEAR TERM
Worthsville Road & Emerson Avenue

LINE ITEM	ITEM NO.	DESCRIPTION	NOTES
1	110-01001	MOBILIZATION AND DEMOBILIZATION	
2	201-52370	CLEARING RIGHT-OF-WAY	pruning shrubs in west median
3	202-74035	SIGN, REMOVE	removes the existing non- standard cross traffic sign
4	801-06775	MAINTAINING TRAFFIC	
5	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	Stop sign Need 1 per each sign use 14' per post say 14 LFT
6	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	for W4-4P Cross Traffic Does Not Stop (24" by 12") and No Left Turns (R3-2) 24" by 24"; Stop sign(R1-1) 30" by 30"= 5.18 sft e total say 14 SFT
7	802-11648	SIGN POST, TYPE	use this item for reflective strips on existing and new sign posts (assume 7 ft per each post) 2-Red and 1-Yellow for a total of 3 each
8	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	
9	808-75274	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 8 IN.	total = 60
10	808-75297	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN.	TOTAL=20
11	808-75300	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, WHITE, 6 IN.	TOTAL =100
12	808-75320	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, LANE INDICATION ARROW	total =1

Long-Term Improvements (Possible Roundabout Layout) Worthsville Road & Emerson Avenue



PRELIMINARY COST ESTIMATE - LONG TERM
Worthsville & Emerson Avenue

LINE ITEM	ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	105-06845	CONSTRUCTION ENGINEERING	1	LS	\$ 60,000.00	\$ 60,000.00
2	110-01001	MOBILIZATION AND DEMOBILIZATION	1	LS	\$ 185,800.00	\$ 185,800.00
3	201-52370	CLEARING RIGHT-OF-WAY	1	LS	\$ 35,000.00	\$ 35,000.00
4	202-02240	PAVEMENT REMOVAL	7,106	SYS	\$ 70.00	\$ 497,420.00
5	202-02279	CURB AND GUTTER, REMOVE	2,170	LFT	\$ 20.00	\$ 43,400.00
6	202-52710	SIDEWALK CONCRETE, REMOVE	1,203	SYS	\$ 125.00	\$ 150,375.00
7	202-91385	INLET, REMOVE	2	EACH	\$ 1,200.00	\$ 2,400.00
8	202-96133	PIPE, REMOVE	100	LFT	\$ 65.00	\$ 6,500.00
9	203-02000	EXCAVATION, COMMON	1,500	CYS	\$ 80.00	\$ 120,000.00
10	205-12108	STORMWATER MANAGEMENT BUDGET	40,000	DOL	\$ 1.00	\$ 40,000.00
11	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	1	LS	\$ 15,000.00	\$ 15,000.00
12	205-12618	SWQCP PREPARATION	1	LS	\$ 10,000.00	\$ 10,000.00
13	207-09935	SUBGRADE TREATMENT, TYPE IC	7,086	SYS	\$ 45.00	\$ 318,870.00
14	211-09264	STRUCTURE BACKFILL, TYPE 1	1,150	CYS	\$ 84.00	\$ 96,600.00
15	306-08043	MILLING, TRANSITION	670	SYS	\$ 10.00	\$ 6,700.00
16	401-000005	QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm	585	TON	\$ 100.00	\$ 58,500.00
17	401-000032	QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm	975	TON	\$ 110.00	\$ 107,250.00
18	401-000046	QC/QA-HMA, 2, 58S, BASE, 25.0 mm	2,339	TON	\$ 110.00	\$ 257,290.00
19	401-000062	QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm	1,170	TON	\$ 150.00	\$ 175,500.00
20	401-11526	JOINT ADHESIVE	2,082	LFT	\$ 1.00	\$ 2,082.00
21	401-12438	VOID REDUCING ASPHALT MEMBRANE FOR HMA	6,246	LFT	\$ 7.00	\$ 43,722.00
22	406-05520	ASPHALT FOR TACK COAT	2	TON	\$ 750.00	\$ 1,500.00
23	502-06327	PCCP, 10 IN.	445	SYS	\$ 200.00	\$ 89,000.00
24	601-94689	GUARDRAIL END TREATMENT, TYPE OS	2	EACH	\$ 2,800.00	\$ 5,600.00
25	601-99105	GUARDRAIL, W-BEAM, 6 FT 3 IN. SPACING	120	LFT	\$ 30.00	\$ 3,600.00
26	604-06070	SIDEWALK, CONCRETE	2,459	SYS	\$ 240.00	\$ 590,160.00
27	604-08086	CURB RAMP, CONCRETE	64	SYS	\$ 280.00	\$ 17,920.00
28	604-12083	DETECTABLE WARNING SURFACES	6	SYS	\$ 325.00	\$ 1,950.00
29	605-02493	CURB, ISLAND CONCRETE	64	SYS	\$ 150.00	\$ 9,600.00
30	605-06120	CURB, CONCRETE	1,728	LFT	\$ 100.00	\$ 172,800.00
31	605-06121	CURB, CONCRETE, TYPE B	315	LFT	\$ 75.00	\$ 23,625.00
32	605-06140	CURB AND GUTTER, CONCRETE	2,470	LFT	\$ 90.00	\$ 222,300.00
33	621-01004	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	4	EACH	\$ 800.00	\$ 3,200.00
34	621-06545	FERTILIZER	1	TON	\$ 1,200.00	\$ 1,200.00
35	621-06553	SEED MIXTURE, TYPE R	210	LBS	\$ 40.00	\$ 8,400.00
36	621-06565	MULCHING MATERIAL	2	TON	\$ 600.00	\$ 1,200.00
37	621-06575	SODDING, NURSERY	2,519	SYS	\$ 65.00	\$ 163,735.00
38	622-05640	PLANT, DECIDUOUS SHRUB, 24 IN. TO 36 IN.	12	EACH	\$ 130.00	\$ 1,560.00
39	626-000206	STORMWATER TREATMENT UNIT, TYPE D	1	EACH	\$ 100,000.00	\$ 100,000.00
40	715-05048	PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.	2,600	LFT	\$ 18.00	\$ 46,800.00
41	715-05053	PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.	160	LFT	\$ 35.00	\$ 5,600.00
42	715-05149	PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.	240	LFT	\$ 95.00	\$ 22,800.00
43	715-05151	PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.	800	LFT	\$ 115.00	\$ 92,000.00
44	715-05152	PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.	800	LFT	\$ 130.00	\$ 104,000.00
45	715-05154	PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.	200	LFT	\$ 140.00	\$ 28,000.00
46	718-12306	GEOTEXTILE FOR UNDERDRAINS, TYPE 1B	1,785	SYS	\$ 7.00	\$ 12,495.00
47	718-52610	AGGREGATE FOR UNDERDRAINS	670	CYS	\$ 110.00	\$ 73,700.00
48	720-45045	INLET, TYPE J10	16	EACH	\$ 4,500.00	\$ 72,000.00
49	720-45410	MANHOLE, TYPE C4	8	EACH	\$ 6,500.00	\$ 52,000.00
50	720-90349	MANHOLE, TYPE C8	4	EACH	\$ 6,500.00	\$ 26,000.00
51	801-06775	MAINTAINING TRAFFIC	1	LS	\$ 50,000.00	\$ 50,000.00
52	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	336	LFT	\$ 31.00	\$ 10,416.00
53	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	110	SFT	\$ 45.00	\$ 4,950.00
54	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	12	SFT	\$ 50.00	\$ 600.00
55	807-02191	HANDHOLE, LIGHTING	18	EACH	\$ 2,000.00	\$ 36,000.00
56	807-02352	WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/C	2,600	LFT	\$ 30.00	\$ 78,000.00
57	807-06592	CONDUIT, STEEL, GALVANIZED, 2 IN.	280	LFT	\$ 40.00	\$ 11,200.00
58	807-12199	LUMINAIRE, HIGH LUMEN ROADWAY	18	EACH	\$ 800.00	\$ 14,400.00
59	807-12791	LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING	18	EACH	\$ 2,500.00	\$ 45,000.00
60	807-83502	LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, ANCHOR BASE	18	EACH	\$ 5,000.00	\$ 90,000.00
61	807-86810	SERVICE POINT, TYPE II	1	EACH	\$ 10,600.00	\$ 10,600.00
62	807-86889	CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C	630	LFT	\$ 2.00	\$ 1,260.00
63	807-86910	CONNECTOR KIT, UNFUSED	18	EACH	\$ 71.00	\$ 1,278.00
64	807-86915	CONNECTOR KIT, FUSED	18	EACH	\$ 71.00	\$ 1,278.00
65	808-03439	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, WHITE, 24 IN.	96	LFT	\$ 15.00	\$ 1,440.00
66	808-11478	LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.	80	LFT	\$ 4.50	\$ 360.00
67	808-11698	TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.	100	LFT	\$ 18.00	\$ 1,800.00
68	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	1,600	LFT	\$ 1.25	\$ 2,000.00
TOTAL						\$ 3,961,454.00

CONSTRUCTION TOTAL	\$3,961,000.00
CONTINGENCY (10%)	\$396,000.00
OVERALL PROJECT TOTAL	\$4,357,000.00

This cost estimate makes the following assumptions:
1.) Unit price estimates based on stand-alone project

Project Phases		
Task No.	Task	Cost
1	Preliminary Engineering	\$ 522,840
2	Right of Way	\$ 75,000
3	Utility CN	\$ 450,000
4	Railroad CN	\$ -
5	Construction Inspection/Testing	\$ 435,700
TOTAL		\$ 1,483,540

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

Signature: Gary L. Yellig



Todd Johnson
Estimate Completed By
6/5/2026
Date

ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - LONG TERM
Worthsville & Emerson Avenue

LINE ITEM	ITEM NO.	DESCRIPTION	NOTES
1	105-06845	CONSTRUCTION ENGINEERING	assumed value
2	110-01001	MOBILIZATION AND DEMOBILIZATION	assumed value
3	201-52370	CLEARING RIGHT-OF-WAY	assumed value
4	202-02240	PAVEMENT REMOVAL	7106
5	202-02279	CURB AND GUTTER, REMOVE	2170
6	202-52710	SIDEWALK CONCRETE, REMOVE	1203
7	202-91385	INLET, REMOVE	2 existing inlet on north leg wil be removed
8	202-96133	PIPE, REMOVE	existing storm sewer crosses under north leg. Remove it where under proposed pavement/walk say 100 LFT
9	203-02000	EXCAVATION, COMMON	assume under new pavement in open area or 12,000 sft * 1.5' + 800 CYS potential detention area say 1,500 CYS
10	205-12108	STORMWATER MANAGEMENT BUDGET	assume \$ 10,000 each in the NE and NW and \$ 20,000 each in the SE and SW due to the lakes. Use \$ 60,000
11	205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	assumed value
12	205-12618	SWQCP PREPARATION	assume a cost of \$ 10,000
13	207-09935	SUBGRADE TREATMENT, TYPE IC	7086
14	211-09264	STRUCTURE BACKFILL, TYPE 1	used for strom sewers. 2,040' of storm sewer and say an average of 15 sft per ft or say 1,150 CYS
15	306-08043	MILLING, TRANSITION	Used on existing pavement at tie into to new pavement. Use a average length of 50' and average width of 30' and get say 670 SYS
16	401-000005	QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm	585
17	401-000032	QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm	975
18	401-000046	QC/QA-HMA, 2, 58S, BASE, 25.0 mm	2339
19	401-000062	QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm	1170
20	401-11526	JOINT ADHESIVE	Total length from AutoCAD (x2 for intermediate):
21	401-12439	VOID REDUCING ASPHALT MEMBRANE FOR HMA	Total length from AutoCAD:
22	406-05520	ASPHALT FOR TACK COAT	2
23	502-06327	PCCP, 10 IN.	Used for truck overrun apron. Area by cad is 4,005 sft or 445 SYS
24	601-94689	GUARDRAIL END TREATMENT, TYPE OS	assume 2
25	601-99105	GUARDRAIL, W-BEAM, 6 FT 3 IN. SPACING	Total length from AutoCAD:
26	604-06070	SIDEWALK, CONCRETE	2459
27	604-08086	CURB RAMP, CONCRETE	
28	604-12083	DETECTABLE WARNING SURFACES	There are 4 locations requiring these. Assume 1.5 SYS each or 6 SYS
29	605-02493	CURB, ISLAND CONCRETE	There are 8 locations requiring these. Assume 8 SYS each or 64 SYS
30	605-06120	CURB, CONCRETE	used on central islands in the median.
31	605-06121	CURB, CONCRETE, TYPE B	roll curb at truck overrun apron. By cad the length is 315 LFT
32	605-06140	CURB AND GUTTER, CONCRETE	used on outsides of new pavement
33	621-01004	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	Assume 4 each - one for each quadrant
34	621-06545	FERTILIZER	Use 800 LBS or roundup to say 1 Ton
35	621-06553	SEED MIXTURE, TYPE R	Length of project on both sides is about 2,600' and say a disturbed area averaging 15' wide or round up and say 1 acre. Use say 210 LBS
36	621-06565	MULCHING MATERIAL	
37	621-06575	SODDING, NURSERY	2519.00
38	622-05640	PLANT, DECIDUOUS SHRUB, 24 IN. TO 36 IN.	replaces landscaping on north leg. Assume 12 shrubs
39	626-000206	STORMWATER TREATMENT UNIT, TYPE D	assumed value
40	715-05048	PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.	assume underdrains use a length of 2,600 LFT
41	715-05053	PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.	connector pipe from underdrain to inlet. Say 10' per each J10 Inlet or 160 LFT
42	715-05149	PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.	use an average of 30 per each pair of inlets or 8 * 30' = 240 LFT
43	715-05151	PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.	say 200' per leg or 800 LFT
44	715-05152	PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.	say 200' per leg or 800 LFT
45	715-05154	PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.	used near outlet end of storm sewer say 200 LFT
46	718-12306	GEOTEXTILE FOR UNDERDRAINS, TYPE 1B	assume 6.1667' per ft and get 6.1667' * 2,600' = say 1,785 SYS
47	718-52610	AGGREGATE FOR UNDERDRAINS	use IDM factor of 0.257 CYS/LFT and get 2,600 * 0.257 = say 670 CYS
48	720-45045	INLET, TYPE J10	assume 2 pairs of inlets on each leg or 2 * 2 * 4 = 16 Each
49	720-45410	MANHOLE, TYPE C4	assume one each per each pair of inlets or 8 each
50	720-90349	MANHOLE, TYPE C8	assume 4 each of these manhole/inlets used around the circle
51	801-06775	MAINTAINING TRAFFIC	assumed value
52	802-05704	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	assume Yield signs and RAB Warning signs on each leg and Pedestrian Warning sign on the north and west legs and One Way in circle. Use 24 signs total and 14' per sign or 336 LFT
53	802-09838	SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS	Assume 110 SFT for all signs
54	802-09840	SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS	assume one way signs needed in center of RAB and each is 3 SFT and 4 required or 12 SFT
55	807-02191	HANDHOLE, LIGHTING	18 each - see Luminaire
56	807-02352	WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/C	based on project length assume 2,600 LFT
57	807-06592	CONDUIT, STEEL, GALVANIZED, 2 IN.	crossing under pavement - say 4 crossings at an average of 70 each = 280 LFT
58	807-12199	LUMINAIRE, HIGH LUMEN ROADWAY	assume 4 on west leg; 4 on east leg; 4 on south leg and 2 on north leg; and 1 each on each quad or 18 each
59	807-12791	LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING	18 each - see Luminaire
60	807-83502	LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, ANCHOR BASE	18 each - see Luminaire
61	807-86810	SERVICE POINT, TYPE II	assume 1 each
62	807-86889	CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C	assume 35' per pole and 18 poles = 630 LFT
63	807-86910	CONNECTOR KIT, UNFUSED	18 each - see Luminaire
64	807-86915	CONNECTOR KIT, FUSED	18 each - see Luminaire
65	808-03439	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, WHITE, 24 IN.	used on the north and west legs. Use 48' per leg of 96 LFT total
66	808-11478	LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.	use at each leg - say 40' per leg total length of 160' assume a 2' on 2' off pattern and get 80 LFT
67	808-11698	TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.	
68	808-75245	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.	100 1600

Economic Evaluation - Form F5		Form <u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> CDB Tool Calculate Load Crashes New Open Save Save As Reports Exit Guidelines Help Equations General Improvements Table Service Life Table
Alternative	Worthsville Rd & Emerson Ave - Long-Term Recommendation	
INPUT Collapse		
Number of Crashes (crash/period)		
Fatal and Incapacitating Injury Crashes	2	
Non-Incapacitating and Possible Injury Crashes	2	
Property Damage Only Crashes	11	
Road Type	City Arterial Intersection On	
Average Crash Costs (\$)		
Fatal and Incapacitating Injury Crashes	1840100	
Non-Incapacitating and Possible Injury Crashes	393200	
Property Damage Only Crashes	40200	
Crash Cost Year (yyyy)	2017	
First Year with Crash Data (yyyy)	2022	
Last Year with Crash Data (yyyy)	2024	
Present Year (yyyy)	2026	
Implementation Year (yyyy)	2030	
Inflation Rate (%)	2	
Interest Rate (%)	4	
Annual Traffic Growth Rate (%)	2	
Total Traffic Growth Factor	1.27	
Future Traffic Growth Period (years)	24	
COUNTERMEASURES Collapse All		
Countermeasure 1 Collapse	[C] Copy	
Description	Dual Lane Roundabout	
Crash Reduction Factors (%)		
Fatal and Incapacitating Injury Crashes	78	
Non-Incapacitating and Possible Injury Crashes	78	
Property Damage Only Crashes	78	
Number of Target Crashes (crash/period)		
Fatal and Incapacitating Injury Crashes	2	
Non-Incapacitating and Possible Injury Crashes	2	
Alternatives Save Current Alternative Read Alternative Notes: The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes		
Location Worthsville Road & Emerson Ave GIS Post Analyst JMR Date 3/19/2026 15 Comments Traffic Counts: INDOT TCDS Crash Data: ARIES provided by IMPO Functional Class: IMPO Data Settings: Indiana local settings Version 4.1 Worthsville & Emerson		

Property Damage Only Crashes	11
Countermeasure Service Life (years)	20
Countermeasure Capital Cost (\$)	5840540
Countermeasure Annual Maintenance Cost (\$)	0
Countermeasure Salvage Value (\$)	0
[+] Add	
OUTPUT	
Total Crashes Saved	4.242
FI Crashes Saved	0.460
NI Crashes Saved	0.601
PDO Crashes Saved	3.182
Equivalent Annual Benefit (\$)	1,350,908
Equivalent Annual Cost (\$)	367,358
Present Worth Benefit (\$)	33,772,704
Present Worth Cost (\$)	9,183,955
Net Annual Benefit (\$)	983,550
Present Worth Net Benefit (\$)	24,588,748
Benefit-Cost Ratio	3.68

Notes:

The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes

Location	Worthsville Road & Emerson Ave	
GIS		
Post		
Analyst	JMR	
Date	3/19/2026	15
Comments	Traffic Counts: INDOT TCDS Crash Data: ARIES provided by IMPO Functional Class: IMPO Data	
Settings: Indiana local settings		
Version 4.1 Worthsville & Emerson		

PREPARED FOR:



APPENDIX I:

Johnson County RSAs



CORRADINO LLC

ABBREVIATED ENGINEERING REVIEW FOR TRAFFIC SAFETY

		Date:	6/25/2026	
		Des. No.:	n/a	

Reviewer Information:		Agency/Firm Name: Corradino LLC		
Primary Author:	James Mark Rinehart	Agency:	Indianapolis Metropolitan Planning Organization	
Phone Numbers:	(317) 488-2363	Email Address:	jrinehart@corradino.com	

Purpose of Review:

Corradino LLC was hired by the Indianapolis MPO (IMPO) to conduct a series of roadway safety audits at preselected intersections within its urbanized area. The goal was to identify existing safety issues and recommend near-term and long-term improvements to address them. Improvements may range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements, including intersection upgrades, multimodal infrastructure, and upgraded traffic signals, as needed. This form is suitable for Level 1 review. Of the three available levels of engineering review, this represents the least refined, lowest-intensity degree of analysis, development of essential project intent (outline of the certified course of action), scoring, and process documentation.

Project Location:

Route: Whiteland Rd & CR N 75 W	District: Seymour	City: Whiteland	County: Johnson
Lat & Long (BOP)	39.549256 -86.115805	Lat & Long (EOP):	39.549256 -86.115805 Inside Urban Area Boundary: Yes or No (circle)
IMPO: Indianapolis Metropolitan Planning Organization		Project Type: Roadway Safety Audit	

Location: The intersection of Whiteland Road & CR N 75 W

Existing Conditions:

The Whiteland Road & CR N 75 W intersection is a two-way stop-controlled intersection with stop signs on the NB and SB approaches. All approaches have one lane for left/right turns and through travel. The posted speed limit for Whiteland Rd at the intersection is 50mph. The posted speed limit for CR 75 W at the intersection is 40mph. Driveways from the NW and SE quadrants are located within or in proximity to the intersection turn radius.

There are no pedestrian facilities present at any of the approaches to the intersection.

Located in each quadrant of the intersection are:

- NW Quadrant: Residential home.
- SW Quadrant: Residential home.
- SE Quadrant: Residential home.
- NE Quadrant: Agricultural field with a residential subdivision further north.

Multiple site visibility concerns were observed at the intersection. Per Johnson County GIS, the existing right-of-way along Whiteland Road is just off the edge of pavement on the north side of the road and along the backs of the power poles (just a few feet further off the edge of pavement) along the south side. It is along the edge of the pavement on both sides of CR 75W. The potential sight obstructions at the intersection include:

- NW quadrant: Three large trees and power poles along the north side of Whiteland Road. The trees have large canopies that hang over Whiteland Road. While this may not obstruct the sightline of SB motorists at the stop bar looking toward oncoming EB vehicles, the tree canopies could diminish overall awareness of the intersection for EB mainline Whiteland Road motorists approaching the intersection. There is also a smaller tree along CR 75W just north of the intersection that partially blocks the view of the stop sign.
- SW quadrant: Wrought iron fence and large power poles along the south side of Whiteland Road.
- SE quadrant: Wooden privacy fence and large power poles, with two large weight restriction signs mounted on the nearest power pole to the intersection, along the south side of Whiteland Road. A new wood barricade, a few feet high (not yet shown on Google Street View), has been constructed by the property owner at the SE corner of the intersection, likely to help protect the home from being struck by an errant vehicle traveling through the intersection. The barricade does not appear to block NB motorists' line of sight at the stop bar toward oncoming WB vehicles.

Corradino staff held a virtual meeting with IMPO staff, Johnson County staff, and the Johnson County Sheriff's Department on April 17, 2026, to

review the Preliminary Findings Report, discuss any past or upcoming projects at or near the intersection, and identify potential near-term and long-term solutions for Corradino to test before the field check. Meeting minutes from the virtual meeting are available in **Attachment D**.

Corradino held a field check with the representatives from the IMPO and Johnson County on May 11, 2026, to provide a recap of the discussion held during the virtual meeting, share test results for the near-term and long-term solutions, and build consensus around a series of countermeasures for Corradino to cost as part of the final recommendations. The field check meeting minutes are available in **Attachment D**.

Traffic Operations:

- a) **Mobility/Congestion Performance:** According to AM Peak Hour traffic hand count data collected on April 14th, 2026. EB traffic entering the intersection was **456**. The WB traffic entering the intersection was **452**. The NB traffic entering the intersection was **55**. The SB traffic entering the intersection was **96**. According to PM Peak Hour traffic hand-count data, EB traffic entering the intersection was **646**. The WB traffic entering the intersection was **670**. The NB traffic entering the intersection was **56**. The SB traffic entering the intersection was **131**.

Corradino seasonally adjusted the traffic counts by applying INDOT's most recent 2025 Traffic Adjustment Factors to account for seasonal and day-of-week variations and normalize the data. A **2.2%** forecasted annual growth rate, derived from the IMPO's TDM, was used to develop a future no-build traffic scenario and to test long-term build alternatives at the intersection. The design year for the long-term build alternatives was 2050. Peak hour hand counts are available for review in **Attachment B**. Results from the traffic analysis are available in **Attachment C**.

	Eastbound		Westbound		Northbound		Southbound	
Alternative	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
AM Peak – 2026	A	7.9	A	8.0	C	16.4	C	16.6
PM Peak - 2026	A	8.3	A	8.2	C	21.3	C	21.5
AM Peak - 2050	A	8.3	A	8.5	D	31.7	E	39.7
PM Peak - 2050	A	9.1	A	8.9	F	97.1	F	135.5

- b) **Safety Performance / Crash Analysis:** According to available crash data from January 1, 2022, to December 31, 2024, there were **14** crashes reported in the study area. Of those crashes, **1** resulted in a fatality, **3** resulted in incapacitating injuries, and **2** resulted in non-incapacitating injuries. See attached Crash Summary and output from RoadHAT 4.1 in **Attachment A**.

When reviewing the collision diagram created for the Whiteland Road & CR 75 W intersection, the most notable crash type was Right Angle crashes, comprising 12 (86%) of the 14 reported crashes. Furthermore, of the 12 Right Angle crashes reported, nine involved collisions between NB and WB vehicles (one fatal and two incapacitating injuries), and two involved collisions between NB and EB vehicles (one incapacitating injury). Only one of the 12 Right Angle crashes involved an SB vehicle, which collided with an EB vehicle. None of the reported Right Angle crashes involved running the stop sign, per the police narrative. In all cases, the vehicle stopped on the minor road approach pulled out in front of the mainline vehicle. The collision diagram is available in **Attachment A**.

During the field check, it was noted that while there are potential sight obstructions in three of the four quadrants (as previously noted), the predominant crash pattern is NB and WB Right Angle crashes, due to the wooden privacy fence along the south side of Whiteland Road in the southeast quadrant. The field check minutes are available in **Attachment D**.

RoadHAT 4.1 was used to develop crash cost (ICC) and crash frequency (ICF) scores for the Campus Parkway & Brooks School Road Intersection. Results from the RoadHAT 4.1 analysis were as follows: ICC = **2.11**, ICF = **3.14**. The RoadHAT 4.1 analysis results are available in **Attachment A**.

Alternatives & Recommendations

During the field check with representatives from Johnson County and the IMPO, crash data and traffic data were discussed while observing traffic patterns. Multiple maintenance-type improvements were identified in the field to address near-term safety needs at the intersection (striping, signage, etc.). Below are the Near- and Long-Term improvements discussed for the Whiteland Road & CR N 75 W intersection. Notes from the field check summarizing conversations are available for review in **Attachment D**.

Near-Term

- Work with the property owner to remove the wooden privacy fence along Whiteland Road in the SE quadrant. It may be possible to accommodate this through discussions and potential cost-to-cure options to replace the fence; however, formal land acquisition might be required.
- While not as high a priority as the SE quadrant, work with the property owner to remove the wrought iron fence along Whiteland Road in the SW quadrant. It may be possible to accommodate this through discussions and potential cost-to-cure options to replace the fence; however, formal land acquisition might be required.
- Make sure weight limit signs along the south side of Whiteland Road in the SE quadrant are removed (post bridge construction).

- Trim the small tree along CR 75W in the NW quadrant of the intersection.
- Add stop signs on the left side of each CR 75W approach, and place “cross traffic does not stop” placards on each of the four stop signs.
- Mill and resurface the NB CR 75W Approach for a distance of 50’ from Whiteland Road and stripe the centerline, edge lines, and stop bar.
- Restripe the stop bar on the SB CR 75W approach.
- Add intersection ahead warning signs for EB and WB Whiteland Road

Long-Term

- Convert the intersection to a single-lane roundabout.

Future Consideration

- N/A

Near-Term & Long-Term Cost Estimates for the Proposed Safety Improvements

Cost estimates for the near- and long-term improvements are available in **Attachment E**.

Near-Term Recommendation

PE - **\$10,000**

ROW - **\$20,000**

Utility CN - **\$500**

Railroad CN - **\$0**

Construction Inspection/Testing (10% Rounded up to nearest \$1k) - **\$0**

CN (including 10% contingency) - **\$30,000**

Near-Term Total - \$60,500

Long-Term Recommendation

PE - **\$565,440**

ROW - **\$580,000**

Utility CN - **\$200,000**

Railroad CN - **\$0**

Construction Inspection/Testing (10% Rounded up to nearest \$1k) - **\$471,200**

CN (including 10% contingency) - **\$4,712,000**

Long-Term Total - 6,528,640

Project Score: (for INDOT use)

Safety Program Score =

Miscellaneous Notes:

During the field check for this RSA, the group discussed the possibility of converting the intersection to an All-Way Stop (AWS). According to the collected AM and PM peak-hour turning movement counts, Whiteland Road carries approximately nine times as much traffic as CR 75W. The Johnson County Engineer determined that making all Whiteland Road traffic stop at an AWS is not desirable, and the AWS will not be investigated further.

Attachments:

Attachment A: Preliminary Findings Report

Attachment B: Traffic Counts

Attachment C: Traffic Analysis

Attachment D: Virtual Meeting Minutes & Field Check Minutes

Attachment E: Cost Estimates & Schematics

Attachment A

Preliminary Findings

PRELIMINARY FINDINGS

Safety Analysis at Whiteland Road & CR N 75 W

Report Prepared for: IMPO & Johnson County Highway Department

1. **Safety Analysis**

A crash data analysis was completed for the intersection of Whiteland Road & County Road N 75 W (Study Area) in Johnson County, IN. Before beginning the crash analysis, the project team followed these steps to clean the data:

- Received 2022-2024 crash data from the IMPO. Serious Injury and Fatal crashes had been cleaned by IMPO staff.
- Placed a 250' buffer around the Study Area to identify reported crashes near the intersection.
- Reviewed the police reports for each crash record identified within the 250' buffer.
- Identified and removed any crash records from the analysis that involved a collision with an animal in the roadway or occurred in a parking lot near the intersection.
- Reviewed the description in the reports to confirm the selected Manner of Collision & Crash Severity accurately reflected how the police officer described the crash.
- Exported the results from ArcGIS Pro into MS Excel.
- Created a collision diagram of the Study Area as well as summary tables of the crash records.
- Developed a crash cost (Icc) and crash frequency (Icf) for the Study Area using RoadHat 4.1.

14 crashes were identified within the Study Area. Five of the 14 reported crashes were injury-related crashes. Three of the five injury-related crashes were Incapacitating crashes, and two were Non-Incapacitating crashes. Four of the five reported injury-related crashes were Right Angle crashes. The remaining injury-related crash was a Ran off Road crash. Additionally, one Fatal crash was reported in the Study Area. It was a Right Angle crash in which a northbound vehicle attempted to cross over Whiteland Road and was struck by a westbound vehicle.

Other notable results near the Study Area include:

- 88% of the reported crashes within the Study Area were Right Angle crashes.
 - All injury-related and Fatal crashes were Right Angle crashes.
 - 75% of the reported Right Angle crashes were conflicts between northbound and westbound vehicles in the Study Area.
- 50% of reported crashes occurred during Off-Peak travel times. 29% of reported crashes occurred during the evening peak hours (4 pm-7 pm), and 21% during the morning peak hours (6 am-9 am).
- 57% of reported crashes occurred in daylight hours and 36% in dark (lighted) conditions. The remaining 7% of crashes listed lighting conditions as "Dawn/Dusk" in the police report.
- 7% of reported crashes occurred in wet or icy roadway surface conditions. The remaining 93% of reported crashes occurred on dry roadways.
- 79% of reported crashes occurred when the weather conditions were clear. The remaining 21% of reported crashes occurred in either Cloudy or Rainy weather conditions.

Attached are the crash summary tables, a collision diagram, images of the intersection, and the results of the RoadHAT 4.1 analysis.

2022-2024 Crash Summary	
TOTAL CRASHES	14
TOTAL INJURIES	10
PROPERTY DAMAGE ONLY	8
NON-INCAPACITATING	2
INCAPACITATING	3
FATAL	1

Summary of Primary Factors per Manner of Collision		
Primary Factors per Manner of Collision	Crashes	Percent
RIGHT ANGLE	12	86%
FAILURE TO YIELD RIGHT OF WAY	10	
FAILURE TO MAINTAIN LANE	1	
OTHER (DRIVER) - EXPLAIN IN NARRATIVE	1	
OPPOSITE DIRECTION SIDESWIPE	1	7%
OTHER (DRIVER) - EXPLAIN IN NARRATIVE	1	
RAN OFF ROAD	1	7%
ENGINE FAILURE OR DEFECTIVE	1	
Total Crashes	14	100%

Summary of Crashes per Time of Day		
Time of Day	Crashes	Percent
Peak AM (6:00-9:00 AM)	3	21%
Peak PM (4:00-7:00 PM)	4	29%
Off Peak	7	50%
Total Crashes	14	100%

Summary of Crashes per Light Conditions		
Light Conditions	Crashes	Percent
DAWN/DUSK	1	7%
DARK (NOT LIGHTED)	5	36%
DAYLIGHT	8	57%
Total Crashes	14	100%

Summary of Roadway Surface Conditions			
Manner of Collision	DRY	WET	Total Crashes
RIGHT ANGLE	11	1	12
OPPOSITE DIRECTION SIDESWIPE	1		1
RAN OFF ROAD	1		1
Total Crashes	13	1	14

Summary of Weather Conditions				
Manner of Collision	CLEAR	CLOUDY	RAIN	Total Crashes
RIGHT ANGLE	9	2	1	12
OPPOSITE DIRECTION SIDESWIPE	1			1
RAN OFF ROAD	1			1
Total Crashes	11	2	1	14

DIAGRAM OF
COLLISION
REPORTS

Whiteland Road & CR N 75 W

Study Period: 1/1/2022 to 12/31/2024 Location: Johnson County
INDOT District: Seymour County: Johnson City/Town: Whtieland
Analyst: JMR QC: DC Date: 3/26/2026



YEAR	REPORTS
2022	4
2023	4
2024	6
Total	14

NOTES
1) Crashes with determinable location are shown in diagram. Crash total may not match ARIES database.
2) Crashes on diagram do not represent exact crash locations; they are approximated based on available information.
3) Diagram not to scale.

Object Symbols

→

MOVING VEHICLE

↘

TURNING VEHICLE

←←

BACKING VEHICLE

~~~~

OUT OF CONTROL

▭

PARKED VEHICLE

🚶

PEDESTRIAN

🚲

BICYCLE

A

ANIMAL

D

DEBRIS IN ROADWAY

🚗

DRIVEWAY CRASH

🔴

FATAL CRASH

🟡

INJURY CRASH – INCAPACITATING

🟢

INJURY CRASH – NONINCAPACITATING

Ⓜ

PDO CRASHES (IF > 1)

🚦

SIGNALIZED INTERSECTION

#

FIXED OBJECT  
(See table for # codes)

**Collision Symbols**

→→

REAR END

↔

HEAD ON

→→

OTHER

↘↘

SIDESWIPE – SAME

↘↗

SIDESWIPE – OPPOSITE

↗↗

RIGHT ANGLE

↘↗

LEFT/RIGHT TURN

→

RAN OFF ROAD

**Fixed Object Codes**

01 – BRIDGE or OVERPASS

02 – BUILDING

03 – CULVERT or DITCH

04 – CURB

05 – GUARDRAIL or BARRIER

06 – EMBANKMENT

07 – FENCE

08 – TRAFFIC POLE

09 – UTILITY POLE

10 – SIGN

11 – TREE / SHRUB

12 – CONSTRUCTION BARRIER

13 – CRASH ATTENUATOR

88 – OTHER

99 - UNKNOWN

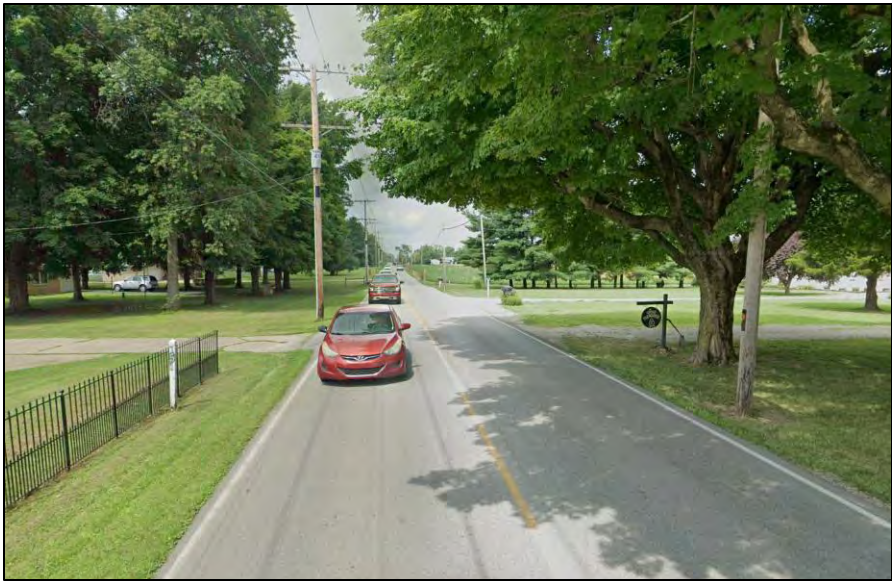
Appendix I - 9

4 | Page

Attachment A - 5



|                     |                                             |                                 |                             |
|---------------------|---------------------------------------------|---------------------------------|-----------------------------|
| Intersection Images | Whiteland Road & CR S 75 W                  |                                 |                             |
|                     | Study Period: <u>1/1/2022 to 12/31/2024</u> | Location: <u>Johnson County</u> |                             |
|                     | INDOT District: <u>Seymour</u>              | County: <u>Johnson</u>          | City/Town: <u>Whiteland</u> |



West Leg – Looking West



West Leg – Looking East



East Leg – Looking West



East Leg – Looking East



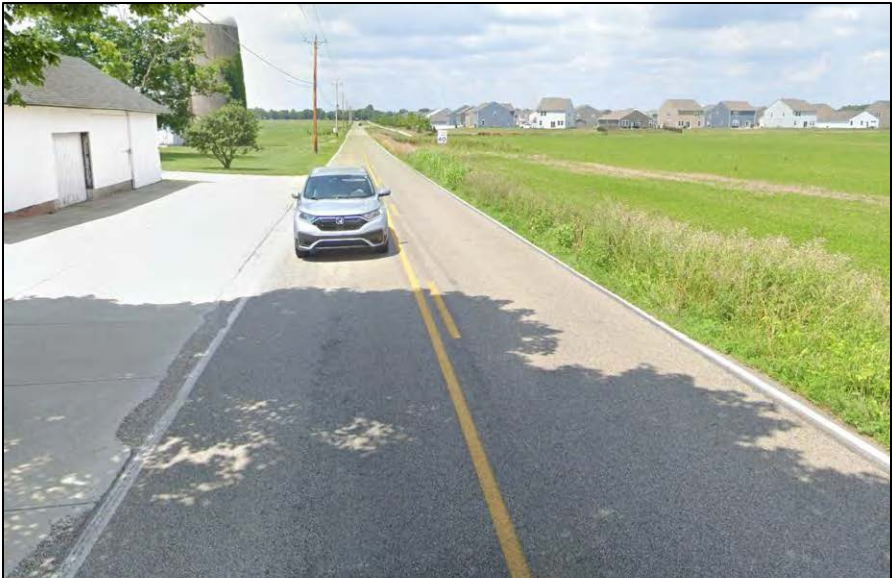
South Leg – Looking South



South Leg – Looking North



North Leg – Looking South



North Leg – Looking North



|                                                                        |                                                    |          |
|------------------------------------------------------------------------|----------------------------------------------------|----------|
| RoadHAT 4D                                                             | <b>Index of Crash Frequency and Cost - Form F1</b> | Page 1/2 |
| Settings: Indiana local settings      Version: Version 4.1             |                                                    |          |
| Location                                                               | Whiteland Road & CR N 75 W                         |          |
| GIS                                                                    |                                                    |          |
| Post                                                                   |                                                    |          |
| Analyst                                                                | JMR                                                |          |
| Date                                                                   | 3/27/2026                                          |          |
| <b>INPUT</b>                                                           |                                                    |          |
| Road Facility Type                                                     | County Local Intersection One AADT                 |          |
| Busiest Road AADT (veh/day)                                            | 8056                                               |          |
| Crossing Road Principal Arterial Indicator (1 if present, 0 otherwise) | 0                                                  |          |
| Crossing Road Minor Arterial Indicator (1 if present, 0 otherwise)     | 0                                                  |          |
| Crossing Road Major Collector Indicator (1 if present, 0 otherwise)    | 0                                                  |          |
| Crossing Road Minor Collector Indicator (1 if present, 0 otherwise)    | 0                                                  |          |
| First Year with Crash Data (yyyy)                                      | 2022                                               |          |
| Last Year with Crash Data (yyyy)                                       | 2024                                               |          |
| Number of Crashes (crash/period)                                       |                                                    |          |
| Fatal and Incapacitating Injury Crashes                                | 4                                                  |          |
| Non-Incapacitating and Possible Injury Crashes                         | 2                                                  |          |
| Property Damage Only Crashes                                           | 8                                                  |          |
| Route or Road Type                                                     | County Local Intersection One AADT                 |          |
| Average Crash Costs (\$)                                               |                                                    |          |
| Fatal and Incapacitating Injury Crashes                                | 2190300                                            |          |
| Non-Incapacitating and Possible Injury Crashes                         | 400600                                             |          |
| Property Damage Only Crashes                                           | 37000                                              |          |
| Crash Cost Year (yyyy)                                                 | 2017                                               |          |
| <b>OUTPUT</b>                                                          |                                                    |          |
| Expected Crash Frequency (crash/year)                                  |                                                    |          |
| Fatal and Incapacitating Injury Crashes                                | 0.038                                              |          |
| Non-Incapacitating and Possible Injury Crashes                         | 0.04                                               |          |
| Property Damage Only Crashes                                           | 0.29                                               |          |
| All Crashes                                                            | 0.36                                               |          |
| Index of Crash Frequency                                               | <b>3.14</b>                                        |          |
| Index of Crash Cost                                                    | <b>2.11</b>                                        |          |

|                                                                                                                |                                                    |          |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------|
| RoadHAT 4D                                                                                                     | <b>Index of Crash Frequency and Cost - Form F1</b> | Page 2/2 |
| Settings: Indiana local settings      Version: Version 4.1                                                     |                                                    |          |
| Location                                                                                                       | Whiteland Road & CR N 75 W                         |          |
| GIS                                                                                                            |                                                    |          |
| Post                                                                                                           |                                                    |          |
| Analyst                                                                                                        | JMR                                                |          |
| Date                                                                                                           | 3/27/2026                                          |          |
| <b>Comments:</b> Traffic Counts: INDOT TCDS Functional Class: IMPO Data Hub Crash Data: ARIES provided by IMPO |                                                    |          |

# Attachment B Traffic Counts



Whiteland Rd & CR 75 W AM Peak (7:30-9:00 am)

| Time         | NB L      | NB T      | NB R     | SB L      | SB T      | SB R      | EB L      | EB T       | EB R     | WB L     | WB T       | WB R      |
|--------------|-----------|-----------|----------|-----------|-----------|-----------|-----------|------------|----------|----------|------------|-----------|
| 7:30-7:45    | 4         | 5         | 0        | 3         | 14        | 3         | 3         | 80         | 0        | 3        | 91         | 8         |
| 7:45-8:00    | 3         | 12        | 0        | 5         | 4         | 5         | 5         | 81         | 3        | 0        | 76         | 3         |
| 8:00-8:15    | 3         | 6         | 1        | 5         | 10        | 2         | 1         | 83         | 1        | 1        | 46         | 5         |
| 8:15-8:30    | 3         | 4         | 0        | 16        | 4         | 1         | 1         | 85         | 0        | 3        | 60         | 4         |
| 8:30-8:45    | 2         | 1         | 2        | 3         | 5         | 4         | 3         | 54         | 1        | 0        | 67         | 8         |
| 8:45-9:00    | 1         | 8         | 0        | 3         | 5         | 4         | 1         | 54         | 0        | 1        | 72         | 4         |
| <b>Total</b> | <b>16</b> | <b>36</b> | <b>3</b> | <b>35</b> | <b>42</b> | <b>19</b> | <b>14</b> | <b>437</b> | <b>5</b> | <b>8</b> | <b>412</b> | <b>32</b> |

Total 1,059

Whiteland Rd & CR 75 W PM Peak (4:00-5:30 pm)

| Time         | NB L      | NB T      | NB R      | SB L      | SB T      | SB R      | EB L      | EB T       | EB R      | WB L     | WB T       | WB R      |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|----------|------------|-----------|
| 4:00-4:15    | 0         | 4         | 2         | 4         | 12        | 8         | 4         | 88         | 3         | 1        | 104        | 2         |
| 4:15-4:30    | 3         | 3         | 0         | 8         | 7         | 6         | 4         | 88         | 4         | 2        | 102        | 6         |
| 4:30-4:45    | 0         | 8         | 2         | 4         | 6         | 2         | 3         | 104        | 2         | 0        | 102        | 9         |
| 4:45-5:00    | 6         | 3         | 2         | 7         | 13        | 7         | 4         | 97         | 3         | 1        | 98         | 6         |
| 5:00-5:15    | 2         | 8         | 2         | 3         | 7         | 11        | 7         | 105        | 3         | 3        | 104        | 6         |
| 5:15-5:30    | 5         | 3         | 3         | 7         | 10        | 9         | 8         | 115        | 4         | 2        | 114        | 8         |
| <b>Total</b> | <b>16</b> | <b>29</b> | <b>11</b> | <b>33</b> | <b>55</b> | <b>43</b> | <b>30</b> | <b>597</b> | <b>19</b> | <b>9</b> | <b>624</b> | <b>37</b> |

Total 1,503

# Attachment C

## Traffic Analysis

|                        |      |                        | Existing 2026     |      |      |      |     |                   |      |      |      |     |
|------------------------|------|------------------------|-------------------|------|------|------|-----|-------------------|------|------|------|-----|
| Intersection           | Type | MOE                    | 2026 AM Peak Hour |      |      |      |     | 2026 PM Peak Hour |      |      |      |     |
|                        |      |                        | EB                | WB   | NB   | SB   | INT | EB                | WB   | NB   | SB   | INT |
| Whiteland Rd & CR 75 W | TWSC | LOS                    | A                 | A    | C    | C    | N/A | A                 | A    | C    | C    | N/A |
|                        |      | Delay (sec/veh)        | 7.9               | 8.0  | 16.4 | 16.6 | 2.6 | 8.3               | 8.2  | 21.3 | 21.5 | 2.9 |
|                        |      | Queue Length 95th (ft) | 0                 | 0    | 8    | 14   |     | 2                 | 0    | 12   | 22   |     |
|                        |      | v/c Ratio              | 0.01              | 0.01 | 0.12 | 0.19 |     | 0.02              | 0.01 | 0.17 | 0.29 |     |
|                        |      | LOS-F Movements        | ---               | ---  | ---  | ---  |     | ---               | ---  | ---  | ---  |     |

|                        |      |                        | No-Build 2050     |      |      |      |     |                   |      |      |       |      |
|------------------------|------|------------------------|-------------------|------|------|------|-----|-------------------|------|------|-------|------|
| Intersection           | Type | MOE                    | 2050 AM Peak Hour |      |      |      |     | 2050 PM Peak Hour |      |      |       |      |
|                        |      |                        | EB                | WB   | NB   | SB   | INT | EB                | WB   | NB   | SB    | INT  |
| Whiteland Rd & CR 75 W | TWSC | LOS                    | A                 | A    | D    | E    | N/A | A                 | A    | F    | F     | N/A  |
|                        |      | Delay (sec/veh)        | 8.3               | 8.5  | 31.7 | 39.7 | 5.7 | 9.1               | 8.9  | 97.1 | 135.5 | 15.5 |
|                        |      | Queue Length 95th (ft) | 0                 | 0    | 28   | 56   |     | 2                 | 0    | 68   | 138   |      |
|                        |      | v/c Ratio              | 0.01              | 0.01 | 0.33 | 0.53 |     | 0.04              | 0.01 | 0.68 | 0.98  |      |
|                        |      | LOS-F Movements        | ---               | ---  | ---  | ---  |     | ---               | ---  | NB   | SB    |      |

|                        |      |                        | Build 2050        |      |      |      |     |                   |      |      |      |     |
|------------------------|------|------------------------|-------------------|------|------|------|-----|-------------------|------|------|------|-----|
| Intersection           | Type | MOE                    | 2050 AM Peak Hour |      |      |      |     | 2050 PM Peak Hour |      |      |      |     |
|                        |      |                        | EB                | WB   | NB   | SB   | INT | EB                | WB   | NB   | SB   | INT |
| Whiteland Rd & CR 75 W | RAB  | LOS                    | A                 | A    | A    | A    | A   | A                 | A    | A    | A    | A   |
|                        |      | Delay (sec/veh)        | 6.6               | 6.3  | 8.5  | 8.3  | 6.7 | 6.6               | 6.4  | 9.3  | 8.8  | 6.8 |
|                        |      | Queue Length 95th (ft) | 84                | 66   | 10   | 15   |     | 122               | 115  | 13   | 24   |     |
|                        |      | v/c Ratio              | 0.44              | 0.37 | 0.07 | 0.11 |     | 0.54              | 0.53 | 0.08 | 0.16 |     |
|                        |      | LOS-F Movements        | ---               | ---  | ---  | ---  |     | ---               | ---  | ---  | ---  |     |

Intersection

Int Delay, s/veh 2.6

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 9    | 300  | 4    | 6    | 249  | 18   | 12   | 25   | 1    | 26   | 29   | 10   |
| Future Vol, veh/h        | 9    | 300  | 4    | 6    | 249  | 18   | 12   | 25   | 1    | 26   | 29   | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   |
| Heavy Vehicles, %        | 0    | 6    | 0    | 0    | 6    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 10   | 341  | 5    | 7    | 283  | 20   | 14   | 28   | 1    | 30   | 33   | 11   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |     |     | Minor2 |     |     |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|--------|-----|-----|
| Conflicting Flow All | 303    | 0 | 0 | 345    | 0 | 0 | 677    | 681 | 343 | 682    | 673 | 293 |
| Stage 1              | -      | - | - | -      | - | - | 364    | 364 | -   | 307    | 307 | -   |
| Stage 2              | -      | - | - | -      | - | - | 313    | 317 | -   | 376    | 366 | -   |
| Critical Hdwy        | 4.1    | - | - | 4.1    | - | - | 7.1    | 6.5 | 6.2 | 7.1    | 6.5 | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5 | -   | 6.1    | 5.5 | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5 | -   | 6.1    | 5.5 | -   |
| Follow-up Hdwy       | 2.2    | - | - | 2.2    | - | - | 3.5    | 4   | 3.3 | 3.5    | 4   | 3.3 |
| Pot Cap-1 Maneuver   | 1269   | - | - | 1225   | - | - | 370    | 375 | 704 | 366    | 379 | 751 |
| Stage 1              | -      | - | - | -      | - | - | 659    | 628 | -   | 707    | 665 | -   |
| Stage 2              | -      | - | - | -      | - | - | 702    | 658 | -   | 650    | 626 | -   |
| Platoon blocked, %   |        | - | - |        | - | - |        |     |     |        |     |     |
| Mov Cap-1 Maneuver   | 1269   | - | - | 1225   | - | - | 327    | 369 | 704 | 332    | 373 | 751 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 327    | 369 | -   | 332    | 373 | -   |
| Stage 1              | -      | - | - | -      | - | - | 653    | 621 | -   | 703    | 660 | -   |
| Stage 2              | -      | - | - | -      | - | - | 652    | 653 | -   | 613    | 620 | -   |

| Approach          | EB   | WB   | NB   | SB   |
|-------------------|------|------|------|------|
| HCM Ctrl Dly, s/v | 0.23 | 0.17 | 16.4 | 16.6 |
| HCM LOS           |      |      | C    | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 359   | 52    | -   | -   | 39    | -   | -   | 384   |
| HCM Lane V/C Ratio    | 0.12  | 0.008 | -   | -   | 0.006 | -   | -   | 0.192 |
| HCM Ctrl Dly (s/v)    | 16.4  | 7.9   | 0   | -   | 8     | 0   | -   | 16.6  |
| HCM Lane LOS          | C     | A     | A   | -   | A     | A   | -   | C     |
| HCM 95th %tile Q(veh) | 0.4   | 0     | -   | -   | 0     | -   | -   | 0.7   |

Intersection

Int Delay, s/veh 2.9

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 20   | 384  | 11   | 5    | 381  | 26   | 12   | 20   | 8    | 19   | 33   | 26   |
| Future Vol, veh/h        | 20   | 384  | 11   | 5    | 381  | 26   | 12   | 20   | 8    | 19   | 33   | 26   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 0    | 2    | 0    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 22   | 427  | 12   | 6    | 423  | 29   | 13   | 22   | 9    | 21   | 37   | 29   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |     |     | Minor2 |     |     |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|--------|-----|-----|
| Conflicting Flow All | 452    | 0 | 0 | 439    | 0 | 0 | 930    | 941 | 433 | 931    | 932 | 438 |
| Stage 1              | -      | - | - | -      | - | - | 477    | 477 | -   | 449    | 449 | -   |
| Stage 2              | -      | - | - | -      | - | - | 453    | 463 | -   | 482    | 483 | -   |
| Critical Hdwy        | 4.1    | - | - | 4.1    | - | - | 7.1    | 6.5 | 6.2 | 7.1    | 6.5 | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5 | -   | 6.1    | 5.5 | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5 | -   | 6.1    | 5.5 | -   |
| Follow-up Hdwy       | 2.2    | - | - | 2.2    | - | - | 3.5    | 4   | 3.3 | 3.5    | 4   | 3.3 |
| Pot Cap-1 Maneuver   | 1119   | - | - | 1132   | - | - | 250    | 265 | 627 | 249    | 268 | 623 |
| Stage 1              | -      | - | - | -      | - | - | 573    | 559 | -   | 593    | 576 | -   |
| Stage 2              | -      | - | - | -      | - | - | 590    | 567 | -   | 569    | 556 | -   |
| Platoon blocked, %   |        | - | - |        | - | - |        |     |     |        |     |     |
| Mov Cap-1 Maneuver   | 1119   | - | - | 1132   | - | - | 199    | 257 | 627 | 218    | 260 | 623 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 199    | 257 | -   | 218    | 260 | -   |
| Stage 1              | -      | - | - | -      | - | - | 558    | 545 | -   | 589    | 572 | -   |
| Stage 2              | -      | - | - | -      | - | - | 523    | 564 | -   | 524    | 541 | -   |

| Approach          | EB  |  |  | WB  |  |  | NB    |  |  | SB    |  |  |
|-------------------|-----|--|--|-----|--|--|-------|--|--|-------|--|--|
| HCM Ctrl Dly, s/v | 0.4 |  |  | 0.1 |  |  | 21.31 |  |  | 21.45 |  |  |
| HCM LOS           |     |  |  |     |  |  | C     |  |  | C     |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL  | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 265   | 86   | -   | -   | 22    | -   | -   | 305   |
| HCM Lane V/C Ratio    | 0.168 | 0.02 | -   | -   | 0.005 | -   | -   | 0.285 |
| HCM Ctrl Dly (s/v)    | 21.3  | 8.3  | 0   | -   | 8.2   | 0   | -   | 21.5  |
| HCM Lane LOS          | C     | A    | A   | -   | A     | A   | -   | C     |
| HCM 95th %tile Q(veh) | 0.6   | 0.1  | -   | -   | 0     | -   | -   | 1.1   |

Intersection

Int Delay, s/veh 5.7

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 14   | 461  | 6    | 9    | 382  | 28   | 18   | 38   | 2    | 40   | 45   | 15   |
| Future Vol, veh/h        | 14   | 461  | 6    | 9    | 382  | 28   | 18   | 38   | 2    | 40   | 45   | 15   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   | 88   |
| Heavy Vehicles, %        | 0    | 6    | 0    | 0    | 6    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 16   | 524  | 7    | 10   | 434  | 32   | 20   | 43   | 2    | 45   | 51   | 17   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |     | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 466    | 0 | 0 | 531    | 0 | 0 | 1039   | 1045 | 527 | 1048   | 1033 | 450 |
| Stage 1              | -      | - | - | -      | - | - | 559    | 559  | -   | 470    | 470  | -   |
| Stage 2              | -      | - | - | -      | - | - | 480    | 486  | -   | 577    | 563  | -   |
| Critical Hdwy        | 4.1    | - | - | 4.1    | - | - | 7.1    | 6.5  | 6.2 | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.2    | - | - | 2.2    | - | - | 3.5    | 4    | 3.3 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 1106   | - | - | 1047   | - | - | 210    | 230  | 555 | 208    | 234  | 613 |
| Stage 1              | -      | - | - | -      | - | - | 517    | 514  | -   | 578    | 563  | -   |
| Stage 2              | -      | - | - | -      | - | - | 571    | 554  | -   | 505    | 512  | -   |
| Platoon blocked, %   |        | - | - |        | - | - |        |      |     |        |      |     |
| Mov Cap-1 Maneuver   | 1106   | - | - | 1047   | - | - | 154    | 223  | 555 | 162    | 227  | 613 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 154    | 223  | -   | 162    | 227  | -   |
| Stage 1              | -      | - | - | -      | - | - | 506    | 504  | -   | 570    | 556  | -   |
| Stage 2              | -      | - | - | -      | - | - | 497    | 547  | -   | 451    | 502  | -   |

| Approach          | EB   | WB   | NB    | SB    |
|-------------------|------|------|-------|-------|
| HCM Ctrl Dly, s/v | 0.24 | 0.18 | 31.72 | 39.75 |
| HCM LOS           |      |      | D     | E     |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | 199   | 52    | -   | -   | 38   | -   | -   | 213   |
| HCM Lane V/C Ratio    | 0.331 | 0.014 | -   | -   | 0.01 | -   | -   | 0.534 |
| HCM Ctrl Dly (s/v)    | 31.7  | 8.3   | 0   | -   | 8.5  | 0   | -   | 39.7  |
| HCM Lane LOS          | D     | A     | A   | -   | A    | A   | -   | E     |
| HCM 95th %tile Q(veh) | 1.4   | 0     | -   | -   | 0    | -   | -   | 2.8   |



Intersection

Int Delay, s/veh 15.5

| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 31   | 590  | 17   | 8    | 585  | 40   | 18   | 31   | 12   | 29   | 51   | 40   |
| Future Vol, veh/h        | 31   | 590  | 17   | 8    | 585  | 40   | 18   | 31   | 12   | 29   | 51   | 40   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 0    | 2    | 0    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 34   | 656  | 19   | 9    | 650  | 44   | 20   | 34   | 13   | 32   | 57   | 44   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |     | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 694    | 0 | 0 | 674    | 0 | 0 | 1430   | 1446 | 665 | 1432   | 1433 | 672 |
| Stage 1              | -      | - | - | -      | - | - | 734    | 734  | -   | 690    | 690  | -   |
| Stage 2              | -      | - | - | -      | - | - | 696    | 712  | -   | 742    | 743  | -   |
| Critical Hdwy        | 4.1    | - | - | 4.1    | - | - | 7.1    | 6.5  | 6.2 | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.2    | - | - | 2.2    | - | - | 3.5    | 4    | 3.3 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 911    | - | - | 926    | - | - | 113    | 133  | 464 | 113    | 135  | 459 |
| Stage 1              | -      | - | - | -      | - | - | 415    | 429  | -   | 439    | 449  | -   |
| Stage 2              | -      | - | - | -      | - | - | 435    | 439  | -   | 411    | 425  | -   |
| Platoon blocked, %   |        | - | - |        | - | - |        |      |     |        |      |     |
| Mov Cap-1 Maneuver   | 911    | - | - | 926    | - | - | 54     | 123  | 464 | 75     | 125  | 459 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 54     | 123  | -   | 75     | 125  | -   |
| Stage 1              | -      | - | - | -      | - | - | 390    | 403  | -   | 432    | 442  | -   |
| Stage 2              | -      | - | - | -      | - | - | 337    | 432  | -   | 343    | 399  | -   |

| Approach          | EB   | WB   | NB    | SB     |
|-------------------|------|------|-------|--------|
| HCM Ctrl Dly, s/v | 0.44 | 0.11 | 97.09 | 135.53 |
| HCM LOS           |      |      | F     | F      |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | 99    | 87    | -   | -   | 22   | -   | -   | 136   |
| HCM Lane V/C Ratio    | 0.682 | 0.038 | -   | -   | 0.01 | -   | -   | 0.981 |
| HCM Ctrl Dly (s/v)    | 97.1  | 9.1   | 0   | -   | 8.9  | 0   | -   | 135.5 |
| HCM Lane LOS          | F     | A     | A   | -   | A    | A   | -   | F     |
| HCM 95th %tile Q(veh) | 3.4   | 0.1   | -   | -   | 0    | -   | -   | 6.9   |

# LANE SUMMARY

 **Site: [18.3] 2050 AM** (Whiteland Rd & CR 75 W)  
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Lane Use and Performance |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |      |                |                      |                   |                      |
|--------------------------|--------------------------------------------------|-----|---------------------------------------------------|-----|---------------|---------------------|--------------------|-----------------------|---------------------|-----------------------------------------------|------|----------------|----------------------|-------------------|----------------------|
|                          | Demand Flows<br>[ Total    HV ]<br>veh/h       % |     | Arrival Flows<br>[ Total    HV ]<br>veh/h       % |     | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Aver.<br>Delay<br>sec | Level of<br>Service | 95% Back Of Queue<br>[ Veh       Dist ]<br>ft |      | Lane<br>Config | Lane<br>Length<br>ft | Cap.<br>Adj.<br>% | Prob.<br>Block.<br>% |
| South: CR 75 W           |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |      |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 66                                               | 0.0 | 66                                                | 0.0 | 907           | 0.073               | 100                | 8.5                   | LOS A               | 0.4                                           | 10.2 | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 66                                               | 0.0 | 66                                                | 0.0 |               | 0.073               |                    | 8.5                   | LOS A               | 0.4                                           | 10.2 |                |                      |                   |                      |
| East: Whiteland Rd       |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |      |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 476                                              | 5.5 | 476                                               | 5.5 | 1293          | 0.368               | 100                | 6.3                   | LOS A               | 2.5                                           | 66.2 | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 476                                              | 5.5 | 476                                               | 5.5 |               | 0.368               |                    | 6.3                   | LOS A               | 2.5                                           | 66.2 |                |                      |                   |                      |
| North: CR 75 W           |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |      |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 114                                              | 0.0 | 114                                               | 0.0 | 1029          | 0.110               | 100                | 8.3                   | LOS A               | 0.6                                           | 15.0 | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 114                                              | 0.0 | 114                                               | 0.0 |               | 0.110               |                    | 8.3                   | LOS A               | 0.6                                           | 15.0 |                |                      |                   |                      |
| West: Whiteland Rd       |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |      |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 547                                              | 5.8 | 547                                               | 5.8 | 1258          | 0.435               | 100                | 6.6                   | LOS A               | 3.2                                           | 83.7 | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 547                                              | 5.8 | 547                                               | 5.8 |               | 0.435               |                    | 6.6                   | LOS A               | 3.2                                           | 83.7 |                |                      |                   |                      |
| All Vehicles             | 1202                                             | 4.8 | 1202                                              | 4.8 |               | 0.435               |                    | 6.7                   | LOS A               | 3.2                                           | 83.7 |                |                      |                   |                      |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Signalised Intersections.  
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.  
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).  
Roundabout Capacity Model: SIDRA HCM.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

<sup>d</sup> Dominant lane on roundabout approach

| Approach Lane Flows (veh/h) |    |     |    |       |     |       |       |       |        |      |  |
|-----------------------------|----|-----|----|-------|-----|-------|-------|-------|--------|------|--|
| South: CR 75 W              |    |     |    |       |     |       |       |       |        |      |  |
| Mov.                        | L2 | T1  | R2 | Total | %HV |       | Deg.  | Lane  | Prob.  | Ov.  |  |
| From S                      |    |     |    |       |     | Cap.  | Satn  | Util. | SL Ov. | Lane |  |
| To Exit:                    | W  | N   | E  |       |     | veh/h | v/c   | %     | %      | No.  |  |
| Lane 1                      | 20 | 43  | 2  | 66    | 0.0 | 907   | 0.073 | 100   | NA     | NA   |  |
| Approach                    | 20 | 43  | 2  | 66    | 0.0 |       | 0.073 |       |        |      |  |
| East: Whiteland Rd          |    |     |    |       |     |       |       |       |        |      |  |
| Mov.                        | L2 | T1  | R2 | Total | %HV |       | Deg.  | Lane  | Prob.  | Ov.  |  |
| From E                      |    |     |    |       |     | Cap.  | Satn  | Util. | SL Ov. | Lane |  |
| To Exit:                    | S  | W   | N  |       |     | veh/h | v/c   | %     | %      | No.  |  |
| Lane 1                      | 10 | 434 | 32 | 476   | 5.5 | 1293  | 0.368 | 100   | NA     | NA   |  |
| Approach                    | 10 | 434 | 32 | 476   | 5.5 |       | 0.368 |       |        |      |  |
| North: CR 75 W              |    |     |    |       |     |       |       |       |        |      |  |
| Mov.                        | L2 | T1  | R2 | Total | %HV |       | Deg.  | Lane  | Prob.  | Ov.  |  |

| From N<br>To Exit: | E     | S   | W              |       |     | Cap.<br>veh/h | Satn<br>v/c         | Util.<br>%         | SL Ov.<br>%          | Lane<br>No.        |
|--------------------|-------|-----|----------------|-------|-----|---------------|---------------------|--------------------|----------------------|--------------------|
| Lane 1             | 45    | 51  | 17             | 114   | 0.0 | 1029          | 0.110               | 100                | NA                   | NA                 |
| Approach           | 45    | 51  | 17             | 114   | 0.0 |               | 0.110               |                    |                      |                    |
| West: Whiteland Rd |       |     |                |       |     |               |                     |                    |                      |                    |
| Mov.               | L2    | T1  | R2             | Total | %HV |               | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| From W<br>To Exit: | N     | E   | S              |       |     | Cap.<br>veh/h |                     |                    |                      |                    |
| Lane 1             | 16    | 524 | 7              | 547   | 5.8 | 1258          | 0.435               | 100                | NA                   | NA                 |
| Approach           | 16    | 524 | 7              | 547   | 5.8 |               | 0.435               |                    |                      |                    |
|                    |       |     |                |       |     |               |                     |                    |                      |                    |
|                    | Total | %HV | Deg.Satn (v/c) |       |     |               |                     |                    |                      |                    |
| All Vehicles       | 1202  | 4.8 | 0.435          |       |     |               |                     |                    |                      |                    |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

| Merge Analysis                                                 |                        |                               |                                 |                                |                                |                        |                             |                               |                   |                     |                      |                       |                                |  |
|----------------------------------------------------------------|------------------------|-------------------------------|---------------------------------|--------------------------------|--------------------------------|------------------------|-----------------------------|-------------------------------|-------------------|---------------------|----------------------|-----------------------|--------------------------------|--|
|                                                                | Exit<br>Lane<br>Number | Short<br>Lane<br>Length<br>ft | Percent<br>Opng in<br>Lane<br>% | Opposing<br>Flow Rate<br>veh/h | Opposing<br>Flow Rate<br>pcu/h | Critical<br>Gap<br>sec | Follow-up<br>Headway<br>sec | Lane<br>Flow<br>Rate<br>veh/h | Capacity<br>veh/h | Deg.<br>Satn<br>v/c | Min.<br>Delay<br>sec | Merge<br>Delay<br>sec | Merge Queue<br>[ Veh<br>Dist ] |  |
| There are no Exit Short Lanes for Merge Analysis at this Site. |                        |                               |                                 |                                |                                |                        |                             |                               |                   |                     |                      |                       |                                |  |

| Variable Demand Analysis |                                    |                                     |                                                   |                                   |
|--------------------------|------------------------------------|-------------------------------------|---------------------------------------------------|-----------------------------------|
|                          | Initial<br>Queued<br>Demand<br>veh | Residual<br>Queued<br>Demand<br>veh | Time for<br>Residual<br>Demand<br>to Clear<br>sec | Duration<br>of<br>Oversatn<br>sec |
| South: CR 75 W           |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |
| East: Whiteland Rd       |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |
| North: CR 75 W           |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |
| West: Whiteland Rd       |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |

LANE SUMMARY

 **Site: [18.4] 2050 PM** (Whiteland Rd & CR 75 W)  
Output produced by SIDRA INTERSECTION Version: 10.0.8.241

NA  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Lane Use and Performance |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |       |                |                      |                   |                      |
|--------------------------|--------------------------------------------------|-----|---------------------------------------------------|-----|---------------|---------------------|--------------------|-----------------------|---------------------|-----------------------------------------------|-------|----------------|----------------------|-------------------|----------------------|
|                          | Demand Flows<br>[ Total    HV ]<br>veh/h       % |     | Arrival Flows<br>[ Total    HV ]<br>veh/h       % |     | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Aver.<br>Delay<br>sec | Level of<br>Service | 95% Back Of Queue<br>[ Veh       Dist ]<br>ft |       | Lane<br>Config | Lane<br>Length<br>ft | Cap.<br>Adj.<br>% | Prob.<br>Block.<br>% |
| South: CR 75 W           |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |       |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 68                                               | 0.0 | 68                                                | 0.0 | 809           | 0.084               | 100                | 9.3                   | LOS A               | 0.5                                           | 12.6  | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 68                                               | 0.0 | 68                                                | 0.0 |               | 0.084               |                    | 9.3                   | LOS A               | 0.5                                           | 12.6  |                |                      |                   |                      |
| East: Whiteland Rd       |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |       |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 703                                              | 2.8 | 703                                               | 2.8 | 1322          | 0.532               | 100                | 6.4                   | LOS A               | 4.5                                           | 114.8 | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 703                                              | 2.8 | 703                                               | 2.8 |               | 0.532               |                    | 6.4                   | LOS A               | 4.5                                           | 114.8 |                |                      |                   |                      |
| North: CR 75 W           |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |       |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 133                                              | 0.0 | 133                                               | 0.0 | 860           | 0.155               | 100                | 8.8                   | LOS A               | 1.0                                           | 23.8  | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 133                                              | 0.0 | 133                                               | 0.0 |               | 0.155               |                    | 8.8                   | LOS A               | 1.0                                           | 23.8  |                |                      |                   |                      |
| West: Whiteland Rd       |                                                  |     |                                                   |     |               |                     |                    |                       |                     |                                               |       |                |                      |                   |                      |
| Lane 1 <sup>d</sup>      | 709                                              | 1.8 | 709                                               | 1.8 | 1318          | 0.538               | 100                | 6.6                   | LOS A               | 4.8                                           | 121.6 | Full           | 1600                 | 0.0               | 0.0                  |
| Approach                 | 709                                              | 1.8 | 709                                               | 1.8 |               | 0.538               |                    | 6.6                   | LOS A               | 4.8                                           | 121.6 |                |                      |                   |                      |
| All Vehicles             | 1613                                             | 2.0 | 1613                                              | 2.0 |               | 0.538               |                    | 6.8                   | LOS A               | 4.8                                           | 121.6 |                |                      |                   |                      |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Signalised Intersections.  
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.  
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).  
Roundabout Capacity Model: SIDRA HCM.  
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

<sup>d</sup> Dominant lane on roundabout approach

| Approach Lane Flows (veh/h) |    |     |    |       |     |       |       |       |        |      |  |
|-----------------------------|----|-----|----|-------|-----|-------|-------|-------|--------|------|--|
| South: CR 75 W              |    |     |    |       |     |       |       |       |        |      |  |
| Mov.                        | L2 | T1  | R2 | Total | %HV |       | Deg.  | Lane  | Prob.  | Ov.  |  |
| From S                      |    |     |    |       |     | Cap.  | Satn  | Util. | SL Ov. | Lane |  |
| To Exit:                    | W  | N   | E  |       |     | veh/h | v/c   | %     | %      | No.  |  |
| Lane 1                      | 20 | 34  | 13 | 68    | 0.0 | 809   | 0.084 | 100   | NA     | NA   |  |
| Approach                    | 20 | 34  | 13 | 68    | 0.0 |       | 0.084 |       |        |      |  |
| East: Whiteland Rd          |    |     |    |       |     |       |       |       |        |      |  |
| Mov.                        | L2 | T1  | R2 | Total | %HV |       | Deg.  | Lane  | Prob.  | Ov.  |  |
| From E                      |    |     |    |       |     | Cap.  | Satn  | Util. | SL Ov. | Lane |  |
| To Exit:                    | S  | W   | N  |       |     | veh/h | v/c   | %     | %      | No.  |  |
| Lane 1                      | 9  | 650 | 44 | 703   | 2.8 | 1322  | 0.532 | 100   | NA     | NA   |  |
| Approach                    | 9  | 650 | 44 | 703   | 2.8 |       | 0.532 |       |        |      |  |
| North: CR 75 W              |    |     |    |       |     |       |       |       |        |      |  |
| Mov.                        | L2 | T1  | R2 | Total | %HV |       | Deg.  | Lane  | Prob.  | Ov.  |  |

| From N<br>To Exit: | E     | S   | W              |       |     | Cap.<br>veh/h | Satn<br>v/c         | Util.<br>%         | SL Ov.<br>%          | Lane<br>No.        |
|--------------------|-------|-----|----------------|-------|-----|---------------|---------------------|--------------------|----------------------|--------------------|
| Lane 1             | 32    | 57  | 44             | 133   | 0.0 | 860           | 0.155               | 100                | NA                   | NA                 |
| Approach           | 32    | 57  | 44             | 133   | 0.0 |               | 0.155               |                    |                      |                    |
| West: Whiteland Rd |       |     |                |       |     |               |                     |                    |                      |                    |
| Mov.               | L2    | T1  | R2             | Total | %HV |               | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| From W<br>To Exit: | N     | E   | S              |       |     | Cap.<br>veh/h |                     |                    |                      |                    |
| Lane 1             | 34    | 656 | 19             | 709   | 1.8 | 1318          | 0.538               | 100                | NA                   | NA                 |
| Approach           | 34    | 656 | 19             | 709   | 1.8 |               | 0.538               |                    |                      |                    |
|                    |       |     |                |       |     |               |                     |                    |                      |                    |
|                    | Total | %HV | Deg.Satn (v/c) |       |     |               |                     |                    |                      |                    |
| All Vehicles       | 1613  | 2.0 | 0.538          |       |     |               |                     |                    |                      |                    |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

| Merge Analysis                                                 |                        |                               |                                 |                                |                                |                        |                             |                               |                   |                     |                      |                       |                                |  |
|----------------------------------------------------------------|------------------------|-------------------------------|---------------------------------|--------------------------------|--------------------------------|------------------------|-----------------------------|-------------------------------|-------------------|---------------------|----------------------|-----------------------|--------------------------------|--|
|                                                                | Exit<br>Lane<br>Number | Short<br>Lane<br>Length<br>ft | Percent<br>Opng in<br>Lane<br>% | Opposing<br>Flow Rate<br>veh/h | Opposing<br>Flow Rate<br>pcu/h | Critical<br>Gap<br>sec | Follow-up<br>Headway<br>sec | Lane<br>Flow<br>Rate<br>veh/h | Capacity<br>veh/h | Deg.<br>Satn<br>v/c | Min.<br>Delay<br>sec | Merge<br>Delay<br>sec | Merge Queue<br>[ Veh<br>Dist ] |  |
| There are no Exit Short Lanes for Merge Analysis at this Site. |                        |                               |                                 |                                |                                |                        |                             |                               |                   |                     |                      |                       |                                |  |

| Variable Demand Analysis |                                    |                                     |                                                   |                                   |
|--------------------------|------------------------------------|-------------------------------------|---------------------------------------------------|-----------------------------------|
|                          | Initial<br>Queued<br>Demand<br>veh | Residual<br>Queued<br>Demand<br>veh | Time for<br>Residual<br>Demand<br>to Clear<br>sec | Duration<br>of<br>Oversatn<br>sec |
| South: CR 75 W           |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |
| East: Whiteland Rd       |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |
| North: CR 75 W           |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |
| West: Whiteland Rd       |                                    |                                     |                                                   |                                   |
| Lane 1                   | 0.0                                | 0.0                                 | 0.0                                               | 0.0                               |

# Attachment D

## Virtual Meeting Minutes & Field Check Minutes



## **IMPO Safety Study: Johnson County RSA Locations**

Date: April 17, 2026

Time: 2:00 – 2:30 PM

Location: MS Teams

### **Attendees:**

Daniel Johnston, Johnson County Highway Department

Luke Mastin, Johnson County Highway Department

Andy Barnhart, Johnson County Sheriff Department

Dax Norton, Bargersville PD

Jennifer Dunn, IMPO

James Mark Rinehart, Corradino LLC

David Cleveland, Corradino LLC

### **Agenda**

#### **1. Introductions**

- a. Corradino staff kicked off the meeting with a round of introductions for all the participants on the Teams call.
- b. Corradino staff then shared that the purpose of the kick-off meeting was to spend some time talking with Johnson County staff about the two RSA locations they selected to study as part of the Indianapolis MPO's (IMPO) Safety Study. The information from the kick-off meeting will be considered as Corradino completes the safety and traffic analysis and begins identifying potential countermeasures for the two RSA locations. Corradino then asked the Johnson County staff and representatives from local law enforcement to provide an overview of why they selected their two RSA locations, including observed safety concerns, changes in traffic related to new development, and existing plans or studies that have identified long-term improvements at the RSA locations.

#### **2. Overview of RSA locations**

- a. **Whiteland Road & CR 75 W**
  - i. Johnson County staff and local law enforcement noted that a new single-family residential subdivision has been constructed north of the intersection, which has led to an increase in traffic volumes at the intersection.
  - ii. Johnson County staff also noted they are in the conceptual stages of doing a corridor improvement along Whiteland Road, which would include the intersection at CR 75. No improvements have been identified as part of the corridor project at this time, but results from this RSA may be valuable to include.

- iii. Regarding Safety, both Johnson County Staff and the Sheriff's Department referenced several variables that make navigating the intersection difficult.
  - 1. Speed Concerns – Whiteland Road currently has a posted speed limit of 50 mph. Johnson County Staff noted that if vehicles are speeding along the roadway, it could cause vehicles traveling northbound and southbound to misjudge the distance they have to cross through the intersection
  - 2. Sight Distance Concerns – The current right-of-way (ROW) along Whiteland Road is narrow. There is currently no paved or unpaved shoulder along Whiteland Road. Utility poles are placed on both the north and south sides of the roadway, and appear to be within 6' of the edge of pavement. Additionally, mature trees and privacy fences are located along Whiteland Road at the intersection. According to the Johnson County Sheriff's Department, the utility poles, trees, and fences make it difficult to see oncoming eastbound and westbound traffic when stopped at the intersection.
    - a. There is a wooden privacy fence along the south side of Whiteland Road in the southeast quadrant, creating challenging sight lines, and 10 of the 14 crashes are Right Angle crashes involving a northbound CR 75 W vehicle pulling out from a stopped condition and being struck by a westbound Whiteland Road vehicle. T
    - b. There is a wrought iron fence along the south side of Whiteland Road on the parcel in the southwest quadrant. Two of the 14 crashes are Right Angle crashes involving a northbound CR 75 W vehicle pulling out from a stopped condition and being struck by an eastbound Whiteland Road vehicle.
    - c. There are three large trees along the north side of Whiteland Road on the parcel in the northwest quadrant. One of the 14 crashes is a Right Angle crash involving a southbound CR 75 W vehicle pulling out from a stopped condition and being struck by an eastbound Whiteland Road vehicle.
  - i. Johnson County also noted that trees and fences located at the intersection are on private property, which means any recommendations that involve "tree clearing" or fence removal would require coordination with the property owners, or even ROW acquisition.

3. Location of Existing Residential Properties – Johnson County pointed out that three of the four corners at the intersection are older single-family homes built close to the roadway, and have their driveways constructed very close to or have direct access into the intersection.
- iv. Johnson County and the Johnson County Sheriff's department noted a couple of improvements for both near-term and long-term for the intersection:
  1. Near-Term – Evaluate if an All-Way Stop would be feasible for the intersection, and identify ways to improve sight distance at the intersection.
    - a. Note: Sight-distance improvements may require ROW acquisition.
  2. Long-Term – Evaluate the feasibility of reconstructing the intersection into a roundabout.
    - a. Corradino noted they would test this alternative before the field check to identify how large the roundabout would need to be.

**b. Whiteland Road & Smokey Row Road**

- i. Johnson County said they observed a notable spike in the number of crashes occurring at the intersection in 2025. Johnson County staff also noted that the majority of crashes were Right Angle crashes. When reviewing the crash narratives from 2025, they noticed several drivers stated they “did not see the vehicle coming” or “thought they had enough time to make it through the intersection.”
  1. Corradino noted they evaluated crash data from 2022 to 2024 as part of this RSA.
- ii. Johnson County said they have observed an increase in traffic volumes at the intersection in recent years. New single-family residential development has increased vehicle and truck traffic at the intersection. Johnson County anticipates the area around the intersection continuing to grow over the next 10 years.
- iii. Johnson County staff noted the intersection is flat with minimal grade changes that could cause concern. The northeast quadrant of the intersection is wooded, which may have contributed to sight-distance concerns.
  1. Note: Johnson County said they went out and cleared trees earlier this year to improve sight distance at the intersection. They noted several complaints from the nearby residents about the trees blocking their view at the intersection.

iv. Johnson County, Johnson County Sheriff's department, and the representative from the Bargersville Police Department noted a couple of improvements for the intersection:

1. Near-Term – It was discussed that low-cost systematic improvements at the intersection might be the best solution. Improved striping, signage, and visibility might be all that is needed at this time.
  - a. Corradino staff asked Johnson County staff if they have considered converting the intersection from a two-way to an all-way stop controlled intersection. Johnson County did not think the intersection would meet the warrant criteria for an all-way stop-controlled intersection. Additionally, Johnson County staff noted that the traffic along Whiteland Road is much higher than along Smokey Row, and forcing all traffic to stop at the intersection may cause other concerns.
  - b. Corradino said they would review the All-Way Stop Warrant criteria identified in the MUTCD and share their findings at the field check.
2. Long-Term – Johnson County said a roundabout or widening the intersection might be a solution for this intersection, someday. However, Johnson County staff do not believe it is necessary to pursue long-term infrastructure improvements at this intersection at this time.

### 3. Preliminary Findings Reports

- a. Corradino staff walked through the preliminary findings reports, summarizing the crash history and patterns about both RSA locations. The draft report was shared with IMPO staff for review and will then be updated and shared with Johnson County staff before the field check.

### 4. Traffic Counts

- a. Corradino staff asked Johnson County staff if they had recent traffic counts available for either RSA location.
- b. Johnson County staff said they did not have any recent traffic counts at either location.
- c. Indianapolis MPO noted that they have a license with the SaaS, Replica, which will be able to provide traffic counts, in case traffic capacity analysis is needed for either RSA sight location.
  - i. Additionally, Corradino staff noted that they collected peak-hour traffic counts at both locations to compare with the counts provided by Replica.

**5. Next Steps**

- a. The field check for both Johnson County intersections was scheduled for Monday, May 11, 2026, at 1:00 PM.

## Field Check Notes for RSA at Whiteland Road & CR 75 W

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |            |                                                                                     |                 |                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|-------------------------------------------------------------------------------------|-----------------|---------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |            |                                                                                     | Date: 5/29/2026 |                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |            |                                                                                     | Des. No.: n/a   |                                                   |
| <b>Reviewer Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |            | Agency/Firm Name: Corradino LLC                                                     |                 |                                                   |
| Primary Author: James Mark Rinehart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |            | Agency: Indianapolis Metropolitan Planning Organization                             |                 |                                                   |
| Phone Numbers: (317) 488-2363                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |            | Email Address: <a href="mailto:jrinehart@corradino.com">jrinehart@corradino.com</a> |                 |                                                   |
| <b>Attendees:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |            |                                                                                     |                 |                                                   |
| <ul style="list-style-type: none"> <li>Daniel Johnston, Johnson County</li> <li>Jennifer Dunn, IMPO</li> <li>James Mark Rinehart, Corradino</li> <li>David Cleveland, Corradino</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |            |                                                                                     |                 |                                                   |
| <b>Purpose of Field Check:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |            |                                                                                     |                 |                                                   |
| <p>The purpose of this field check was to review the crash history at the Whiteland Road &amp; CR 75 W intersection, evaluate the current roadway conditions, observe traffic patterns, and collaborate with representatives from Local Public Agencies (LPA) to identify safety countermeasures.</p> <p>The goal of the field check was to identify near-term and long-term improvements and build consensus with the LPAs and Local Law Enforcement on the recommendations.</p> <p>Recommendations from the field check will serve as the final recommendations for the RSA and will be included in IMPO's Safety Study.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |            |                                                                                     |                 |                                                   |
| <b>Project Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |            |                                                                                     |                 |                                                   |
| Location: Intersection of Whiteland Road & CR 75 W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |            |                                                                                     |                 |                                                   |
| INDOT District: Seymour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |            | City: Unincorporated                                                                |                 | County: Johnson                                   |
| Lat & Long (BOP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 39.549256 | -86.115805 | Urban/Rural - <b>URBAN</b>                                                          |                 | Functional Class of Major Roadway: Minor Arterial |
| Traffic Control Type: Two-Way Stop Controlled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |            | Posted Speed Limit: Whiteland Rd. – 50mph; CR 75 N – 40mph                          |                 |                                                   |
| <b>Site Observations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |            |                                                                                     |                 |                                                   |
| <p>Corradino provided an overview of the crash history at the intersection. The most notable crash type was right-angle, comprising 12 (86%) of the total 14 crashes. Furthermore, of the 12 right-angle crashes, nine involved collisions between NB and WB vehicles (one fatal and two incapacitating injuries), and two involved collisions between NB and EB vehicles (one incapacitating injury). Only one of the 12 right-angle crashes involved an SB vehicle, which collided with an EB vehicle. None of the right-angle crashes involved running the stop sign. In all cases, the vehicle stopped on the minor road approach pulled out in front of the mainline vehicle.</p> <p>The group noted that while there are potential sight obstructions in three of the four quadrants, the previously described predominant crash pattern is NB and WB right-angle crashes, due to the wooden privacy fence along the south side of Whiteland Road in the southeast quadrant. Per Johnson County GIS, the existing right-of-way along Whiteland Road is just off the edge of pavement on the north side of the road and along the backs of the power poles (just a few feet further off the edge of pavement) along the south side. It is along the edge of the pavement on both sides of CR 75W. The potential sight obstructions include:</p> <ul style="list-style-type: none"> <li><u>NW quadrant</u>: Three large trees and power poles along the north side of Whiteland Road. The trees have large canopies that hang over Whiteland Road. While this may not obstruct the sightline of SB motorists at the stop bar looking toward oncoming EB vehicles, it could diminish overall awareness of the intersection for EB mainline Whiteland Road motorists approaching the intersection. There is also a smaller tree along CR 75W just north of the intersection that partially blocks the view of the stop sign.</li> <li><u>SW quadrant</u>: Wrought iron fence and large power poles along the south side of Whiteland Road.</li> <li><u>SE quadrant</u>: Wooden privacy fence and large power poles, with two large weight restriction signs mounted on the</li> </ul> |           |            |                                                                                     |                 |                                                   |



nearest power pole to the intersection, along the south side of Whiteland Road. A new wooden barricade, a few feet high (not yet shown on Google Street View), has been constructed by the property owner at the SE corner of the intersection, likely to help protect the home from being struck by an errant vehicle traveling through the intersection. The barricade does not appear to block NB motorists' line of sight at the stop bar toward oncoming WB vehicles.

A bridge is currently being replaced on Whiteland Road approximately 2,000' east of the subject intersection. The Johnson County Engineer noted that the bridge will accommodate heavier vehicles and that the weight restriction warning signs can be removed upon completion of construction.

Corradino questioned whether there is any Johnson County ordinance that would disallow a front yard privacy fence as close to Whiteland Road as the fence in the SE quadrant. The Johnson County Engineer responded that the Unified Development Ordinance (UDO) addresses sightline triangles and obstruction prevention on corner lots. After the meeting, Corradino found language on page 87 of the UDC that states "...No fence, wall, hedge, tree, shrub, sign, or other object which obstructs sight lines and elevations between two and one-half (2½) and eight (8) feet above the street shall be placed, planted, or permitted to remain on any corner lot within the triangular area formed by the street right-of-way lines and a line connecting Amendment 2025-Z-1 87 points thirty-five (35) feet from the intersection of said street lines..." For the subject intersection, the privacy fence is at least 50' from the CR 75W edge of pavement.

Regarding the small tree in the NW quadrant along CR 75W that partially obstructs the view of the stop sign, although the crash data does not indicate a stop-sign run, the tree should be trimmed to make the stop sign more visible to approaching traffic. Likewise, stop signs should be doubled up (left and right sides) on both CR 75W approaches, and "cross traffic does not stop" placards should be placed on each of the four signs. This will help define the stop condition as traffic increases in the area.

There are multiple utilities at the intersection, other than the previously mentioned electric, including fiber optic and a CenterPoint Energy gas transmission (possibly a 16" line) along the south side of Whiteland Road.

The residence in the NW quadrant has driveway access from CR 75W and also a driveway access directly into the NW corner of the subject intersection, which is unorthodox. It likely has very low usage.

The pavement on the NB CR 75 W approach to the intersection is severely deteriorated and lacks striping.

The group discussed the possibility of converting the intersection to an All-Way Stop (AWS). Corradino previously collected AM and PM peak-hour turning movement counts and shared a summary with the group. Whiteland Road carries approximately nine times as much traffic as CR 75W. The Johnson County Engineer determined that making all Whiteland Road traffic stop at an AWS is not desirable, and the AWS will not be investigated further.

The group noted that a roundabout would eliminate the previously discussed sightline challenges and right-angle conflicts, which account for 86% of crashes at the subject intersection. If a roundabout were constructed, it could be shifted towards the NE quadrant to minimize impacts to existing residences. The open agricultural field in the NE quadrant sits a few feet below the roadway profiles for Whiteland Road and CR 75W.

### Potential Alternatives Discussed

#### Near-Term

- Work with the property owner to remove the wooden privacy fence along Whiteland Road in the SE quadrant. It may be possible to accommodate this through discussions and potential cost-to-cure options to replace the fence; however, formal land acquisition might be required.
- While not as high a priority as the SE quadrant, work with the property owner to remove the wrought iron fence along Whiteland Road in the SW quadrant. It may be possible to accommodate this through discussions and potential cost-to-cure options to replace the fence; however, formal land acquisition might be required.
- Make sure weight limit signs along the south side of Whiteland Road in the SE quadrant are removed (post bridge construction).
- Trim the small tree along CR 75W in the NW quadrant of the intersection.
- Add stop signs on the left side of each CR 75W approach, and place "cross traffic does not stop" placards on each of the four stop signs.
- Mill and resurface the NB CR 75W Approach for a distance of 50' from Whiteland Road and stripe the centerline, edge lines, and stop bar.
- Restripe the stop bar on the SB CR 75W approach.

- Add intersection ahead warning signs for EB and WB Whiteland Road

**Long-Term**

- Convert the intersection to a single-lane roundabout.

**Future Consideration**

- N/A

**Consensus on Key Items for Alternatives**

- Consensus was met that the Potential Alternatives identified above will be the recommended alternatives for the RSA.

# Attachment E

## Cost Estimates & Schematics

# Near-Term Improvements Whiteland Road & CR 75 W



**PRELIMINARY COST ESTIMATE - NEAR TERM**  
**Whiteland Road & CR 75 W**

| LINE ITEM | ITEM NO.   | DESCRIPTION                                                 | QUANTITY | UNIT | UNIT PRICE  | AMOUNT       |
|-----------|------------|-------------------------------------------------------------|----------|------|-------------|--------------|
| 1         | 110-01001  | MOBILIZATION AND DEMOBILIZATION                             | 1        | LS   | \$ 5,000.00 | \$ 5,000.00  |
| 2         | 201-52370  | CLEARING RIGHT-OF-WAY                                       | 1        | LS   | \$ 500.00   | \$ 500.00    |
| 3         | 202-74045  | SIGN AND SUPPORTS, CHANNEL POSTS, REMOVE                    | 1        | EACH | \$ 140.00   | \$ 140.00    |
| 4         | 304-12623  | HMA PATCHING, FULL DEPTH, TYPE B                            | 8        | TON  | \$ 1,200.00 | \$ 9,600.00  |
| 5         | 306-08599  | MILLING, ASPHALT, 1/2 IN.                                   | 145      | SYS  | \$ 6.00     | \$ 870.00    |
| 6         | 401-000005 | QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm                          | 12       | TON  | \$ 100.00   | \$ 1,200.00  |
| 7         | 406-05521  | ASPHALT FOR TACK COAT                                       | 145      | SYS  | \$ 5.00     | \$ 725.00    |
| 8         | 801-06775  | MAINTAINING TRAFFIC                                         | 1        | LS   | \$ 4,250.00 | \$ 4,250.00  |
| 9         | 802-05704  | SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE         | 56       | LFT  | \$ 31.00    | \$ 1,736.00  |
| 10        | 802-09838  | SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS               | 36       | SFT  | \$ 45.00    | \$ 1,620.00  |
| 11        | 802-11648  | SIGN POST, TYPE                                             | 6        | EACH | \$ 125.00   | \$ 750.00    |
| 12        | 808-06703  | LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.                    | 200      | LFT  | \$ 1.25     | \$ 250.00    |
| 13        | 808-75245  | LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.                   | 200      | LFT  | \$ 1.25     | \$ 250.00    |
| 14        | 808-75297  | TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN. | 37       | LFT  | \$ 14.00    | \$ 518.00    |
| TOTAL     |            |                                                             |          |      |             | \$ 27,409.00 |

|                              |                    |
|------------------------------|--------------------|
| <b>CONSTRUCTION TOTAL</b>    | <b>\$27,000.00</b> |
| <b>CONTINGENCY (10%)</b>     | <b>\$3,000.00</b>  |
| <b>OVERALL PROJECT TOTAL</b> | <b>\$30,000.00</b> |

This cost estimate makes the following assumptions:  
1.) Unit price estimates based on stand-alone project

| Project Phases |                                 |                  |
|----------------|---------------------------------|------------------|
| Task No.       | Task                            | Cost             |
| 1              | Preliminary Engineering         | \$ 10,000        |
| 2              | Right of Way                    | \$ 20,000        |
| 3              | Utility CN                      | \$ 500           |
| 4              | Railroad CN                     | \$ -             |
| 5              | Construction Inspection/Testing | \$ -             |
| <b>TOTAL</b>   |                                 | <b>\$ 30,500</b> |

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

*Gary L. Yellig*  
\_\_\_\_\_  
Signature

Todd Johnson  
\_\_\_\_\_  
Estimate Completed By  
6/5/2026  
\_\_\_\_\_  
Date



**ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - LONG TERM**  
**Whiteland Road & CR 75 W**

| LINE ITEM | ITEM NO.   | DESCRIPTION                                                 | NOTES                                                                                                                                                                               |
|-----------|------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 110-01001  | MOBILIZATION AND DEMOBILIZATION                             |                                                                                                                                                                                     |
| 2         | 201-52370  | CLEARING RIGHT-OF-WAY                                       | Used for tree trimming (fence removal cost is in Task 2 Right of Way)                                                                                                               |
| 3         | 202-74045  | SIGN AND SUPPORTS, CHANNEL POSTS, REMOVE                    | 1 each for the Weight Limit sign                                                                                                                                                    |
| 4         | 304-12623  | HMA PATCHING, FULL DEPTH, TYPE B                            | assume a patching depth of 9 inches and an area of 10% of milling or 15 SYS and get 15 * 9 * 110/2000 = say 8 Tons                                                                  |
| 5         | 306-08599  | MILLING, ASPHALT, 1/2 IN.                                   | Area by cad is 1,295 sft or say 145 SYS                                                                                                                                             |
| 6         | 401-000005 | QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm                          | 145 SYS * 1.5 * 110/2000 = say 12 Tons                                                                                                                                              |
| 7         | 406-05521  | ASPHALT FOR TACK COAT                                       | same area as Milling                                                                                                                                                                |
| 8         | 801-06775  | MAINTAINING TRAFFIC                                         | Assume \$ 750/per leg for N, W, and E and then use \$ 2,000 for work on south leg or \$ 4,250 total                                                                                 |
| 9         | 802-05704  | SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE         | 4 new signs required (2 Stop and 2 Intersection Warning) say 14' per post and use 56 LFT                                                                                            |
| 10        | 802-09838  | SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS               | 2 new Stop signs (R1-1) at 5.18 sft/ea; 4 new W4-Y4P Warning signs at 2.50 sft/ea; 2 new Intersection signs (W2-2) at 6.25 sft/ea; 2 new CR 75 W W16-8P at 1.50 sft/ea = say 36 SFT |
| 11        | 802-11648  | SIGN POST, TYPE                                             | assume retroreflective strips on each of the 6 new and existing sign posts                                                                                                          |
| 12        | 808-06703  | LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.                    | assume 50' of white edge lines on both sides of both legs of CR 75 W or 200 LFT                                                                                                     |
| 13        | 808-75245  | LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.                   | assume 50' of double yellow at both legs of CR 75 W or 200 LFT                                                                                                                      |
| 14        | 808-75297  | TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN. | by cad the two stop lines measure 37 LFT                                                                                                                                            |
|           |            |                                                             |                                                                                                                                                                                     |



# Long-Term Improvements Whiteland & CR 75W





**PRELIMINARY COST ESTIMATE - LONG TERM  
WHITELAND ROAD & CR 75**

| LINE ITEM | ITEM NO.   | DESCRIPTION                                                      | QUANTITY | UNIT | UNIT PRICE      | AMOUNT        |
|-----------|------------|------------------------------------------------------------------|----------|------|-----------------|---------------|
| 1         | 105-06845  | CONSTRUCTION ENGINEERING                                         | 1        | LS   | \$ 60,000.00    | \$ 60,000.00  |
| 2         | 110-01001  | MOBILIZATION AND DEMOBILIZATION                                  | 1        | LS   | \$ 194,500.00   | \$ 194,500.00 |
| 3         | 201-52370  | CLEARING RIGHT-OF-WAY                                            | 1        | LS   | \$ 35,000.00    | \$ 35,000.00  |
| 4         | 202-02240  | PAVEMENT REMOVAL                                                 | 5,600    | SYS  | \$ 70.00        | \$ 392,000.00 |
| 5         | 202-03000  | HOUSES AND BUILDINGS, REMOVE, PARCEL NO.                         | 1        | LS   | \$ 200,000.00   | \$ 200,000.00 |
| 6         | 202-96133  | PIPE, REMOVE                                                     | 170      | LFT  | \$ 50.00        | \$ 8,500.00   |
| 7         | 203-02000  | EXCAVATION, COMMON                                               | 1,500    | CYS  | \$ 80.00        | \$ 120,000.00 |
| 8         | 203-02055  | EMBANKMENT                                                       | 4,500    | CYS  | \$ 51.00        | \$ 229,500.00 |
| 9         | 205-12108  | STORMWATER MANAGEMENT BUDGET                                     | 40,000   | DOL  | \$ 1.00         | \$ 40,000.00  |
| 10        | 205-12616  | STORMWATER MANAGEMENT IMPLEMENTATION                             | 1        | LS   | \$ 15,000.00    | \$ 15,000.00  |
| 11        | 205-12618  | SWQCP PREPARATION                                                | 1        | LS   | \$ 10,000.00    | \$ 10,000.00  |
| 12        | 207-09935  | SUBGRADE TREATMENT, TYPE IC                                      | 4,872    | SYS  | \$ 45.00        | \$ 219,240.00 |
| 13        | 211-09264  | STRUCTURE BACKFILL, TYPE 1                                       | 1,150    | CYS  | \$ 84.00        | \$ 96,600.00  |
| 14        | 306-08043  | MILLING, TRANSITION                                              | 670      | SYS  | \$ 10.00        | \$ 6,700.00   |
| 15        | 401-000005 | QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm                               | 402      | TON  | \$ 100.00       | \$ 40,200.00  |
| 16        | 401-000032 | QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm                         | 670      | TON  | \$ 110.00       | \$ 73,700.00  |
| 17        | 401-000046 | QC/QA-HMA, 2, 58S, BASE, 25.0 mm                                 | 1,608    | TON  | \$ 110.00       | \$ 176,880.00 |
| 18        | 401-000062 | QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm                     | 804      | TON  | \$ 150.00       | \$ 120,600.00 |
| 19        | 401-11526  | JOINT ADHESIVE                                                   | 2,163    | LFT  | \$ 1.00         | \$ 2,163.00   |
| 20        | 401-12439  | VOID REDUCING ASPHALT MEMBRANE FOR HMA                           | 2,163    | LFT  | \$ 7.00         | \$ 15,141.00  |
| 21        | 406-05520  | ASPHALT FOR TACK COAT                                            | 2        | TON  | \$ 750.00       | \$ 1,500.00   |
| 22        | 502-06327  | PCCP, 10 IN.                                                     | 315      | SYS  | \$ 200.00       | \$ 63,000.00  |
| 23        | 605-02493  | CURB, ISLAND CONCRETE                                            | 325      | SYS  | \$ 150.00       | \$ 48,750.00  |
| 24        | 605-06120  | CURB, CONCRETE                                                   | 610      | LFT  | \$ 100.00       | \$ 61,000.00  |
| 25        | 605-06121  | CURB, CONCRETE, TYPE B                                           | 315      | LFT  | \$ 75.00        | \$ 23,625.00  |
| 26        | 605-06140  | CURB AND GUTTER, CONCRETE                                        | 3,560    | LFT  | \$ 90.00        | \$ 320,400.00 |
| 27        | 621-01004  | MOBILIZATION AND DEMOBILIZATION FOR SEEDING                      | 4        | EACH | \$ 800.00       | \$ 3,200.00   |
| 28        | 621-06545  | FERTILIZER                                                       | 1        | TON  | \$ 1,200.00     | \$ 1,200.00   |
| 29        | 621-06553  | SEED MIXTURE, TYPE R                                             | 420      | LBS  | \$ 40.00        | \$ 16,800.00  |
| 30        | 621-06565  | MULCHING MATERIAL                                                | 4        | TON  | \$ 600.00       | \$ 2,400.00   |
| 31        | 621-06575  | SODDING, NURSERY                                                 | 1,170    | SYS  | \$ 65.00        | \$ 76,050.00  |
| 32        | 626-000206 | STORMWATER TREATMENT UNIT, TYPE D                                | 1        | EACH | \$ 100,000.00   | \$ 100,000.00 |
| 33        | 715-05048  | PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.                           | 3,500    | LFT  | \$ 18.00        | \$ 63,000.00  |
| 34        | 715-05053  | PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.                          | 260      | LFT  | \$ 35.00        | \$ 9,100.00   |
| 35        | 715-05149  | PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.                          | 390      | LFT  | \$ 95.00        | \$ 37,050.00  |
| 36        | 715-05151  | PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.                          | 1,200    | LFT  | \$ 115.00       | \$ 138,000.00 |
| 37        | 715-05152  | PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.                          | 1,200    | LFT  | \$ 130.00       | \$ 156,000.00 |
| 38        | 715-05154  | PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.                          | 400      | LFT  | \$ 140.00       | \$ 56,000.00  |
| 39        | 715-05161  | PIPE, TYPE 2, CIRCULAR, DIAMETER 48 IN.                          | 180      | LFT  | \$ 400.00       | \$ 72,000.00  |
| 40        | 718-12306  | GEOTEXTILE FOR UNDERDRAINS, TYPE 1B                              | 2,400    | SYS  | \$ 7.00         | \$ 16,800.00  |
| 41        | 718-52610  | AGGREGATE FOR UNDERDRAINS                                        | 900      | CYS  | \$ 110.00       | \$ 99,000.00  |
| 42        | 720-45045  | INLET, TYPE J10                                                  | 26       | EACH | \$ 4,500.00     | \$ 117,000.00 |
| 43        | 720-45410  | MANHOLE, TYPE C4                                                 | 13       | EACH | \$ 6,500.00     | \$ 84,500.00  |
| 44        | 720-45416  | MANHOLE, TYPE E4                                                 | 2        | EACH | \$ 10,000.00    | \$ 20,000.00  |
| 45        | 720-90349  | MANHOLE, TYPE C8                                                 | 4        | EACH | \$ 6,500.00     | \$ 26,000.00  |
| 46        | 801-06775  | MAINTAINING TRAFFIC                                              | 1        | LS   | \$ 160,000.00   | \$ 160,000.00 |
| 47        | 802-05704  | SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE              | 168      | LFT  | \$ 31.00        | \$ 5,208.00   |
| 48        | 802-09838  | SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS                    | 65       | SFT  | \$ 45.00        | \$ 2,925.00   |
| 49        | 802-09840  | SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS                    | 12       | SFT  | \$ 50.00        | \$ 600.00     |
| 50        | 807-02191  | HANDHOLE, LIGHTING                                               | 17       | EACH | \$ 2,000.00     | \$ 34,000.00  |
| 51        | 807-02352  | WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/C                 | 3,500    | LFT  | \$ 30.00        | \$ 105,000.00 |
| 52        | 807-06592  | CONDUIT, STEEL, GALVANIZED, 2 IN.                                | 280      | LFT  | \$ 40.00        | \$ 11,200.00  |
| 53        | 807-12199  | LUMINAIRE, HIGH LUMEN ROADWAY                                    | 17       | EACH | \$ 800.00       | \$ 13,600.00  |
| 54        | 807-12791  | LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING | 17       | EACH | \$ 2,500.00     | \$ 42,500.00  |
| 55        | 807-85502  | LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, BREAKAWAY BASE         | 17       | EACH | \$ 5,000.00     | \$ 85,000.00  |
| 56        | 807-86810  | SERVICE POINT, TYPE II                                           | 1        | EACH | \$ 10,600.00    | \$ 10,600.00  |
| 57        | 807-86889  | CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C           | 595      | LFT  | \$ 2.00         | \$ 1,190.00   |
| 58        | 807-86910  | CONNECTOR KIT, UNFUSED                                           | 17       | EACH | \$ 71.00        | \$ 1,207.00   |
| 59        | 807-86915  | CONNECTOR KIT, FUSED                                             | 17       | EACH | \$ 71.00        | \$ 1,207.00   |
| 60        | 808-11478  | LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.                        | 80       | LFT  | \$ 4.50         | \$ 360.00     |
| 61        | 808-11698  | TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.     | 100      | LFT  | \$ 18.00        | \$ 1,800.00   |
| 62        | 808-75245  | LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.                        | 3,580    | LFT  | \$ 1.25         | \$ 4,475.00   |
| TOTAL     |            |                                                                  |          |      | \$ 3,828,099.00 |               |

**CONSTRUCTION TOTAL** **\$3,828,000.00**

**CONTINGENCY (10%)** **\$383,000.00**

**OVERALL PROJECT TOTAL** **\$4,211,000.00**

This cost estimate makes the following assumptions:  
1.) Unit price estimates based on stand-alone project

| Project Phases |                                 |              |
|----------------|---------------------------------|--------------|
| Task No.       | Task                            | Cost         |
| 1              | Preliminary Engineering         | \$ 505,320   |
| 2              | Right of Way                    | \$ 580,000   |
| 3              | Utility CN                      | \$ 200,000   |
| 4              | Railroad CN                     | \$ -         |
| 5              | Construction Inspection/Testing | \$ 421,100   |
| TOTAL          |                                 | \$ 1,706,420 |

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

*Gary L. Yellig*  
Signature



Todd Johnson  
Estimate Completed By  
6/5/2026  
Date

**ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - LONG TERM**  
**WHITELAND ROAD & CR 75**

| LINE ITEM | ITEM NO.   | DESCRIPTION                                                      | NOTES                                                                                                                                   |
|-----------|------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 105-06845  | CONSTRUCTION ENGINEERING                                         | assumed values                                                                                                                          |
| 2         | 110-01001  | MOBILIZATION AND DEMOBILIZATION                                  | assumed values                                                                                                                          |
| 3         | 201-52370  | CLEARING RIGHT-OF-WAY                                            | assumed values                                                                                                                          |
| 4         | 202-02240  | PAVEMENT REMOVAL                                                 | Whiteland Road = 22' * 1200'; CR 75 W = 20' * 750'; Existing Drives 1,500 sft; Site Paving SE parcel = 7,500 sft. Total = 5,600 SYS     |
| 5         | 202-03000  | HOUSES AND BUILDINGS, REMOVE, PARCEL NO.                         | Includes 3 buildings. Three parcels have one owner                                                                                      |
| 6         | 202-96133  | PIPE, REMOVE                                                     | This removes an apparent field drain tile that crosses north-south. Assume 170 LFT                                                      |
| 7         | 203-02000  | EXCAVATION, COMMON                                               | assume under new pavement in open area or 12,000 sft * 1.5' + 800 CYS potential detention area say 1,500 CYS                            |
| 8         | 203-02055  | EMBANKMENT                                                       | area of embankment in NE quad is about 40,206 sft by cad. Assume an average depth of 3' and get say 4,500 CYS                           |
| 9         | 205-12108  | STORMWATER MANAGEMENT BUDGET                                     | assumed values                                                                                                                          |
| 10        | 205-12616  | STORMWATER MANAGEMENT IMPLEMENTATION                             | assumed values                                                                                                                          |
| 11        | 205-12618  | SWQCP PREPARATION                                                | assumed values                                                                                                                          |
| 12        | 207-09935  | SUBGRADE TREATMENT, TYPE IC                                      | 4872                                                                                                                                    |
| 13        | 211-09264  | STRUCTURE BACKFILL, TYPE 1                                       | used for storm sewers. 2,040' of storm sewer and say an average of 15 sft per ft or say 1,150 CYS                                       |
| 14        | 306-08043  | MILLING, TRANSITION                                              | Used on existing pavement at tie into to new pavement. Use a average length of 50' and average width of 30' and get say 670 SYS         |
| 15        | 401-000005 | QC/QA-HMA, 3, 58H, SURFACE, 9.5 mm                               | 402                                                                                                                                     |
| 16        | 401-000032 | QC/QA-HMA, 3, 58H, INTERMEDIATE, 12.5 mm                         | 670                                                                                                                                     |
| 17        | 401-000046 | QC/QA-HMA, 2, 58S, BASE, 25.0 mm                                 | 1608                                                                                                                                    |
| 18        | 401-000062 | QC/QA-HMA, 3, 58E, INTERMEDIATE, OG, 19.0 mm                     | 804                                                                                                                                     |
| 19        | 401-11526  | JOINT ADHESIVE                                                   | 2161                                                                                                                                    |
| 20        | 401-12439  | VOID REDUCING ASPHALT MEMBRANE FOR HMA                           | 2161                                                                                                                                    |
| 21        | 406-05520  | ASPHALT FOR TACK COAT                                            | 2                                                                                                                                       |
| 22        | 502-06327  | PCCP, 10 IN.                                                     | Used for truck overrun apron. Area by cad is 2,827 sft or say 315 SYS                                                                   |
| 23        | 605-02493  | CURB, ISLAND CONCRETE                                            | used at islands 325 SYS                                                                                                                 |
| 24        | 605-06120  | CURB, CONCRETE                                                   | used at islands Total = say 610 LFT                                                                                                     |
| 25        | 605-06121  | CURB, CONCRETE, TYPE B                                           | roll curb at truck overrun apron. By cad the length is 315 LFT                                                                          |
| 26        | 605-06140  | CURB AND GUTTER, CONCRETE                                        | used on outside edges. Total = say 3,560 LFT                                                                                            |
| 27        | 621-01004  | MOBILIZATION AND DEMOBILIZATION FOR SEEDING                      | Assume 4 each - one for each quadrant                                                                                                   |
| 28        | 621-06545  | FERTILIZER                                                       | Use 1,600 LBS or roundup to say 1 Ton                                                                                                   |
| 29        | 621-06553  | SEED MIXTURE, TYPE R                                             | Length of project on both sides is about 3,500' and say a disturbed area averaging 15' wide or round up and say 2 acre. Use say 420 LBS |
| 30        | 621-06565  | MULCHING MATERIAL                                                | 2 tons per acre or 4 tons                                                                                                               |
| 31        | 621-06575  | SODDING, NURSERY                                                 | used in grass medians. Area is 10,507 sft by cad assume 1,170 SYS                                                                       |
| 32        | 626-000206 | STORMWATER TREATMENT UNIT, TYPE D                                | assume 1 each is needed to treat stormwater quality before runoff enters existing pond                                                  |
| 33        | 715-05048  | PIPE, TYPE 4, CIRCULAR, DIAMETER 6 IN.                           | assume underdrains use a length of 3,500 LFT                                                                                            |
| 34        | 715-05053  | PIPE, UNDERDRAIN OUTLET, DIAMETER 6 IN.                          | connector pipe from underdrain to inlet. Say 10' per each J10 Inlet or 260 LFT                                                          |
| 35        | 715-05149  | PIPE, TYPE 2, CIRCULAR, DIAMETER 12 IN.                          | use an average of 30 per each pair of inlets or 13 * 30' = 390 LFT                                                                      |
| 36        | 715-05151  | PIPE, TYPE 2, CIRCULAR, DIAMETER 15 IN.                          | say 200'/leg for south and west and 400'/leg for north and east or 1,200 LFT                                                            |
| 37        | 715-05152  | PIPE, TYPE 2, CIRCULAR, DIAMETER 18 IN.                          | say 200'/leg for south and west and 400'/leg for north and east or 1,200 LFT                                                            |
| 38        | 715-05154  | PIPE, TYPE 2, CIRCULAR, DIAMETER 24 IN.                          | used near outlet end of storm sewer say 400 LFT                                                                                         |
| 39        | 715-05161  | PIPE, TYPE 2, CIRCULAR, DIAMETER 48 IN.                          | used to perpetuate existing tile. Say 180 LFT needed                                                                                    |
| 40        | 718-12306  | GEOTEXTILE FOR UNDERDRAINS, TYPE 1B                              | assume 6.1667' per ft and get 6.1667' * 3,500' = say 2,400 SYS                                                                          |
| 41        | 718-52610  | AGGREGATE FOR UNDERDRAINS                                        | use IDM factor of 0.257 CYS/LFT and get 3,500 * 0.257 = say 900 CYS                                                                     |
| 42        | 720-45045  | INLET, TYPE J10                                                  | assume 2 pairs of inlets on south leg; 3 on west; 3 on north; and 5 on east or 13 pairs * 2 = 26 Each                                   |
| 43        | 720-45410  | MANHOLE, TYPE C4                                                 | assume one each per each pair of inlets or 13 each                                                                                      |
| 44        | 720-45416  | MANHOLE, TYPE E4                                                 | assume two needed for 48" pipe to perpetuate tile drain                                                                                 |
| 45        | 720-90349  | MANHOLE, TYPE C8                                                 | assume 4 each of these manhole/inlets used around the circle                                                                            |
| 46        | 801-06775  | MAINTAINING TRAFFIC                                              | assumed values                                                                                                                          |
| 47        | 802-05704  | SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE              | assume Yield signs and RAB Warning signs on each leg and One Way in circle. Use 12 signs total and 14' per sign or 168 LFT              |
| 48        | 802-09838  | SIGN, SHEET, WITH LEGEND, 0.080 IN. THICKNESS                    | Assume 65 SFT for all signs                                                                                                             |
| 49        | 802-09840  | SIGN, SHEET, WITH LEGEND, 0.100 IN. THICKNESS                    | assume one way signs needed in center of RAB and each is 3 SFT and 4 required or 12 SFT                                                 |
| 50        | 807-02191  | HANDHOLE, LIGHTING                                               | 17 each - see Luminaire                                                                                                                 |
| 51        | 807-02352  | WIRE, XHHW, NO. 4 COPPER, IN PLASTIC DUCT, 4 1/C                 | based on project length assume 3,500 LFT                                                                                                |
| 52        | 807-06592  | CONDUIT, STEEL, GALVANIZED, 2 IN.                                | crossing under pavement - say 4 crossings at an average of 70 each = 280 LFT                                                            |
| 53        | 807-12199  | LUMINAIRE, HIGH LUMEN ROADWAY                                    | assume 5 on north side; 4 on west side; 3 on southwest side; and 5 on southeast side or 17 each                                         |
| 54        | 807-12791  | LIGHTING FOUNDATION, CONVENTIONAL POLE, CONCRETE, WITH GROUNDING | 17 each - see Luminaire                                                                                                                 |
| 55        | 807-85502  | LIGHT POLE, 30 FT E.M.H., 15 FT MAST ARM, BREAKAWAY BASE         | 17 each - see Luminaire                                                                                                                 |
| 56        | 807-86810  | SERVICE POINT, TYPE II                                           | assume 1 each                                                                                                                           |
| 57        | 807-86889  | CABLE, POLE CIRCUIT, THWN, NO. 10 COPPER, STRANDED 1/C           | assume 35' per pole and 17 poles = 595 LFT                                                                                              |
| 58        | 807-86910  | CONNECTOR KIT, UNFUSED                                           | 17 each - see Luminaire                                                                                                                 |
| 59        | 807-86915  | CONNECTOR KIT, FUSED                                             | 17 each - see Luminaire                                                                                                                 |
| 60        | 808-11478  | LINE, THERMOPLASTIC, DOTTED, WHITE, 8 IN.                        | use at each leg - say 40' per leg total length of 160' assume a 2' on 2' off pattern and get 80 LFT                                     |
| 61        | 808-11698  | TRANSVERSE MARKING, THERMOPLASTIC, YIELD LINE, WHITE, 27 IN.     | assume yield lines on each approach at 25' each or 100 LFT                                                                              |
| 62        | 808-75245  | LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.                        | 3580                                                                                                                                    |
| 0         | 0          |                                                                  |                                                                                                                                         |

| Economic Evaluation - Form F5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Whiteland Road & CR 75W - Long-Term Recommendation |
| <b>INPUT</b> <a href="#">Collapse</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                    |
| Number of Crashes (crash/period)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                    |
| Fatal and Incapacitating Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4                                                  |
| Non-Incapacitating and Possible Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2                                                  |
| Property Damage Only Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 8                                                  |
| Road Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | County Local Intersection O                        |
| Average Crash Costs (\$)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                    |
| Fatal and Incapacitating Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2190300                                            |
| Non-Incapacitating and Possible Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 400600                                             |
| Property Damage Only Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 37000                                              |
| Crash Cost Year (yyyy)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2017                                               |
| First Year with Crash Data (yyyy)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2022                                               |
| Last Year with Crash Data (yyyy)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2024                                               |
| Present Year (yyyy)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2026                                               |
| Implementation Year (yyyy)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2030                                               |
| Inflation Rate (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2                                                  |
| Interest Rate (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4                                                  |
| Annual Traffic Growth Rate (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2                                                  |
| Total Traffic Growth Factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1.69                                               |
| Future Traffic Growth Period (years)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 24                                                 |
| <b>COUNTERMEASURES</b> <a href="#">Collapse All</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |
| Countermeasure 1 <a href="#">Collapse</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <a href="#">[C] Copy</a>                           |
| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Single Lane Roundabout                             |
| Crash Reduction Factors (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                    |
| Fatal and Incapacitating Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 78                                                 |
| Non-Incapacitating and Possible Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 78                                                 |
| Property Damage Only Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 78                                                 |
| Number of Target Crashes (crash/period)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                    |
| Fatal and Incapacitating Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4                                                  |
| Non-Incapacitating and Possible Injury Crashes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2                                                  |
| <div> <div>Form</div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>CDB Tool</div> </div> <div> <div>Calculate</div> <div>Load Crashes</div> <div>New</div> <div>Open</div> <div>Save</div> <div>Save As</div> <div>Reports</div> <div>Exit</div> <div>Guidelines</div> <div>Help</div> <div>Equations</div> <div>General Improvements Table</div> <div>Service Life Table</div> </div> <div> <div>Alternatives</div> <div>Save Current Alternative</div> <div>Read Alternative</div> </div> <div> <div>Notes:</div> <div>The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes</div> </div> <div> <div>Location</div> <div>Whiteland Road &amp; CR N 75 W</div> <div>GIS</div> <div>Post</div> <div>Analyst</div> <div>JMR</div> <div>Date</div> <div>3/27/2026</div> <div>Comments</div> <div>Traffic Counts: INDOT TCDS</div> <div>Functional Class: IMPO Data Hub</div> <div>Crash Data: ARIFS provided</div> </div> <div> <div>Settings: Indiana local settings</div> <div>Version 4.1</div> <div>Whiteland &amp; 75</div> </div> |                                                    |

|                                             |            |
|---------------------------------------------|------------|
| Property Damage Only Crashes                | 8          |
| Countermeasure Service Life (years)         | 20         |
| Countermeasure Capital Cost (\$)            | 6,528,640  |
| Countermeasure Annual Maintenance Cost (\$) | 0          |
| Countermeasure Salvage Value (\$)           | 0          |
| [+] Add                                     |            |
| <b>OUTPUT</b>                               |            |
| Total Crashes Saved                         | 2.263      |
| FI Crashes Saved                            | 0.362      |
| NI Crashes Saved                            | 0.233      |
| PDO Crashes Saved                           | 1.669      |
| Equivalent Annual Benefit (\$)              | 1,189,943  |
| Equivalent Annual Cost (\$)                 | 410,638    |
| Present Worth Benefit (\$)                  | 29,748,568 |
| Present Worth Cost (\$)                     | 10,265,958 |
| Net Annual Benefit (\$)                     | 779,304    |
| Present Worth Net Benefit (\$)              | 19,482,610 |
| Benefit-Cost Ratio                          | 2.90       |

Notes:

The number of target crashes are those that can be specifically reduced by the countermeasure selected. The number of target crashes for each countermeasure should not exceed the number of crashes

Location: Whiteland Road & CR N 75 W

GIS:

Post:

Analyst: JMR

Date: 3/27/2026

Comments: Traffic Counts: INDOT TCDS  
Functional Class: IMPO Data Hub  
Crash Data: ARIFS provided

Settings: Indiana local settings

Version 4.1 Whiteland & 75

## ABBREVIATED ENGINEERING REVIEW FOR TRAFFIC SAFETY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                   |                                                                                     |                    |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|-------------------------------------------------------------------------------------|--------------------|------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                   |                                                                                     | Date: 6/25/2026    |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                   |                                                                                     | Des. No.: n/a      |            |
| <b>Reviewer Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |                   | Agency/Firm Name: Corradino LLC                                                     |                    |            |
| Primary Author: James Mark Rinehart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |                   | Agency: Indianapolis Metropolitan Planning Organization                             |                    |            |
| Phone Numbers: (317) 488-2363                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |                   | Email Address: <a href="mailto:jrinehart@corradino.com">jrinehart@corradino.com</a> |                    |            |
| <b>Purpose of Review:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |                   |                                                                                     |                    |            |
| Corradino LLC was hired by the Indianapolis MPO (IMPO) to conduct a series of roadway safety audits at preselected intersections within its urbanized area. The goal was to identify existing safety issues and recommend near-term and long-term improvements to address them. Improvements may range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements, including intersection upgrades, multimodal infrastructure, and upgraded traffic signals, as needed. This form is suitable for Level 1 review. Of the three available levels of engineering review, this represents the least refined, lowest-intensity degree of analysis, development of essential project intent (outline of the certified course of action), scoring, and process documentation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                   |                                                                                     |                    |            |
| <b>Project Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                   |                                                                                     |                    |            |
| Route: Whiteland Rd & Smokey Row Rd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           | District: Seymour |                                                                                     | City: Bargersville |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                   |                                                                                     | County: Johnson    |            |
| Lat & Long (BOP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 39.547134 | -86.220419        | Lat & Long (EOP):                                                                   | 39.547134          | -86.220419 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                   | Inside Urban Area Boundary: <u>Yes</u> or No (circle)                               |                    |            |
| IMPO: Indianapolis Metropolitan Planning Organization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |                   | Project Type: Roadway Safety Audit                                                  |                    |            |
| Location: The intersection of Whiteland Road & Smokey Row Road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |                   |                                                                                     |                    |            |
| <b>Existing Conditions:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                   |                                                                                     |                    |            |
| <p>The Whiteland Road &amp; Smokey Row Road intersection is a two-way stop-controlled intersection with Stop signs and “Cross Traffic Does Not Stop” signs on the NB and SB approaches. All four approaches have one travel lane. Stop Ahead signs are placed approximately 300’ north and south of the intersection, although trees partially obstruct the NB approach’s sign. The posted speed limit for Whiteland Rd at the intersection is 50mph. The posted speed limit for Smokey Row Rd at the intersection is 45mph.</p> <p>There are no pedestrian facilities present at any of the approaches to the intersection.</p> <p>Located in each quadrant of the intersection are:</p> <ul style="list-style-type: none"> <li>• NW Quadrant: Residential home.</li> <li>• SW Quadrant: Vacant land.</li> <li>• SE Quadrant: Agricultural field.</li> <li>• NE Quadrant: Wooded area. <ul style="list-style-type: none"> <li>○ During the field check for this RSA, the Johnson County Engineer commented that the edge of the woods in the NE quadrant of the intersection was recently trimmed to better open up sightlines, especially for SB Smokey Row Road stopped motorists looking to the west for suitable gaps in the oncoming EB traffic. The tree trimming helped, but more aggressive trimming and tree removal would be beneficial. The slight vertical crest curve on the west leg of the intersection exacerbates the sightline challenges.</li> </ul> </li> </ul> <p>Corradino staff held a virtual meeting with IMPO staff, Johnson County staff, and the Bargersville Police Department on April 17, 2026, to review the Preliminary Findings Report, discuss any past or upcoming projects at or near the intersection, and identify potential near-term and long-term solutions for Corradino to test before the field check. Meeting minutes from the virtual meeting are available in <b>Attachment D</b>.</p> <p>Corradino held a field check with the representatives from the IMPO and Johnson County on May 11, 2026, to provide a recap of the discussion held during the virtual meeting, share test results for the near-term and long-term solutions, and build consensus around a series of countermeasures for Corradino to cost as part of the final recommendations. The field check meeting minutes are available in <b>Attachment D</b>.</p> |           |                   |                                                                                     |                    |            |

## Traffic Operations:

- a) **Mobility/Congestion Performance:** According to AM Peak Hour traffic hand count data collected on April 16, 2026. EB traffic entering the intersection was **135**. The WB traffic entering the intersection was **79**. The NB traffic entering the intersection was **37**. The SB traffic entering the intersection was **68**. According to PM Peak Hour traffic hand-count data, EB traffic entering the intersection was **156**. The WB traffic entering the intersection was **153**. The NB traffic entering the intersection was **36**. The SB traffic entering the intersection was **91**.

Corradino seasonally adjusted the traffic counts by applying INDOT's most recent 2025 Traffic Adjustment Factors to account for seasonal and day-of-week variations and normalize the data. A **1.2%** forecasted annual growth rate, derived from the IMPO's TDM, was used to develop a future no-build traffic scenario for the intersection. The design year for the long-term build alternatives was **2050**. Peak hour hand counts are available for review in **Attachment B**. Results from the traffic analysis are available in **Attachment C**.

|                | Eastbound |       | Westbound |       | Northbound |       | Southbound |       |
|----------------|-----------|-------|-----------|-------|------------|-------|------------|-------|
| Alternative    | LOS       | Delay | LOS       | Delay | LOS        | Delay | LOS        | Delay |
| AM Peak – 2026 | A         | 7.3   | A         | 7.3   | A          | 9.8   | A          | 9.7   |
| PM Peak - 2026 | A         | 7.5   | A         | 7.4   | B          | 10.2  | B          | 10.9  |
| AM Peak - 2050 | A         | 7.4   | A         | 7.4   | B          | 10.2  | B          | 10.1  |
| PM Peak - 2050 | A         | 7.6   | A         | 7.5   | B          | 10.9  | B          | 11.8  |

- b) **Safety Performance / Crash Analysis:** According to available crash data from January 1, 2022, to December 31, 2024, there were **5** crashes associated with the study area. Of those crashes, **0** resulted in fatality, **0** resulted in incapacitating injuries, and **2** resulted in non-incapacitating injuries.

There was no clear pattern observed in the crash data, other than two Right Angle crashes reported at the intersection. However, Johnson County staff noted they are beginning to see increased NB and SB traffic at the intersection due to the development of new single-family residential neighborhoods and rerouting since the completion of I-69 South, due to new access control on I-69 with the nearest interchange to the north, via SR 144. This rerouting has also likely caused EB and WB traffic to decrease at the intersection. See attached Crash Summary and output from RoadHAT 4.1 in **Attachment A**.

RoadHAT 4.1 was used to develop crash cost (ICC) and crash frequency (ICF) scores for the Whiteland Road & Smokey Row Road Intersection. Results from the RoadHAT 4.1 analysis were as follows:  $I_{CC} = 0.31$ ,  $I_{CF} = 1.16$ . The RoadHAT 4.1 analysis results are available in **Attachment A**.

## Alternatives & Recommendations

During the field check with representatives from Johnson County and the IMPO, crash data and traffic data were discussed while observing traffic patterns. Multiple maintenance-type improvements were identified in the field to address near-term safety needs at the intersection (striping, signage, tree pruning, etc.). Below are the Near- and Long-Term improvements discussed for the Whiteland Road & Smokey Row Road intersection. Notes from the field check summarizing conversations are available for review in **Attachment D**.

### Near-Term

- Work with the property owner in the NE quadrant to get approval to remove trees along the south side of Whiteland Road and better open up sight lines.
- Relocate the "Adopt-a-Road" sign along the north side of Whiteland Road in the NW quadrant to remove it from the sight line.
- Paint stop bars on the Smokey Row Road approaches to the intersection.

### Long-Term

- Due to the low traffic volume and number of reported crashes, there were no long-term recommendations for the Whiteland Road & Smokey Row Road intersection.

### Future Consideration

- N/A

| Near-Term & Long-Term Cost Estimates for the Proposed Safety Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <p>Cost estimates for the near- and long-term improvements are available in <b>Attachment E</b>.</p> <p><b><u>Near-Term Recommendation</u></b></p> <p>PE - <b>\$5,000</b><br/>           ROW - <b>\$0</b><br/>           Utility CN - <b>\$1,000</b><br/>           Railroad CN - <b>\$0</b><br/>           Construction Inspection/Testing (10% Rounded up to nearest \$1k) - <b>\$0</b><br/>           CN (including 10% contingency) - <b>\$31,000</b></p> <p><b>Near-Term Total - \$37,000</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| Project Score: (for INDOT use)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| <div>Safety Program Score =</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| Miscellaneous Notes:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| <p>Corradino did conduct an All-Way-Stop warrant analysis for the intersection. Based on section 2B of FHWA’s MUTCD, 11<sup>th</sup> Edition, the Whiteland Road &amp; Smokey Row Road intersection did not meet the warrant criteria for an all-way stop-controlled intersection. However, it is important to note that “warrants are not a substitute for engineering judgment... and are not conclusive justification to install or not install all-way stop control. Because each intersection will have unique characteristics that affect its operational performance or safety, it is the engineering study for a given intersection that is ultimately the basis for a decision to install or not install all-way stop control.” <i>MUTCD 11<sup>th</sup> Edition – Chapter 2B, Section 2B.12</i>. While the all-way stop was not recommended as part of this RSA, it could be evaluated at a later date and be recommended if safety concerns at the intersection become more prominent.</p> |  |
| Attachments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| <p><b>Attachment A:</b> Preliminary Findings Report</p> <p><b>Attachment B:</b> Traffic Counts</p> <p><b>Attachment C:</b> Traffic Analysis</p> <p><b>Attachment D:</b> Virtual Meeting Minutes &amp; Field Check Minutes</p> <p><b>Attachment E:</b> Cost Estimates &amp; Schematics</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |



# Attachment A

## Preliminary Findings

# PRELIMINARY FINDINGS

## Safety Analysis at Whiteland Road & Smokey Row Road

Report Prepared for: IMPO & Johnson County Highway Department

## 1. **Safety Analysis**

A crash data analysis was completed for the intersection of Whiteland Road & Smokey Row Road (Study Area) in Johnson County, IN. The Study Area is located within the Town of Bargersville but is maintained by Johnson County. Coordination with the Town and County is recommended. Before beginning the crash analysis, the project team followed these steps to clean the data:

- Received 2022-2024 crash data from the IMPO. Serious Injury and Fatal crashes had been cleaned by IMPO staff.
- Placed a 250' buffer around the Study Area to identify reported crashes near the intersection.
- Reviewed the police reports for each crash record identified within the 250' buffer.
- Identified and removed any crash records from the analysis that involved a collision with an animal in the roadway or occurred in a parking lot near the intersection.
- Reviewed the description in the reports to confirm the selected Manner of Collision & Crash Severity accurately reflected how the police officer described the crash.
- Exported the results from ArcGIS Pro into MS Excel.
- Created a collision diagram of the Study Area as well as summary tables of the crash records.
- Developed a crash cost (Icc) and crash frequency (Icf) for the Study Area using RoadHat 4.1.

Five crashes were identified within the Study Area. Two of the reported crashes resulted in Non-Incapacitating injuries. There were no reported Incapacitating or Fatal crashes. The two reported injury-related crashes were classified as Right Turn, Rear End. Other notable results near the Study Area include:

- 40% of the reported crashes within the Study Area were Right Angle crashes.
- 60% of reported crashes occurred during Off-Peak travel times. 40% of reported crashes occurred during the evening peak hours (4 pm-7 pm). There were no reported crashes during the morning peak hours (6 am-9 am).
- 100% of reported crashes occurred in daylight hours.
- 100% of reported crashes occurred on dry roadway surface conditions.
- 100% of reported crashes occurred when the weather conditions were clear.

Attached are the crash summary tables, a collision diagram, images of the intersection, and the results of the RoadHAT 4.1 analysis.

| 2022-2024 Crash Summary |   |
|-------------------------|---|
| TOTAL CRASHES           | 5 |
| TOTAL INJURIES          | 4 |
| PROPERTY DAMAGE ONLY    | 3 |
| NON-INCAPACITATING      | 2 |
| INCAPACITATING          | 0 |
| FATAL                   | 0 |

| Summary of Primary Factors per Manner of Collision |          |             |
|----------------------------------------------------|----------|-------------|
| Primary Factors per Manner of Collision            | Crashes  | Percent     |
| <b>RIGHT ANGLE</b>                                 | <b>2</b> | <b>40%</b>  |
| FAILURE TO YIELD RIGHT OF WAY                      | 2        |             |
| <b>RIGHT TURN</b>                                  | <b>1</b> | <b>20%</b>  |
| FAILURE TO YIELD RIGHT OF WAY                      | 1        |             |
| <b>LEFT TURN</b>                                   | <b>1</b> | <b>20%</b>  |
| LEFT OF CENTER                                     | 1        |             |
| <b>REAR END</b>                                    | <b>1</b> | <b>20%</b>  |
| UNSAFE LANE MOVEMENT                               | 1        |             |
| <b>Total Crashes</b>                               | <b>5</b> | <b>100%</b> |

| Summary of Crashes per Time of Day |          |             |
|------------------------------------|----------|-------------|
| Time of Day                        | Crashes  | Percent     |
| Peak AM (6:00-9:00 AM)             | 0        | 0%          |
| Peak PM (4:00-7:00 PM)             | 2        | 40%         |
| Off Peak                           | 3        | 60%         |
| <b>Total Crashes</b>               | <b>5</b> | <b>100%</b> |

| Summary of Crashes per Light Conditions |          |             |
|-----------------------------------------|----------|-------------|
| Light Conditions                        | Crashes  | Percent     |
| DAWN/DUSK                               | 0        | 0%          |
| DARK (NOT LIGHTED)                      | 0        | 0%          |
| DAYLIGHT                                | 5        | 100%        |
| <b>Total Crashes</b>                    | <b>5</b> | <b>100%</b> |

| Summary of Roadway Surface Conditions |          |               |
|---------------------------------------|----------|---------------|
| Manner of Collision                   | DRY      | Total Crashes |
| RIGHT ANGLE                           | 2        | 2             |
| RIGHT TURN                            | 1        | 1             |
| LEFT TURN                             | 1        | 1             |
| REAR END                              | 1        | 1             |
| <b>Total Crashes</b>                  | <b>5</b> | <b>5</b>      |

| Summary of Weather Conditions |          |               |
|-------------------------------|----------|---------------|
| Manner of Collision           | CLEAR    | Total Crashes |
| RIGHT ANGLE                   | 2        | 2             |
| RIGHT TURN                    | 1        | 1             |
| LEFT TURN                     | 1        | 1             |
| REAR END                      | 1        | 1             |
| <b>Total Crashes</b>          | <b>5</b> | <b>5</b>      |



DIAGRAM OF  
COLLISION  
REPORTS

Whiteland Road & Smokey Row Road

Study Period: 1/1/2022 to 12/31/2024

Location: Johnson County

INDOT District: SeymourCounty: Johnson

City/Town: Bargersville

Analyst: JMRQC: DC

Date: 3/18/2026



| YEAR  | REPORTS |
|-------|---------|
| 2022  | 3       |
| 2023  | 0       |
| 2024  | 2       |
| Total | 5       |

**NOTES**  
1) Crashes with determinable location are shown in diagram. Crash total may not match ARIES database.  
2) Crashes on diagram do not represent exact crash locations; they are approximated based on available information.  
3) Diagram not to scale.

- Object Symbols**
- MOVING VEHICLE
  - TURNING VEHICLE
  - BACKING VEHICLE
  - OUT OF CONTROL
  - PARKED VEHICLE
  - PEDESTRIAN
  - BICYCLE
  - ANIMAL
  - DEBRIS IN ROADWAY
  - DRIVEWAY CRASH

- FATAL CRASH
- INJURY CRASH – INCAPACITATING
- INJURY CRASH – NONINCAPACITATING
- PDO CRASHES (IF > 1)

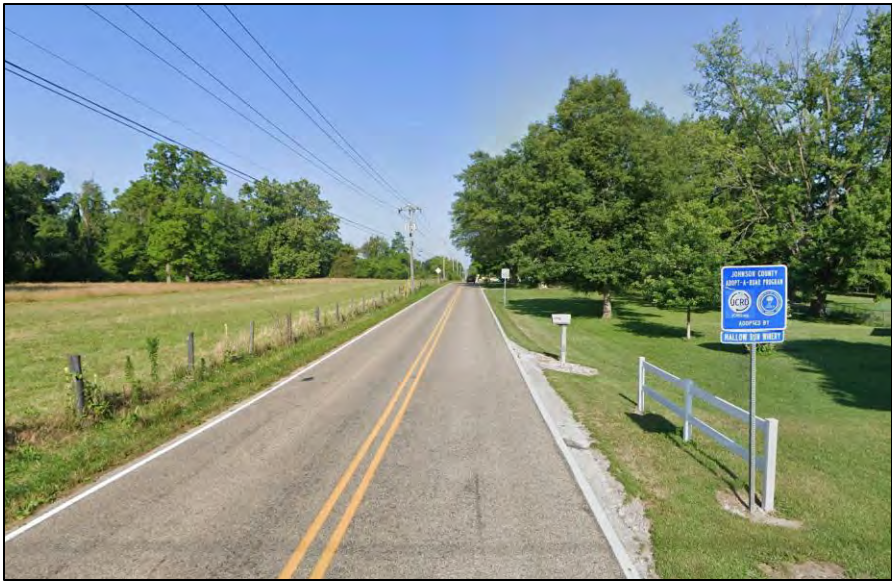
- SIGNALIZED INTERSECTION
- FIXED OBJECT (See table for # codes)

- Collision Symbols**
- REAR END
  - HEAD ON
  - OTHER
  - SIDESWIPE – SAME
  - SIDESWIPE – OPPOSITE
  - RIGHT ANGLE
  - LEFT/RIGHT TURN
  - RAN OFF ROAD

- Fixed Object Codes**
- 01 – BRIDGE or OVERPASS
  - 02 – BUILDING
  - 03 – CULVERT or DITCH
  - 04 – CURB
  - 05 – GUARDRAIL or BARRIER
  - 06 – EMBANKMENT
  - 07 – FENCE
  - 08 – TRAFFIC POLE
  - 09 – UTILITY POLE
  - 10 – SIGN
  - 11 – TREE / SHRUB
  - 12 – CONSTRUCTION BARRIER
  - 13 – CRASH ATTENUATOR
  - 88 – OTHER
  - 99 - UNKNOWN



|                     |                                             |                        |                                 |
|---------------------|---------------------------------------------|------------------------|---------------------------------|
| Intersection Images | Whiteland Road & Smokey Row Road            |                        |                                 |
|                     | Study Period: <u>1/1/2022 to 12/31/2024</u> |                        | Location: <u>Johnson County</u> |
|                     | INDOT District: <u>Seymour</u>              | County: <u>Johnson</u> | City/Town: <u>Bargersville</u>  |



West Leg – Looking West



West Leg – Looking East



East Leg – Looking West



East Leg – Looking East



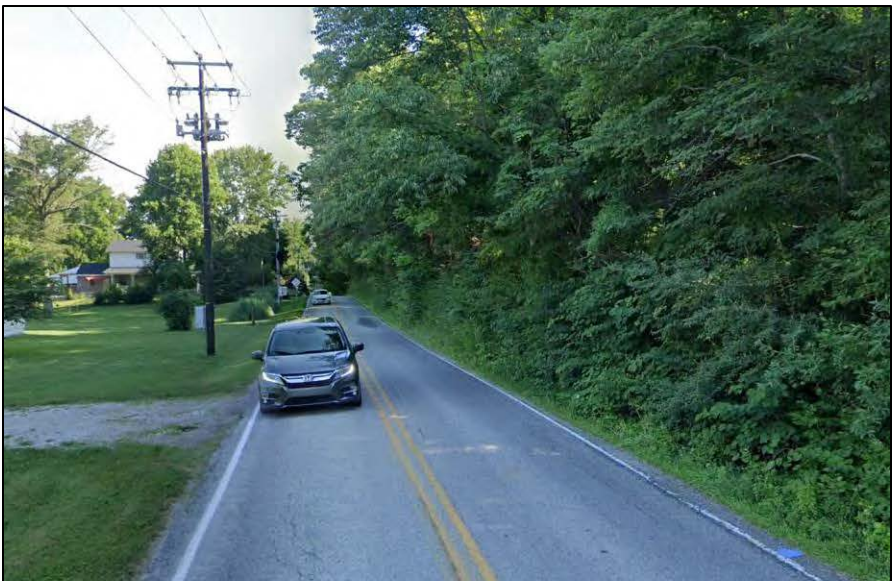
South Leg – Looking South



South Leg – Looking North



North Leg – Looking South



North Leg – Looking North



|                                                                        |                                                    |          |
|------------------------------------------------------------------------|----------------------------------------------------|----------|
| RoadHAT 4D                                                             | <b>Index of Crash Frequency and Cost - Form F1</b> | Page 1/2 |
| Settings: Indiana local settings      Version: Version 4.1             |                                                    |          |
| Location                                                               | Whiteland Road & Smokey Row Road                   |          |
| GIS                                                                    |                                                    |          |
| Post                                                                   |                                                    |          |
| Analyst                                                                | JMR                                                |          |
| Date                                                                   | 3/27/2026                                          |          |
| <b>INPUT</b>                                                           |                                                    |          |
| Road Facility Type                                                     | County Local Intersection One AADT                 |          |
| Busiest Road AADT (veh/day)                                            | 3230                                               |          |
| Crossing Road Principal Arterial Indicator (1 if present, 0 otherwise) | 0                                                  |          |
| Crossing Road Minor Arterial Indicator (1 if present, 0 otherwise)     | 0                                                  |          |
| Crossing Road Major Collector Indicator (1 if present, 0 otherwise)    | 0                                                  |          |
| Crossing Road Minor Collector Indicator (1 if present, 0 otherwise)    | 1                                                  |          |
| First Year with Crash Data (yyyy)                                      | 2022                                               |          |
| Last Year with Crash Data (yyyy)                                       | 2024                                               |          |
| Number of Crashes (crash/period)                                       |                                                    |          |
| Fatal and Incapacitating Injury Crashes                                | 0                                                  |          |
| Non-Incapacitating and Possible Injury Crashes                         | 2                                                  |          |
| Property Damage Only Crashes                                           | 3                                                  |          |
| Route or Road Type                                                     | County Local Intersection One AADT                 |          |
| Average Crash Costs (\$)                                               |                                                    |          |
| Fatal and Incapacitating Injury Crashes                                | 2190300                                            |          |
| Non-Incapacitating and Possible Injury Crashes                         | 400600                                             |          |
| Property Damage Only Crashes                                           | 37000                                              |          |
| Crash Cost Year (yyyy)                                                 | 2017                                               |          |
| <b>OUTPUT</b>                                                          |                                                    |          |
| Expected Crash Frequency (crash/year)                                  |                                                    |          |
| Fatal and Incapacitating Injury Crashes                                | 0.059                                              |          |
| Non-Incapacitating and Possible Injury Crashes                         | 0.06                                               |          |
| Property Damage Only Crashes                                           | 0.37                                               |          |
| All Crashes                                                            | 0.49                                               |          |
| Index of Crash Frequency                                               | <b>1.16</b>                                        |          |
| Index of Crash Cost                                                    | <b>0.31</b>                                        |          |

|                                                                                                                |                                                    |          |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------|
| RoadHAT 4D                                                                                                     | <b>Index of Crash Frequency and Cost - Form F1</b> | Page 2/2 |
| Settings: Indiana local settings      Version: Version 4.1                                                     |                                                    |          |
| Location                                                                                                       | Whiteland Road & Smokey Row Road                   |          |
| GIS                                                                                                            |                                                    |          |
| Post                                                                                                           |                                                    |          |
| Analyst                                                                                                        | JMR                                                |          |
| Date                                                                                                           | 3/27/2026                                          |          |
| <b>Comments:</b> Traffic Counts: INDOT TCDS Functional Class: IMPO Data Hub Crash Data: ARIES provided by IMPO |                                                    |          |

# Attachment B Traffic Counts

### Whiteland Rd & Smokey Row Rd AM Peak (7:30-9:00 am)

| Time         | NB L     | NB T      | NB R      | SB L      | SB T      | SB R      | EB L      | EB T       | EB R     | WB L     | WB T      | WB R     |
|--------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|----------|----------|-----------|----------|
| 7:30-7:45    | 1        | 6         | 4 (1)     | 1         | 4         | 1         | 4         | 26         | 0        | 0        | 11        | 0        |
| 7:45-8:00    | 0        | 2         | 5         | 3         | 6         | 2         | 4         | 18         | 0        | 2        | 10        | 1        |
| 8:00-8:15    | 0        | 11        | 0         | 3         | 2         | 3         | 5         | 12         | 0        | 3        | 12        | 0        |
| 8:15-8:30    | 0        | 2         | 2         | 0         | 9         | 9         | 6         | 11         | 0        | 1        | 13        | 2        |
| 8:30-8:45    | 0        | 4         | 0         | 4         | 4         | 9         | 5         | 15         | 1        | 0        | 9         | 0        |
| 8:45-9:00    | 0        | 0         | 4         | 1         | 2         | 5         | 5         | 23         | 0        | 0        | 15        | 0        |
| <b>Total</b> | <b>1</b> | <b>25</b> | <b>11</b> | <b>12</b> | <b>27</b> | <b>29</b> | <b>29</b> | <b>105</b> | <b>1</b> | <b>6</b> | <b>70</b> | <b>3</b> |

Total 319

### Whiteland Rd & Smokey Row Rd PM Peak (3:45-5:15 pm)

| Time         | NB L     | NB T      | NB R      | SB L      | SB T      | SB R      | EB L      | EB T       | EB R     | WB L      | WB T       | WB R     |
|--------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|----------|-----------|------------|----------|
| 3:45-4:00    | 0        | 1         | 1         | 1         | 5         | 6         | 25        | 33         | 1        | 2         | 19         | 1        |
| 4:00-4:15    | 0        | 4         | 3         | 3         | 7         | 6         | 2         | 15         | 0        | 3         | 25         | 0        |
| 4:15-4:30    | 2        | 1         | 1         | 1         | 6         | 2         | 2         | 17         | 0        | 1         | 21         | 2        |
| 4:30-4:45    | 1        | 1         | 5         | 3         | 10        | 3         | 2         | 15         | 0        | 0         | 15         | 3        |
| 4:45-5:00    | 0        | 3         | 1         | 4         | 12        | 7         | 3         | 20         | 0        | 5         | 22         | 1        |
| 5:00-5:15    | 1        | 8         | 3         | 2         | 8         | 5         | 4         | 16         | 1        | 3         | 30         | 0        |
| <b>Total</b> | <b>4</b> | <b>18</b> | <b>14</b> | <b>14</b> | <b>48</b> | <b>29</b> | <b>38</b> | <b>116</b> | <b>2</b> | <b>14</b> | <b>132</b> | <b>7</b> |

Total 436

# Attachment C

## Traffic Analysis

|                              |      |                        | Existing 2026     |      |      |      |     |                   |      |      |      |     |
|------------------------------|------|------------------------|-------------------|------|------|------|-----|-------------------|------|------|------|-----|
| Intersection                 | Type | MOE                    | 2026 AM Peak Hour |      |      |      |     | 2026 PM Peak Hour |      |      |      |     |
|                              |      |                        | EB                | WB   | NB   | SB   | INT | EB                | WB   | NB   | SB   | INT |
| Whiteland Rd & Smokey Row Rd | TWSC | LOS                    | A                 | A    | A    | A    | N/A | A                 | A    | B    | B    | N/A |
|                              |      | Delay (sec/veh)        | 7.3               | 7.3  | 9.8  | 9.7  | 4.2 | 7.5               | 7.4  | 10.2 | 10.9 | 3.8 |
|                              |      | Queue Length 95th (ft) | 0                 | 0    | 2    | 4    |     | 2                 | 0    | 2    | 6    |     |
|                              |      | v/c Ratio              | 0.01              | 0.00 | 0.04 | 0.05 |     | 0.03              | 0.01 | 0.03 | 0.10 |     |
|                              |      | LOS-F Movements        | ---               | ---  | ---  | ---  |     | ---               | ---  | ---  | ---  |     |

|                              |      |                        | No-Build 2050     |      |      |      |     |                   |      |      |      |     |
|------------------------------|------|------------------------|-------------------|------|------|------|-----|-------------------|------|------|------|-----|
| Intersection                 | Type | MOE                    | 2050 AM Peak Hour |      |      |      |     | 2050 PM Peak Hour |      |      |      |     |
|                              |      |                        | EB                | WB   | NB   | SB   | INT | EB                | WB   | NB   | SB   | INT |
| Whiteland Rd & Smokey Row Rd | TWSC | LOS                    | A                 | A    | B    | B    | N/A | A                 | A    | B    | B    | N/A |
|                              |      | Delay (sec/veh)        | 7.4               | 7.4  | 10.2 | 10.1 | 4.4 | 7.6               | 7.5  | 10.9 | 11.8 | 4.1 |
|                              |      | Queue Length 95th (ft) | 0                 | 0    | 4    | 4    |     | 2                 | 0    | 4    | 10   |     |
|                              |      | v/c Ratio              | 0.02              | 0.00 | 0.06 | 0.07 |     | 0.03              | 0.01 | 0.05 | 0.14 |     |
|                              |      | LOS-F Movements        | ---               | ---  | ---  | ---  |     | ---               | ---  | ---  | ---  |     |

|                              |      |                        | Build 2050        |      |      |      |     |                   |      |      |      |     |
|------------------------------|------|------------------------|-------------------|------|------|------|-----|-------------------|------|------|------|-----|
| Intersection                 | Type | MOE                    | 2050 AM Peak Hour |      |      |      |     | 2050 PM Peak Hour |      |      |      |     |
|                              |      |                        | EB                | WB   | NB   | SB   | INT | EB                | WB   | NB   | SB   | INT |
| Whiteland Rd & Smokey Row Rd | AWS  | LOS                    | A                 | A    | A    | A    | A   | A                 | A    | A    | A    | A   |
|                              |      | Delay (sec/veh)        | 7.8               | 7.6  | 7.4  | 7.4  | 7.6 | 8.7               | 8.3  | 8.3  | 8.1  | 8.4 |
|                              |      | Queue Length 95th (ft) | 8                 | 6    | 2    | 4    |     | 16                | 12   | 2    | 8    |     |
|                              |      | v/c Ratio              | 0.13              | 0.08 | 0.05 | 0.06 |     | 0.22              | 0.18 | 0.05 | 0.11 |     |
|                              |      | LOS-F Movements        | ---               | ---  | ---  | ---  |     | ---               | ---  | ---  | ---  |     |

| Intersection             |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 4.2    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR   | SBL    | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |      |        |  |      |        |  |       |        |  |      |
| Traffic Vol, veh/h       | 17     | 61                                                                                | 0    | 5      | 42                                                                                | 3    | 1      | 19                                                                                | 10    | 6      | 19                                                                                  | 14   |
| Future Vol, veh/h        | 17     | 61                                                                                | 0    | 5      | 42                                                                                | 3    | 1      | 19                                                                                | 10    | 6      | 19                                                                                  | 14   |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0     | 0      | 0                                                                                   | 0    |
| Sign Control             | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop  | Stop   | Stop                                                                                | Stop |
| RT Channelized           | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None  | -      | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -     | -      | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -     | -      | 0                                                                                   | -    |
| Peak Hour Factor         | 94     | 94                                                                                | 94   | 94     | 94                                                                                | 94   | 94     | 94                                                                                | 94    | 94     | 94                                                                                  | 94   |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 10                                                                                | 9     | 0      | 10                                                                                  | 0    |
| Mvmt Flow                | 18     | 65                                                                                | 0    | 5      | 45                                                                                | 3    | 1      | 20                                                                                | 11    | 6      | 20                                                                                  | 15   |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |      |
| Major/Minor              | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |       | Minor2 |                                                                                     |      |
| Conflicting Flow All     | 48     | 0                                                                                 | 0    | 65     | 0                                                                                 | 0    | 166    | 160                                                                               | 65    | 168    | 158                                                                                 | 46   |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 101    | 101                                                                               | -     | 57     | 57                                                                                  | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 65     | 59                                                                                | -     | 111    | 101                                                                                 | -    |
| Critical Hdwy            | 4.1    | -                                                                                 | -    | 4.1    | -                                                                                 | -    | 7.1    | 6.6                                                                               | 6.29  | 7.1    | 6.6                                                                                 | 6.2  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.1    | 5.6                                                                               | -     | 6.1    | 5.6                                                                                 | -    |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.1    | 5.6                                                                               | -     | 6.1    | 5.6                                                                                 | -    |
| Follow-up Hdwy           | 2.2    | -                                                                                 | -    | 2.2    | -                                                                                 | -    | 3.5    | 4.09                                                                              | 3.381 | 3.5    | 4.09                                                                                | 3.3  |
| Pot Cap-1 Maneuver       | 1572   | -                                                                                 | -    | 1550   | -                                                                                 | -    | 802    | 718                                                                               | 980   | 800    | 720                                                                                 | 1029 |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 910    | 796                                                                               | -     | 960    | 832                                                                                 | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 950    | 831                                                                               | -     | 899    | 796                                                                                 | -    |
| Platoon blocked, %       |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |       |        |                                                                                     |      |
| Mov Cap-1 Maneuver       | 1572   | -                                                                                 | -    | 1550   | -                                                                                 | -    | 757    | 707                                                                               | 980   | 757    | 709                                                                                 | 1029 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 757    | 707                                                                               | -     | 757    | 709                                                                                 | -    |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 899    | 787                                                                               | -     | 957    | 829                                                                                 | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 910    | 828                                                                               | -     | 856    | 787                                                                                 | -    |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |      |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |      |
| Approach                 | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |       | SB     |                                                                                     |      |
| HCM Ctrl Dly, s/v        | 1.59   |                                                                                   |      | 0.73   |                                                                                   |      | 9.8    |                                                                                   |       | 9.7    |                                                                                     |      |
| HCM LOS                  |        |                                                                                   |      |        |                                                                                   |      | A      |                                                                                   |       | A      |                                                                                     |      |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |       |        |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |       |        |                                                                                     |      |
| Capacity (veh/h)         | 781    | 392                                                                               | -    | -      | 178                                                                               | -    | -      | 807                                                                               |       |        |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.041  | 0.012                                                                             | -    | -      | 0.003                                                                             | -    | -      | 0.051                                                                             |       |        |                                                                                     |      |
| HCM Ctrl Dly (s/v)       | 9.8    | 7.3                                                                               | 0    | -      | 7.3                                                                               | 0    | -      | 9.7                                                                               |       |        |                                                                                     |      |
| HCM Lane LOS             | A      | A                                                                                 | A    | -      | A                                                                                 | A    | -      | A                                                                                 |       |        |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0.1    | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0.2                                                                               |       |        |                                                                                     |      |



| Intersection             |        |       |      |        |       |      |        |       |      |        |       |      |
|--------------------------|--------|-------|------|--------|-------|------|--------|-------|------|--------|-------|------|
| Int Delay, s/veh         | 3.8    |       |      |        |       |      |        |       |      |        |       |      |
| Movement                 | EBL    | EBT   | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
| Lane Configurations      |        | ↕     |      |        | ↕     |      |        | ↕     |      |        | ↕     |      |
| Traffic Vol, veh/h       | 28     | 73    | 1    | 5      | 73    | 5    | 3      | 6     | 9    | 7      | 26    | 16   |
| Future Vol, veh/h        | 28     | 73    | 1    | 5      | 73    | 5    | 3      | 6     | 9    | 7      | 26    | 16   |
| Conflicting Peds, #/hr   | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0     | 0    |
| Sign Control             | Free   | Free  | Free | Free   | Free  | Free | Stop   | Stop  | Stop | Stop   | Stop  | Stop |
| RT Channelized           | -      | -     | None | -      | -     | None | -      | -     | None | -      | -     | None |
| Storage Length           | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -     | -    |
| Veh in Median Storage, # | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    |
| Grade, %                 | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    |
| Peak Hour Factor         | 73     | 73    | 73   | 73     | 73    | 73   | 73     | 73    | 73   | 73     | 73    | 73   |
| Heavy Vehicles, %        | 3      | 1     | 0    | 0      | 0     | 0    | 33     | 0     | 0    | 0      | 4     | 0    |
| Mvmt Flow                | 38     | 100   | 1    | 7      | 100   | 7    | 4      | 8     | 12   | 10     | 36    | 22   |
| Major/Minor              | Major1 |       |      | Major2 |       |      | Minor1 |       |      | Minor2 |       |      |
| Conflicting Flow All     | 107    | 0     | 0    | 101    | 0     | 0    | 309    | 298   | 101  | 298    | 295   | 103  |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 177    | 177   | -    | 117    | 117   | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 132    | 121   | -    | 181    | 178   | -    |
| Critical Hdwy            | 4.13   | -     | -    | 4.1    | -     | -    | 7.43   | 6.5   | 6.2  | 7.1    | 6.54  | 6.2  |
| Critical Hdwy Stg 1      | -      | -     | -    | -      | -     | -    | 6.43   | 5.5   | -    | 6.1    | 5.54  | -    |
| Critical Hdwy Stg 2      | -      | -     | -    | -      | -     | -    | 6.43   | 5.5   | -    | 6.1    | 5.54  | -    |
| Follow-up Hdwy           | 2.227  | -     | -    | 2.2    | -     | -    | 3.797  | 4     | 3.3  | 3.5    | 4.036 | 3.3  |
| Pot Cap-1 Maneuver       | 1478   | -     | -    | 1504   | -     | -    | 587    | 617   | 960  | 658    | 613   | 957  |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 757    | 756   | -    | 892    | 795   | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 803    | 800   | -    | 826    | 748   | -    |
| Platoon blocked, %       |        | -     | -    |        | -     | -    |        |       |      |        |       |      |
| Mov Cap-1 Maneuver       | 1478   | -     | -    | 1504   | -     | -    | 523    | 597   | 960  | 621    | 593   | 957  |
| Mov Cap-2 Maneuver       | -      | -     | -    | -      | -     | -    | 523    | 597   | -    | 621    | 593   | -    |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 736    | 735   | -    | 888    | 791   | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 745    | 796   | -    | 784    | 728   | -    |
| Approach                 | EB     |       |      | WB     |       |      | NB     |       |      | SB     |       |      |
| HCM Ctrl Dly, s/v        | 2.06   |       |      | 0.45   |       |      | 10.21  |       |      | 10.85  |       |      |
| HCM LOS                  |        |       |      |        |       |      | B      |       |      | B      |       |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL   | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |      |        |       |      |
| Capacity (veh/h)         | 716    | 493   | -    | -      | 107   | -    | -      | 682   |      |        |       |      |
| HCM Lane V/C Ratio       | 0.034  | 0.026 | -    | -      | 0.005 | -    | -      | 0.098 |      |        |       |      |
| HCM Ctrl Dly (s/v)       | 10.2   | 7.5   | 0    | -      | 7.4   | 0    | -      | 10.9  |      |        |       |      |
| HCM Lane LOS             | B      | A     | A    | -      | A     | A    | -      | B     |      |        |       |      |
| HCM 95th %tile Q(veh)    | 0.1    | 0.1   | -    | -      | 0     | -    | -      | 0.3   |      |        |       |      |

| Intersection             |        |       |      |        |       |      |        |       |       |        |      |      |
|--------------------------|--------|-------|------|--------|-------|------|--------|-------|-------|--------|------|------|
| Int Delay, s/veh         | 4.4    |       |      |        |       |      |        |       |       |        |      |      |
| Movement                 | EBL    | EBT   | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR   | SBL    | SBT  | SBR  |
| Lane Configurations      |        | ↕     |      |        | ↕     |      |        | ↕     |       |        | ↕    |      |
| Traffic Vol, veh/h       | 22     | 79    | 0    | 6      | 54    | 4    | 1      | 25    | 13    | 8      | 25   | 18   |
| Future Vol, veh/h        | 22     | 79    | 0    | 6      | 54    | 4    | 1      | 25    | 13    | 8      | 25   | 18   |
| Conflicting Peds, #/hr   | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0     | 0     | 0      | 0    | 0    |
| Sign Control             | Free   | Free  | Free | Free   | Free  | Free | Stop   | Stop  | Stop  | Stop   | Stop | Stop |
| RT Channelized           | -      | -     | None | -      | -     | None | -      | -     | None  | -      | -    | None |
| Storage Length           | -      | -     | -    | -      | -     | -    | -      | -     | -     | -      | -    | -    |
| Veh in Median Storage, # | -      | 0     | -    | -      | 0     | -    | -      | 0     | -     | -      | 0    | -    |
| Grade, %                 | -      | 0     | -    | -      | 0     | -    | -      | 0     | -     | -      | 0    | -    |
| Peak Hour Factor         | 94     | 94    | 94   | 94     | 94    | 94   | 94     | 94    | 94    | 94     | 94   | 94   |
| Heavy Vehicles, %        | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 10    | 9     | 0      | 10   | 0    |
| Mvmt Flow                | 23     | 84    | 0    | 6      | 57    | 4    | 1      | 27    | 14    | 9      | 27   | 19   |
| Major/Minor              | Major1 |       |      | Major2 |       |      | Minor1 |       |       | Minor2 |      |      |
| Conflicting Flow All     | 62     | 0     | 0    | 84     | 0     | 0    | 214    | 205   | 84    | 216    | 203  | 60   |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 131    | 131   | -     | 72     | 72   | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 84     | 74    | -     | 144    | 131  | -    |
| Critical Hdwy            | 4.1    | -     | -    | 4.1    | -     | -    | 7.1    | 6.6   | 6.29  | 7.1    | 6.6  | 6.2  |
| Critical Hdwy Stg 1      | -      | -     | -    | -      | -     | -    | 6.1    | 5.6   | -     | 6.1    | 5.6  | -    |
| Critical Hdwy Stg 2      | -      | -     | -    | -      | -     | -    | 6.1    | 5.6   | -     | 6.1    | 5.6  | -    |
| Follow-up Hdwy           | 2.2    | -     | -    | 2.2    | -     | -    | 3.5    | 4.09  | 3.381 | 3.5    | 4.09 | 3.3  |
| Pot Cap-1 Maneuver       | 1554   | -     | -    | 1526   | -     | -    | 747    | 677   | 956   | 744    | 679  | 1012 |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 878    | 773   | -     | 942    | 819  | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 930    | 818   | -     | 863    | 773  | -    |
| Platoon blocked, %       |        | -     | -    |        | -     | -    |        |       |       |        |      |      |
| Mov Cap-1 Maneuver       | 1554   | -     | -    | 1526   | -     | -    | 690    | 664   | 956   | 691    | 666  | 1012 |
| Mov Cap-2 Maneuver       | -      | -     | -    | -      | -     | -    | 690    | 664   | -     | 691    | 666  | -    |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 864    | 761   | -     | 938    | 816  | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 878    | 814   | -     | 808    | 761  | -    |
| Approach                 | EB     |       |      | WB     |       |      | NB     |       |       | SB     |      |      |
| HCM Ctrl Dly, s/v        | 1.6    |       |      | 0.69   |       |      | 10.15  |       |       | 10.09  |      |      |
| HCM LOS                  |        |       |      |        |       |      | B      |       |       | B      |      |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL   | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |       |        |      |      |
| Capacity (veh/h)         | 740    | 392   | -    | -      | 166   | -    | -      | 762   |       |        |      |      |
| HCM Lane V/C Ratio       | 0.056  | 0.015 | -    | -      | 0.004 | -    | -      | 0.071 |       |        |      |      |
| HCM Ctrl Dly (s/v)       | 10.2   | 7.4   | 0    | -      | 7.4   | 0    | -      | 10.1  |       |        |      |      |
| HCM Lane LOS             | B      | A     | A    | -      | A     | A    | -      | B     |       |        |      |      |
| HCM 95th %tile Q(veh)    | 0.2    | 0     | -    | -      | 0     | -    | -      | 0.2   |       |        |      |      |

| Intersection             |        |       |      |        |       |      |        |       |      |        |       |      |
|--------------------------|--------|-------|------|--------|-------|------|--------|-------|------|--------|-------|------|
| Int Delay, s/veh         | 4.1    |       |      |        |       |      |        |       |      |        |       |      |
| Movement                 | EBL    | EBT   | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT   | SBR  |
| Lane Configurations      |        | ↕     |      |        | ↕     |      |        | ↕     |      |        | ↕     |      |
| Traffic Vol, veh/h       | 36     | 94    | 1    | 6      | 94    | 6    | 4      | 8     | 12   | 9      | 34    | 21   |
| Future Vol, veh/h        | 36     | 94    | 1    | 6      | 94    | 6    | 4      | 8     | 12   | 9      | 34    | 21   |
| Conflicting Peds, #/hr   | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0     | 0    |
| Sign Control             | Free   | Free  | Free | Free   | Free  | Free | Stop   | Stop  | Stop | Stop   | Stop  | Stop |
| RT Channelized           | -      | -     | None | -      | -     | None | -      | -     | None | -      | -     | None |
| Storage Length           | -      | -     | -    | -      | -     | -    | -      | -     | -    | -      | -     | -    |
| Veh in Median Storage, # | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    |
| Grade, %                 | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    | -      | 0     | -    |
| Peak Hour Factor         | 73     | 73    | 73   | 73     | 73    | 73   | 73     | 73    | 73   | 73     | 73    | 73   |
| Heavy Vehicles, %        | 3      | 1     | 0    | 0      | 0     | 0    | 33     | 0     | 0    | 0      | 4     | 0    |
| Mvmt Flow                | 49     | 129   | 1    | 8      | 129   | 8    | 5      | 11    | 16   | 12     | 47    | 29   |
| Major/Minor              | Major1 |       |      | Major2 |       |      | Minor1 |       |      | Minor2 |       |      |
| Conflicting Flow All     | 137    | 0     | 0    | 130    | 0     | 0    | 397    | 382   | 129  | 382    | 378   | 133  |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 228    | 228   | -    | 149    | 149   | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 168    | 153   | -    | 233    | 229   | -    |
| Critical Hdwy            | 4.13   | -     | -    | 4.1    | -     | -    | 7.43   | 6.5   | 6.2  | 7.1    | 6.54  | 6.2  |
| Critical Hdwy Stg 1      | -      | -     | -    | -      | -     | -    | 6.43   | 5.5   | -    | 6.1    | 5.54  | -    |
| Critical Hdwy Stg 2      | -      | -     | -    | -      | -     | -    | 6.43   | 5.5   | -    | 6.1    | 5.54  | -    |
| Follow-up Hdwy           | 2.227  | -     | -    | 2.2    | -     | -    | 3.797  | 4     | 3.3  | 3.5    | 4.036 | 3.3  |
| Pot Cap-1 Maneuver       | 1441   | -     | -    | 1468   | -     | -    | 512    | 554   | 926  | 580    | 551   | 922  |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 710    | 719   | -    | 858    | 770   | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 766    | 774   | -    | 775    | 711   | -    |
| Platoon blocked, %       |        | -     | -    |        | -     | -    |        |       |      |        |       |      |
| Mov Cap-1 Maneuver       | 1441   | -     | -    | 1468   | -     | -    | 434    | 531   | 926  | 534    | 527   | 922  |
| Mov Cap-2 Maneuver       | -      | -     | -    | -      | -     | -    | 434    | 531   | -    | 534    | 527   | -    |
| Stage 1                  | -      | -     | -    | -      | -     | -    | 684    | 693   | -    | 853    | 765   | -    |
| Stage 2                  | -      | -     | -    | -      | -     | -    | 693    | 770   | -    | 721    | 685   | -    |
| Approach                 | EB     |       |      | WB     |       |      | NB     |       |      | SB     |       |      |
| HCM Ctrl Dly, s/v        | 2.09   |       |      | 0.42   |       |      | 10.89  |       |      | 11.83  |       |      |
| HCM LOS                  |        |       |      |        |       |      | B      |       |      | B      |       |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL   | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |      |        |       |      |
| Capacity (veh/h)         | 644    | 494   | -    | -      | 101   | -    | -      | 615   |      |        |       |      |
| HCM Lane V/C Ratio       | 0.051  | 0.034 | -    | -      | 0.006 | -    | -      | 0.143 |      |        |       |      |
| HCM Ctrl Dly (s/v)       | 10.9   | 7.6   | 0    | -      | 7.5   | 0    | -      | 11.8  |      |        |       |      |
| HCM Lane LOS             | B      | A     | A    | -      | A     | A    | -      | B     |      |        |       |      |
| HCM 95th %tile Q(veh)    | 0.2    | 0.1   | -    | -      | 0     | -    | -      | 0.5   |      |        |       |      |

Intersection

|                           |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 7.6 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 22   | 79                                                                                | 0    | 6    | 54                                                                                | 4    | 1    | 25                                                                                  | 13   | 8    | 25                                                                                  | 18   |
| Future Vol, veh/h   | 22   | 79                                                                                | 0    | 6    | 54                                                                                | 4    | 1    | 25                                                                                  | 13   | 8    | 25                                                                                  | 18   |
| Peak Hour Factor    | 0.94 | 0.94                                                                              | 0.94 | 0.94 | 0.94                                                                              | 0.94 | 0.94 | 0.94                                                                                | 0.94 | 0.94 | 0.94                                                                                | 0.94 |
| Heavy Vehicles, %   | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0    | 10                                                                                  | 9    | 0    | 10                                                                                  | 0    |
| Mvmt Flow           | 23   | 84                                                                                | 0    | 6    | 57                                                                                | 4    | 1    | 27                                                                                  | 14   | 9    | 27                                                                                  | 19   |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 0    | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB  | SB  |
|----------------------------|-----|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  | NB  |
| Opposing Lanes             | 1   | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1   | 1   | 1   |
| HCM Control Delay, s/veh   | 7.8 | 7.6 | 7.4 | 7.4 |
| HCM LOS                    | A   | A   | A   | A   |

| Lane                     | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|--------------------------|-------|-------|-------|-------|
| Vol Left, %              | 3%    | 22%   | 9%    | 16%   |
| Vol Thru, %              | 64%   | 78%   | 84%   | 49%   |
| Vol Right, %             | 33%   | 0%    | 6%    | 35%   |
| Sign Control             | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane      | 39    | 101   | 64    | 51    |
| LT Vol                   | 1     | 22    | 6     | 8     |
| Through Vol              | 25    | 79    | 54    | 25    |
| RT Vol                   | 13    | 0     | 4     | 18    |
| Lane Flow Rate           | 41    | 107   | 68    | 54    |
| Geometry Grp             | 1     | 1     | 1     | 1     |
| Degree of Util (X)       | 0.047 | 0.124 | 0.078 | 0.061 |
| Departure Headway (Hd)   | 4.052 | 4.162 | 4.13  | 4.056 |
| Convergence, Y/N         | Yes   | Yes   | Yes   | Yes   |
| Cap                      | 868   | 854   | 858   | 868   |
| Service Time             | 2.15  | 2.222 | 2.2   | 2.152 |
| HCM Lane V/C Ratio       | 0.047 | 0.125 | 0.079 | 0.062 |
| HCM Control Delay, s/veh | 7.4   | 7.8   | 7.6   | 7.4   |
| HCM Lane LOS             | A     | A     | A     | A     |
| HCM 95th-tile Q          | 0.1   | 0.4   | 0.3   | 0.2   |

Intersection

|                           |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 8.4 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 36   | 94                                                                                | 1    | 6    | 94                                                                                | 6    | 4    | 8                                                                                   | 12   | 9    | 34                                                                                  | 21   |
| Future Vol, veh/h   | 36   | 94                                                                                | 1    | 6    | 94                                                                                | 6    | 4    | 8                                                                                   | 12   | 9    | 34                                                                                  | 21   |
| Peak Hour Factor    | 0.73 | 0.73                                                                              | 0.73 | 0.73 | 0.73                                                                              | 0.73 | 0.73 | 0.73                                                                                | 0.73 | 0.73 | 0.73                                                                                | 0.73 |
| Heavy Vehicles, %   | 3    | 1                                                                                 | 0    | 0    | 0                                                                                 | 0    | 33   | 0                                                                                   | 0    | 0    | 4                                                                                   | 0    |
| Mvmt Flow           | 49   | 129                                                                               | 1    | 8    | 129                                                                               | 8    | 5    | 11                                                                                  | 16   | 12   | 47                                                                                  | 29   |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 0    | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB  | SB  |
|----------------------------|-----|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  | NB  |
| Opposing Lanes             | 1   | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1   | 1   | 1   |
| HCM Control Delay, s/veh   | 8.7 | 8.3 | 8.3 | 8.1 |
| HCM LOS                    | A   | A   | A   | A   |

| Lane                     | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|--------------------------|-------|-------|-------|-------|
| Vol Left, %              | 17%   | 27%   | 6%    | 14%   |
| Vol Thru, %              | 33%   | 72%   | 89%   | 53%   |
| Vol Right, %             | 50%   | 1%    | 6%    | 33%   |
| Sign Control             | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane      | 24    | 131   | 106   | 64    |
| LT Vol                   | 4     | 36    | 6     | 9     |
| Through Vol              | 8     | 94    | 94    | 34    |
| RT Vol                   | 12    | 1     | 6     | 21    |
| Lane Flow Rate           | 33    | 179   | 145   | 88    |
| Geometry Grp             | 1     | 1     | 1     | 1     |
| Degree of Util (X)       | 0.046 | 0.222 | 0.176 | 0.11  |
| Departure Headway (Hd)   | 5.037 | 4.444 | 4.361 | 4.507 |
| Convergence, Y/N         | Yes   | Yes   | Yes   | Yes   |
| Cap                      | 711   | 809   | 823   | 796   |
| Service Time             | 3.065 | 2.463 | 2.381 | 2.531 |
| HCM Lane V/C Ratio       | 0.046 | 0.221 | 0.176 | 0.111 |
| HCM Control Delay, s/veh | 8.3   | 8.7   | 8.3   | 8.1   |
| HCM Lane LOS             | A     | A     | A     | A     |
| HCM 95th-tile Q          | 0.1   | 0.8   | 0.6   | 0.4   |

# Attachment D

## Virtual Meeting Minutes & Field Check Minutes



## **IMPO Safety Study: Johnson County RSA Locations**

Date: April 17, 2026

Time: 2:00 – 2:30 PM

Location: MS Teams

### **Attendees:**

Daniel Johnston, Johnson County Highway Department

Luke Mastin, Johnson County Highway Department

Andy Barnhart, Johnson County Sheriff Department

Dax Norton, Bargersville PD

Jennifer Dunn, IMPO

James Mark Rinehart, Corradino LLC

David Cleveland, Corradino LLC

### **Agenda**

#### **1. Introductions**

- a. Corradino staff kicked off the meeting with a round of introductions for all the participants on the Teams call.
- b. Corradino staff then shared that the purpose of the kick-off meeting was to spend some time talking with Johnson County staff about the two RSA locations they selected to study as part of the Indianapolis MPO's (IMPO) Safety Study. The information from the kick-off meeting will be considered as Corradino completes the safety and traffic analysis and begins identifying potential countermeasures for the two RSA locations. Corradino then asked the Johnson County staff and representatives from local law enforcement to provide an overview of why they selected their two RSA locations, including observed safety concerns, changes in traffic related to new development, and existing plans or studies that have identified long-term improvements at the RSA locations.

#### **2. Overview of RSA locations**

- a. **Whiteland Road & CR 75 W**
  - i. Johnson County staff and local law enforcement noted that a new single-family residential subdivision has been constructed north of the intersection, which has led to an increase in traffic volumes at the intersection.
  - ii. Johnson County staff also noted they are in the conceptual stages of doing a corridor improvement along Whiteland Road, which would include the intersection at CR 75. No improvements have been identified as part of the corridor project at this time, but results from this RSA may be valuable to include.

- iii. Regarding Safety, both Johnson County Staff and the Sheriff's Department referenced several variables that make navigating the intersection difficult.
  - 1. Speed Concerns – Whiteland Road currently has a posted speed limit of 50 mph. Johnson County Staff noted that if vehicles are speeding along the roadway, it could cause vehicles traveling northbound and southbound to misjudge the distance they have to cross through the intersection
  - 2. Sight Distance Concerns – The current right-of-way (ROW) along Whiteland Road is narrow. There is currently no paved or unpaved shoulder along Whiteland Road. Utility poles are placed on both the north and south sides of the roadway, and appear to be within 6' of the edge of pavement. Additionally, mature trees and privacy fences are located along Whiteland Road at the intersection. According to the Johnson County Sheriff's Department, the utility poles, trees, and fences make it difficult to see oncoming eastbound and westbound traffic when stopped at the intersection.
    - a. There is a wooden privacy fence along the south side of Whiteland Road in the southeast quadrant, creating challenging sight lines, and 10 of the 14 crashes are Right Angle crashes involving a northbound CR 75 W vehicle pulling out from a stopped condition and being struck by a westbound Whiteland Road vehicle. T
    - b. There is a wrought iron fence along the south side of Whiteland Road on the parcel in the southwest quadrant. Two of the 14 crashes are Right Angle crashes involving a northbound CR 75 W vehicle pulling out from a stopped condition and being struck by an eastbound Whiteland Road vehicle.
    - c. There are three large trees along the north side of Whiteland Road on the parcel in the northwest quadrant. One of the 14 crashes is a Right Angle crash involving a southbound CR 75 W vehicle pulling out from a stopped condition and being struck by an eastbound Whiteland Road vehicle.
  - i. Johnson County also noted that trees and fences located at the intersection are on private property, which means any recommendations that involve "tree clearing" or fence removal would require coordination with the property owners, or even ROW acquisition.

3. Location of Existing Residential Properties – Johnson County pointed out that three of the four corners at the intersection are older single-family homes built close to the roadway, and have their driveways constructed very close to or have direct access into the intersection.
- iv. Johnson County and the Johnson County Sheriff's department noted a couple of improvements for both near-term and long-term for the intersection:
  1. Near-Term – Evaluate if an All-Way Stop would be feasible for the intersection, and identify ways to improve sight distance at the intersection.
    - a. Note: Sight-distance improvements may require ROW acquisition.
  2. Long-Term – Evaluate the feasibility of reconstructing the intersection into a roundabout.
    - a. Corradino noted they would test this alternative before the field check to identify how large the roundabout would need to be.

**b. Whiteland Road & Smokey Row Road**

- i. Johnson County said they observed a notable spike in the number of crashes occurring at the intersection in 2025. Johnson County staff also noted that the majority of crashes were Right Angle crashes. When reviewing the crash narratives from 2025, they noticed several drivers stated they “did not see the vehicle coming” or “thought they had enough time to make it through the intersection.”
  1. Corradino noted they evaluated crash data from 2022 to 2024 as part of this RSA.
- ii. Johnson County said they have observed an increase in traffic volumes at the intersection in recent years. New single-family residential development has increased vehicle and truck traffic at the intersection. Johnson County anticipates the area around the intersection continuing to grow over the next 10 years.
- iii. Johnson County staff noted the intersection is flat with minimal grade changes that could cause concern. The northeast quadrant of the intersection is wooded, which may have contributed to sight-distance concerns.
  1. Note: Johnson County said they went out and cleared trees earlier this year to improve sight distance at the intersection. They noted several complaints from the nearby residents about the trees blocking their view at the intersection.

iv. Johnson County, Johnson County Sheriff's department, and the representative from the Bargersville Police Department noted a couple of improvements for the intersection:

1. Near-Term – It was discussed that low-cost systematic improvements at the intersection might be the best solution. Improved striping, signage, and visibility might be all that is needed at this time.
  - a. Corradino staff asked Johnson County staff if they have considered converting the intersection from a two-way to an all-way stop controlled intersection. Johnson County did not think the intersection would meet the warrant criteria for an all-way stop-controlled intersection. Additionally, Johnson County staff noted that the traffic along Whiteland Road is much higher than along Smokey Row, and forcing all traffic to stop at the intersection may cause other concerns.
  - b. Corradino said they would review the All-Way Stop Warrant criteria identified in the MUTCD and share their findings at the field check.
2. Long-Term – Johnson County said a roundabout or widening the intersection might be a solution for this intersection, someday. However, Johnson County staff do not believe it is necessary to pursue long-term infrastructure improvements at this intersection at this time.

### **3. Preliminary Findings Reports**

- a. Corradino staff walked through the preliminary findings reports, summarizing the crash history and patterns about both RSA locations. The draft report was shared with IMPO staff for review and will then be updated and shared with Johnson County staff before the field check.

### **4. Traffic Counts**

- a. Corradino staff asked Johnson County staff if they had recent traffic counts available for either RSA location.
- b. Johnson County staff said they did not have any recent traffic counts at either location.
- c. Indianapolis MPO noted that they have a license with the SaaS, Replica, which will be able to provide traffic counts, in case traffic capacity analysis is needed for either RSA sight location.
  - i. Additionally, Corradino staff noted that they collected peak-hour traffic counts at both locations to compare with the counts provided by Replica.

**5. Next Steps**

- a. The field check for both Johnson County intersections was scheduled for Monday, May 11, 2026, at 1:00 PM.

## Field Check Notes for RSA at Whiteland Road & Smokey Row Road

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |            |                                                                                     |                 |                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|-------------------------------------------------------------------------------------|-----------------|----------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |            |                                                                                     | Date: 5/29/2026 |                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |            |                                                                                     | Des. No.: n/a   |                                                    |
| <b>Reviewer Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |            | Agency/Firm Name: Corradino LLC                                                     |                 |                                                    |
| Primary Author: James Mark Rinehart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |            | Agency: Indianapolis Metropolitan Planning Organization                             |                 |                                                    |
| Phone Numbers: (317) 488-2363                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |            | Email Address: <a href="mailto:jrinehart@corradino.com">jrinehart@corradino.com</a> |                 |                                                    |
| <b>Attendees:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |            |                                                                                     |                 |                                                    |
| <ul style="list-style-type: none"> <li>Daniel Johnston, Johnson County</li> <li>Jennifer Dunn, IMPO</li> <li>James Mark Rinehart, Corradino</li> <li>David Cleveland, Corradino</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |            |                                                                                     |                 |                                                    |
| <b>Purpose of Field Check:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |            |                                                                                     |                 |                                                    |
| <p>The purpose of this field check was to review the crash history at the Whiteland Road &amp; Smokey Row Road intersection, evaluate the current roadway conditions, observe traffic patterns, and collaborate with representatives from Local Public Agencies (LPA) and Law Enforcement to identify safety countermeasures.</p> <p>The goal of the field check was to identify near-term and long-term improvements and build consensus with the LPAs and Local Law Enforcement on the recommendations.</p> <p>Recommendations from the field check will serve as the final recommendations for the RSA and will be included in IMPO's Safety Study.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |            |                                                                                     |                 |                                                    |
| <b>Project Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |            |                                                                                     |                 |                                                    |
| Location: Intersection of Whiteland Road & Smokey Row Road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |            |                                                                                     |                 |                                                    |
| INDOT District: Seymour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            | City: Bargersville                                                                  |                 | County: Johnson                                    |
| Lat & Long (BOP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 39.547134 | -86.220419 | Urban/Rural - <b>URBAN</b>                                                          |                 | Functional Class of Major Roadway: Minor Collector |
| Traffic Control Type: Two-Way Stop Controlled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |            | Posted Speed Limit: Whiteland Rd. – 50mph; Smokey Row Rd. – 45mph                   |                 |                                                    |
| <b>Site Observations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |            |                                                                                     |                 |                                                    |
| <p>Corradino provided an overview of the crash history at the intersection. There were 5 crashes in total during the 3 years, none of which were incapacitating or fatal. There was no particular crash pattern, with the highest occurring crash type being two right-angle crashes.</p> <p>The Johnson County Engineer commented that the recently constructed, limited-access I-69 has affected traffic patterns, resulting in a decrease in mainline Whiteland Road volume and potentially a slight increase in north-south traffic on Smokey Row Road, attracted to CR 144 to the north, which has access to I-69. There is also a new residential development to the south that utilizes Smokey Row Road.</p> <p>Regarding the NE quadrant, the Johnson County Engineer commented that the edge of the woods along the north side of Whiteland Road was recently trimmed to better open up sightlines, especially for SB Smokey Row Road stopped motorists looking to the west for suitable gaps in the oncoming EB traffic. The tree trimming helped, but more aggressive trimming and tree removal would be beneficial. The slight vertical crest curve on the west leg of the intersection exacerbates the sightline challenges.</p> <p>There is a Johnson County Adopt-a-Road sign along the north side of Whiteland Road in the NW quadrant, approximately 100' west of Smokey Row Road, which is in the sight line of a stopped SB motorist looking west toward oncoming EB vehicles for suitable gaps. The large tree canopy, an additional 60' to the west, adds to the sight challenges.</p> <p>There are multiple utilities at the intersection, including overhead power lines, water, and fiber-optic cable.</p> <p>The group discussed the possibility of converting the intersection to an All-Way Stop (AWS). Corradino previously collected AM and PM peak-hour turning movement counts and shared a summary with the group. Whiteland Road only carries approximately twice as much traffic as CR 75W. Only approximately 300 vehicles enter the intersection during the</p> |           |            |                                                                                     |                 |                                                    |



controlling PM peak hour. The Johnson County Engineer agreed to have Corradino perform an AWS warrant analysis and potentially add it to the short-term recommendations.

The group agreed that, based on the low traffic volumes and the relatively low number of crashes, no long-term recommendation will be made for this site.

#### **Potential Alternatives Discussed**

##### **Near-Term**

- Work with the property owner in the NE quadrant to get approval to remove trees along the south side of Whiteland Road and better open up sight lines.
- Relocate the "Adopt-a-Road" sign along the north side of Whiteland Road in the NW quadrant to remove it from the sight line.
- Paint stop bars on the Smokey Row Road approaches to the intersection.
- Perform an AWS warrant analysis. If warrants are met, convert the intersection to an AWS by adding stop signs and stop bars to the Whiteland Road approaches, and remove the "Cross Traffic Does not Stop" placards from the stop signs on the Smokey Row Road approaches.

##### **Long-Term**

- There are no long-term recommendations

##### **Future Consideration**

- N/A

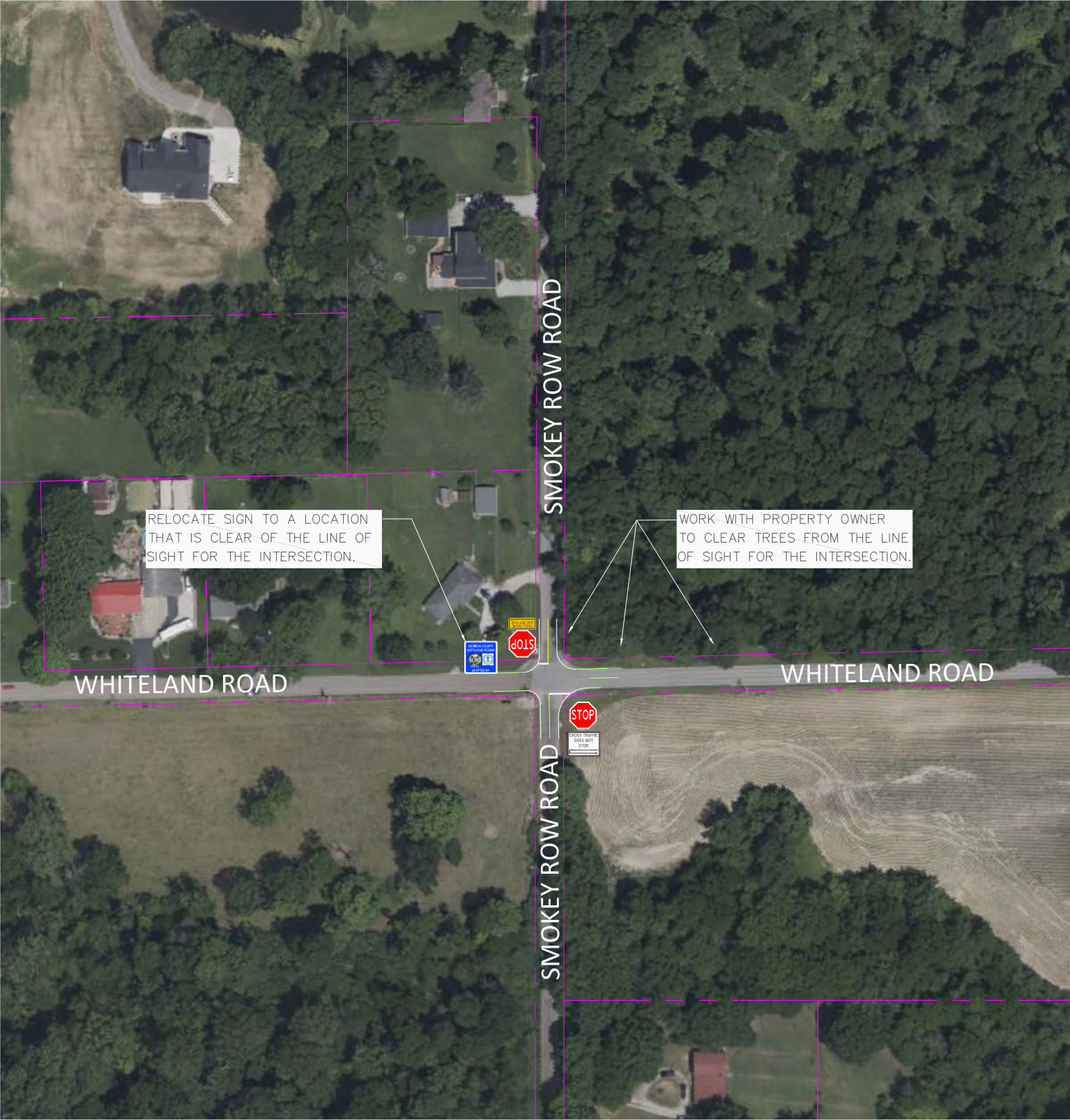
#### **Consensus on Key Items for Alternatives**

- Consensus was met that the Potential Alternatives identified above will be the recommended alternatives for the RSA.

# Attachment E

## Cost Estimates & Schematics

# Near-Term Improvements Whiteland Road & Smokey Row Road



**PRELIMINARY COST ESTIMATE - NEAR TERM**  
**Whiteland Road & Smokey Row Road**

| LINE ITEM | ITEM NO.  | DESCRIPTION                                                 | QUANTITY | UNIT | UNIT PRICE   | AMOUNT       |
|-----------|-----------|-------------------------------------------------------------|----------|------|--------------|--------------|
| 1         | 110-01001 | MOBILIZATION AND DEMOBILIZATION                             | 1        | LS   | \$ 5,000.00  | \$ 5,000.00  |
| 2         | 201-52370 | CLEARING RIGHT-OF-WAY                                       | 1        | LS   | \$ 20,000.00 | \$ 20,000.00 |
| 3         | 801-06775 | MAINTAINING TRAFFIC                                         | 1        | LS   | \$ 1,500.00  | \$ 1,500.00  |
| 4         | 802-07058 | SIGN, SHEET ASSEMBLY, RELOCATE                              | 1        | EACH | \$ 300.00    | \$ 300.00    |
| 5         | 808-06703 | LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.                    | 200      | LFT  | \$ 1.25      | \$ 250.00    |
| 6         | 808-75245 | LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.                   | 200      | LFT  | \$ 1.25      | \$ 250.00    |
| 7         | 808-75297 | TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN. | 36       | LFT  | \$ 14.00     | \$ 504.00    |
|           |           |                                                             |          |      |              | \$ -         |
|           |           |                                                             |          |      | TOTAL        | \$ 27,804.00 |

|                              |                    |
|------------------------------|--------------------|
| <b>CONSTRUCTION TOTAL</b>    | <b>\$28,000.00</b> |
| <b>CONTINGENCY (10%)</b>     | <b>\$3,000.00</b>  |
| <b>OVERALL PROJECT TOTAL</b> | <b>\$31,000.00</b> |

This cost estimate makes the following assumptions:  
1.) Unit price estimates based on stand-alone project

| Project Phases |                                 |                 |
|----------------|---------------------------------|-----------------|
| Task No.       | Task                            | Cost            |
| 1              | Preliminary Engineering         | \$ 5,000        |
| 2              | Right of Way                    | \$ -            |
| 3              | Utility CN                      | \$ 1,000        |
| 4              | Railroad CN                     | \$ -            |
| 5              | Construction Inspection/Testing | \$ -            |
|                | <b>TOTAL</b>                    | <b>\$ 6,000</b> |

The Preliminary Cost Estimate portion of this document was prepared by me or under my supervision and represents a planning level cost estimate of the project's scope.

\_\_\_\_\_  
Signature

Todd Johnson  
\_\_\_\_\_  
Estimate Completed By  
6/5/2026  
\_\_\_\_\_  
Date



**ABBREVIATED ENGINEERING NOTES FOR PRELIMINARY COST ESTIMATE - LONG TERM**  
**Whiteland Road & Smokey Row Road**

| LINE ITEM | ITEM NO.  | DESCRIPTION                                                 | NOTES                                                                        |
|-----------|-----------|-------------------------------------------------------------|------------------------------------------------------------------------------|
| 1         | 110-01001 | MOBILIZATION AND DEMOBILIZATION                             |                                                                              |
| 2         | 201-52370 | CLEARING RIGHT-OF-WAY                                       |                                                                              |
| 3         | 801-06775 | MAINTAINING TRAFFIC                                         | Assume \$ 750/per leg for E and W or \$ 1,500 total                          |
| 4         | 802-07058 | SIGN, SHEET ASSEMBLY, RELOCATE                              | 1 each to relocate the Adopt-A-Spot sign                                     |
| 5         | 808-06703 | LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.                    | by cad the white edge lines on Smokey Row including fillets is about 275 LFT |
| 6         | 808-75245 | LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN.                   | assume 50' of double yellow at both legs of Smokey Row or 200 LFT            |
| 7         | 808-75297 | TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, WHITE, 24 IN. | by cad the two stop lines measure 36 LFT                                     |
|           |           |                                                             |                                                                              |

PREPARED FOR:



# APPENDIX J:

## Plainfield RSAs



CORRADINO LLC



# ABBREVIATED ENGINEERING REVIEW FOR TRAFFIC SAFETY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |                                                                                                     |                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------|--------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | Date: 7/22/2026                                                                                     |                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | Des. No.: n/a                                                                                       |                                      |
| <b>Reviewer Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          | Agency/Firm Name: Infrastructure Engineering Inc.                                                   |                                      |
| Primary Author: Emily Schmidt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          | Agency: Indianapolis Metropolitan Planning Organization                                             |                                      |
| Phone Numbers: (317) 202-1282                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          | Email Address: <a href="mailto:eschmidt@infrastructure-eng.com">eschmidt@infrastructure-eng.com</a> |                                      |
| <b>Purpose of Review:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |                                                                                                     |                                      |
| <p>Infrastructure Engineering Inc., on behalf of Corradino LLC, was hired by the Indianapolis MPO (IMPO) to conduct a series of roadway safety audits at preselected intersections within its urbanized area. The goal was to identify existing safety issues and recommend near-term and long-term improvements to address them. Improvements may range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements, including intersection upgrades, multimodal infrastructure, and upgraded traffic signals, as needed. This form is suitable for Level 1 review. Of the three available levels of engineering review, this represents the least refined, lowest-intensity degree of analysis, development of essential project intent (outline of the certified course of action), scoring, and process documentation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |                                                                                                     |                                      |
| <b>Project Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |                                                                                                     |                                      |
| Route: Quaker Boulevard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          | District: Crawfordsville                                                                            |                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | Town: Plainfield                                                                                    |                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | County: Hendricks                                                                                   |                                      |
| Lat & Long (BOP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 39.69719 | -86.37114                                                                                           | Lat & Long (EOP): 39.69719 -86.37114 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | Inside Urban Area Boundary: <u>Yes</u> or No (circle)                                               |                                      |
| IMPO: Indianapolis Metropolitan Planning Organization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          | Project Type: Roadway Safety Audit (RSA)                                                            |                                      |
| Location: The intersection of Quaker Boulevard and Stafford Road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |                                                                                                     |                                      |
| <b>Existing Conditions:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |                                                                                                     |                                      |
| <p>The Quaker Boulevard and Stafford Road intersection is a signalized intersection with protected left turn signals in the northbound and southbound directions and protected/permissive (4 signal faces with flashing yellow arrow) for the eastbound and westbound directions. There are nearside signals for Stafford Road at the intersection. Quaker Boulevard is a 4-lane roadway with 2 through lanes in the northbound and southbound directions with dedicated right turn lanes and single left-turn lanes in the northbound and southbound directions. Stafford Road is a 4-lane road at the intersection with dedicated left turn lanes in the eastbound and westbound directions. The posted speed on Quaker Boulevard is 55 MPH. The posted speed limit on Stafford Road at the intersection is 40 MPH.</p> <p>A multi-use trail is located on the northeast and southeast quadrants of Quaker Boulevard and on the northeast quadrant of Stafford Road. Curb ramps provide a pedestrian crossing across the east leg of the intersection. The multi-use trail crossed Quaker Boulevard south of the intersection below grade.</p> <p>Located in each quadrant of the intersection are:</p> <ul style="list-style-type: none"> <li>• NW Quadrant: Banks, church, drive thru restaurant</li> <li>• SW Quadrant: Gas station</li> <li>• SE Quadrant: Bank</li> <li>• NE Quadrant: Bank</li> </ul> <p>Infrastructure Engineering staff held a virtual meeting with the Town of Plainfield staff on April 1<sup>st</sup>, 2026, to review data generated for the IMPO's Regional Safety Study update and identify potential issues with the site. Meeting minutes from the virtual meeting with the Town of Plainfield are available in <b>Attachment C</b>.</p> <p>Infrastructure Engineering held a field check with the representatives from the IMPO and the Town of Plainfield on May 4<sup>th</sup>, 2026, to provide a recap on the discussion held during the virtual meeting, to discuss the near-term and long-term solutions, and build consensus around a series of countermeasures for Infrastructure Engineering to cost as part of the final recommendations. The field check meeting minutes are available in <b>Attachment C</b>.</p> |          |                                                                                                     |                                      |

## Traffic Operations:

**a) Mobility/Congestion Performance:** The weekday average volumes were provided by the Town of Plainfield for the month of February 2026 from the Miovision units that are located on the southeast and northwest strain poles. According to count data, eastbound traffic entering the intersection is **10,646**. The westbound traffic entering the intersection is **4,642**. The northbound traffic entering the intersection is **5,185**. The southbound traffic entering the intersection is **9,882**. Those can be viewed in the attached traffic data in **Attachment B**.

**b) Safety Performance / Crash Analysis:** According to available crash data, there were **60** crashes associated with the study area from January 1, 2022, to December 31, 2024. Of those crashes, **1** resulted in fatality, **6** resulted in incapacitating injuries, and **8** resulted in non-incapacitating injuries. See attached Crash Summary and output from RoadHAT 4.1 in **Attachment A**.

2022-2024 Crash Data – Stafford Road & Quaker Boulevard intersection (analyzed as **City Arterial Intersection**) ICC = **3.22**, ICF = **2.62**

## Alternatives & Recommendations

### Near-Term

Near-term solutions include:

Convert the existing protected/permissive left turn signals for Stafford Road to protected left turn signals.

Add “Left on Green Arrow Only” (R10-5) to all protected left turn signals.

Additional pavement markings on the eastbound to southbound movement to better delineate the turn.

Convert the Lakeside Drive movements to right in/right out with pavement markings and signage.

The Level of Service (LOS) of the intersection was analyzed with the existing signal configuration and the proposed signal configuration in the current year (2026) and the future year (2046). The overall intersection LOS did not change between the signal configurations for the two study years. The Synchro reports can be found in **Attachment F**.

### Long-Term

The long-term recommended improvement for the intersection include the narrowing of Quaker Boulevard to reduce the shoulders and to allow for bicycle/pedestrian facilities. A multi-use trail will be located on the northwest and southwest quadrants for Quaker Boulevard and on the southwest quadrant of Stafford Road. Sidewalk will be located on the northwest quadrant of Stafford Road.

Concrete median will be added to the west leg of Stafford Road. Right turn in/out medians will be added to Lakeside Drive and the driveway for the gas station on the southwest quadrant. The current crash data indicates a pattern of crashes to/from Lakeside Drive and the driveway to the south. The Town of Plainfield shared a previous traffic study of Stafford Road from Center Street to Quaker Boulevard. The previous study also recommended a concrete median and right turn in/out medians and has been included in Attachment E.

The existing median on Quaker Boulevard will be extended on the north leg to allow for pedestrian refuge. A right turn delineator median and pedestrian refuge will be added to the southbound approach on Quaker Boulevard. The existing shoulders will be removed and replaced with curb and gutter on the northbound Quaker Boulevard north leg and on the southbound Quaker Boulevard south leg to narrow the roadway to reduce the roadway footprint. The Town of Plainfield has a vision to reduce the footprint of Quaker Boulevard to help to reduce the speeds on Quaker Boulevard. A schematic of the proposed roadway improvement to Stafford Road is in **Attachment D**.

The near-term solution of the protected left turn signals for Stafford Road were included in the long-term solutions.

### Future Consideration

The Town of Plainfield conducted a traffic analysis for the Stafford Road corridor from Center Street/Buchanan Street to Quaker Boulevard. The analysis is in **Attachment E**.

## Near-Term & Long-Term Cost Estimates for the Proposed Safety Improvements

Cost estimates for the near- and long-term improvements are available in **Attachment D**. Benefit-Cost Calculations were also calculated for the near-term improvement and can also be found in **Attachment D**.

### Near-Term Recommendation

PE - \$2,220.00

ROW - \$0.00

Utility CN - \$2,000.00

Railroad CN - \$0.00

Construction Inspection/Testing (10% Rounded up to nearest \$500) – \$1,500.00

CN - \$14,800.00

**Near-Term Total - \$20,520.00**

**Long-Term Recommendation**

PE - \$154,000.00

ROW - \$125,000.00

Utility CN - \$50,000.00

Railroad CN - \$0.00

Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$103,000.00

CN - \$1,026,100.00

**Long-Term Total - \$1,458,100.00****Project Score: (for INDOT use)**

Safety Program Score =

**Miscellaneous Notes:****Attachments:****Attachment A:** Preliminary Findings Report**Attachment B:** Traffic Counts**Attachment C:** Virtual Meeting Minutes & Field Check Minutes**Attachment D:** Cost Estimates & Schematics**Attachment E:** Previous Traffic Memo**Attachment F:** Intersection Capacity Reports

## **ATTACHEMNT A: PRELIMINARY FINDINGS REPORT**

---

# **Preliminary Findings**

**Safety Analysis at Stafford Rd. & Quaker Blvd.**

Prepared For  
**IMPO & Town of Plainfield**

## SAFETY ANALYSIS

---

A crash data analysis was completed for the intersection of Stafford Road and Quaker Boulevard (Study Area) in Plainfield, IN. Before beginning the crash analysis, the project team followed these steps to clean the data:

- Received 2022-2024 crash data from the IMPO. Serious Injury and Fatal crashes had been cleaned by IMPO staff.
- Placed a 250 ft buffer around the Study Area to identify reported crashes near the intersection.
- Reviewed the police reports for each crash record identified within the 250 ft buffer.
- Identified and removed any crash records from the analysis that involved a collision with an animal in the roadway or occurred in a parking lot near the intersection.
- Reviewed the description in the reports to confirm the selected Manner of Collision & Crash Severity accurately reflected how the police officer described the crash.
- Created a collision diagram of the Study Area as well as summary tables of the crash records.
- Developed a crash cost (Icc) and crash frequency (Icf) for the Study Area using RoadHat 4.1.

60 crashes were identified within the Study Area. Six of those reported crashes resulted in incapacitating injuries, and one resulted in a fatality. Four incapacitating injury crashes were reported as rear end crashes, one was reported as left turn crash, and one was reported as a right angle crash. The fatality was a right angle crash when a southbound vehicle disregarded the signal turning in front of the northbound vehicle. Other notable results near the Study Area include:

- 47% of the reported crashes at the intersection were rear end crashes. 7 of the crashes were in the southbound lanes, 11 of the crashes were in the northbound lanes, 7 of the crashes were in the eastbound lanes, and 3 of the crashes were in the westbound lanes.
- 25% of the reported crashes at the intersection were left turn crashes.
- 78% of the reported crashes occurred during Off-Peak travel times, 8% occurred during the morning peak hours (7am-9am) and 13% occurred in the evening peak hours (4pm -6pm).
- 60% of the reported crashes occurred in the daylight hours, 7% in the dawn/dusk hours, and 33% in the dark (lighted) conditions.
- 15% of the reported crashes occurred during wet roadway surface conditions, 2% occurred during snow/slush roadway surface conditions, and the rest occurred during dry roadway surface conditions.
- 30% of the reported crashes occurred on cloudy days, 7% occurred on rainy days, 1% occurred on snowy days, and 62% occurred on clear days.

Attached are the crash summary tables, a collision diagram, images of the intersection, and the results of the RoadHat 4.1 analysis.



## Stafford Rd & Quaker Blvd

| Overall Summary                             |    |
|---------------------------------------------|----|
| Total Number of Crashes                     | 60 |
| Number of People Killed                     | 1  |
| Number of People Injured                    | 21 |
| Number of Property Damage Only              | 45 |
| Number of Fatal Crashes                     | 1  |
| Number of Incapacitating Injury Crashes     | 6  |
| Number of Non-Incapacitating Injury Crashes | 8  |

| Summary of Primary Factors               |                   |             |
|------------------------------------------|-------------------|-------------|
| Primary Factor                           | Number of Crashes | Percentage  |
| ACCELERATOR FAILURE OR DEFECTIVE         | 1                 | 2%          |
| CELL PHONE USAGE                         | 1                 | 2%          |
| DISREGARD SIGNAL/REG SIGN                | 3                 | 5%          |
| DRIVER DISTRACTED - EXPLAIN IN NARRATIVE | 1                 | 2%          |
| FAILURE TO MAINTAIN LANE                 | 1                 | 2%          |
| FAILURE TO YIELD RIGHT OF WAY            | 20                | 33%         |
| FOLLOWING TOO CLOSELY                    | 22                | 37%         |
| IMPROPER TURNING                         | 2                 | 3%          |
| UNSAFE BACKING                           | 1                 | 2%          |
| UNSAFE LANE MOVEMENT                     | 3                 | 5%          |
| UNSAFE SPEED                             | 3                 | 5%          |
| OTHER (DRIVER) - EXPLAIN IN NARRATIVE    | 2                 | 3%          |
| <b>Grand Total</b>                       | <b>60</b>         | <b>100%</b> |

| Summary of Manner of Collision     |                   |             |
|------------------------------------|-------------------|-------------|
| Manner (Type) of Collision         | Number of Crashes | Percentage  |
| BACKING CRASH                      | 1                 | 2%          |
| HEAD ON BETWEEN TWO MOTOR VEHICLES | 1                 | 2%          |
| LEFT TURN                          | 15                | 25%         |
| LEFT/RIGHT TURN                    | 1                 | 2%          |
| REAR END                           | 28                | 47%         |
| RIGHT ANGLE                        | 10                | 17%         |
| SAME DIRECITON SIDESWIPE           | 4                 | 7%          |
| <b>Grand Total</b>                 | <b>60</b>         | <b>100%</b> |

| Summary of Light Conditions |                   |             |
|-----------------------------|-------------------|-------------|
| Time of Day                 | Number of Crashes | Percentage  |
| DARK (LIGHTED)              | 20                | 33%         |
| DAWN/DUSK                   | 4                 | 7%          |
| DAYLIGHT                    | 36                | 60%         |
| <b>Grand Total</b>          | <b>60</b>         | <b>100%</b> |

| Summary of Crash Time of Day |                   |             |
|------------------------------|-------------------|-------------|
| Time of Day                  | Number of Crashes | Percentage  |
| AM PEAK (7-9 AM)             | 5                 | 8%          |
| PM PEAK (4-6 PM)             | 8                 | 13%         |
| OFF-PEAK                     | 47                | 78%         |
| <b>Grand Total</b>           | <b>60</b>         | <b>100%</b> |

# Stafford Rd & Quaker Blvd

| Summary of Weather Conditions      |                         |           |           |                 |          |                           |          |                   |             |
|------------------------------------|-------------------------|-----------|-----------|-----------------|----------|---------------------------|----------|-------------------|-------------|
| Manner (Type) of Collision         | Blowing Sand/Soil/ Snow | Clear     | Cloudy    | Fog/Smoke/ Smog | Rain     | Sleet/Hail/ Freezing Rain | Snow     | Severe Cross Wind | Grand Total |
| BACKING CRASH                      | 0                       | 1         | 0         | 0               | 0        | 0                         | 0        | 0                 | 1           |
| HEAD ON BETWEEN TWO MOTOR VEHICLES | 0                       | 1         | 0         | 0               | 0        | 0                         | 0        | 0                 | 1           |
| LEFT TURN                          | 0                       | 8         | 6         | 0               | 1        | 0                         | 0        | 0                 | 15          |
| LEFT/RIGHT TURN                    | 0                       | 1         | 0         | 0               | 0        | 0                         | 0        | 0                 | 1           |
| REAR END                           | 0                       | 18        | 7         | 0               | 2        | 0                         | 1        | 0                 | 28          |
| RIGHT ANGLE                        | 0                       | 5         | 4         | 0               | 1        | 0                         | 0        | 0                 | 10          |
| SAME DIRECITON SIDESWIPE           | 0                       | 3         | 1         | 0               | 0        | 0                         | 0        | 0                 | 4           |
| <b>Grand Total</b>                 | <b>0</b>                | <b>37</b> | <b>18</b> | <b>0</b>        | <b>4</b> | <b>0</b>                  | <b>1</b> | <b>0</b>          | <b>60</b>   |

| Summary of Pavement Conditions     |           |          |            |          |                            |             |
|------------------------------------|-----------|----------|------------|----------|----------------------------|-------------|
| Manner (Type) of Collision         | Dry       | Ice      | Snow/Slush | Wet      | Water (Standing or Moving) | Grand Total |
| BACKING CRASH                      | 1         | 0        | 0          | 0        | 0                          | 1           |
| HEAD ON BETWEEN TWO MOTOR VEHICLES | 1         | 0        | 0          | 0        | 0                          | 1           |
| LEFT TURN                          | 10        | 0        | 0          | 5        | 0                          | 15          |
| LEFT/RIGHT TURN                    | 1         | 0        | 0          | 0        | 0                          | 1           |
| REAR END                           | 24        | 0        | 1          | 3        | 0                          | 28          |
| RIGHT ANGLE                        | 9         | 0        | 0          | 1        | 0                          | 10          |
| SAME DIRECITON SIDESWIPE           | 4         | 0        | 0          | 0        | 0                          | 4           |
| <b>Grand Total</b>                 | <b>50</b> | <b>0</b> | <b>1</b>   | <b>9</b> | <b>0</b>                   | <b>60</b>   |

DIAGRAM OF  
COLLISION  
REPORTS

Stafford Rd at Quaker Blvd

Study Period:01/01/2022 to 12/31/2024

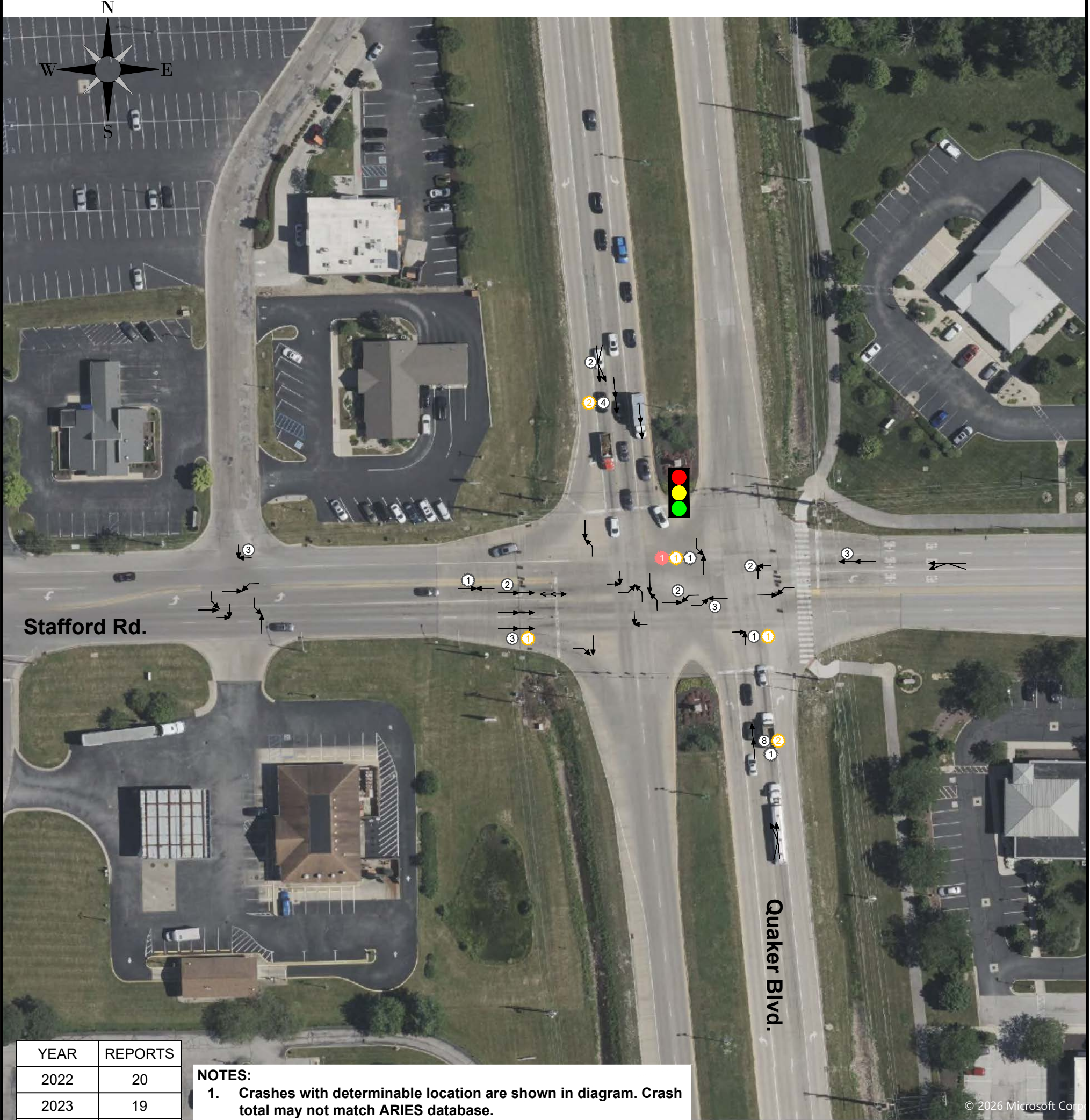
Location:1

District:CrawfordsvilleCounty:Hendricks

City/Town:Plainfield

Analyst:JHQC:ES

Date:4/30/2026



OBJECT SYMBOLS

→

MOVING VEHICLE

↘

TURNING VEHICLE

↔

BACKING VEHICLE

⤿

OUT OF CONTROL

▭

PARKED VEHICLE

🚶

PEDESTRIAN

🚲

BICYCLE

A

ANIMAL

D

DEBRIS IN ROADWAY

DR

DRIVEWAY CRASH

#

FATAL CRASH

#

INJURY CRASH-  
INCAPACITATING

#

INJURY CRASH-  
NONINCAPACITATING

#

PDO CRASHES (IF > 1)

🚦

SIGNALIZED INTERSECTION

#

FIXED OBJECT  
(SEE TABLE FOR # CODES)

COLLISION SYMBOLS

→→

REAR END

→↘

HEAD ON

↘↘

OTHER

↘↘

SIDESWIPE-  
SAME

↘↘

SIDESWIPE-  
OPPOSITE

↘↘

RIGHT ANGLE

↘↘

LEFT/RIGHT TURN

→

RAN OFF ROAD

FIXED OBJECT CODES

01 - BRIDGE / OVERPASS

02 - BUILDING

03 - CULVERT / DITCH

04 - CURB

05 - GUARDRAIL / BARRIER

06 - EMBANKMENT

07 - FENCE

08 - TRAFFIC POLE

09 - UTILITY POLE

10 - SIGN

11 - TREE / SHRUB

12 - CONSTRUCTION BARRIER

13 - CRASH ATTENUATOR

88 - OTHER

99 - UNKNOWN

Attachment A-6





1. Looking west at east approach



2. Looking west at north approach





3. Looking west at west approach



4. Looking south at south approach

| RoadHAT 4D                                     |                             | Index of Crash Frequency and Cost - Form F1 |  | Page 1/2 |
|------------------------------------------------|-----------------------------|---------------------------------------------|--|----------|
| Settings: Indiana local settings               |                             | Version: Version 4.1                        |  |          |
| Location                                       | Quaker Blvd. & Stafford Rd. |                                             |  |          |
| Plainfield, Indiana                            |                             |                                             |  |          |
| GIS                                            |                             |                                             |  |          |
| Post                                           |                             |                                             |  |          |
| Analyst                                        | JHL                         |                                             |  |          |
| Date                                           | 5/14/2026                   |                                             |  |          |
| <b>INPUT</b>                                   |                             |                                             |  |          |
| Road Facility Type                             | City Arterial Intersection  |                                             |  |          |
| Busiest Road AADT (veh/day)                    | 20521                       |                                             |  |          |
| Crossing Road AADT (veh/day)                   | 5095                        |                                             |  |          |
| First Year with Crash Data (yyyy)              | 2022                        |                                             |  |          |
| Last Year with Crash Data (yyyy)               | 2024                        |                                             |  |          |
| Number of Crashes (crash/period)               |                             |                                             |  |          |
| Fatal and Incapacitating Injury Crashes        | 7                           |                                             |  |          |
| Non-Incapacitating and Possible Injury Crashes | 8                           |                                             |  |          |
| Property Damage Only Crashes                   | 45                          |                                             |  |          |
| Route or Road Type                             | City Arterial Intersection  |                                             |  |          |
| Average Crash Costs (\$)                       |                             |                                             |  |          |
| Fatal and Incapacitating Injury Crashes        | 1840100                     |                                             |  |          |
| Non-Incapacitating and Possible Injury Crashes | 393200                      |                                             |  |          |
| Property Damage Only Crashes                   | 40200                       |                                             |  |          |
| Crash Cost Year (yyyy)                         | 2017                        |                                             |  |          |
| <b>OUTPUT</b>                                  |                             |                                             |  |          |
| Expected Crash Frequency (crash/year)          |                             |                                             |  |          |
| Fatal and Incapacitating Injury Crashes        | 0.286                       |                                             |  |          |
| Non-Incapacitating and Possible Injury Crashes | 0.71                        |                                             |  |          |
| Property Damage Only Crashes                   | 3.76                        |                                             |  |          |
| All Crashes                                    | 4.75                        |                                             |  |          |
| Index of Crash Frequency                       | 3.22                        |                                             |  |          |
| Index of Crash Cost                            | 2.62                        |                                             |  |          |

| RoadHAT 4D                       |                             | Index of Crash Frequency and Cost - Form F1 |  | Page 2/2 |
|----------------------------------|-----------------------------|---------------------------------------------|--|----------|
| Settings: Indiana local settings |                             | Version: Version 4.1                        |  |          |
| Location                         | Quaker Blvd. & Stafford Rd. |                                             |  |          |
| Plainfield, Indiana              |                             |                                             |  |          |
| GIS                              |                             |                                             |  |          |
| Post                             |                             |                                             |  |          |
| Analyst                          | JHL                         |                                             |  |          |
| Date                             | 5/14/2026                   |                                             |  |          |
| <b>Comments:</b>                 |                             |                                             |  |          |
|                                  |                             |                                             |  |          |

## **ATTACHEMNT B: TRAFFIC COUNTS**

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## Summary

Study Name Quaker Boulevard and Stafford Road

Project Quaker Boulevard and Stafford Road

Project Code

Legs and Movements

Bin Size 15 minutes

Time Zone America/Indiana/Indianapolis

Date Range 2026-02-02 - 2026-02-27

Time Range 00:00:00 - 23:59:59

Location Quaker Boulevard and Stafford Road

Latitude and Longitude -39.69691,-86.37154

AM Peak 07:15-08:15

Midday Peak 15:00-16:00

PM Peak 16:30-17:30

## Articulated Truck

| Entry      | Stafford Road |       |      | Quaker Boulevard |       |      | Quaker Boulevard |       |      | Stafford Road |       |      |
|------------|---------------|-------|------|------------------|-------|------|------------------|-------|------|---------------|-------|------|
| Direction  | Westbound     |       |      | Northbound       |       |      | Southbound       |       |      | Eastbound     |       |      |
| Start Time | Left          | Right | Thru | Left             | Right | Thru | Left             | Right | Thru | Left          | Right | Thru |
| 0:00:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 0:15:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 0:30:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 0:45:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 1:00:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 1:15:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 1:30:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 1:45:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 2:00:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 2:15:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 2:30:00    | 0             | 0     | 0    | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 2:45:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 3:00:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 3:15:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 3:30:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 3:45:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 4:00:00    | 0             | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 1             | 0     | 0    |
| 4:15:00    | 0             | 0     | 0    | 0                | 0     | 0    | 1                | 0     | 0    | 1             | 0     | 0    |
| 4:30:00    | 0             | 0     | 0    | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 4:45:00    | 0             | 0     | 0    | 0                | 0     | 0    | 1                | 0     | 0    | 1             | 0     | 0    |
| 5:00:00    | 0             | 0     | 0    | 0                | 0     | 0    | 1                | 0     | 0    | 1             | 0     | 0    |
| 5:15:00    | 0             | 0     | 0    | 0                | 0     | 1    | 1                | 0     | 0    | 1             | 0     | 0    |
| 5:30:00    | 0             | 0     | 0    | 0                | 0     | 1    | 1                | 0     | 0    | 1             | 0     | 0    |
| 5:45:00    | 0             | 0     | 0    | 0                | 0     | 1    | 1                | 0     | 0    | 0             | 0     | 0    |
| 6:00:00    | 0             | 0     | 0    | 0                | 0     | 1    | 0                | 0     | 0    | 1             | 0     | 0    |
| 6:15:00    | 1             | 0     | 0    | 0                | 0     | 1    | 2                | 0     | 0    | 1             | 0     | 0    |
| 6:30:00    | 1             | 0     | 0    | 0                | 0     | 1    | 1                | 1     | 0    | 2             | 0     | 0    |
| 6:45:00    | 1             | 0     | 0    | 0                | 0     | 1    | 2                | 1     | 0    | 4             | 0     | 0    |
| 7:00:00    | 1             | 0     | 0    | 0                | 0     | 1    | 1                | 1     | 0    | 2             | 0     | 0    |
| 7:15:00    | 1             | 0     | 0    | 0                | 0     | 2    | 2                | 0     | 0    | 2             | 0     | 0    |
| 7:30:00    | 1             | 0     | 0    | 0                | 0     | 1    | 2                | 0     | 0    | 2             | 0     | 0    |
| 7:45:00    | 1             | 0     | 0    | 0                | 0     | 1    | 1                | 1     | 0    | 2             | 0     | 0    |
| 8:00:00    | 1             | 0     | 0    | 0                | 0     | 1    | 2                | 0     | 0    | 2             | 0     | 0    |
| 8:15:00    | 0             | 1     | 0    | 0                | 0     | 2    | 2                | 0     | 0    | 2             | 0     | 0    |
| 8:30:00    | 1             | 0     | 0    | 0                | 0     | 2    | 2                | 0     | 0    | 1             | 0     | 0    |
| 8:45:00    | 1             | 0     | 0    | 0                | 0     | 2    | 2                | 1     | 0    | 2             | 0     | 0    |
| 9:00:00    | 1             | 0     | 0    | 0                | 0     | 1    | 2                | 1     | 0    | 2             | 0     | 0    |
| 9:15:00    | 1             | 0     | 0    | 0                | 0     | 2    | 2                | 1     | 0    | 2             | 0     | 0    |

|          |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:30:00  | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 2 | 0 | 0 | 0 |
| 9:45:00  | 0 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 3 | 0 | 0 | 0 |
| 10:00:00 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 3 | 0 | 0 | 0 |
| 10:15:00 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 4 | 0 | 0 | 0 |
| 10:30:00 | 1 | 1 | 0 | 0 | 2 | 2 | 1 | 0 | 2 | 0 | 0 | 0 |
| 10:45:00 | 1 | 1 | 0 | 0 | 2 | 3 | 1 | 0 | 3 | 0 | 0 | 0 |
| 11:00:00 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 2 | 0 | 0 | 0 |
| 11:15:00 | 1 | 1 | 0 | 0 | 2 | 3 | 1 | 0 | 3 | 0 | 0 | 0 |
| 11:30:00 | 1 | 1 | 0 | 0 | 2 | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| 11:45:00 | 1 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| 12:00:00 | 1 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| 12:15:00 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| 12:30:00 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 3 | 0 | 0 | 0 |
| 12:45:00 | 1 | 1 | 0 | 0 | 2 | 3 | 1 | 0 | 3 | 0 | 0 | 0 |
| 13:00:00 | 1 | 1 | 0 | 0 | 2 | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| 13:15:00 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 3 | 0 | 0 | 0 |
| 13:30:00 | 1 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| 13:45:00 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 4 | 0 | 0 | 0 |
| 14:00:00 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 2 | 0 | 0 | 0 |
| 14:15:00 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 |
| 14:30:00 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 14:45:00 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 15:00:00 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 |
| 15:15:00 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 15:30:00 | 1 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| 15:45:00 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 16:00:00 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 |
| 16:15:00 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 16:30:00 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 16:45:00 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 17:00:00 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 17:15:00 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 17:30:00 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 17:45:00 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:00:00 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:15:00 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:30:00 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:45:00 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 19:00:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:15:00 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 19:30:00 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 19:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:00:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 20:15:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 20:30:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 20:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 21:00:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:15:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:30:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:45:00 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 22:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:30:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

## Bicycle

| Entry      | Stafford Road |       |      | Quaker Boulevard |       |      | Quaker Boulevard |       |      | Stafford Road |       |      |   |
|------------|---------------|-------|------|------------------|-------|------|------------------|-------|------|---------------|-------|------|---|
| Direction  | Westbound     |       |      | Northbound       |       |      | Southbound       |       |      | Eastbound     |       |      |   |
| Start Time | Left          | Right | Thru | Left             | Right | Thru | Left             | Right | Thru | Left          | Right | Thru |   |
| 0:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 0:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 0:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 0:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:00:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:30:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:45:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:00:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:30:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:45:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:00:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:30:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:45:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 13:00:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 13:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |

|          |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Bus        |               |       |      |                  |       |      |                  |       |      |               |       |      |    |
|------------|---------------|-------|------|------------------|-------|------|------------------|-------|------|---------------|-------|------|----|
| Entry      | Stafford Road |       |      | Quaker Boulevard |       |      | Quaker Boulevard |       |      | Stafford Road |       |      |    |
| Direction  | Westbound     |       |      | Northbound       |       |      | Southbound       |       |      | Eastbound     |       |      |    |
| Start Time | Left          | Right | Thru | Left             | Right | Thru | Left             | Right | Thru | Left          | Right | Thru |    |
| 0:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 0:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 0:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 0:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 1:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 1:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 1:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 1:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 2:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 2:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 2:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 2:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 3:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 3:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 3:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 3:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 4:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 4:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 4:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 4:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 5:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 5:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 5:30:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 5:45:00    |               | 0     | 0    | 0                | 0     | 1    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 6:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 6:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 6:30:00    |               | 0     | 0    | 0                | 0     | 1    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 6:45:00    |               | 0     | 2    | 0                | 0     | 0    | 1                | 1     | 0    | 0             | 0     | 0    | 0  |
| 7:00:00    |               | 0     | 0    | 1                | 0     | 0    | 0                | 0     | 1    | 0             | 0     | 0    | 0  |
| 7:15:00    |               | 0     | 0    | 1                | 3     | 0    | 0                | 0     | 1    | 1             | 0     | 0    | 0  |
| 7:30:00    |               | 0     | 0    | 0                | 0     | 1    | 0                | 0     | 0    | 0             | 2     | 0    | 0  |
| 7:45:00    |               | 0     | 0    | 0                | 1     | 0    | 5                | 0     | 1    | 2             | 0     | 1    | 0  |
| 8:00:00    |               | 0     | 0    | 0                | 0     | 2    | 1                | 0     | 1    | 2             | 1     | 0    | 1  |
| 8:15:00    |               | 0     | 0    | 0                | 1     | 0    | 0                | 0     | 4    | 0             | 0     | 0    | 0  |
| 8:30:00    |               | 0     | 0    | 0                | 1     | 1    | 0                | 4     | 0    | 0             | 0     | 0    | 13 |
| 8:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 1     | 0    | 0             | 0     | 0    | 5  |
| 9:00:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 1  |
| 9:15:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 1  |
| 9:30:00    |               | 0     | 0    | 1                | 0     | 1    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 9:45:00    |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 10:00:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 10:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 10:30:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 1    | 0             | 1     | 0    | 0  |
| 10:45:00   |               | 0     | 0    | 0                | 1     | 0    | 1                | 0     | 0    | 0             | 0     | 0    | 0  |
| 11:00:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 1    | 0             | 0     | 0    | 0  |
| 11:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 11:30:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 11:45:00   |               | 0     | 0    | 1                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 12:00:00   |               | 0     | 1    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 1  |
| 12:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 1  |
| 12:30:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 12:45:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0  |
| 13:00:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 1  |
| 13:15:00   |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 1  |

|          |   |   |    |   |   |   |   |   |   |   |   |   |
|----------|---|---|----|---|---|---|---|---|---|---|---|---|
| 13:30:00 | 0 | 0 | 0  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15:00 | 0 | 0 | 3  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30:00 | 0 | 0 | 15 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45:00 | 0 | 0 | 0  | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 15:00:00 | 0 | 0 | 1  | 0 | 1 | 0 | 0 | 0 | 2 | 2 | 1 | 0 |
| 15:15:00 | 0 | 0 | 1  | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 0 |
| 15:30:00 | 0 | 0 | 2  | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 15:45:00 | 0 | 0 | 0  | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 16:00:00 | 0 | 0 | 0  | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 2 |
| 16:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 16:30:00 | 0 | 0 | 0  | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 16:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 17:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30:00 | 0 | 0 | 0  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30:00 | 0 | 0 | 0  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:30:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:30:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:30:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:30:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:15:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:30:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:45:00 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



| Light Entry | Stafford Road |       |      | Quaker Boulevard |       |      | Quaker Boulevard |       |      | Stafford Road |       |      |    |
|-------------|---------------|-------|------|------------------|-------|------|------------------|-------|------|---------------|-------|------|----|
| Direction   | Westbound     |       |      | Northbound       |       |      | Southbound       |       |      | Eastbound     |       |      |    |
| Start Time  | Left          | Right | Thru | Left             | Right | Thru | Left             | Right | Thru | Left          | Right | Thru |    |
| 0:00:00     |               | 1     | 2    | 5                | 2     | 0    | 12               | 1     | 1    | 11            | 1     | 0    | 3  |
| 0:15:00     |               | 1     | 2    | 5                | 1     | 1    | 8                | 1     | 2    | 8             | 1     | 0    | 2  |
| 0:30:00     |               | 1     | 3    | 4                | 2     | 1    | 9                | 1     | 2    | 7             | 1     | 1    | 3  |
| 0:45:00     |               | 1     | 1    | 3                | 2     | 1    | 6                | 1     | 2    | 5             | 1     | 0    | 2  |
| 1:00:00     |               | 1     | 2    | 2                | 1     | 1    | 5                | 1     | 1    | 6             | 1     | 0    | 1  |
| 1:15:00     |               | 1     | 2    | 3                | 1     | 1    | 5                | 1     | 2    | 4             | 1     | 0    | 1  |
| 1:30:00     |               | 2     | 1    | 3                | 1     | 1    | 5                | 1     | 1    | 4             | 1     | 1    | 1  |
| 1:45:00     |               | 1     | 1    | 3                | 1     | 1    | 4                | 1     | 1    | 3             | 0     | 0    | 1  |
| 2:00:00     |               | 1     | 1    | 2                | 1     | 0    | 5                | 1     | 1    | 4             | 0     | 0    | 1  |
| 2:15:00     |               | 1     | 1    | 2                | 1     | 1    | 5                | 1     | 1    | 5             | 0     | 0    | 2  |
| 2:30:00     |               | 1     | 2    | 2                | 1     | 1    | 8                | 1     | 2    | 5             | 0     | 1    | 3  |
| 2:45:00     |               | 1     | 1    | 3                | 1     | 1    | 6                | 1     | 2    | 4             | 1     | 0    | 4  |
| 3:00:00     |               | 0     | 2    | 2                | 0     | 2    | 5                | 2     | 1    | 6             | 0     | 1    | 5  |
| 3:15:00     |               | 0     | 1    | 2                | 1     | 1    | 4                | 2     | 1    | 8             | 1     | 0    | 3  |
| 3:30:00     |               | 2     | 2    | 3                | 1     | 1    | 4                | 2     | 2    | 11            | 2     | 1    | 5  |
| 3:45:00     |               | 1     | 2    | 3                | 1     | 3    | 6                | 2     | 3    | 9             | 1     | 1    | 6  |
| 4:00:00     |               | 2     | 3    | 4                | 1     | 3    | 6                | 4     | 1    | 8             | 1     | 1    | 9  |
| 4:15:00     |               | 1     | 3    | 4                | 1     | 5    | 9                | 10    | 1    | 13            | 1     | 1    | 8  |
| 4:30:00     |               | 2     | 7    | 6                | 1     | 7    | 16               | 8     | 2    | 27            | 1     | 3    | 14 |
| 4:45:00     |               | 2     | 6    | 5                | 2     | 5    | 17               | 10    | 2    | 30            | 4     | 3    | 22 |
| 5:00:00     |               | 3     | 8    | 8                | 2     | 7    | 24               | 8     | 3    | 29            | 7     | 3    | 22 |
| 5:15:00     |               | 4     | 9    | 8                | 2     | 10   | 24               | 11    | 5    | 47            | 5     | 4    | 27 |
| 5:30:00     |               | 3     | 10   | 7                | 2     | 10   | 48               | 14    | 5    | 63            | 7     | 5    | 36 |
| 5:45:00     |               | 3     | 11   | 7                | 3     | 10   | 48               | 18    | 5    | 46            | 7     | 4    | 40 |
| 6:00:00     |               | 2     | 9    | 8                | 5     | 8    | 41               | 16    | 7    | 43            | 8     | 7    | 38 |
| 6:15:00     |               | 2     | 11   | 9                | 9     | 10   | 60               | 22    | 9    | 58            | 9     | 6    | 34 |
| 6:30:00     |               | 3     | 10   | 12               | 9     | 11   | 84               | 22    | 10   | 72            | 11    | 9    | 54 |
| 6:45:00     |               | 4     | 14   | 17               | 12    | 12   | 84               | 33    | 14   | 73            | 10    | 9    | 53 |
| 7:00:00     |               | 3     | 13   | 20               | 11    | 11   | 75               | 33    | 18   | 75            | 11    | 9    | 47 |
| 7:15:00     |               | 3     | 16   | 30               | 21    | 13   | 98               | 39    | 20   | 91            | 17    | 19   | 69 |
| 7:30:00     |               | 6     | 17   | 25               | 25    | 11   | 113              | 33    | 26   | 100           | 27    | 28   | 78 |
| 7:45:00     |               | 7     | 23   | 26               | 30    | 16   | 127              | 34    | 22   | 119           | 23    | 24   | 67 |
| 8:00:00     |               | 6     | 21   | 23               | 32    | 12   | 117              | 33    | 20   | 85            | 14    | 9    | 53 |
| 8:15:00     |               | 6     | 19   | 29               | 38    | 12   | 101              | 34    | 26   | 90            | 16    | 8    | 44 |
| 8:30:00     |               | 6     | 22   | 36               | 35    | 9    | 99               | 25    | 27   | 87            | 17    | 18   | 61 |
| 8:45:00     |               | 6     | 21   | 31               | 23    | 12   | 108              | 23    | 24   | 93            | 21    | 17   | 49 |
| 9:00:00     |               | 6     | 19   | 23               | 17    | 10   | 89               | 22    | 25   | 77            | 23    | 9    | 32 |
| 9:15:00     |               | 7     | 20   | 20               | 16    | 12   | 92               | 18    | 25   | 83            | 20    | 7    | 31 |
| 9:30:00     |               | 9     | 19   | 22               | 16    | 11   | 86               | 21    | 24   | 78            | 22    | 7    | 29 |
| 9:45:00     |               | 8     | 18   | 24               | 18    | 12   | 95               | 19    | 26   | 88            | 22    | 7    | 24 |
| 10:00:00    |               | 9     | 18   | 23               | 13    | 11   | 90               | 18    | 22   | 82            | 23    | 6    | 28 |
| 10:15:00    |               | 9     | 20   | 20               | 17    | 12   | 98               | 17    | 22   | 86            | 22    | 7    | 28 |
| 10:30:00    |               | 9     | 21   | 22               | 15    | 13   | 104              | 19    | 23   | 91            | 26    | 7    | 34 |
| 10:45:00    |               | 9     | 23   | 24               | 17    | 16   | 101              | 21    | 27   | 104           | 23    | 8    | 29 |
| 11:00:00    |               | 14    | 28   | 34               | 19    | 16   | 101              | 24    | 25   | 91            | 26    | 6    | 33 |
| 11:15:00    |               | 12    | 27   | 28               | 20    | 17   | 111              | 26    | 26   | 104           | 25    | 8    | 35 |
| 11:30:00    |               | 15    | 28   | 33               | 18    | 20   | 106              | 22    | 26   | 95            | 29    | 9    | 39 |
| 11:45:00    |               | 16    | 29   | 36               | 23    | 20   | 125              | 22    | 31   | 100           | 28    | 9    | 33 |
| 12:00:00    |               | 18    | 30   | 36               | 22    | 19   | 110              | 25    | 30   | 110           | 32    | 9    | 38 |
| 12:15:00    |               | 16    | 32   | 36               | 22    | 21   | 125              | 23    | 32   | 111           | 27    | 8    | 37 |
| 12:30:00    |               | 18    | 30   | 36               | 20    | 19   | 108              | 26    | 31   | 111           | 29    | 8    | 35 |
| 12:45:00    |               | 18    | 27   | 35               | 24    | 18   | 118              | 22    | 35   | 117           | 27    | 8    | 34 |
| 13:00:00    |               | 17    | 28   | 34               | 18    | 17   | 103              | 21    | 35   | 109           | 30    | 8    | 35 |
| 13:15:00    |               | 14    | 25   | 32               | 20    | 16   | 120              | 20    | 35   | 118           | 26    | 7    | 35 |

|          |    |    |    |    |    |     |    |    |     |    |    |    |
|----------|----|----|----|----|----|-----|----|----|-----|----|----|----|
| 13:30:00 | 16 | 28 | 35 | 21 | 17 | 124 | 23 | 31 | 116 | 28 | 7  | 33 |
| 13:45:00 | 16 | 27 | 36 | 21 | 15 | 126 | 18 | 35 | 125 | 25 | 8  | 35 |
| 14:00:00 | 17 | 30 | 40 | 19 | 16 | 122 | 22 | 32 | 114 | 28 | 9  | 35 |
| 14:15:00 | 22 | 40 | 45 | 29 | 19 | 147 | 25 | 30 | 122 | 27 | 8  | 38 |
| 14:30:00 | 25 | 45 | 49 | 25 | 17 | 125 | 29 | 36 | 126 | 27 | 9  | 35 |
| 14:45:00 | 18 | 39 | 53 | 26 | 15 | 130 | 21 | 36 | 137 | 26 | 9  | 32 |
| 15:00:00 | 17 | 38 | 58 | 28 | 16 | 131 | 28 | 35 | 139 | 34 | 14 | 43 |
| 15:15:00 | 18 | 40 | 67 | 59 | 19 | 169 | 23 | 40 | 141 | 34 | 10 | 37 |
| 15:30:00 | 22 | 49 | 72 | 45 | 15 | 148 | 28 | 37 | 134 | 34 | 11 | 37 |
| 15:45:00 | 16 | 46 | 67 | 33 | 15 | 149 | 24 | 43 | 156 | 31 | 15 | 44 |
| 16:00:00 | 18 | 45 | 69 | 26 | 15 | 145 | 30 | 40 | 151 | 37 | 13 | 56 |
| 16:15:00 | 18 | 42 | 76 | 29 | 19 | 142 | 28 | 39 | 143 | 34 | 10 | 42 |
| 16:30:00 | 23 | 49 | 81 | 39 | 22 | 164 | 26 | 36 | 146 | 35 | 10 | 44 |
| 16:45:00 | 22 | 48 | 83 | 33 | 19 | 165 | 29 | 39 | 160 | 31 | 11 | 39 |
| 17:00:00 | 21 | 45 | 81 | 33 | 18 | 169 | 32 | 38 | 167 | 31 | 12 | 46 |
| 17:15:00 | 19 | 41 | 76 | 34 | 20 | 145 | 31 | 38 | 158 | 31 | 9  | 47 |
| 17:30:00 | 17 | 37 | 68 | 30 | 21 | 139 | 23 | 34 | 132 | 25 | 9  | 44 |
| 17:45:00 | 15 | 31 | 52 | 28 | 17 | 130 | 26 | 33 | 136 | 21 | 6  | 36 |
| 18:00:00 | 14 | 31 | 48 | 22 | 15 | 123 | 23 | 34 | 130 | 22 | 7  | 33 |
| 18:15:00 | 16 | 27 | 50 | 20 | 18 | 111 | 24 | 32 | 116 | 22 | 7  | 34 |
| 18:30:00 | 16 | 21 | 41 | 19 | 13 | 101 | 18 | 31 | 109 | 19 | 6  | 26 |
| 18:45:00 | 16 | 20 | 35 | 16 | 11 | 97  | 15 | 29 | 99  | 18 | 7  | 27 |
| 19:00:00 | 12 | 20 | 32 | 16 | 11 | 92  | 15 | 25 | 111 | 17 | 5  | 27 |
| 19:15:00 | 12 | 19 | 29 | 12 | 9  | 79  | 14 | 21 | 88  | 19 | 5  | 23 |
| 19:30:00 | 11 | 18 | 25 | 12 | 7  | 76  | 13 | 18 | 87  | 14 | 3  | 17 |
| 19:45:00 | 11 | 15 | 26 | 11 | 6  | 62  | 10 | 16 | 79  | 16 | 4  | 18 |
| 20:00:00 | 8  | 13 | 23 | 9  | 6  | 61  | 11 | 17 | 81  | 12 | 3  | 15 |
| 20:15:00 | 9  | 14 | 24 | 12 | 4  | 55  | 9  | 16 | 68  | 11 | 4  | 15 |
| 20:30:00 | 7  | 12 | 19 | 11 | 4  | 58  | 8  | 14 | 66  | 13 | 4  | 15 |
| 20:45:00 | 7  | 10 | 19 | 10 | 4  | 51  | 6  | 11 | 58  | 10 | 4  | 13 |
| 21:00:00 | 6  | 8  | 16 | 9  | 4  | 42  | 8  | 11 | 61  | 8  | 3  | 12 |
| 21:15:00 | 5  | 8  | 18 | 8  | 4  | 39  | 6  | 11 | 48  | 6  | 2  | 11 |
| 21:30:00 | 3  | 6  | 14 | 7  | 4  | 51  | 5  | 10 | 51  | 6  | 2  | 8  |
| 21:45:00 | 3  | 6  | 13 | 7  | 2  | 33  | 4  | 10 | 40  | 6  | 2  | 8  |
| 22:00:00 | 2  | 5  | 10 | 6  | 2  | 37  | 4  | 9  | 33  | 4  | 1  | 8  |
| 22:15:00 | 3  | 4  | 10 | 5  | 2  | 28  | 5  | 7  | 29  | 3  | 2  | 8  |
| 22:30:00 | 2  | 5  | 9  | 4  | 2  | 27  | 5  | 6  | 25  | 3  | 1  | 5  |
| 22:45:00 | 2  | 5  | 6  | 3  | 2  | 25  | 3  | 5  | 24  | 3  | 1  | 6  |
| 23:00:00 | 3  | 8  | 11 | 4  | 2  | 20  | 3  | 4  | 22  | 3  | 1  | 3  |
| 23:15:00 | 3  | 11 | 11 | 5  | 1  | 26  | 3  | 4  | 18  | 2  | 1  | 6  |
| 23:30:00 | 2  | 8  | 7  | 3  | 2  | 19  | 2  | 3  | 15  | 2  | 1  | 5  |
| 23:45:00 | 1  | 4  | 8  | 3  | 1  | 13  | 1  | 2  | 12  | 2  | 1  | 2  |

## Other Motorized Vehicle

| Entry      | Stafford Road |           |      | Quaker Boulevard |       |      | Quaker Boulevard |       |      | Stafford Road |       |      |   |
|------------|---------------|-----------|------|------------------|-------|------|------------------|-------|------|---------------|-------|------|---|
|            | Direction     | Westbound |      | Northbound       |       |      | Southbound       |       |      | Eastbound     |       |      |   |
| Start Time | Left          | Right     | Thru | Left             | Right | Thru | Left             | Right | Thru | Left          | Right | Thru |   |
| 0:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 0:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 0:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 0:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 1:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 2:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 3:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 4:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 5:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 6:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 7:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 8:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:00:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:15:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:30:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 9:45:00    |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:00:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:15:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:30:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 10:45:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:00:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:15:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:30:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 11:45:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:00:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:15:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:30:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 12:45:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 13:00:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |
| 13:15:00   |               | 0         | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    | 0 |

|          |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| SingleUnitTruck | Stafford Road |       |      | Quaker Boulevard |       |      | Quaker Boulevard |       |      | Stafford Road |       |      |
|-----------------|---------------|-------|------|------------------|-------|------|------------------|-------|------|---------------|-------|------|
| Entry           | Westbound     |       |      | Northbound       |       |      | Southbound       |       |      | Eastbound     |       |      |
| Start Time      | Left          | Right | Thru | Left             | Right | Thru | Left             | Right | Thru | Left          | Right | Thru |
| 0:00:00         |               | 0     | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 0:15:00         | 0             |       | 0    | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 0:30:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 0:45:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 1:00:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 1:15:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 1:30:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 1:45:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 2:00:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 2:15:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 2:30:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 2:45:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 1             | 0     | 0    |
| 3:00:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 3:15:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 1             | 0     | 0    |
| 3:30:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 1     | 0    | 1             | 0     | 0    |
| 3:45:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 4:00:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 4:15:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 4:30:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 4:45:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 5:00:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 5:15:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 5:30:00         | 0             | 0     |      | 0                | 0     | 0    | 0                | 0     | 0    | 0             | 0     | 0    |
| 5:45:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 6:00:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 6:15:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 0             | 0     | 0    |
| 6:30:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 1             | 0     | 0    |
| 6:45:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 1             | 0     | 0    |
| 7:00:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 1             | 0     | 0    |
| 7:15:00         | 0             | 0     |      | 0                | 0     | 0    | 1                | 0     | 0    | 3             | 0     | 0    |
| 7:30:00         | 0             | 0     |      | 0                | 0     | 0    | 2                | 0     | 0    | 3             | 0     | 0    |
| 7:45:00         | 0             | 1     |      | 0                | 0     | 0    | 2                | 0     | 0    | 3             | 0     | 0    |
| 8:00:00         | 0             | 0     |      | 1                | 0     | 0    | 2                | 0     | 0    | 3             | 0     | 1    |
| 8:15:00         | 0             | 0     |      | 0                | 0     | 0    | 2                | 0     | 0    | 3             | 0     | 0    |
| 8:30:00         | 0             | 0     |      | 0                | 0     | 0    | 2                | 0     | 0    | 2             | 0     | 0    |
| 8:45:00         | 0             | 0     |      | 1                | 0     | 1    | 2                | 0     | 0    | 2             | 0     | 0    |
| 9:00:00         | 0             | 1     |      | 1                | 0     | 1    | 3                | 0     | 0    | 2             | 0     | 0    |
| 9:15:00         | 0             | 0     |      | 1                | 0     | 1    | 2                | 1     | 0    | 2             | 0     | 0    |
| 9:30:00         | 0             | 1     |      | 1                | 0     | 0    | 2                | 0     | 0    | 2             | 0     | 0    |
| 9:45:00         | 0             | 1     |      | 1                | 1     | 0    | 2                | 0     | 0    | 2             | 0     | 0    |
| 10:00:00        | 1             | 1     |      | 1                | 0     | 0    | 3                | 1     | 0    | 3             | 0     | 1    |
| 10:15:00        | 0             | 1     |      | 1                | 0     | 0    | 3                | 0     | 1    | 3             | 0     | 0    |
| 10:30:00        | 0             | 1     |      | 1                | 0     | 0    | 3                | 1     | 0    | 2             | 0     | 1    |
| 10:45:00        | 0             | 0     |      | 1                | 0     | 0    | 3                | 0     | 0    | 2             | 0     | 0    |
| 11:00:00        | 0             | 1     |      | 1                | 0     | 1    | 2                | 1     | 0    | 2             | 0     | 1    |
| 11:15:00        | 0             | 0     |      | 1                | 1     | 1    | 3                | 0     | 0    | 3             | 0     | 1    |
| 11:30:00        | 0             | 1     |      | 0                | 0     | 1    | 3                | 0     | 0    | 2             | 0     | 0    |
| 11:45:00        | 0             | 0     |      | 1                | 0     | 1    | 3                | 0     | 0    | 2             | 0     | 0    |
| 12:00:00        | 0             | 1     |      | 0                | 0     | 0    | 3                | 1     | 0    | 2             | 0     | 0    |
| 12:15:00        | 0             | 1     |      | 0                | 0     | 0    | 3                | 0     | 0    | 2             | 0     | 1    |
| 12:30:00        | 0             | 0     |      | 0                | 0     | 0    | 2                | 1     | 0    | 2             | 0     | 0    |
| 12:45:00        | 0             | 1     |      | 1                | 0     | 0    | 2                | 0     | 0    | 2             | 0     | 0    |
| 13:00:00        | 0             | 1     |      | 1                | 0     | 0    | 2                | 0     | 0    | 2             | 0     | 1    |
| 13:15:00        | 0             | 1     |      | 1                | 0     | 0    | 3                | 1     | 0    | 2             | 0     | 1    |

|          |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:30:00 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 2 | 0 | 0 | 1 |
| 13:45:00 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 |
| 14:00:00 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 1 |
| 14:15:00 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 1 |
| 14:30:00 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 1 |
| 14:45:00 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 |
| 15:00:00 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 1 |
| 15:15:00 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 0 |
| 15:30:00 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 0 |
| 15:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 16:00:00 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 |
| 16:15:00 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 16:30:00 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 16:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 17:00:00 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 17:15:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 17:30:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:00:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:15:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:30:00 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 18:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:15:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:30:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:30:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:45:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:00:00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:30:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:45:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



| Entry      | Stafford Road |       |      |    | Quaker Boulevard |       |      |     | Quaker Boulevard |       |      |     | Stafford Road |       |      |    |
|------------|---------------|-------|------|----|------------------|-------|------|-----|------------------|-------|------|-----|---------------|-------|------|----|
| Direction  | Westbound     |       |      |    | Northbound       |       |      |     | Southbound       |       |      |     | Eastbound     |       |      |    |
| Start Time | Left          | Right | Thru |    | Left             | Right | Thru |     | Left             | Right | Thru |     | Left          | Right | Thru |    |
| 0:00:00    |               | 1     | 2    | 5  |                  | 2     | 0    | 12  |                  | 1     | 1    | 11  |               | 1     | 0    | 3  |
| 0:15:00    |               | 1     | 2    | 5  |                  | 1     | 1    | 8   |                  | 1     | 2    | 8   |               | 1     | 0    | 2  |
| 0:30:00    |               | 1     | 3    | 4  |                  | 2     | 1    | 10  |                  | 1     | 2    | 7   |               | 1     | 1    | 3  |
| 0:45:00    |               | 1     | 1    | 3  |                  | 2     | 1    | 6   |                  | 1     | 2    | 5   |               | 1     | 0    | 2  |
| 1:00:00    |               | 1     | 2    | 2  |                  | 1     | 1    | 6   |                  | 1     | 1    | 6   |               | 1     | 0    | 1  |
| 1:15:00    |               | 1     | 2    | 3  |                  | 1     | 1    | 6   |                  | 1     | 2    | 4   |               | 1     | 0    | 1  |
| 1:30:00    |               | 2     | 1    | 3  |                  | 1     | 1    | 6   |                  | 1     | 1    | 4   |               | 1     | 1    | 1  |
| 1:45:00    |               | 1     | 1    | 3  |                  | 1     | 1    | 4   |                  | 1     | 1    | 3   |               | 0     | 0    | 1  |
| 2:00:00    |               | 1     | 1    | 2  |                  | 1     | 0    | 5   |                  | 1     | 1    | 4   |               | 0     | 0    | 1  |
| 2:15:00    |               | 1     | 1    | 2  |                  | 1     | 1    | 5   |                  | 1     | 1    | 5   |               | 0     | 0    | 2  |
| 2:30:00    |               | 1     | 2    | 2  |                  | 1     | 1    | 9   |                  | 1     | 2    | 5   |               | 0     | 1    | 3  |
| 2:45:00    |               | 1     | 1    | 3  |                  | 1     | 1    | 6   |                  | 1     | 2    | 5   |               | 1     | 0    | 4  |
| 3:00:00    |               | 0     | 2    | 2  |                  | 0     | 2    | 5   |                  | 2     | 1    | 6   |               | 0     | 1    | 5  |
| 3:15:00    |               | 0     | 1    | 2  |                  | 1     | 1    | 4   |                  | 2     | 1    | 9   |               | 1     | 0    | 3  |
| 3:30:00    |               | 2     | 2    | 3  |                  | 1     | 1    | 4   |                  | 3     | 2    | 12  |               | 2     | 1    | 5  |
| 3:45:00    |               | 1     | 2    | 3  |                  | 1     | 3    | 6   |                  | 2     | 3    | 9   |               | 1     | 1    | 6  |
| 4:00:00    |               | 2     | 3    | 4  |                  | 1     | 3    | 6   |                  | 4     | 1    | 9   |               | 1     | 1    | 9  |
| 4:15:00    |               | 1     | 3    | 4  |                  | 1     | 5    | 10  |                  | 10    | 1    | 14  |               | 1     | 1    | 8  |
| 4:30:00    |               | 2     | 7    | 6  |                  | 1     | 7    | 17  |                  | 8     | 2    | 27  |               | 1     | 3    | 14 |
| 4:45:00    |               | 2     | 6    | 5  |                  | 2     | 5    | 18  |                  | 10    | 2    | 31  |               | 4     | 3    | 22 |
| 5:00:00    |               | 3     | 8    | 8  |                  | 2     | 7    | 25  |                  | 8     | 3    | 30  |               | 7     | 3    | 22 |
| 5:15:00    |               | 4     | 9    | 8  |                  | 2     | 11   | 26  |                  | 11    | 5    | 48  |               | 5     | 4    | 27 |
| 5:30:00    |               | 3     | 10   | 7  |                  | 2     | 11   | 49  |                  | 14    | 5    | 64  |               | 7     | 5    | 36 |
| 5:45:00    |               | 3     | 11   | 7  |                  | 3     | 12   | 50  |                  | 18    | 5    | 46  |               | 7     | 4    | 40 |
| 6:00:00    |               | 2     | 9    | 8  |                  | 5     | 9    | 42  |                  | 16    | 7    | 44  |               | 8     | 7    | 38 |
| 6:15:00    |               | 3     | 11   | 9  |                  | 9     | 11   | 63  |                  | 22    | 9    | 59  |               | 9     | 6    | 34 |
| 6:30:00    |               | 4     | 10   | 12 |                  | 9     | 13   | 86  |                  | 23    | 10   | 75  |               | 11    | 9    | 54 |
| 6:45:00    |               | 5     | 16   | 17 |                  | 12    | 13   | 88  |                  | 35    | 14   | 78  |               | 10    | 9    | 53 |
| 7:00:00    |               | 4     | 13   | 21 |                  | 11    | 12   | 77  |                  | 34    | 19   | 78  |               | 11    | 9    | 47 |
| 7:15:00    |               | 4     | 16   | 31 |                  | 24    | 15   | 101 |                  | 39    | 21   | 97  |               | 17    | 19   | 69 |
| 7:30:00    |               | 7     | 17   | 25 |                  | 25    | 13   | 117 |                  | 33    | 26   | 105 |               | 29    | 28   | 78 |
| 7:45:00    |               | 8     | 24   | 26 |                  | 31    | 17   | 135 |                  | 35    | 23   | 126 |               | 23    | 25   | 67 |
| 8:00:00    |               | 7     | 21   | 24 |                  | 32    | 15   | 122 |                  | 33    | 21   | 92  |               | 15    | 9    | 55 |
| 8:15:00    |               | 6     | 20   | 29 |                  | 39    | 14   | 105 |                  | 34    | 30   | 95  |               | 16    | 8    | 44 |
| 8:30:00    |               | 7     | 22   | 36 |                  | 36    | 12   | 103 |                  | 29    | 27   | 90  |               | 17    | 18   | 74 |
| 8:45:00    |               | 7     | 21   | 32 |                  | 23    | 15   | 112 |                  | 25    | 24   | 97  |               | 21    | 17   | 54 |
| 9:00:00    |               | 7     | 20   | 24 |                  | 17    | 12   | 94  |                  | 23    | 25   | 81  |               | 23    | 9    | 33 |
| 9:15:00    |               | 8     | 20   | 21 |                  | 16    | 15   | 96  |                  | 20    | 25   | 87  |               | 20    | 7    | 32 |
| 9:30:00    |               | 10    | 20   | 24 |                  | 16    | 13   | 90  |                  | 22    | 24   | 82  |               | 22    | 7    | 29 |
| 9:45:00    |               | 8     | 20   | 25 |                  | 19    | 14   | 98  |                  | 20    | 26   | 93  |               | 22    | 7    | 24 |
| 10:00:00   |               | 11    | 20   | 24 |                  | 13    | 12   | 96  |                  | 20    | 22   | 88  |               | 23    | 6    | 29 |
| 10:15:00   |               | 10    | 21   | 21 |                  | 17    | 13   | 103 |                  | 18    | 23   | 93  |               | 22    | 7    | 28 |
| 10:30:00   |               | 10    | 23   | 23 |                  | 15    | 15   | 109 |                  | 21    | 24   | 95  |               | 27    | 7    | 35 |
| 10:45:00   |               | 10    | 24   | 25 |                  | 18    | 18   | 108 |                  | 22    | 27   | 109 |               | 23    | 8    | 29 |
| 11:00:00   |               | 15    | 29   | 35 |                  | 19    | 18   | 106 |                  | 26    | 26   | 95  |               | 26    | 6    | 34 |
| 11:15:00   |               | 13    | 28   | 29 |                  | 21    | 20   | 117 |                  | 27    | 26   | 110 |               | 25    | 8    | 36 |
| 11:30:00   |               | 16    | 30   | 33 |                  | 18    | 23   | 111 |                  | 23    | 26   | 100 |               | 29    | 9    | 39 |
| 11:45:00   |               | 17    | 30   | 38 |                  | 23    | 22   | 130 |                  | 23    | 31   | 105 |               | 28    | 9    | 33 |
| 12:00:00   |               | 19    | 32   | 36 |                  | 22    | 21   | 115 |                  | 27    | 30   | 115 |               | 32    | 9    | 39 |
| 12:15:00   |               | 17    | 33   | 36 |                  | 22    | 22   | 130 |                  | 24    | 32   | 116 |               | 27    | 8    | 39 |
| 12:30:00   |               | 19    | 31   | 36 |                  | 20    | 20   | 113 |                  | 28    | 31   | 116 |               | 29    | 8    | 35 |
| 12:45:00   |               | 19    | 29   | 36 |                  | 24    | 20   | 123 |                  | 23    | 35   | 122 |               | 27    | 8    | 34 |
| 13:00:00   |               | 18    | 30   | 35 |                  | 18    | 19   | 107 |                  | 22    | 35   | 114 |               | 30    | 8    | 37 |
| 13:15:00   |               | 15    | 26   | 33 |                  | 20    | 18   | 126 |                  | 21    | 35   | 123 |               | 26    | 7    | 37 |
| 13:30:00   |               | 17    | 30   | 36 |                  | 21    | 20   | 128 |                  | 25    | 31   | 121 |               | 28    | 7    | 34 |

|          |    |    |    |    |    |     |    |    |     |    |    |    |
|----------|----|----|----|----|----|-----|----|----|-----|----|----|----|
| 13:45:00 | 17 | 28 | 36 | 21 | 17 | 131 | 19 | 35 | 131 | 25 | 8  | 35 |
| 14:00:00 | 17 | 31 | 40 | 19 | 17 | 126 | 22 | 32 | 118 | 28 | 9  | 36 |
| 14:15:00 | 24 | 41 | 49 | 29 | 21 | 151 | 26 | 30 | 125 | 27 | 8  | 39 |
| 14:30:00 | 26 | 46 | 65 | 26 | 19 | 129 | 30 | 36 | 129 | 27 | 9  | 36 |
| 14:45:00 | 19 | 41 | 53 | 26 | 16 | 135 | 21 | 36 | 140 | 27 | 9  | 32 |
| 15:00:00 | 17 | 39 | 59 | 28 | 18 | 134 | 30 | 35 | 145 | 36 | 15 | 44 |
| 15:15:00 | 18 | 41 | 68 | 59 | 20 | 176 | 24 | 41 | 145 | 34 | 10 | 37 |
| 15:30:00 | 23 | 49 | 75 | 46 | 17 | 153 | 29 | 38 | 137 | 34 | 11 | 38 |
| 15:45:00 | 16 | 46 | 67 | 36 | 17 | 152 | 24 | 43 | 159 | 31 | 16 | 45 |
| 16:00:00 | 19 | 45 | 69 | 26 | 16 | 150 | 30 | 40 | 155 | 39 | 14 | 59 |
| 16:15:00 | 18 | 42 | 77 | 29 | 20 | 144 | 28 | 40 | 145 | 34 | 10 | 43 |
| 16:30:00 | 23 | 49 | 81 | 39 | 24 | 167 | 28 | 36 | 148 | 35 | 10 | 46 |
| 16:45:00 | 22 | 48 | 83 | 33 | 20 | 168 | 30 | 39 | 162 | 31 | 11 | 40 |
| 17:00:00 | 21 | 45 | 81 | 33 | 20 | 171 | 33 | 38 | 169 | 31 | 12 | 46 |
| 17:15:00 | 20 | 41 | 76 | 34 | 21 | 148 | 31 | 38 | 160 | 31 | 9  | 47 |
| 17:30:00 | 17 | 37 | 68 | 30 | 23 | 142 | 23 | 34 | 133 | 25 | 9  | 44 |
| 17:45:00 | 15 | 31 | 52 | 28 | 18 | 133 | 26 | 33 | 138 | 21 | 6  | 36 |
| 18:00:00 | 15 | 31 | 48 | 22 | 16 | 126 | 23 | 34 | 132 | 22 | 7  | 33 |
| 18:15:00 | 16 | 27 | 50 | 20 | 19 | 113 | 24 | 32 | 118 | 22 | 7  | 34 |
| 18:30:00 | 16 | 22 | 41 | 19 | 15 | 103 | 18 | 31 | 111 | 19 | 6  | 26 |
| 18:45:00 | 16 | 20 | 35 | 16 | 12 | 99  | 15 | 29 | 100 | 18 | 7  | 27 |
| 19:00:00 | 12 | 20 | 32 | 16 | 11 | 94  | 15 | 25 | 111 | 17 | 5  | 27 |
| 19:15:00 | 12 | 19 | 29 | 12 | 9  | 82  | 14 | 21 | 89  | 19 | 5  | 23 |
| 19:30:00 | 11 | 18 | 25 | 12 | 8  | 78  | 13 | 18 | 88  | 14 | 3  | 17 |
| 19:45:00 | 11 | 15 | 26 | 11 | 6  | 63  | 10 | 16 | 79  | 16 | 4  | 18 |
| 20:00:00 | 8  | 13 | 23 | 9  | 6  | 62  | 11 | 17 | 82  | 12 | 3  | 15 |
| 20:15:00 | 9  | 14 | 24 | 12 | 4  | 56  | 9  | 16 | 69  | 11 | 4  | 15 |
| 20:30:00 | 7  | 12 | 19 | 11 | 4  | 60  | 8  | 14 | 67  | 13 | 4  | 15 |
| 20:45:00 | 7  | 10 | 19 | 10 | 4  | 53  | 6  | 11 | 59  | 10 | 4  | 13 |
| 21:00:00 | 6  | 8  | 16 | 9  | 4  | 44  | 8  | 11 | 61  | 8  | 3  | 12 |
| 21:15:00 | 5  | 8  | 18 | 8  | 4  | 40  | 6  | 11 | 48  | 6  | 2  | 11 |
| 21:30:00 | 3  | 6  | 14 | 7  | 4  | 52  | 5  | 10 | 51  | 6  | 2  | 8  |
| 21:45:00 | 4  | 6  | 13 | 7  | 2  | 34  | 4  | 10 | 40  | 6  | 2  | 8  |
| 22:00:00 | 3  | 5  | 10 | 6  | 2  | 37  | 4  | 9  | 34  | 4  | 1  | 8  |
| 22:15:00 | 3  | 4  | 10 | 5  | 2  | 28  | 5  | 7  | 29  | 3  | 2  | 8  |
| 22:30:00 | 2  | 5  | 9  | 4  | 2  | 28  | 5  | 6  | 25  | 3  | 1  | 5  |
| 22:45:00 | 2  | 5  | 6  | 3  | 2  | 25  | 3  | 5  | 24  | 3  | 1  | 6  |
| 23:00:00 | 3  | 8  | 11 | 4  | 2  | 21  | 3  | 4  | 22  | 3  | 1  | 3  |
| 23:15:00 | 3  | 11 | 11 | 5  | 1  | 26  | 3  | 4  | 18  | 2  | 1  | 6  |
| 23:30:00 | 2  | 8  | 7  | 3  | 2  | 19  | 2  | 3  | 15  | 2  | 1  | 5  |
| 23:45:00 | 1  | 4  | 8  | 3  | 1  | 14  | 1  | 2  | 12  | 2  | 1  | 2  |

|            |      |      |            |      |      |            |       |      |            |      |      |
|------------|------|------|------------|------|------|------------|-------|------|------------|------|------|
| 868        | 1778 | 2539 | 1423       | 1038 | 7421 | 1566       | 1784  | 7296 | 1478       | 592  | 2572 |
| Total WB = | 5185 |      | Total NB = | 9882 |      | Total SB = | 10646 |      | Total EB = | 4642 |      |

Total Quaker = 20528

Total Stafford = 9827

Total = 30355

## **ATTACHEMNT C: VIRTUAL MEETING MINUTES & FIELD CHECK MINUTES**



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## MEETING MINUTES

---

|                     |                                                                                 |                   |                          |
|---------------------|---------------------------------------------------------------------------------|-------------------|--------------------------|
| <b>Location:</b>    | Virtual – Microsoft Teams                                                       | <b>Date:</b>      | Wednesday, April 1, 2026 |
| <b>Regarding:</b>   | Intersections of Stafford Rd & Quaker Blvd and Stafford Rd & Ronald Reagan Pwky | <b>Time:</b>      | 3:00 PM EDT              |
| <b>Prepared by:</b> | Emily Schmidt                                                                   | <b>Proj. No.:</b> |                          |

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The meeting was organized to obtain feedback regarding the two intersections in Plainfield and to set a time for the future field check. Items discussed are as follows:

Attendees:

Scott Singleton, Director of Engineering, Town of Plainfield  
Joe Smock, Deputy Chief, Town of Plainfield  
Doug Schnarr, Plainfield Police Department  
Emily Schmidt, Project Manager, Infrastructure Engineering, Inc.  
Jordan Hennessy, Civil Engineer, Infrastructure Engineering, Inc.

Information Presented/Discussed:

1. Introductions
2. Emily Siler provided a summary of the two project locations in their existing condition and the initial crash data:
  - a. Stafford Rd & Quaker Blvd
    - i. Signalized intersection
    - ii. Quaker Blvd is divided with median
    - iii. NB – Left turn lane, two thru lanes, right turn lane
    - iv. SB – Left turn lane, two thru lanes, right turn lane
    - v. EB – Left turn lane, two thru lanes
    - vi. WB – Left turn lane, thru lane, right turn lane
    - vii. NB & SB left turn lanes are protected
    - viii. EB & WB left turn lanes are protected/permissive (flashing arrow)
    - ix. NB & SB right turn lanes have an overlap
    - x. Pedestrian crossing on east approach only
  - b. Stafford Rd & Ronald Reagan Pwky
    - i. Signalized intersection
    - ii. Raised medians on all approaches
    - iii. NB – Two left turn lanes, two thru lanes

- iv. SB – Left turn lane, two thru lanes, right turn lane
    - 1. Future additional left turn lane
  - v. EB – Left turn lane, thru lane, 2 right turn lanes
    - 1. Right turn lanes are channelized
    - 2. Outside right turn lane is protected from Columbia Rd
  - vi. WB – Left turn lane, thru lane, right turn lane
  - vii. NB & SB left turn lanes are protected
  - viii. EB & WB left turn lanes are protected/permissive (5 sign head doghouse)
  - ix. EB right turn lanes are free flowing with arrows.
  - x. Pedestrian crossing on north approach only
3. Discussion with Town of Plainfield and Plainfield Police about intersections
- a. Stafford Rd & Quaker Blvd
    - i. Issues with left turns on flashing yellows (at Stafford).
    - ii. In general, there are issues with people running red lights.
    - iii. The town is undergoing projects to the west of Stafford and Quaker. There is interest in continuing increased pedestrian access up to Quaker.
  - b. Stafford Rd & Ronald Reagan Pwky
    - i. The barrier installation has provided positive impact in regard to traffic flow.
    - ii. There has been interest in changing this intersection to an at grade roundabout. American Structurepoint is currently evaluating this.
4. Future Meetings
- a. Field Check Meetings
    - i. *Field check has been scheduled for May 4<sup>th</sup>, 2026*
5. Commitments
- a. The town of plainfield will provide screenshots of Miovision Data for turn movements.
  - b. Joe Smock will reach out to patrol officers for feedback before the field check meeting

Attachments:

- 1. Initial Summary of Crash Data

These minutes are final unless IEI is notified of desired modifications within seven (7) calendar days of their distribution.



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## MEETING MINUTES

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|                     |                                                                                                           |                   |                                    |
|---------------------|-----------------------------------------------------------------------------------------------------------|-------------------|------------------------------------|
| <b>Location:</b>    | Intersections of Stafford Rd & Quaker Blvd<br>and Stafford Rd & Ronald Reagan Pwky<br>Plainfield, Indiana | <b>Date:</b>      | Monday, May 4 <sup>th</sup> , 2026 |
| <b>Regarding:</b>   | Intersections of Stafford Rd & Quaker Blvd<br>and Stafford Rd & Ronald Reagan Pwky                        | <b>Time:</b>      | 1:00 PM EDT                        |
| <b>Prepared by:</b> | Emily Schmidt                                                                                             | <b>Proj. No.:</b> |                                    |

---

The meeting was organized to obtain on-site feedback regarding the two intersections in Plainfield. Items discussed are as follows:

Attendees:

Jennifer Dunn, Senior Data Planner, IMPO  
Scott Singleton, Director of Engineering, Town of Plainfield  
Joe Smock, Deputy Chief, Town of Plainfield  
Doug Schnarr, Plainfield Police Department  
Emily Schmidt, Project Manager, Infrastructure Engineering, Inc.  
Jordan Hennessy, Civil Engineer, Infrastructure Engineering, Inc.

Information Presented/Discussed:

1. Introductions
2. Stafford Rd & Quaker Blvd
  - a. Vertical curve sightlines across the crown of Quaker Blvd could be causing some of the poor left turn decisions.
  - b. Shoulder on Quaker Blvd is not needed anymore. The Town would like to have the long-term solution of narrowing Quaker Blvd to the north of Stafford Rd up to US 40.
  - c. It was noted that traffic is heavier on Sundays around the Lakeside Dr intersection.
  - d. A short-term solution could be to change the left turn movements from Stafford Rd to protected movements. We would have to consider the traffic counts and the LOS for the turning movements.
  - e. Another short-term solution would be to add striping in taper areas to discourage the areas being used as merging lanes.
  - f. For the Lakeside Dr areas, a potential short term solution is converting the right lane to right turn only may alleviate some issues.
  - g. Verify whether signals are needed on both sides of the intersection for Stafford Rd.

3. Stafford Rd & Ronald Reagan Pwky

- a. The Town has received interest in developing the SW corner of the intersection. Proposals to develop the land have included a right in-right out of Midfield Ct onto Ronald Reagan Pkwy. The Town believes that while a right in-right out of Midfield Ct is unlikely, any future development would most likely require Columbia Rd and Stafford Rd to become a signalized intersection. This signal would have to be tied to the timing of the signal at Stafford Rd and Ronald Reagan Pkwy.
- b. The Town noted that the wooded section along the west side of Columbia Rd is a protected area due to Indiana Bats.
- c. The Town is unsure of the long-term potential traffic volume along Ronald Reagan Pkwy. The long-term goal is for the road to continue north until it connects with I-65. This could see an increase in traffic volume and may require widening Ronald Reagan Pkwy to 6 lanes wide.
- d. The Town noted that a large number of the sideswipe and rear end accidents happen during shift change hours when there is a high volume of drivers at this intersection.
- e. IEI noted that there are no streetlights along Ronald Reagan Pkwy.
- f. It was also noted that the pavement markings, especially in the dedicated right turn lane, were very faded and difficult to see.
- g. The Town also noted that there is an extra receiving lane on the east leg of the intersection.
- h. Some short term solutions that were discussed include updating pavement markings and improving signal timings. Also there is a potential to add milled corrugations in the gore area between the two right turn lanes.

These minutes are final unless IEI is notified of desired modifications within seven (7) calendar days of their distribution.



## **ATTACHEMNT D: COST ESTIMATE & SCHEMATICS**

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**PRELIMINARY COST ESTIMATE**  
**Stafford Rd and Quaker Blvd - Short Term - (Hendricks County)**

| ITEM NO.                  | DESCRIPTION                                                       | QUANTITY   | UNIT | UNIT PRICE                   | AMOUNT             |
|---------------------------|-------------------------------------------------------------------|------------|------|------------------------------|--------------------|
| 1                         | Mobilization and Demobilization (6%)                              | 1          | LSUM | \$700.00                     | \$700.00           |
| 2                         | Construction Engineering (5%)                                     | 1          | LSUM | \$600.00                     | \$600.00           |
| 3                         | Maintaining Traffic (5%)                                          | 1          | LSUM | \$600.00                     | \$600.00           |
| 4                         | Line, Thermoplastic, Solid, White, 4 In                           | 220        | LFT  | \$2.50                       | \$550.00           |
| 5                         | Line, Thermoplastic, Solid, White, 8 In                           | 80         | LFT  | \$4.00                       | \$320.00           |
| 6                         | Line, Thermoplastic, Solid, Yellow, 4 In                          | 305        | LFT  | \$2.50                       | \$762.50           |
| 7                         | Transverse Marking, Thermoplastic, Crosshatch Line, Yellow, 12 In | 50         | LFT  | \$8.00                       | \$400.00           |
| 8                         | Transverse Marking, Thermoplastic, Crosshatch Line, White, 24 In  | 85         | LFT  | \$10.00                      | \$850.00           |
| 9                         | Sign, Sheet, With Legend, 0.100 in Thickness                      | 33         | SFT  | \$40.00                      | \$1,320.00         |
| 10                        | Sign Post, Square Type 1, Reinforced Anchor Base                  | 44         | LFT  | \$40.00                      | \$1,760.00         |
| 11                        | Sign, Remove                                                      | 2          | EACH | \$110.00                     | \$220.00           |
| 12                        | Sign, Sheet, With Legend, 0.125 in Thickness                      | 30         | SFT  | \$50.00                      | \$1,500.00         |
| 13                        | Traffic Signal Equipment, Remove                                  | 1          | EACH | \$2,000.00                   | \$2,000.00         |
| 14                        | Traffic Signal Head, No. 3 Section, 12 in.                        | 1          | EACH | \$1,500.00                   | \$1,500.00         |
| 15                        | Contingencies (15%)                                               | 1          | LSUM | \$1,700.00                   | \$1,700.00         |
|                           |                                                                   |            |      | <b>CONSTRUCTION SUBTOTAL</b> | <b>\$14,782.50</b> |
| <b>CONSTRUCTION TOTAL</b> |                                                                   | <i>USE</i> |      | <i>USE</i>                   | <b>\$14,800.00</b> |

|                                               |  |  |  |            |                   |
|-----------------------------------------------|--|--|--|------------|-------------------|
| <b>PRELIMINARY ENGINEERING ESTIMATE (15%)</b> |  |  |  | <i>USE</i> | <b>\$2,220.00</b> |
|-----------------------------------------------|--|--|--|------------|-------------------|

|                               |                      |   |      |            |                   |
|-------------------------------|----------------------|---|------|------------|-------------------|
|                               | Utility Coordination | 1 | LSUM | \$2,000    | \$2,000.00        |
| <b>TOTAL</b>                  |                      |   |      |            | <b>\$2,000.00</b> |
| <b>SITE PREPARATION TOTAL</b> |                      |   |      | <i>USE</i> | <b>\$2,000.00</b> |

|                                              |  |  |  |            |                   |
|----------------------------------------------|--|--|--|------------|-------------------|
| <b>CONSTRUCTION INSPECTION/TESTING (10%)</b> |  |  |  | <i>USE</i> | <b>\$1,500.00</b> |
|----------------------------------------------|--|--|--|------------|-------------------|

|                              |  |  |  |                    |  |
|------------------------------|--|--|--|--------------------|--|
| <b>OVERALL PROJECT TOTAL</b> |  |  |  | <b>\$20,520.00</b> |  |
|------------------------------|--|--|--|--------------------|--|

This Cost Estimate makes the following assumptions:

1. Quantities are based off conceptual layout and not actual design
2. Signal timing review and adjustments are not included in this estimate.
3. Estimate assumes the reuse of existing signal cable for the Stafford Rd. left turn signals.

**PRELIMINARY COST ESTIMATE**  
**Stafford Rd and Quaker Blvd - Long Term - (Hendricks County)**

| ITEM NO.                  | DESCRIPTION                                                     | QUANTITY | UNIT                         | UNIT PRICE   | AMOUNT                |
|---------------------------|-----------------------------------------------------------------|----------|------------------------------|--------------|-----------------------|
| 1                         | Mobilization and Demobilization (6%)                            | 1        | LSUM                         | \$37,800.00  | \$37,800.00           |
| 2                         | Construction Engineering (5%)                                   | 1        | LSUM                         | \$31,500.00  | \$31,500.00           |
| 3                         | Clearing Right of Way (3%)                                      | 1        | LSUM                         | \$11,600.00  | \$11,600.00           |
| 4                         | Maintaining Traffic (30%)                                       | 1        | LSUM                         | \$189,000.00 | \$189,000.00          |
| 5                         | Common Excavation                                               | 580      | CYS                          | \$40.00      | \$23,200.00           |
| 6                         | Borrow                                                          | 300      | CYS                          | \$25.00      | \$7,500.00            |
| 7                         | Curb, Removal                                                   | 1075     | LFT                          | \$20.00      | \$21,500.00           |
| 8                         | Curb, Concrete                                                  | 1100     | LFT                          | \$40.00      | \$44,000.00           |
| 9                         | Sidewalk, Concrete                                              | 180      | SYS                          | \$65.00      | \$11,700.00           |
| 10                        | Curb Ramp, Concrete                                             | 128      | SYS                          | \$210.00     | \$26,880.00           |
| 11                        | Detectable Warning Surfaces                                     | 23       | SYS                          | \$300.00     | \$6,900.00            |
| 12                        | Milling, Asphalt, 1 1/2 in                                      | 9000     | SYS                          | \$3.00       | \$27,000.00           |
| 13                        | HMA Surface                                                     | 1486     | TON                          | \$120.00     | \$178,320.00          |
| 14                        | HMA Intermediate                                                | 130      | TON                          | \$100.00     | \$13,000.00           |
| 15                        | HMA Base                                                        | 260      | TON                          | \$90.00      | \$23,400.00           |
| 16                        | HMA for Sidwalk                                                 | 220      | TON                          | \$125.00     | \$27,500.00           |
| 17                        | Subgrade Treatment                                              | 1210     | SYS                          | \$30.00      | \$36,300.00           |
| 18                        | Raised Concrete Median Curb                                     | 480      | SYS                          | \$120.00     | \$57,600.00           |
| 19                        | Line, Thermoplastic, Solid, White, 4 In                         | 1450     | LFT                          | \$2.50       | \$3,625.00            |
| 20                        | Line, Thermoplastic, Solid, Yellow, 4 In                        | 1300     | LFT                          | \$2.50       | \$3,250.00            |
| 21                        | Line, Thermoplastic, Broken, White, 4 In                        | 380      | LFT                          | \$2.50       | \$950.00              |
| 22                        | Transverse Marking, Thermoplastic, Crosswalk Line, White, 24 In | 864      | LFT                          | \$10.00      | \$8,640.00            |
| 23                        | Transverse Marking, Thermoplastic, Stop Line, White, 24 In      | 205      | LFT                          | \$11.00      | \$2,255.00            |
| 24                        | Sign, Sheet, With Legend, 0.125 in Thickness                    | 30       | SFT                          | \$50.00      | \$1,500.00            |
| 25                        | Traffic Signal Equipment, Remove                                | 1        | EACH                         | \$2,000.00   | \$2,000.00            |
| 26                        | Traffic Signal Head, No. 3 Section, 12 in.                      | 1        | EACH                         | \$1,500.00   | \$1,500.00            |
| 27                        | Signal Pole, Pedestal, 12 ft                                    | 8        | EACH                         | \$1,300.00   | \$10,400.00           |
| 28                        | Signal Pole Foundation, 24 in x 24 in x 36 in                   | 8        | EACH                         | \$1,900.00   | \$15,200.00           |
| 29                        | Pedestrian Signal Head, Countdown, 12 in.                       | 8        | EACH                         | \$1,100.00   | \$8,800.00            |
| 30                        | Pedestrian Push Button, APS                                     | 8        | EACH                         | \$1,400.00   | \$11,200.00           |
| 31                        | Signal Cable, Control, Copper, 5c/14 Gauge                      | 1200     | LFT                          | \$5.00       | \$6,000.00            |
| 32                        | Drainage                                                        | 1        | LSUM                         | \$50,000.00  | \$50,000.00           |
| 33                        | Contingencies (20%)                                             | 1        | LSUM                         | \$126,000.00 | \$126,000.00          |
|                           |                                                                 |          | <b>CONSTRUCTION SUBTOTAL</b> |              | <b>\$1,026,020.00</b> |
| <b>CONSTRUCTION TOTAL</b> |                                                                 |          |                              | <b>USE</b>   | <b>\$1,026,100.00</b> |

|                                               |  |  |  |            |                     |
|-----------------------------------------------|--|--|--|------------|---------------------|
| <b>PRELIMINARY ENGINEERING ESTIMATE (15%)</b> |  |  |  | <b>USE</b> | <b>\$154,000.00</b> |
|-----------------------------------------------|--|--|--|------------|---------------------|

|                               |                      |   |      |            |                     |
|-------------------------------|----------------------|---|------|------------|---------------------|
|                               | ROW Acqusion         | 1 | LSUM | \$125,000  | \$125,000.00        |
|                               | Utility Coordination | 1 | LSUM | \$50,000   | \$50,000.00         |
| <b>TOTAL</b>                  |                      |   |      |            | <b>\$175,000.00</b> |
| <b>SITE PREPARATION TOTAL</b> |                      |   |      | <b>USE</b> | <b>\$175,000.00</b> |

|                                              |  |  |  |            |                     |
|----------------------------------------------|--|--|--|------------|---------------------|
| <b>CONSTRUCTION INSPECTION/TESTING (10%)</b> |  |  |  | <b>USE</b> | <b>\$103,000.00</b> |
|----------------------------------------------|--|--|--|------------|---------------------|

|                              |  |  |  |                       |  |
|------------------------------|--|--|--|-----------------------|--|
| <b>OVERALL PROJECT TOTAL</b> |  |  |  | <b>\$1,458,100.00</b> |  |
|------------------------------|--|--|--|-----------------------|--|

This Cost Estimate makes the following assumptions:

1. Quantities are based off conceptual layout and not actual design
2. Quantities are based off improvements 500 ft north and south of the intersection.
3. Quantities for Stafford Road are based on the preliminary plans and off of improvements 250 ft east and west of the intersection.
4. Assume 0.5 acres of ROW acquisition at \$250,000 per acre.

## Economic Evaluation - Form F5

Alternative Protected Left ^

### INPUT Collapse

Number of Crashes (crash/period)

Fatal and Incapacitating Injury Crashes 7

Non-Incapacitating and Possible Injury Crashes 8

Property Damage Only Crashes 45

Road Type City Arterial Intersection ▾

Average Crash Costs (\$)

Fatal and Incapacitating Injury Crashes 1840100

Non-Incapacitating and Possible Injury Crashes 393200

Property Damage Only Crashes 40200

Crash Cost Year (yyyy) 2017

First Year with Crash Data (yyyy) 2022

Last Year with Crash Data (yyyy) 2024

Present Year (yyyy) 2026

Implementation Year (yyyy) 2030

Inflation Rate (%) 2

Interest Rate (%) 4

Annual Traffic Growth Rate (%) 2

Total Traffic Growth Factor 2

Future Traffic Growth Period (years) 25

**COUNTERMEASURES** Collapse AllCountermeasure 1 Collapse[C] Copy

Description

Protected Left

Crash Reduction Factors (%)

Fatal and Incapacitating Injury Crashes

1

Non-Incapacitating and Possible Injury Crashes

1

Property Damage Only Crashes

1

Number of Target Crashes (crash/period)

Fatal and Incapacitating Injury Crashes

7

Non-Incapacitating and Possible Injury Crashes

8

Property Damage Only Crashes

45

Countermeasure Service Life (years)

10

Countermeasure Capital Cost (\$)

20520

Countermeasure Annual Maintenance Cost (\$)

0

Countermeasure Salvage Value (\$)

0

[+] Add**OUTPUT**

Total Crashes Saved

0.210

FI Crashes Saved

0.016

NI Crashes Saved

0.026

PDO Crashes Saved

0.168

Equivalent Annual Benefit (\$)

66,885

Equivalent Annual Cost (\$)

2,163

Present Worth Benefit (\$)

1,672,124

Present Worth Cost (\$)

54,065

Net Annual Benefit (\$)

**64,722**

Present Worth Net Benefit (\$)

**1,618,060**

Benefit-Cost Ratio

**30.93**





8720 Castle Creek Pkwy. East Drive, Suite 400  
Indianapolis, IN 46250  
<https://eticagroup.com>

 RIGHT-OF-WAY ANTICIPATED  
TO BE NEEDED ON THIS PARCEL

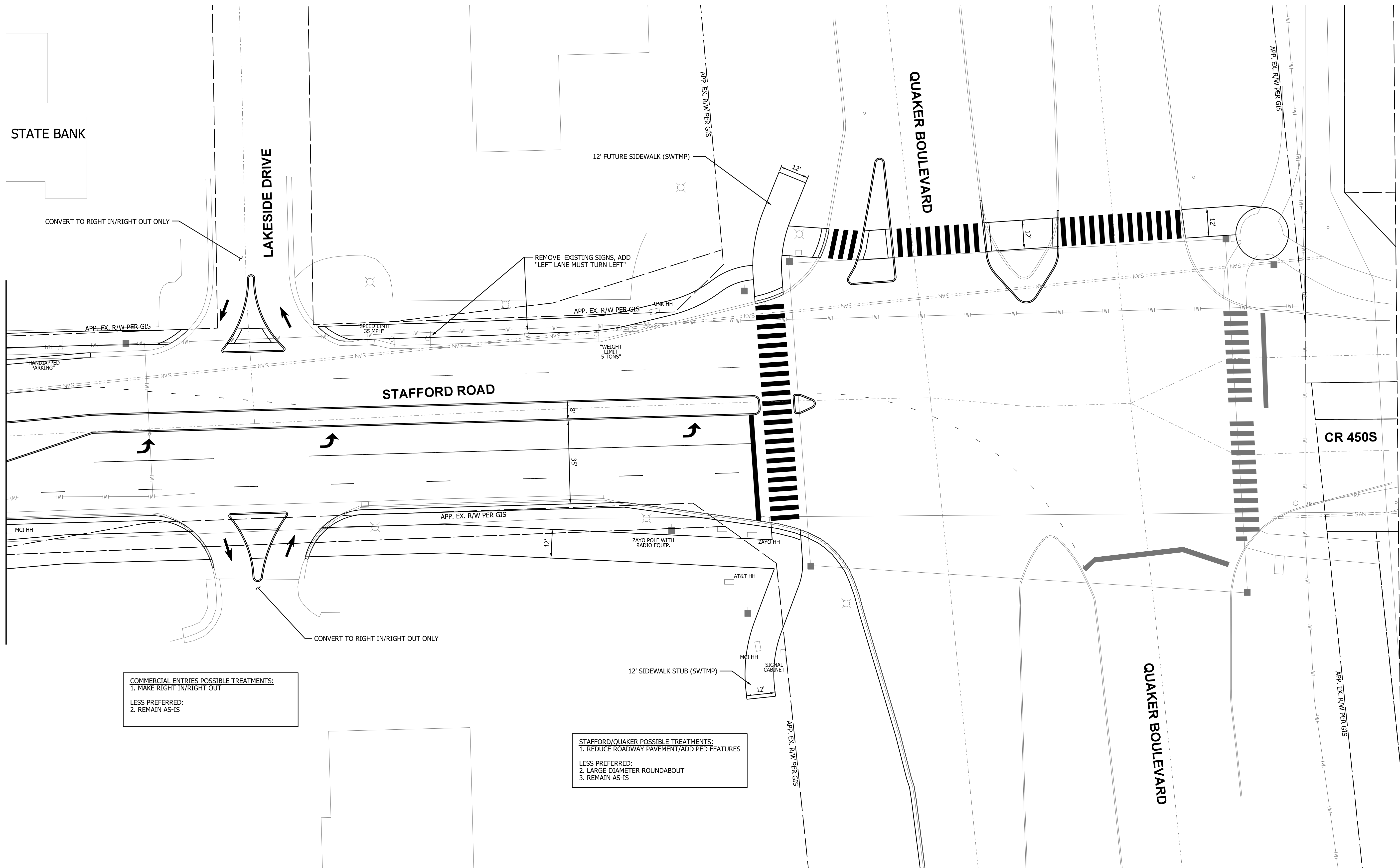
PRELIMINARY  
SET

|                                |  |                                  |  |
|--------------------------------|--|----------------------------------|--|
| RECOMMENDED FOR APPROVAL _____ |  | DESIGN ENGINEER _____ DATE _____ |  |
| DESIGNED: _____ MT             |  | DRAWN: _____ RBA                 |  |
| CHECKED: _____ BR              |  | CHECKED: _____ MT                |  |

TOWN OF PLAINFIELD

CONCEPTUAL PLAN

|                  |                          |
|------------------|--------------------------|
| HORIZONTAL SCALE | BRIDGE FILE              |
| P=20'-0"         | N/A                      |
| VERTICAL SCALE   | HENDRICKS COUNTY PROJECT |
| N/A              | STAFFORD ROAD            |
| SURVEY BOOK      | SHEETS                   |
| N/A              | of X                     |
| CONTRACT         | ETICA PROJECT NUMBER     |
| X                | 230320                   |



## **ATTACHEMNT E: PREVIOUS TRAFFIC MEMO**

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## MEMORANDUM

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**DATE:** 6/17/2025

**TO:** Brock Ridgway, PE  
Senior Engineering Program Manager  
Etica Group

**FROM:** Matt Brown, PE, PTOE  
Vice President  
A&F Engineering Co., LLC

**RE:** Stafford Road Corridor & Center Street/Buchanan Street Evaluation—  
Plainfield, IN

---

A&F Engineering has conducted a cursory traffic analysis along the Stafford Road corridor between Center Street to the west and Quaker Boulevard to the east. For this analysis, AM and PM peak hour turning movement traffic volume counts along the Stafford Road corridor were collected. Based upon observations of these traffic volumes and assuming that there would be minimal growth in traffic within the area over the next several years, the following conclusions are formulated.

- The existing traffic volumes at the intersection of Stafford Road and Center Road do not likely meet typical all-way stop or traffic signal warrant thresholds. Therefore, this intersection should remain with the existing one-way stop control.
- Based on the traffic volume data, the following left-turn lanes along Stafford Road could be eliminated without significantly impacting traffic operations:
  - Westbound left-turn lane at Simmons Street/Gary Drive
  - Westbound left-turn lane at Walton Drive
  - Eastbound and Westbound left-turn lanes at Elm Drive
- It would be beneficial to align the Simmons Street/Gary Drive intersection. If aligned, this intersection could remain controlled as an all-way stop.
- The existing traffic volumes at the intersection of Stafford Road and Elm Drive do not likely meet typical all-way stop warrant thresholds. Therefore, this intersection should remain with the existing two-way stop control.

- The existing traffic volumes at the intersection of Stafford Road & Southfield Drive do not likely meet typical traffic signal warrant thresholds. Therefore, it is recommended the intersection should remain as two-way stop controlled with the existing intersection geometrics.
- The restriction of the commercial drive to a right-in/right-out access could improve safety by eliminating conflict points. However, other considerations such as creating U-turns, the economic impact on the affected businesses and impact on adjacent businesses due to cut through traffic should be considered before restricting access.
- Analysis showed that significant improvements in traffic operations would likely not be achieved by retiming the traffic signal at the intersection of Stafford Road and Quaker Boulevard. Furthermore, this intersection is part of a signal system along Stafford Road. Therefore, if retiming is desired, the entire signal corridor should be evaluated.
- The proposed path could cross on the north or south side of Stafford Road without a significant traffic operations difference between either option. However, it might be beneficial to cross on the north side to reduce the possible pedestrian/right-turn vehicular conflicts.
- From a traffic operations standpoint, it is not necessary to construct roundabouts at any of the intersections that were evaluated. However, if a long-term goal of this corridor project is to reduce side street delays and slow traffic through the corridor, then roundabout installations would be a viable option.

It should be noted that the above conclusions are primarily based on traffic operations impacts. Specific safety concerns should be addressed through further analysis using crash reports and other appropriate data at identified locations.

In addition, A&F Engineering evaluated the intersection of Center Street & Buchanan Street to determine if a multi-way stop condition is warranted based on the existing traffic volumes and the volume criteria defined in Section 2B.07 of the Indiana MUTCD.

24-Hour traffic volume counts were conducted at the intersection of Center Street & Buchanan Street on May 27<sup>th</sup>, 2025. These counts included vehicular, bicycle and pedestrian traffic. The counts were then compared to the following hourly volume thresholds defined within the Indiana MUTCD:

C. Minimum volumes:

1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and
2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour.

The following table summarizes the comparison of the counts to the warrant criteria and the multi-way stop warrant results.

| Time          | Approach Volumes           |                              | Warrant Criteria Met?<br>Yes / No |
|---------------|----------------------------|------------------------------|-----------------------------------|
|               | Center Street<br>(NB + SB) | Buchanan Street<br>(EB + WB) |                                   |
| 12 AM – 1 AM  | 32                         | 3                            | No                                |
| 1 AM – 2 AM   | 21                         | 0                            | No                                |
| 2 AM – 3 AM   | 26                         | 0                            | No                                |
| 3 AM – 4 AM   | 39                         | 1                            | No                                |
| 4 AM – 5 AM   | 61                         | 0                            | No                                |
| 5 AM – 6 AM   | 213                        | 10                           | No                                |
| 6 AM – 7 AM   | 425                        | 30                           | No                                |
| 7 AM – 8 AM   | 1044                       | 49                           | No                                |
| 8 AM – 9 AM   | 704                        | 115                          | No                                |
| 9 AM – 10 AM  | 559                        | 49                           | No                                |
| 10 AM – 11 AM | 573                        | 43                           | No                                |
| 11 AM – 12 PM | 529                        | 56                           | No                                |
| 12 PM – 1 PM  | 622                        | 53                           | No                                |
| 1 PM – 2 PM   | 572                        | 53                           | No                                |
| 2 PM – 3 PM   | 740                        | 62                           | No                                |
| 3 PM – 4 PM   | 924                        | 90                           | No                                |
| 4 PM – 5 PM   | 995                        | 125                          | No                                |
| 5 PM – 6 PM   | 993                        | 89                           | No                                |
| 6 PM – 7 PM   | 750                        | 49                           | No                                |
| 7 PM – 8 PM   | 605                        | 39                           | No                                |
| 8 PM – 9 PM   | 504                        | 32                           | No                                |
| 9 PM – 10 PM  | 232                        | 20                           | No                                |
| 10 PM – 11 PM | 154                        | 9                            | No                                |
| 11 PM – 12 AM | 106                        | 7                            | No                                |

From the results summarized above, it is concluded that a multi-way stop condition is not currently warranted at the intersection of Center Street & Buchanan Street based on the existing traffic counts and the hourly volume thresholds.

## **ATTACHEMNT F: INTERSECTION CAPACITY REPORTS**

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HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2026 AM Peak  
06/12/2026

|                              |  |                                                                                    |  |  |                                                                                    |  |  |                                                                                      |  |  |                                                                                      |  |
|------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                                                                                                                 | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                 | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |  |   |                                                                                   |  |   |                                                                                   |  |   |  |  |   |  |
| Traffic Volume (veh/h)       | 84                                                                                | 269                                                                                                                                                                 | 81                                                                                | 26                                                                                | 106                                                                                                                                                                 | 78                                                                                | 112                                                                                 | 475                                                                                                                                                                     | 60                                                                                  | 140                                                                                 | 420                                                                                                                                                                     | 91                                                                                  |
| Future Volume (veh/h)        | 84                                                                                | 269                                                                                                                                                                 | 81                                                                                | 26                                                                                | 106                                                                                                                                                                 | 78                                                                                | 112                                                                                 | 475                                                                                                                                                                     | 60                                                                                  | 140                                                                                 | 420                                                                                                                                                                     | 91                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                                                                                                     |                                                                                   | No                                                                                |                                                                                                                                                                     |                                                                                   | No                                                                                  |                                                                                                                                                                         |                                                                                     | No                                                                                  |                                                                                                                                                                         |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                              | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                |
| Adj Flow Rate, veh/h         | 91                                                                                | 292                                                                                                                                                                 | 88                                                                                | 28                                                                                | 115                                                                                                                                                                 | 85                                                                                | 122                                                                                 | 516                                                                                                                                                                     | 65                                                                                  | 152                                                                                 | 457                                                                                                                                                                     | 99                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                                                                                                                | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                                                                                                | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                                                                                                    | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                                                                                                    | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 343                                                                               | 455                                                                                                                                                                 | 135                                                                               | 255                                                                               | 265                                                                                                                                                                 | 181                                                                               | 157                                                                                 | 1273                                                                                                                                                                    | 618                                                                                 | 195                                                                                 | 1347                                                                                                                                                                    | 710                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.17                                                                                                                                                                | 0.17                                                                              | 0.03                                                                              | 0.13                                                                                                                                                                | 0.13                                                                              | 0.09                                                                                | 0.36                                                                                                                                                                    | 0.36                                                                                | 0.11                                                                                | 0.38                                                                                                                                                                    | 0.38                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2704                                                                                                                                                                | 800                                                                               | 1781                                                                              | 2018                                                                                                                                                                | 1381                                                                              | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                |
| Grp Volume(v), veh/h         | 91                                                                                | 190                                                                                                                                                                 | 190                                                                               | 28                                                                                | 100                                                                                                                                                                 | 100                                                                               | 122                                                                                 | 516                                                                                                                                                                     | 65                                                                                  | 152                                                                                 | 457                                                                                                                                                                     | 99                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                                                                                                                | 1726                                                                              | 1781                                                                              | 1777                                                                                                                                                                | 1622                                                                              | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                |
| Q Serve(g_s), s              | 2.3                                                                               | 5.4                                                                                                                                                                 | 5.6                                                                               | 0.7                                                                               | 2.8                                                                                                                                                                 | 3.1                                                                               | 3.6                                                                                 | 5.9                                                                                                                                                                     | 1.4                                                                                 | 4.5                                                                                 | 5.0                                                                                                                                                                     | 2.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.3                                                                               | 5.4                                                                                                                                                                 | 5.6                                                                               | 0.7                                                                               | 2.8                                                                                                                                                                 | 3.1                                                                               | 3.6                                                                                 | 5.9                                                                                                                                                                     | 1.4                                                                                 | 4.5                                                                                 | 5.0                                                                                                                                                                     | 2.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                                                                                                     | 0.46                                                                              | 1.00                                                                              |                                                                                                                                                                     | 0.85                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 343                                                                               | 299                                                                                                                                                                 | 291                                                                               | 255                                                                               | 233                                                                                                                                                                 | 213                                                                               | 157                                                                                 | 1273                                                                                                                                                                    | 618                                                                                 | 195                                                                                 | 1347                                                                                                                                                                    | 710                                                                                 |
| V/C Ratio(X)                 | 0.26                                                                              | 0.63                                                                                                                                                                | 0.65                                                                              | 0.11                                                                              | 0.43                                                                                                                                                                | 0.47                                                                              | 0.77                                                                                | 0.41                                                                                                                                                                    | 0.11                                                                                | 0.78                                                                                | 0.34                                                                                                                                                                    | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 389                                                                               | 594                                                                                                                                                                 | 577                                                                               | 363                                                                               | 590                                                                                                                                                                 | 539                                                                               | 280                                                                                 | 1273                                                                                                                                                                    | 618                                                                                 | 312                                                                                 | 1347                                                                                                                                                                    | 710                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 18.4                                                                              | 21.0                                                                                                                                                                | 21.0                                                                              | 19.4                                                                              | 21.7                                                                                                                                                                | 21.8                                                                              | 24.2                                                                                | 13.1                                                                                                                                                                    | 10.5                                                                                | 23.5                                                                                | 12.0                                                                                                                                                                    | 8.8                                                                                 |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 2.2                                                                                                                                                                 | 2.5                                                                               | 0.2                                                                               | 1.2                                                                                                                                                                 | 1.6                                                                               | 7.9                                                                                 | 1.0                                                                                                                                                                     | 0.3                                                                                 | 6.6                                                                                 | 0.7                                                                                                                                                                     | 0.4                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.9                                                                               | 2.2                                                                                                                                                                 | 2.2                                                                               | 0.3                                                                               | 1.1                                                                                                                                                                 | 1.1                                                                               | 1.6                                                                                 | 1.9                                                                                                                                                                     | 0.5                                                                                 | 1.9                                                                                 | 1.5                                                                                                                                                                     | 0.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d), s/veh        | 18.8                                                                              | 23.2                                                                                                                                                                | 23.5                                                                              | 19.6                                                                              | 22.9                                                                                                                                                                | 23.4                                                                              | 32.1                                                                                | 14.0                                                                                                                                                                    | 10.9                                                                                | 30.1                                                                                | 12.7                                                                                                                                                                    | 9.2                                                                                 |
| LnGrp LOS                    | B                                                                                 | C                                                                                                                                                                   | C                                                                                 | B                                                                                 | C                                                                                                                                                                   | C                                                                                 | C                                                                                   | B                                                                                                                                                                       | B                                                                                   | C                                                                                   | B                                                                                                                                                                       | A                                                                                   |
| Approach Vol, veh/h          | 471                                                                               |                                                                                                                                                                     |                                                                                   | 228                                                                               |                                                                                                                                                                     |                                                                                   | 703                                                                                 |                                                                                                                                                                         |                                                                                     | 708                                                                                 |                                                                                                                                                                         |                                                                                     |
| Approach Delay, s/veh        | 22.5                                                                              |                                                                                                                                                                     |                                                                                   | 22.7                                                                              |                                                                                                                                                                     |                                                                                   | 16.9                                                                                |                                                                                                                                                                         |                                                                                     | 15.9                                                                                |                                                                                                                                                                         |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                                                                                                     |                                                                                   | C                                                                                 |                                                                                                                                                                     |                                                                                   | B                                                                                   |                                                                                                                                                                         |                                                                                     | B                                                                                   |                                                                                                                                                                         |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                                                                                                   | 3                                                                                 | 4                                                                                 | 5                                                                                                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.4                                                                              | 23.9                                                                                                                                                                | 6.2                                                                               | 13.6                                                                              | 9.3                                                                                                                                                                 | 25.0                                                                              | 8.2                                                                                 | 11.6                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                                                                                                                 | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                                                                                                 | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 9.5                                                                               | 19.4                                                                                                                                                                | 5.0                                                                               | 18.1                                                                              | 8.5                                                                                                                                                                 | 20.4                                                                              | 5.1                                                                                 | 18.0                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.5                                                                               | 7.9                                                                                                                                                                 | 2.7                                                                               | 7.6                                                                               | 5.6                                                                                                                                                                 | 7.0                                                                               | 4.3                                                                                 | 5.1                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.4                                                                                                                                                                 | 0.0                                                                               | 1.6                                                                               | 0.1                                                                                                                                                                 | 2.4                                                                               | 0.0                                                                                 | 0.8                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 7th Control Delay, s/veh | 18.4                                                                              |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 7th LOS                  | B                                                                                 |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2026 AM Peak-Left Turn Protected  
06/12/2026

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 84                                                                                | 269                                                                               | 81                                                                                | 26                                                                                | 106                                                                               | 78                                                                                | 112                                                                                 | 475                                                                                 | 60                                                                                  | 140                                                                                 | 420                                                                                 | 91                                                                                  |
| Future Volume (veh/h)        | 84                                                                                | 269                                                                               | 81                                                                                | 26                                                                                | 106                                                                               | 78                                                                                | 112                                                                                 | 475                                                                                 | 60                                                                                  | 140                                                                                 | 420                                                                                 | 91                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 91                                                                                | 292                                                                               | 88                                                                                | 28                                                                                | 115                                                                               | 85                                                                                | 122                                                                                 | 516                                                                                 | 65                                                                                  | 152                                                                                 | 457                                                                                 | 99                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 123                                                                               | 461                                                                               | 136                                                                               | 57                                                                                | 268                                                                               | 184                                                                               | 157                                                                                 | 1252                                                                                | 609                                                                                 | 195                                                                                 | 1327                                                                                | 702                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.17                                                                              | 0.17                                                                              | 0.03                                                                              | 0.13                                                                              | 0.13                                                                              | 0.09                                                                                | 0.35                                                                                | 0.35                                                                                | 0.11                                                                                | 0.37                                                                                | 0.37                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2704                                                                              | 800                                                                               | 1781                                                                              | 2018                                                                              | 1381                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 91                                                                                | 190                                                                               | 190                                                                               | 28                                                                                | 100                                                                               | 100                                                                               | 122                                                                                 | 516                                                                                 | 65                                                                                  | 152                                                                                 | 457                                                                                 | 99                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1726                                                                              | 1781                                                                              | 1777                                                                              | 1622                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 2.7                                                                               | 5.3                                                                               | 5.5                                                                               | 0.8                                                                               | 2.8                                                                               | 3.0                                                                               | 3.6                                                                                 | 5.9                                                                                 | 1.4                                                                                 | 4.4                                                                                 | 5.0                                                                                 | 2.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.7                                                                               | 5.3                                                                               | 5.5                                                                               | 0.8                                                                               | 2.8                                                                               | 3.0                                                                               | 3.6                                                                                 | 5.9                                                                                 | 1.4                                                                                 | 4.4                                                                                 | 5.0                                                                                 | 2.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.46                                                                              | 1.00                                                                              |                                                                                   | 0.85                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 123                                                                               | 303                                                                               | 294                                                                               | 57                                                                                | 236                                                                               | 216                                                                               | 157                                                                                 | 1252                                                                                | 609                                                                                 | 195                                                                                 | 1327                                                                                | 702                                                                                 |
| V/C Ratio(X)                 | 0.74                                                                              | 0.63                                                                              | 0.65                                                                              | 0.49                                                                              | 0.42                                                                              | 0.46                                                                              | 0.78                                                                                | 0.41                                                                                | 0.11                                                                                | 0.78                                                                                | 0.34                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 216                                                                               | 630                                                                               | 613                                                                               | 183                                                                               | 597                                                                               | 545                                                                               | 249                                                                                 | 1252                                                                                | 609                                                                                 | 303                                                                                 | 1327                                                                                | 702                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 24.4                                                                              | 20.6                                                                              | 20.7                                                                              | 25.5                                                                              | 21.3                                                                              | 21.4                                                                              | 23.9                                                                                | 13.1                                                                                | 10.6                                                                                | 23.2                                                                                | 12.1                                                                                | 8.9                                                                                 |
| Incr Delay (d2), s/veh       | 8.3                                                                               | 2.1                                                                               | 2.4                                                                               | 6.5                                                                               | 1.2                                                                               | 1.5                                                                               | 8.0                                                                                 | 1.0                                                                                 | 0.4                                                                                 | 6.8                                                                                 | 0.7                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.3                                                                               | 2.1                                                                               | 2.2                                                                               | 0.4                                                                               | 1.1                                                                               | 1.1                                                                               | 1.6                                                                                 | 1.9                                                                                 | 0.5                                                                                 | 1.9                                                                                 | 1.5                                                                                 | 0.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 32.7                                                                              | 22.8                                                                              | 23.1                                                                              | 32.0                                                                              | 22.5                                                                              | 23.0                                                                              | 31.9                                                                                | 14.1                                                                                | 10.9                                                                                | 30.0                                                                                | 12.8                                                                                | 9.3                                                                                 |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 471                                                                               |                                                                                   |                                                                                   | 228                                                                               |                                                                                   |                                                                                     | 703                                                                                 |                                                                                     |                                                                                     | 708                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 24.8                                                                              |                                                                                   |                                                                                   | 23.9                                                                              |                                                                                   |                                                                                     | 16.9                                                                                |                                                                                     |                                                                                     | 16.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.4                                                                              | 23.4                                                                              | 6.2                                                                               | 13.6                                                                              | 9.2                                                                               | 24.5                                                                              | 8.2                                                                                 | 11.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.1                                                                               | 18.4                                                                              | 5.5                                                                               | 19.0                                                                              | 7.5                                                                               | 20.0                                                                              | 6.5                                                                                 | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.4                                                                               | 7.9                                                                               | 2.8                                                                               | 7.5                                                                               | 5.6                                                                               | 7.0                                                                               | 4.7                                                                                 | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.3                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                               | 2.4                                                                               | 0.0                                                                                 | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 19.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2026 PM Peak  
06/12/2026

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 128                                                                               | 179                                                                               | 42                                                                                | 86                                                                                | 321                                                                               | 183                                                                               | 139                                                                                 | 654                                                                                 | 85                                                                                  | 122                                                                                 | 639                                                                                 | 151                                                                                 |
| Future Volume (veh/h)        | 128                                                                               | 179                                                                               | 42                                                                                | 86                                                                                | 321                                                                               | 183                                                                               | 139                                                                                 | 654                                                                                 | 85                                                                                  | 122                                                                                 | 639                                                                                 | 151                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 139                                                                               | 195                                                                               | 46                                                                                | 93                                                                                | 349                                                                               | 199                                                                               | 151                                                                                 | 711                                                                                 | 92                                                                                  | 133                                                                                 | 695                                                                                 | 164                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 314                                                                               | 662                                                                               | 153                                                                               | 426                                                                               | 464                                                                               | 260                                                                               | 191                                                                                 | 1147                                                                                | 613                                                                                 | 170                                                                                 | 1105                                                                                | 625                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.23                                                                              | 0.23                                                                              | 0.06                                                                              | 0.21                                                                              | 0.21                                                                              | 0.11                                                                                | 0.32                                                                                | 0.32                                                                                | 0.10                                                                                | 0.31                                                                                | 0.31                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2867                                                                              | 661                                                                               | 1781                                                                              | 2196                                                                              | 1230                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 139                                                                               | 119                                                                               | 122                                                                               | 93                                                                                | 281                                                                               | 267                                                                               | 151                                                                                 | 711                                                                                 | 92                                                                                  | 133                                                                                 | 695                                                                                 | 164                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1751                                                                              | 1781                                                                              | 1777                                                                              | 1649                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 3.7                                                                               | 3.5                                                                               | 3.6                                                                               | 2.5                                                                               | 9.3                                                                               | 9.6                                                                               | 5.2                                                                                 | 10.6                                                                                | 2.4                                                                                 | 4.6                                                                                 | 10.5                                                                                | 4.4                                                                                 |
| Cycle Q Clear(g_c), s        | 3.7                                                                               | 3.5                                                                               | 3.6                                                                               | 2.5                                                                               | 9.3                                                                               | 9.6                                                                               | 5.2                                                                                 | 10.6                                                                                | 2.4                                                                                 | 4.6                                                                                 | 10.5                                                                                | 4.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.38                                                                              | 1.00                                                                              |                                                                                   | 0.75                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 314                                                                               | 410                                                                               | 404                                                                               | 426                                                                               | 376                                                                               | 349                                                                               | 191                                                                                 | 1147                                                                                | 613                                                                                 | 170                                                                                 | 1105                                                                                | 625                                                                                 |
| V/C Ratio(X)                 | 0.44                                                                              | 0.29                                                                              | 0.30                                                                              | 0.22                                                                              | 0.75                                                                              | 0.77                                                                              | 0.79                                                                                | 0.62                                                                                | 0.15                                                                                | 0.78                                                                                | 0.63                                                                                | 0.26                                                                                |
| Avail Cap(c_a), veh/h        | 322                                                                               | 516                                                                               | 508                                                                               | 463                                                                               | 510                                                                               | 473                                                                               | 256                                                                                 | 1147                                                                                | 613                                                                                 | 241                                                                                 | 1105                                                                                | 625                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 17.8                                                                              | 19.9                                                                              | 19.9                                                                              | 17.4                                                                              | 23.2                                                                              | 23.3                                                                              | 27.3                                                                                | 18.0                                                                                | 12.5                                                                                | 27.7                                                                                | 18.5                                                                                | 12.8                                                                                |
| Incr Delay (d2), s/veh       | 1.0                                                                               | 0.4                                                                               | 0.4                                                                               | 0.3                                                                               | 4.1                                                                               | 5.1                                                                               | 11.4                                                                                | 2.5                                                                                 | 0.5                                                                                 | 10.3                                                                                | 2.7                                                                                 | 1.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 1.4                                                                               | 1.4                                                                               | 0.9                                                                               | 3.9                                                                               | 3.8                                                                               | 2.5                                                                                 | 3.9                                                                                 | 0.8                                                                                 | 2.2                                                                                 | 3.9                                                                                 | 1.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 18.8                                                                              | 20.3                                                                              | 20.4                                                                              | 17.7                                                                              | 27.2                                                                              | 28.4                                                                              | 38.7                                                                                | 20.5                                                                                | 13.0                                                                                | 38.0                                                                                | 21.2                                                                                | 13.8                                                                                |
| LnGrp LOS                    | B                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 380                                                                               |                                                                                   |                                                                                   | 641                                                                               |                                                                                   |                                                                                   | 954                                                                                 |                                                                                     |                                                                                     | 992                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 19.7                                                                              |                                                                                   |                                                                                   | 26.3                                                                              |                                                                                   |                                                                                   | 22.7                                                                                |                                                                                     |                                                                                     | 22.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.5                                                                              | 24.7                                                                              | 8.5                                                                               | 19.0                                                                              | 11.2                                                                              | 24.0                                                                              | 9.7                                                                                 | 17.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.5                                                                               | 20.0                                                                              | 5.3                                                                               | 18.2                                                                              | 9.0                                                                               | 19.5                                                                              | 5.5                                                                                 | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 6.6                                                                               | 12.6                                                                              | 4.5                                                                               | 5.6                                                                               | 7.2                                                                               | 12.5                                                                              | 5.7                                                                                 | 11.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.6                                                                               | 0.0                                                                               | 1.0                                                                               | 0.1                                                                               | 2.6                                                                               | 0.0                                                                                 | 1.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh | 22.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2026 PM Peak-Left Turn Protected  
06/12/2026

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 128                                                                               | 179                                                                               | 42                                                                                | 86                                                                                | 321                                                                               | 183                                                                               | 139                                                                                 | 654                                                                                 | 85                                                                                  | 122                                                                                 | 639                                                                                 | 151                                                                                 |
| Future Volume (veh/h)        | 128                                                                               | 179                                                                               | 42                                                                                | 86                                                                                | 321                                                                               | 183                                                                               | 139                                                                                 | 654                                                                                 | 85                                                                                  | 122                                                                                 | 639                                                                                 | 151                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 139                                                                               | 195                                                                               | 46                                                                                | 93                                                                                | 349                                                                               | 199                                                                               | 151                                                                                 | 711                                                                                 | 92                                                                                  | 133                                                                                 | 695                                                                                 | 164                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 176                                                                               | 694                                                                               | 160                                                                               | 119                                                                               | 462                                                                               | 258                                                                               | 190                                                                                 | 1116                                                                                | 604                                                                                 | 168                                                                                 | 1074                                                                                | 635                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.24                                                                              | 0.24                                                                              | 0.07                                                                              | 0.21                                                                              | 0.21                                                                              | 0.11                                                                                | 0.31                                                                                | 0.31                                                                                | 0.09                                                                                | 0.30                                                                                | 0.30                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2867                                                                              | 661                                                                               | 1781                                                                              | 2196                                                                              | 1230                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 139                                                                               | 119                                                                               | 122                                                                               | 93                                                                                | 281                                                                               | 267                                                                               | 151                                                                                 | 711                                                                                 | 92                                                                                  | 133                                                                                 | 695                                                                                 | 164                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1751                                                                              | 1781                                                                              | 1777                                                                              | 1649                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 4.9                                                                               | 3.5                                                                               | 3.6                                                                               | 3.3                                                                               | 9.5                                                                               | 9.7                                                                               | 5.3                                                                                 | 10.9                                                                                | 2.4                                                                                 | 4.7                                                                                 | 10.8                                                                                | 4.4                                                                                 |
| Cycle Q Clear(g_c), s        | 4.9                                                                               | 3.5                                                                               | 3.6                                                                               | 3.3                                                                               | 9.5                                                                               | 9.7                                                                               | 5.3                                                                                 | 10.9                                                                                | 2.4                                                                                 | 4.7                                                                                 | 10.8                                                                                | 4.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.38                                                                              | 1.00                                                                              |                                                                                   | 0.75                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 176                                                                               | 430                                                                               | 424                                                                               | 119                                                                               | 373                                                                               | 347                                                                               | 190                                                                                 | 1116                                                                                | 604                                                                                 | 168                                                                                 | 1074                                                                                | 635                                                                                 |
| V/C Ratio(X)                 | 0.79                                                                              | 0.28                                                                              | 0.29                                                                              | 0.78                                                                              | 0.75                                                                              | 0.77                                                                              | 0.80                                                                                | 0.64                                                                                | 0.15                                                                                | 0.79                                                                                | 0.65                                                                                | 0.26                                                                                |
| Avail Cap(c_a), veh/h        | 210                                                                               | 533                                                                               | 525                                                                               | 179                                                                               | 502                                                                               | 466                                                                               | 210                                                                                 | 1116                                                                                | 604                                                                                 | 182                                                                                 | 1074                                                                                | 635                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 28.1                                                                              | 19.6                                                                              | 19.7                                                                              | 29.3                                                                              | 23.6                                                                              | 23.7                                                                              | 27.8                                                                                | 18.7                                                                                | 13.0                                                                                | 28.2                                                                                | 19.3                                                                                | 12.8                                                                                |
| Incr Delay (d2), s/veh       | 15.6                                                                              | 0.3                                                                               | 0.4                                                                               | 11.7                                                                              | 4.4                                                                               | 5.5                                                                               | 17.5                                                                                | 2.8                                                                                 | 0.5                                                                                 | 19.3                                                                                | 3.0                                                                                 | 1.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.7                                                                               | 1.4                                                                               | 1.4                                                                               | 1.7                                                                               | 4.0                                                                               | 3.9                                                                               | 2.9                                                                                 | 4.0                                                                                 | 0.8                                                                                 | 2.6                                                                                 | 4.1                                                                                 | 1.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 43.6                                                                              | 20.0                                                                              | 20.0                                                                              | 41.0                                                                              | 28.0                                                                              | 29.2                                                                              | 45.3                                                                                | 21.5                                                                                | 13.5                                                                                | 47.6                                                                                | 22.3                                                                                | 13.7                                                                                |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 380                                                                               |                                                                                   |                                                                                   | 641                                                                               |                                                                                   |                                                                                     | 954                                                                                 |                                                                                     |                                                                                     | 992                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 28.7                                                                              |                                                                                   |                                                                                   | 30.4                                                                              |                                                                                   |                                                                                     | 24.5                                                                                |                                                                                     |                                                                                     | 24.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.5                                                                              | 24.5                                                                              | 8.8                                                                               | 19.9                                                                              | 11.3                                                                              | 23.7                                                                              | 10.8                                                                                | 17.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.5                                                                               | 20.0                                                                              | 6.4                                                                               | 19.1                                                                              | 7.5                                                                               | 19.0                                                                              | 7.5                                                                                 | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.7                                                                               | 12.9                                                                              | 5.3                                                                               | 5.6                                                                               | 7.3                                                                               | 12.8                                                                              | 6.9                                                                                 | 11.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 2.4                                                                               | 0.0                                                                                 | 1.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 26.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2046 AM Peak  
06/12/2026

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 103                                                                               | 329                                                                               | 99                                                                                | 32                                                                                | 130                                                                               | 96                                                                                | 137                                                                                 | 580                                                                                 | 74                                                                                  | 171                                                                                 | 513                                                                                 | 110                                                                                 |
| Future Volume (veh/h)        | 103                                                                               | 329                                                                               | 99                                                                                | 32                                                                                | 130                                                                               | 96                                                                                | 137                                                                                 | 580                                                                                 | 74                                                                                  | 171                                                                                 | 513                                                                                 | 110                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 112                                                                               | 358                                                                               | 108                                                                               | 35                                                                                | 141                                                                               | 104                                                                               | 149                                                                                 | 630                                                                                 | 80                                                                                  | 186                                                                                 | 558                                                                                 | 120                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 366                                                                               | 526                                                                               | 157                                                                               | 263                                                                               | 318                                                                               | 219                                                                               | 163                                                                                 | 1201                                                                                | 596                                                                                 | 179                                                                                 | 1234                                                                                | 669                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.19                                                                              | 0.19                                                                              | 0.04                                                                              | 0.16                                                                              | 0.16                                                                              | 0.09                                                                                | 0.34                                                                                | 0.34                                                                                | 0.10                                                                                | 0.35                                                                                | 0.35                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2700                                                                              | 803                                                                               | 1781                                                                              | 2012                                                                              | 1386                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 112                                                                               | 234                                                                               | 232                                                                               | 35                                                                                | 123                                                                               | 122                                                                               | 149                                                                                 | 630                                                                                 | 80                                                                                  | 186                                                                                 | 558                                                                                 | 120                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1726                                                                              | 1781                                                                              | 1777                                                                              | 1621                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 2.8                                                                               | 6.7                                                                               | 6.8                                                                               | 0.9                                                                               | 3.4                                                                               | 3.7                                                                               | 4.5                                                                                 | 7.8                                                                                 | 1.8                                                                                 | 5.5                                                                                 | 6.7                                                                                 | 2.6                                                                                 |
| Cycle Q Clear(g_c), s        | 2.8                                                                               | 6.7                                                                               | 6.8                                                                               | 0.9                                                                               | 3.4                                                                               | 3.7                                                                               | 4.5                                                                                 | 7.8                                                                                 | 1.8                                                                                 | 5.5                                                                                 | 6.7                                                                                 | 2.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.47                                                                              | 1.00                                                                              |                                                                                   | 0.86                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 366                                                                               | 346                                                                               | 336                                                                               | 263                                                                               | 281                                                                               | 256                                                                               | 163                                                                                 | 1201                                                                                | 596                                                                                 | 179                                                                                 | 1234                                                                                | 669                                                                                 |
| V/C Ratio(X)                 | 0.31                                                                              | 0.68                                                                              | 0.69                                                                              | 0.13                                                                              | 0.44                                                                              | 0.48                                                                              | 0.92                                                                                | 0.52                                                                                | 0.13                                                                                | 1.04                                                                                | 0.45                                                                                | 0.18                                                                                |
| Avail Cap(c_a), veh/h        | 396                                                                               | 584                                                                               | 568                                                                               | 359                                                                               | 584                                                                               | 533                                                                               | 163                                                                                 | 1201                                                                                | 596                                                                                 | 179                                                                                 | 1234                                                                                | 669                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 17.3                                                                              | 20.4                                                                              | 20.5                                                                              | 18.3                                                                              | 20.9                                                                              | 21.0                                                                              | 24.7                                                                                | 14.6                                                                                | 11.2                                                                                | 24.6                                                                                | 13.8                                                                                | 9.9                                                                                 |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 2.3                                                                               | 2.5                                                                               | 0.2                                                                               | 1.1                                                                               | 1.4                                                                               | 46.7                                                                                | 1.6                                                                                 | 0.5                                                                                 | 77.9                                                                                | 1.2                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.1                                                                               | 2.7                                                                               | 2.7                                                                               | 0.3                                                                               | 1.3                                                                               | 1.3                                                                               | 3.7                                                                                 | 2.6                                                                                 | 0.6                                                                                 | 5.8                                                                                 | 2.2                                                                                 | 0.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 17.8                                                                              | 22.7                                                                              | 23.0                                                                              | 18.5                                                                              | 21.9                                                                              | 22.3                                                                              | 71.4                                                                                | 16.2                                                                                | 11.7                                                                                | 102.5                                                                               | 15.0                                                                                | 10.5                                                                                |
| LnGrp LOS                    | B                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | B                                                                                   | B                                                                                   | F                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 578                                                                               |                                                                                   |                                                                                   | 280                                                                               |                                                                                   |                                                                                     | 859                                                                                 |                                                                                     |                                                                                     | 864                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.9                                                                              |                                                                                   |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                     | 25.4                                                                                |                                                                                     |                                                                                     | 33.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.0                                                                              | 23.0                                                                              | 6.6                                                                               | 15.2                                                                              | 9.5                                                                               | 23.5                                                                              | 8.6                                                                                 | 13.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.5                                                                               | 18.5                                                                              | 5.0                                                                               | 18.0                                                                              | 5.0                                                                               | 19.0                                                                              | 5.0                                                                                 | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.5                                                                               | 9.8                                                                               | 2.9                                                                               | 8.8                                                                               | 6.5                                                                               | 8.7                                                                               | 4.8                                                                                 | 5.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 1.8                                                                               | 0.0                                                                               | 2.6                                                                               | 0.0                                                                                 | 1.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 26.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2046 AM Peak-Left Turn Protected  
06/12/2026

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 103                                                                               | 329                                                                               | 99                                                                                | 32                                                                                | 130                                                                               | 96                                                                                | 137                                                                                 | 580                                                                                 | 74                                                                                  | 171                                                                                 | 513                                                                                 | 110                                                                                 |
| Future Volume (veh/h)        | 103                                                                               | 329                                                                               | 99                                                                                | 32                                                                                | 130                                                                               | 96                                                                                | 137                                                                                 | 580                                                                                 | 74                                                                                  | 171                                                                                 | 513                                                                                 | 110                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 112                                                                               | 358                                                                               | 108                                                                               | 35                                                                                | 141                                                                               | 104                                                                               | 149                                                                                 | 630                                                                                 | 80                                                                                  | 186                                                                                 | 558                                                                                 | 120                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 143                                                                               | 518                                                                               | 154                                                                               | 66                                                                                | 299                                                                               | 206                                                                               | 190                                                                                 | 1169                                                                                | 580                                                                                 | 232                                                                                 | 1253                                                                                | 686                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.19                                                                              | 0.19                                                                              | 0.04                                                                              | 0.15                                                                              | 0.15                                                                              | 0.11                                                                                | 0.33                                                                                | 0.33                                                                                | 0.13                                                                                | 0.35                                                                                | 0.35                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2700                                                                              | 803                                                                               | 1781                                                                              | 2012                                                                              | 1386                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 112                                                                               | 234                                                                               | 232                                                                               | 35                                                                                | 123                                                                               | 122                                                                               | 149                                                                                 | 630                                                                                 | 80                                                                                  | 186                                                                                 | 558                                                                                 | 120                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1726                                                                              | 1781                                                                              | 1777                                                                              | 1621                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 3.6                                                                               | 7.1                                                                               | 7.3                                                                               | 1.1                                                                               | 3.7                                                                               | 4.0                                                                               | 4.7                                                                                 | 8.4                                                                                 | 1.9                                                                                 | 5.9                                                                                 | 7.0                                                                                 | 2.7                                                                                 |
| Cycle Q Clear(g_c), s        | 3.6                                                                               | 7.1                                                                               | 7.3                                                                               | 1.1                                                                               | 3.7                                                                               | 4.0                                                                               | 4.7                                                                                 | 8.4                                                                                 | 1.9                                                                                 | 5.9                                                                                 | 7.0                                                                                 | 2.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.47                                                                              | 1.00                                                                              |                                                                                   | 0.86                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 143                                                                               | 341                                                                               | 331                                                                               | 66                                                                                | 264                                                                               | 241                                                                               | 190                                                                                 | 1169                                                                                | 580                                                                                 | 232                                                                                 | 1253                                                                                | 686                                                                                 |
| V/C Ratio(X)                 | 0.78                                                                              | 0.69                                                                              | 0.70                                                                              | 0.53                                                                              | 0.47                                                                              | 0.50                                                                              | 0.78                                                                                | 0.54                                                                                | 0.14                                                                                | 0.80                                                                                | 0.45                                                                                | 0.17                                                                                |
| Avail Cap(c_a), veh/h        | 170                                                                               | 569                                                                               | 553                                                                               | 154                                                                               | 554                                                                               | 505                                                                               | 274                                                                                 | 1169                                                                                | 580                                                                                 | 293                                                                                 | 1253                                                                                | 686                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 26.1                                                                              | 21.7                                                                              | 21.8                                                                              | 27.3                                                                              | 22.5                                                                              | 22.6                                                                              | 25.2                                                                                | 15.8                                                                                | 12.2                                                                                | 24.4                                                                                | 14.4                                                                                | 10.0                                                                                |
| Incr Delay (d2), s/veh       | 17.9                                                                              | 2.5                                                                               | 2.7                                                                               | 6.4                                                                               | 1.3                                                                               | 1.6                                                                               | 8.9                                                                                 | 1.8                                                                                 | 0.5                                                                                 | 11.8                                                                                | 1.1                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.1                                                                               | 2.9                                                                               | 2.9                                                                               | 0.5                                                                               | 1.5                                                                               | 1.5                                                                               | 2.2                                                                                 | 2.9                                                                                 | 0.7                                                                                 | 2.8                                                                                 | 2.3                                                                                 | 0.9                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 43.9                                                                              | 24.2                                                                              | 24.5                                                                              | 33.7                                                                              | 23.8                                                                              | 24.3                                                                              | 34.1                                                                                | 17.6                                                                                | 12.7                                                                                | 36.2                                                                                | 15.5                                                                                | 10.6                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 578                                                                               |                                                                                   |                                                                                   | 280                                                                               |                                                                                   |                                                                                     | 859                                                                                 |                                                                                     |                                                                                     | 864                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 28.1                                                                              |                                                                                   |                                                                                   | 25.2                                                                              |                                                                                   |                                                                                     | 20.0                                                                                |                                                                                     |                                                                                     | 19.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 12.0                                                                              | 23.5                                                                              | 6.6                                                                               | 15.6                                                                              | 10.7                                                                              | 24.9                                                                              | 9.1                                                                                 | 13.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.5                                                                               | 19.0                                                                              | 5.0                                                                               | 18.5                                                                              | 8.9                                                                               | 19.6                                                                              | 5.5                                                                                 | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.9                                                                               | 10.4                                                                              | 3.1                                                                               | 9.3                                                                               | 6.7                                                                               | 9.0                                                                               | 5.6                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.6                                                                               | 0.0                                                                               | 1.8                                                                               | 0.1                                                                               | 2.7                                                                               | 0.0                                                                                 | 1.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                   |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2046 PM Peak  
06/12/2026

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 157                                                                               | 219                                                                               | 52                                                                                | 105                                                                               | 392                                                                               | 224                                                                               | 170                                                                                 | 799                                                                                 | 104                                                                                 | 149                                                                                 | 780                                                                                 | 185                                                                                 |
| Future Volume (veh/h)        | 157                                                                               | 219                                                                               | 52                                                                                | 105                                                                               | 392                                                                               | 224                                                                               | 170                                                                                 | 799                                                                                 | 104                                                                                 | 149                                                                                 | 780                                                                                 | 185                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 171                                                                               | 238                                                                               | 57                                                                                | 114                                                                               | 426                                                                               | 243                                                                               | 185                                                                                 | 868                                                                                 | 113                                                                                 | 162                                                                                 | 848                                                                                 | 201                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 287                                                                               | 708                                                                               | 166                                                                               | 420                                                                               | 514                                                                               | 291                                                                               | 223                                                                                 | 1098                                                                                | 598                                                                                 | 197                                                                                 | 1046                                                                                | 595                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.25                                                                              | 0.25                                                                              | 0.07                                                                              | 0.23                                                                              | 0.23                                                                              | 0.13                                                                                | 0.31                                                                                | 0.31                                                                                | 0.11                                                                                | 0.29                                                                                | 0.29                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2856                                                                              | 671                                                                               | 1781                                                                              | 2188                                                                              | 1236                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 171                                                                               | 146                                                                               | 149                                                                               | 114                                                                               | 345                                                                               | 324                                                                               | 185                                                                                 | 868                                                                                 | 113                                                                                 | 162                                                                                 | 848                                                                                 | 201                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1750                                                                              | 1781                                                                              | 1777                                                                              | 1648                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 4.9                                                                               | 4.6                                                                               | 4.7                                                                               | 3.2                                                                               | 12.5                                                                              | 12.7                                                                              | 6.9                                                                                 | 15.2                                                                                | 3.3                                                                                 | 6.0                                                                                 | 15.0                                                                                | 6.2                                                                                 |
| Cycle Q Clear(g_c), s        | 4.9                                                                               | 4.6                                                                               | 4.7                                                                               | 3.2                                                                               | 12.5                                                                              | 12.7                                                                              | 6.9                                                                                 | 15.2                                                                                | 3.3                                                                                 | 6.0                                                                                 | 15.0                                                                                | 6.2                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.38                                                                              | 1.00                                                                              |                                                                                   | 0.75                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 287                                                                               | 440                                                                               | 433                                                                               | 420                                                                               | 417                                                                               | 387                                                                               | 223                                                                                 | 1098                                                                                | 598                                                                                 | 197                                                                                 | 1046                                                                                | 595                                                                                 |
| V/C Ratio(X)                 | 0.60                                                                              | 0.33                                                                              | 0.34                                                                              | 0.27                                                                              | 0.83                                                                              | 0.84                                                                              | 0.83                                                                                | 0.79                                                                                | 0.19                                                                                | 0.82                                                                                | 0.81                                                                                | 0.34                                                                                |
| Avail Cap(c_a), veh/h        | 287                                                                               | 484                                                                               | 476                                                                               | 430                                                                               | 471                                                                               | 436                                                                               | 223                                                                                 | 1098                                                                                | 598                                                                                 | 197                                                                                 | 1046                                                                                | 595                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 19.1                                                                              | 21.0                                                                              | 21.0                                                                              | 17.8                                                                              | 24.7                                                                              | 24.8                                                                              | 29.0                                                                                | 21.5                                                                                | 14.2                                                                                | 29.6                                                                                | 22.2                                                                                | 15.2                                                                                |
| Incr Delay (d2), s/veh       | 3.3                                                                               | 0.4                                                                               | 0.5                                                                               | 0.3                                                                               | 10.6                                                                              | 12.2                                                                              | 22.5                                                                                | 5.8                                                                                 | 0.7                                                                                 | 23.9                                                                                | 6.8                                                                                 | 1.5                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.1                                                                               | 1.8                                                                               | 1.9                                                                               | 1.2                                                                               | 6.0                                                                               | 5.8                                                                               | 4.0                                                                                 | 6.1                                                                                 | 1.1                                                                                 | 3.6                                                                                 | 6.2                                                                                 | 2.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 22.5                                                                              | 21.4                                                                              | 21.5                                                                              | 18.1                                                                              | 35.2                                                                              | 36.9                                                                              | 51.5                                                                                | 27.3                                                                                | 14.9                                                                                | 53.5                                                                                | 29.1                                                                                | 16.7                                                                                |
| LnGrp LOS                    | C                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | D                                                                                 | D                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 466                                                                               |                                                                                   |                                                                                   | 783                                                                               |                                                                                   |                                                                                   | 1166                                                                                |                                                                                     |                                                                                     | 1211                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 21.8                                                                              |                                                                                   |                                                                                   | 33.4                                                                              |                                                                                   |                                                                                   | 29.9                                                                                |                                                                                     |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 12.0                                                                              | 25.5                                                                              | 9.1                                                                               | 21.3                                                                              | 13.0                                                                              | 24.5                                                                              | 10.0                                                                                | 20.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.5                                                                               | 21.0                                                                              | 5.0                                                                               | 18.5                                                                              | 8.5                                                                               | 20.0                                                                              | 5.5                                                                                 | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 8.0                                                                               | 17.2                                                                              | 5.2                                                                               | 6.7                                                                               | 8.9                                                                               | 17.0                                                                              | 6.9                                                                                 | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.9                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                                 | 1.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh | 29.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 7th Signalized Intersection Summary  
1: Quaker Blvd & Stafford Rd

2046 PM Peak-Left Turn Protected  
06/12/2026

|                              |  |                                                                                    |  |  |                                                                                    |  |   |                                                                                      |  |  |                                                                                      |  |
|------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                                                                                                                 | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                 | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |  |   |                                                                                   |  |   |                                                                                   |  |   |  |  |   |  |
| Traffic Volume (veh/h)       | 157                                                                               | 219                                                                                                                                                                 | 52                                                                                | 105                                                                               | 392                                                                                                                                                                 | 224                                                                               | 170                                                                                 | 799                                                                                                                                                                     | 104                                                                                 | 149                                                                                 | 780                                                                                                                                                                     | 185                                                                                 |
| Future Volume (veh/h)        | 157                                                                               | 219                                                                                                                                                                 | 52                                                                                | 105                                                                               | 392                                                                                                                                                                 | 224                                                                               | 170                                                                                 | 799                                                                                                                                                                     | 104                                                                                 | 149                                                                                 | 780                                                                                                                                                                     | 185                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |
| Lane Width Adj.              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                              |                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                                                                                                     |                                                                                   | No                                                                                |                                                                                                                                                                     |                                                                                   | No                                                                                  |                                                                                                                                                                         |                                                                                     | No                                                                                  |                                                                                                                                                                         |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                              | 1870                                                                                                                                                                | 1870                                                                              | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                | 1870                                                                                | 1870                                                                                                                                                                    | 1870                                                                                |
| Adj Flow Rate, veh/h         | 171                                                                               | 238                                                                                                                                                                 | 57                                                                                | 114                                                                               | 426                                                                                                                                                                 | 243                                                                               | 185                                                                                 | 868                                                                                                                                                                     | 113                                                                                 | 162                                                                                 | 848                                                                                                                                                                     | 201                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                                                                                                                | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                                                                                                | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                                                                                                    | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                                                                                                    | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 197                                                                               | 753                                                                                                                                                                 | 177                                                                               | 146                                                                               | 514                                                                                                                                                                 | 291                                                                               | 210                                                                                 | 999                                                                                                                                                                     | 575                                                                                 | 194                                                                                 | 967                                                                                                                                                                     | 606                                                                                 |
| Arrive On Green              | 0.11                                                                              | 0.26                                                                                                                                                                | 0.26                                                                              | 0.08                                                                              | 0.23                                                                                                                                                                | 0.23                                                                              | 0.12                                                                                | 0.28                                                                                                                                                                    | 0.28                                                                                | 0.11                                                                                | 0.27                                                                                                                                                                    | 0.27                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 2856                                                                                                                                                                | 671                                                                               | 1781                                                                              | 2188                                                                                                                                                                | 1236                                                                              | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 3554                                                                                                                                                                    | 1585                                                                                |
| Grp Volume(v), veh/h         | 171                                                                               | 146                                                                                                                                                                 | 149                                                                               | 114                                                                               | 345                                                                                                                                                                 | 324                                                                               | 185                                                                                 | 868                                                                                                                                                                     | 113                                                                                 | 162                                                                                 | 848                                                                                                                                                                     | 201                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                                                                                                                | 1750                                                                              | 1781                                                                              | 1777                                                                                                                                                                | 1648                                                                              | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                | 1781                                                                                | 1777                                                                                                                                                                    | 1585                                                                                |
| Q Serve(g_s), s              | 6.4                                                                               | 4.5                                                                                                                                                                 | 4.6                                                                               | 4.3                                                                               | 12.5                                                                                                                                                                | 12.7                                                                              | 7.0                                                                                 | 15.8                                                                                                                                                                    | 3.3                                                                                 | 6.1                                                                                 | 15.5                                                                                                                                                                    | 6.1                                                                                 |
| Cycle Q Clear(g_c), s        | 6.4                                                                               | 4.5                                                                                                                                                                 | 4.6                                                                               | 4.3                                                                               | 12.5                                                                                                                                                                | 12.7                                                                              | 7.0                                                                                 | 15.8                                                                                                                                                                    | 3.3                                                                                 | 6.1                                                                                 | 15.5                                                                                                                                                                    | 6.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                                                                                                     | 0.38                                                                              | 1.00                                                                              |                                                                                                                                                                     | 0.75                                                                              | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                |                                                                                                                                                                         | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 197                                                                               | 468                                                                                                                                                                 | 461                                                                               | 146                                                                               | 417                                                                                                                                                                 | 387                                                                               | 210                                                                                 | 999                                                                                                                                                                     | 575                                                                                 | 194                                                                                 | 967                                                                                                                                                                     | 606                                                                                 |
| V/C Ratio(X)                 | 0.87                                                                              | 0.31                                                                                                                                                                | 0.32                                                                              | 0.78                                                                              | 0.83                                                                                                                                                                | 0.84                                                                              | 0.88                                                                                | 0.87                                                                                                                                                                    | 0.20                                                                                | 0.84                                                                                | 0.88                                                                                                                                                                    | 0.33                                                                                |
| Avail Cap(c_a), veh/h        | 197                                                                               | 478                                                                                                                                                                 | 471                                                                               | 189                                                                               | 471                                                                                                                                                                 | 436                                                                               | 210                                                                                 | 999                                                                                                                                                                     | 575                                                                                 | 194                                                                                 | 967                                                                                                                                                                     | 606                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 29.8                                                                              | 20.1                                                                                                                                                                | 20.1                                                                              | 30.6                                                                              | 24.7                                                                                                                                                                | 24.8                                                                              | 29.5                                                                                | 23.2                                                                                                                                                                    | 14.9                                                                                | 29.7                                                                                | 23.6                                                                                                                                                                    | 14.8                                                                                |
| Incr Delay (d2), s/veh       | 31.7                                                                              | 0.4                                                                                                                                                                 | 0.4                                                                               | 14.7                                                                              | 10.6                                                                                                                                                                | 12.2                                                                              | 32.5                                                                                | 10.2                                                                                                                                                                    | 0.8                                                                                 | 25.9                                                                                | 11.0                                                                                                                                                                    | 1.5                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.3                                                                               | 1.8                                                                                                                                                                 | 1.8                                                                               | 2.3                                                                               | 6.0                                                                                                                                                                 | 5.8                                                                               | 4.5                                                                                 | 6.9                                                                                                                                                                     | 1.2                                                                                 | 3.7                                                                                 | 6.9                                                                                                                                                                     | 2.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| LnGrp Delay(d), s/veh        | 61.4                                                                              | 20.5                                                                                                                                                                | 20.5                                                                              | 45.3                                                                              | 35.2                                                                                                                                                                | 36.9                                                                              | 62.1                                                                                | 33.5                                                                                                                                                                    | 15.6                                                                                | 55.6                                                                                | 34.7                                                                                                                                                                    | 16.3                                                                                |
| LnGrp LOS                    | E                                                                                 | C                                                                                                                                                                   | C                                                                                 | D                                                                                 | D                                                                                                                                                                   | D                                                                                 | E                                                                                   | C                                                                                                                                                                       | B                                                                                   | E                                                                                   | C                                                                                                                                                                       | B                                                                                   |
| Approach Vol, veh/h          | 466                                                                               |                                                                                                                                                                     |                                                                                   | 783                                                                               |                                                                                                                                                                     |                                                                                   | 1166                                                                                |                                                                                                                                                                         |                                                                                     | 1211                                                                                |                                                                                                                                                                         |                                                                                     |
| Approach Delay, s/veh        | 35.5                                                                              |                                                                                                                                                                     |                                                                                   | 37.4                                                                              |                                                                                                                                                                     |                                                                                   | 36.3                                                                                |                                                                                                                                                                         |                                                                                     | 34.4                                                                                |                                                                                                                                                                         |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                                                                                                     |                                                                                   | D                                                                                 |                                                                                                                                                                     |                                                                                   | D                                                                                   |                                                                                                                                                                         |                                                                                     | C                                                                                   |                                                                                                                                                                         |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                                                                                                   | 3                                                                                 | 4                                                                                 | 5                                                                                                                                                                   | 6                                                                                 | 7                                                                                   | 8                                                                                                                                                                       |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.9                                                                              | 23.6                                                                                                                                                                | 10.1                                                                              | 22.4                                                                              | 12.5                                                                                                                                                                | 23.0                                                                              | 12.0                                                                                | 20.5                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 4.5                                                                                                                                                                 | 4.5                                                                               | 4.5                                                                               | 4.5                                                                                                                                                                 | 4.5                                                                               | 4.5                                                                                 | 4.5                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 7.4                                                                               | 19.1                                                                                                                                                                | 7.2                                                                               | 18.3                                                                              | 8.0                                                                                                                                                                 | 18.5                                                                              | 7.5                                                                                 | 18.0                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+l1), s | 8.1                                                                               | 17.8                                                                                                                                                                | 6.3                                                                               | 6.6                                                                               | 9.0                                                                                                                                                                 | 17.5                                                                              | 8.4                                                                                 | 14.7                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.7                                                                                                                                                                 | 0.0                                                                               | 1.2                                                                               | 0.0                                                                                                                                                                 | 0.6                                                                               | 0.0                                                                                 | 1.3                                                                                                                                                                     |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 7th Control Delay, s/veh | 35.8                                                                              |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| HCM 7th LOS                  | D                                                                                 |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |

# ABBREVIATED ENGINEERING REVIEW FOR TRAFFIC SAFETY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                                                                                     |                                      |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          | Date: 7/23/2026                                                                                     |                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          | Des. No.: n/a                                                                                       |                                      |
| <b>Reviewer Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          | Agency/Firm Name: Infrastructure Engineering Inc.                                                   |                                      |
| Primary Author: Emily Schmidt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          | Agency: Indianapolis Metropolitan Planning Organization                                             |                                      |
| Phone Numbers: (317) 202-1282                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          | Email Address: <a href="mailto:eschmidt@infrastructure-eng.com">eschmidt@infrastructure-eng.com</a> |                                      |
| <b>Purpose of Review:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |                                                                                                     |                                      |
| <p>Infrastructure Engineering Inc., on behalf of Corradino LLC, was hired by the Indianapolis MPO (IMPO) to conduct a series of roadway safety audits at preselected intersections within its urbanized area. The goal was to identify existing safety issues and recommend near-term and long-term improvements to address them. Improvements may range from lower-cost maintenance items, such as signage and pavement markings, to higher-cost capital improvements, including intersection upgrades, multimodal infrastructure, and upgraded traffic signals, as needed. This form is suitable for Level 1 review. Of the three available levels of engineering review, this represents the least refined, lowest-intensity degree of analysis, development of essential project intent (outline of the certified course of action), scoring, and process documentation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |                                                                                                     |                                      |
| <b>Project Location:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |                                                                                                     |                                      |
| Route: Ronald Reagan Parkway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          | District: Crawfordsville                                                                            | Town: Plainfield                     |
| County: Hendricks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |                                                                                                     |                                      |
| Lat & Long (BOP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 39.69779 | -86.33554                                                                                           | Lat & Long (EOP): 39.69779 -86.33554 |
| IMPO: Indianapolis Metropolitan Planning Organization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          | Project Type: Roadway Safety Audit                                                                  |                                      |
| Location: The intersection of Ronald Reagan Parkway and Stafford Road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |                                                                                                     |                                      |
| <b>Existing Conditions:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |                                                                                                     |                                      |
| <p>The Ronald Reagan Parkway and Stafford Road intersection is a signalized intersection. Ronald Reagan Parkway is a 4-lane roadway with 2 through lanes in the northbound and southbound directions, 2 left-turn lanes in the northbound direction, and a single left-turn lane in the southbound direction with additional pavement for a future second left-turn. Stafford Road is a 4-lane road at the intersection with a dedicated left turn lane in both the eastbound and westbound directions, one dedicated right turn lane in the westbound direction, and two dedicated right turn lanes in the eastbound direction onto Ronald Reagan Parkway South. The dedicated right-turn lanes are free flowing and are channelized by a median curb. The posted speed on Ronald Reagan Parkway is 45 MPH. The posted speed limit on Stafford Road at the intersection is 40 MPH.</p> <p>Just south of the intersection, there is an interchange Ronald Reagan Parkway and I-70. There is a heavy movement of vehicles coming off I-70 and turning left onto westbound Stafford Road. To the west of the intersection, Columbia Road intersects Stafford Road. The two intersections affect each other and any solutions for Ronald Reagan Parkway will need to account for the intersection of Columbia Road and Stafford Road as well.</p> <p>Sidewalk is located at the study intersection on the north side of Stafford Road and on both the east and west sides of Ronald Reagan Parkway. Curb ramps provide a pedestrian crossing across the north leg of the intersection. There is sidewalk in the southwest corner as well, but there is no access to the intersection.</p> <p>Located in each quadrant of the intersection are:</p> <ul style="list-style-type: none"> <li>NW Quadrant: Detention pond/warehouse.</li> <li>SW Quadrant: Empty parcel, no immediate plans to develop.</li> <li>SE Quadrant: Empty Parcel, the Town has received development plans for refrigerated storage facility in the future.</li> <li>NE Quadrant: Metro Air Business Park.</li> </ul> <p>Infrastructure Engineering staff held a virtual meeting with the Town of Plainfield staff on April 1<sup>st</sup>, 2026, to review data generated for the IMPO's Regional Safety Study update and identify potential issues with the site. Meeting minutes from the virtual meeting with the Town of Plainfield are available in <b>Attachment C</b>.</p> <p>Infrastructure Engineering held a field check with the representatives from the IMPO and the Town of Plainfield on May 4<sup>th</sup>, 2026, to provide a recap on the discussion held during the virtual meeting, to discuss the near-term and long-term solutions, and build consensus around a series of countermeasures for Infrastructure Engineering to cost as part of the final recommendations. The field check meeting minutes are available in <b>Attachment C</b>.</p> |          |                                                                                                     |                                      |



### Existing Conditions (Continued):

Infrastructure Engineering held a follow up meeting with the Town of Plainfield on May 15<sup>th</sup>, 2026 to further discuss long-term solutions at this intersection. The Town of Plainfield advised it was currently investigating whether an at-grade roundabout improvement would be sufficiently warranted as a long-term improvement. If a grade separation alternative intersection design is necessary, the Town anticipates a form of Echelon design is the most practical to address the northbound-to-westbound movement, provided the design can function properly with the nearby Stafford/Columbia intersection.

### Traffic Operations:

**a) Mobility/Congestion Performance:** The weekday average volumes were provided by the Town of Plainfield for the month of February 2026 from the Miovision units that are located on the northwest and southwest strain poles. According to count data, eastbound traffic entering the intersection is **2,209**. The westbound traffic entering the intersection is **1,784**. The northbound traffic entering the intersection is **20,633**. The southbound traffic entering the intersection is **10,224**. The Miovision units do not capture the 2 slip lanes from eastbound to southbound. This movement is presumed to be approximately about 10,000 vehicles when balanced with the inbound and outbound traffic. Those can be viewed in the attached traffic data in **Attachment B**.

**b) Safety Performance / Crash Analysis:** According to available crash data, there were **90** crashes associated with the study area from January 1, 2022, to December 31, 2024. Of those crashes, **0** resulted in fatality, **6** resulted in incapacitating injuries, and **5** resulted in non-incapacitating injuries. See attached Crash Summary and output from RoadHAT 4.1 in **Attachment A**.

2022-2024 Crash Data – Stafford Road & Ronald Reagan Parkway intersection (analyzed as **City Arterial Intersection**) ICC = **2.77**, ICF = **1.87**

### Alternatives & Recommendations

#### Near-Term

Near-term solutions include:

Maintenance of the existing pavement markings at the intersection.

Milled corrugations in along the gore for the two right turn lanes for eastbound Stafford Road to southbound Ronald Reagan Parkway.

Transverse rumble strips along northbound Ronald Reagan Parkway approaching the intersection.

#### Long-Term

As noted in the Existing Conditions section of this report, the Town of Plainfield shared that they are investigating the at-grade roundabout alternative, identified in the “Alternative Intersection Study, 2024,” written by A&F Engineering, as a potential long-term improvement for the Ronald Reagan Parkway & Stafford Road intersection. Because the Town of Plainfield is currently investigating the at-grade roundabout alternative, the project team determined that they would provide a cost estimate for one of the long-term interchange alternatives identified in the “Alternative Intersection Study.” Since the Town of Plainfield noted that they believe an echelon interchange might be the most practical option if converting the intersection to an interchange is deemed necessary. The project team has provided a cost estimate for the echelon interchange in **Attachment E** to assist the Town of Plainfield with their decision-making process.

### Near-Term & Long-Term Cost Estimates for the Proposed Safety Improvements

Cost estimates for the near- and long-term improvements are available in **Attachment D**. Benefit-Cost Calculations were also calculated for the long-term improvement and can also be found in **Attachment D**.

#### Near-Term Recommendation

PE – \$4,470

ROW - \$0

Utility CN - \$5,000

Railroad CN - \$0

Construction Inspection/Testing (10% Rounded up to nearest \$1k) - \$5,000

CN – \$44,700

**Near-Term Total - \$59,170**

#### Long-Term Recommendation

PE - \$2,927,000

ROW - \$800,000

Utility CN - \$500,000

Railroad CN - \$0

Construction Inspection/Testing (10% Rounded up to nearest \$1k) – \$1,951,000

CN - \$19,509,000

**Long-Term Total – \$24,628,000**

|                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Score: (for INDOT use)</b>                                                                                                                                                                                                                                                                                             |
| Safety Program Score =                                                                                                                                                                                                                                                                                                            |
| <b>Miscellaneous Notes:</b>                                                                                                                                                                                                                                                                                                       |
| Continuous left-turn lanes for the northbound approach were discussed as a potential build alternative at the intersection. After further review, it was determined that continuous left-turn lanes would shorten the northbound queue length between I-70 and may lead to an increase in rear-end accidents at the intersection. |
| <b>Attachments:</b>                                                                                                                                                                                                                                                                                                               |
| <b>Attachment A:</b> Preliminary Findings Report<br><b>Attachment B:</b> Traffic Counts<br><b>Attachment C:</b> Virtual Meeting Minutes & Field Check Minutes<br><b>Attachment D:</b> Cost Estimates & Schematics<br><b>Attachment E:</b> Previous Intersection Alternative Study                                                 |

## **ATTACHEMNT A: PRELIMINARY FINDINGS REPORT**

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# **Preliminary Findings**

**Safety Analysis at Stafford Rd. & Ronald Reagan Pwky.**

Prepared For  
**IMPO & Town of Plainfield**

## **SAFETY ANALYSIS**

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A crash data analysis was completed for the intersection of Stafford Road and Ronald Reagan Parkway (Study Area) in Plainfield, IN. Before beginning the crash analysis, the project team followed these steps to clean the data:

- Received 2022-2024 crash data from the IMPO. Serious Injury and Fatal crashes had been cleaned by IMPO staff.
- Placed a 250 ft buffer around the Study Area to identify reported crashes near the intersection.
- Reviewed the police reports for each crash record identified within the 250 ft buffer.
- Identified and removed any crash records from the analysis that involved a collision with an animal in the roadway or occurred in a parking lot near the intersection.
- Reviewed the description in the reports to confirm the selected Manner of Collision & Crash Severity accurately reflected how the police officer described the crash.
- Created a collision diagram of the Study Area as well as summary tables of the crash records.
- Developed a crash cost (Icc) and crash frequency (Icf) for the Study Area using RoadHat 4.1.

92 crashes were identified within the Study Area. Three of those reported crashes resulted in incapacitating injuries and no fatalities. The three incapacitating injury crashes were reported as rear end crashes. Other notable results near the Study Area include:

- 35% of the reported crashes at the intersection were rear end crashes. 26% of the reported crashes at the intersection were same direction sideswipe crashes.
- 75% of the reported crashes occurred during Off-Peak travel times, 10% occurred during the morning peak hours (7am-9am) and 15% occurred in the evening peak hours (4pm -6pm).
- 63% of the reported crashes occurred in the daylight hours, 4% in the dawn/dusk hours, 27% in the dark (lighted) conditions, and 5% in dark (not lighted) conditions.
- 34% of the reported crashes occurred during wet roadway surface conditions and the rest occurred during dry roadway surface conditions.
- 30% of the reported crashes occurred on cloudy days, 23% occurred on rainy days, 1% occurred on sleet/hail/freezing rain days, and 46% occurred on clear days.

Attached are the crash summary tables, a collision diagram, images of the intersection, and the results of the RoadHat 4.1 analysis.

## Stafford Rd & Ronald Reagan Pwky

| Overall Summary                             |    |
|---------------------------------------------|----|
| Total Number of Crashes                     | 90 |
| Number of People Killed                     | 0  |
| Number of People Injured                    | 12 |
| Number of Property Damage Only              | 79 |
| Number of Fatal Crashes                     | 0  |
| Number of Incapacitating Injury Crashes     | 5  |
| Number of Non-Incapacitating Injury Crashes | 6  |

| Summary of Primary Factors                   |                   |             |
|----------------------------------------------|-------------------|-------------|
| Primary Factor                               | Number of Crashes | Percentage  |
| BRAKE FAILURE OR DEFECTIVE                   | 2                 | 2%          |
| DISREGARD SIGNAL/REG SIGN                    | 5                 | 6%          |
| DRIVER ASLEEP OR FATIGUED                    | 1                 | 1%          |
| DRIVER DISTRACTED - EXPLAIN IN NARRATIVE     | 1                 | 1%          |
| FAILURE TO MAINTAIN LANE                     | 3                 | 3%          |
| FAILURE TO YIELD RIGHT OF WAY                | 11                | 12%         |
| FOLLOWING TOO CLOSELY                        | 23                | 26%         |
| IMPROPER LANE USAGE                          | 1                 | 1%          |
| IMPROPER PASSING                             | 1                 | 1%          |
| IMPROPER TURNING                             | 3                 | 3%          |
| OVERCORRECTING/OVERSTEERING                  | 1                 | 1%          |
| ROADWAY SURFACE CONDITION                    | 1                 | 1%          |
| SPEED TOO FAST FOR WEATHER CONDITIONS        | 8                 | 9%          |
| UNDER STEERING/UNDER CORRECTING              | 1                 | 1%          |
| UNSAFE BACKING                               | 1                 | 1%          |
| UNSAFE LANE MOVEMENT                         | 14                | 16%         |
| UNSAFE SPEED                                 | 5                 | 6%          |
| OTHER (DRIVER) - EXPLAIN IN NARRATIVE        | 4                 | 4%          |
| OTHER (ENVIRONMENTAL) - EXPLAIN IN NARRATIVE | 2                 | 2%          |
| OTHER (VEHICLE) - EXPLAIN IN NARRATIVE       | 2                 | 2%          |
| <b>Grand Total</b>                           | <b>90</b>         | <b>100%</b> |

| Summary of Manner of Collision     |                   |             |
|------------------------------------|-------------------|-------------|
| Manner (Type) of Collision         | Number of Crashes | Percentage  |
| BACKING CRASH                      | 1                 | 1%          |
| COLLISION WITH OBJECT IN ROAD      | 2                 | 2%          |
| HEAD ON BETWEEN TWO MOTOR VEHICLES | 1                 | 1%          |
| LEFT TURN                          | 1                 | 1%          |
| LEFT/RIGHT TURN                    | 2                 | 2%          |
| RAN OFF ROAD                       | 7                 | 8%          |
| REAR END                           | 32                | 36%         |
| RIGHT ANGLE                        | 15                | 17%         |
| RIGHT TURN                         | 4                 | 4%          |
| SAME DIRECTION SIDESWIPE           | 21                | 23%         |
| OTHER - EXPLAIN IN NARRATIVE       | 4                 | 4%          |
| <b>Grand Total</b>                 | <b>90</b>         | <b>100%</b> |

| Summary of Light Conditions |                   |             |
|-----------------------------|-------------------|-------------|
| Time of Day                 | Number of Crashes | Percentage  |
| DARK (LIGHTED)              | 25                | 28%         |
| DARK (NOT LIGHTED)          | 5                 | 6%          |
| DAWN/DUSK                   | 4                 | 4%          |
| DAYLIGHT                    | 56                | 62%         |
| <b>Grand Total</b>          | <b>90</b>         | <b>100%</b> |

| Summary of Crash Time of Day |                   |             |
|------------------------------|-------------------|-------------|
| Time of Day                  | Number of Crashes | Percentage  |
| AM PEAK (7-9 AM)             | 9                 | 10%         |
| PM PEAK (4-6 PM)             | 14                | 16%         |
| OFF-PEAK                     | 67                | 74%         |
| <b>Grand Total</b>           | <b>90</b>         | <b>100%</b> |

Stafford Rd & Ronald Reagan Pwky

| Summary of Weather Conditions      |                        |           |           |                |           |                          |          |                   |             |
|------------------------------------|------------------------|-----------|-----------|----------------|-----------|--------------------------|----------|-------------------|-------------|
| Manner (Type) of Collision         | Blowing Sand/Soil/Snow | Clear     | Cloudy    | Fog/Smoke/Smog | Rain      | Sleet/Hail/Freezing Rain | Snow     | Severe Cross Wind | Grand Total |
| BACKING CRASH                      | 0                      | 0         | 1         | 0              | 0         | 0                        | 0        | 0                 | 1           |
| COLLISION WITH OBJECT IN ROAD      | 0                      | 1         | 0         | 0              | 1         | 0                        | 0        | 0                 | 2           |
| HEAD ON BETWEEN TWO MOTOR VEHICLES | 0                      | 1         | 0         | 0              | 0         | 0                        | 0        | 0                 | 1           |
| LEFT TURN                          | 0                      | 1         | 0         | 0              | 0         | 0                        | 0        | 0                 | 1           |
| LEFT/RIGHT TURN                    | 0                      | 1         | 0         | 0              | 1         | 0                        | 0        | 0                 | 2           |
| RAN OFF ROAD                       | 0                      | 2         | 0         | 0              | 5         | 0                        | 0        | 0                 | 7           |
| REAR END                           | 0                      | 16        | 10        | 0              | 6         | 0                        | 0        | 0                 | 32          |
| RIGHT ANGLE                        | 0                      | 8         | 4         | 0              | 3         | 0                        | 0        | 0                 | 15          |
| RIGHT TURN                         | 0                      | 1         | 1         | 0              | 1         | 1                        | 0        | 0                 | 4           |
| SAME DIRECITON SIDESWIPE           | 0                      | 10        | 8         | 0              | 3         | 0                        | 0        | 0                 | 21          |
| OTHER - EXPLAIN IN NARRATIVE       | 0                      | 0         | 3         | 0              | 1         | 0                        | 0        | 0                 | 4           |
| <b>Grand Total</b>                 | <b>0</b>               | <b>41</b> | <b>27</b> | <b>0</b>       | <b>21</b> | <b>1</b>                 | <b>0</b> | <b>0</b>          | <b>90</b>   |

| Summary of Pavement Conditions     |           |          |            |           |                            |             |
|------------------------------------|-----------|----------|------------|-----------|----------------------------|-------------|
| Manner (Type) of Collision         | Dry       | Ice      | Snow/Slush | Wet       | Water (Standing or Moving) | Grand Total |
| BACKING CRASH                      | 1         | 0        | 0          | 0         | 0                          | 1           |
| COLLISION WITH OBJECT IN ROAD      | 0         | 0        | 0          | 2         | 0                          | 2           |
| HEAD ON BETWEEN TWO MOTOR VEHICLES | 1         | 0        | 0          | 0         | 0                          | 1           |
| LEFT TURN                          | 1         | 0        | 0          | 0         | 0                          | 1           |
| LEFT/RIGHT TURN                    | 1         | 0        | 0          | 1         | 0                          | 2           |
| RAN OFF ROAD                       | 2         | 0        | 0          | 5         | 0                          | 7           |
| REAR END                           | 25        | 0        | 0          | 7         | 0                          | 32          |
| RIGHT ANGLE                        | 9         | 0        | 0          | 6         | 0                          | 15          |
| RIGHT TURN                         | 1         | 0        | 0          | 3         | 0                          | 4           |
| SAME DIRECITON SIDESWIPE           | 15        | 0        | 0          | 6         | 0                          | 21          |
| OTHER - EXPLAIN IN NARRATIVE       | 3         | 0        | 0          | 1         | 0                          | 4           |
| <b>Grand Total</b>                 | <b>59</b> | <b>0</b> | <b>0</b>   | <b>31</b> | <b>0</b>                   | <b>90</b>   |



DIAGRAM OF  
COLLISION  
REPORTS

Stafford Rd at Ronald Reagan Pkwy

Study Period:01/01/2022 to 12/31/2024

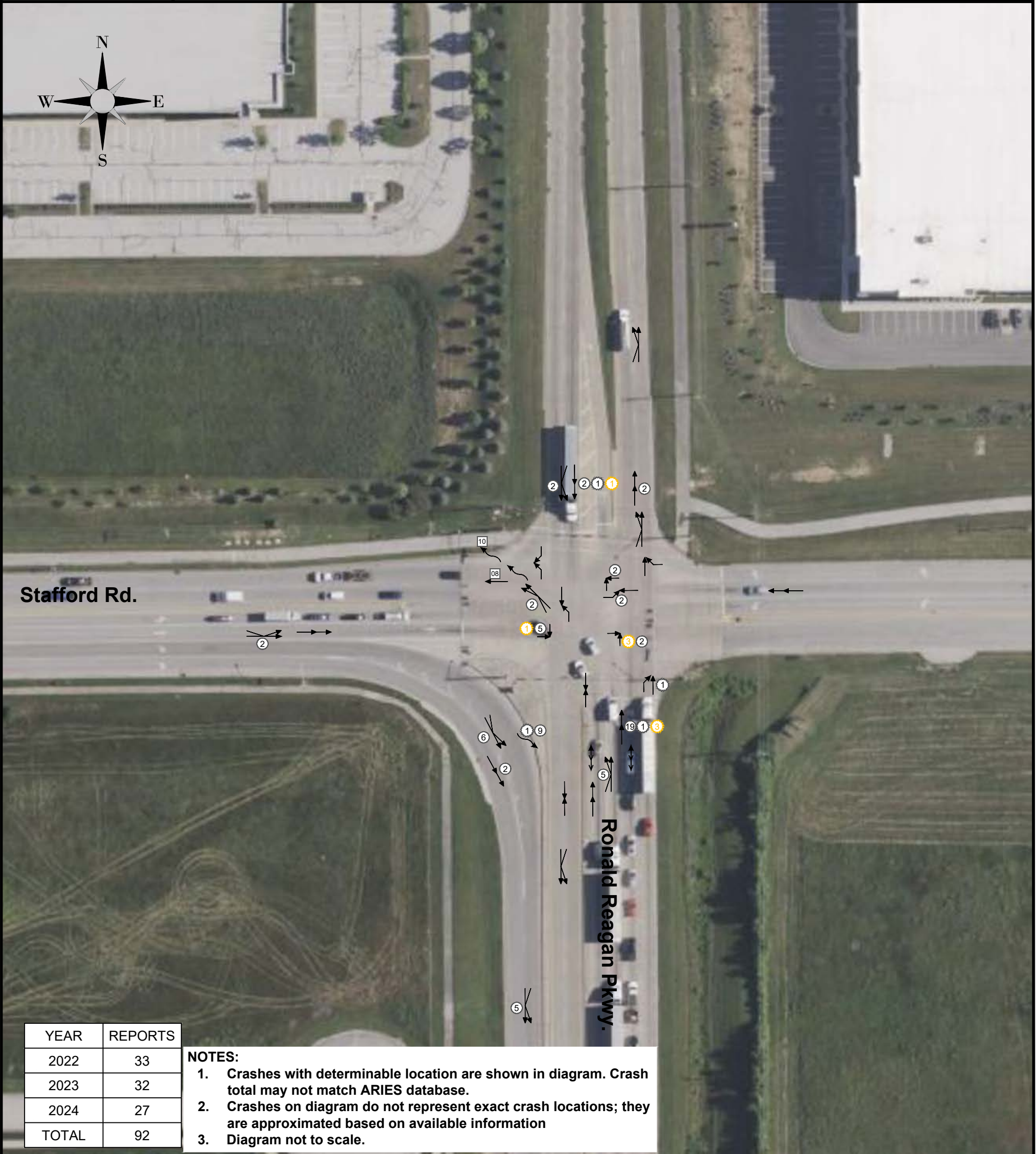
Location:2

District:CrawfordsvilleCounty:Hendricks

City/Town:Plainfield

Analyst:JHQC:ES

Date:4/30/2026



OBJECT SYMBOLS

→

MOVING VEHICLE

↘

TURNING VEHICLE

↔

BACKING VEHICLE

↪

OUT OF CONTROL

▭

PARKED VEHICLE

🚶

PEDESTRIAN

🚲

BICYCLE

A

ANIMAL

D

DEBRIS IN ROADWAY

DR

DRIVEWAY CRASH

#

FATAL CRASH

#

INJURY CRASH-  
INCAPACITATING

#

INJURY CRASH-  
NONINCAPACITATING

#

PDO CRASHES (IF > 1)

🚦

SIGNALIZED INTERSECTION

#

FIXED OBJECT  
(SEE TABLE FOR # CODES)

COLLISION SYMBOLS

→→

REAR END

→↘

HEAD ON

↘↘

OTHER

↘↘

SIDESWIPE-  
SAME

↘↘

SIDESWIPE-  
OPPOSITE

↘↘

RIGHT ANGLE

↘↘

LEFT/RIGHT TURN

→

RAN OFF ROAD

FIXED OBJECT CODES

01 - BRIDGE / OVERPASS

02 - BUILDING

03 - CULVERT / DITCH

04 - CURB

05 - GUARDRAIL / BARRIER

06 - EMBANKMENT

07 - FENCE

08 - TRAFFIC POLE

09 - UTILITY POLE

10 - SIGN

11 - TREE / SHRUB

12 - CONSTRUCTION BARRIER

13 - CRASH ATTENUATOR

88 - OTHER

99 - UNKNOWN

Appendix J - 61

Attachment A-6





1. Looking south at south merge



2. Looking east at east and south approaches





3. Looking north at west approach



4. Looking northeast at north and east approaches

| RoadHAT 4D                                     |                                     | Index of Crash Frequency and Cost - Form F1 |  | Page 1/2 |
|------------------------------------------------|-------------------------------------|---------------------------------------------|--|----------|
| Settings: Indiana local settings               |                                     | Version: Version 4.1                        |  |          |
| Location                                       | Ronald Reagan Pkwy. & Stafford Road |                                             |  |          |
| Plainfield, Indiana                            |                                     |                                             |  |          |
| GIS                                            |                                     |                                             |  |          |
| Post                                           |                                     |                                             |  |          |
| Analyst                                        | JLH                                 |                                             |  |          |
| Date                                           | 5/14/2026                           |                                             |  |          |
| <b>INPUT</b>                                   |                                     |                                             |  |          |
| Road Facility Type                             | City Arterial Intersection          |                                             |  |          |
| Busiest Road AADT (veh/day)                    | 22297                               |                                             |  |          |
| Crossing Road AADT (veh/day)                   | 14712                               |                                             |  |          |
| First Year with Crash Data (yyyy)              | 2022                                |                                             |  |          |
| Last Year with Crash Data (yyyy)               | 2024                                |                                             |  |          |
| Number of Crashes (crash/period)               |                                     |                                             |  |          |
| Fatal and Incapacitating Injury Crashes        | 6                                   |                                             |  |          |
| Non-Incapacitating and Possible Injury Crashes | 5                                   |                                             |  |          |
| Property Damage Only Crashes                   | 81                                  |                                             |  |          |
| Route or Road Type                             | City Arterial Intersection          |                                             |  |          |
| Average Crash Costs (\$)                       |                                     |                                             |  |          |
| Fatal and Incapacitating Injury Crashes        | 1840100                             |                                             |  |          |
| Non-Incapacitating and Possible Injury Crashes | 393200                              |                                             |  |          |
| Property Damage Only Crashes                   | 40200                               |                                             |  |          |
| Crash Cost Year (yyyy)                         | 2017                                |                                             |  |          |
| <b>OUTPUT</b>                                  |                                     |                                             |  |          |
| Expected Crash Frequency (crash/year)          |                                     |                                             |  |          |
| Fatal and Incapacitating Injury Crashes        | 0.449                               |                                             |  |          |
| Non-Incapacitating and Possible Injury Crashes | 1.33                                |                                             |  |          |
| Property Damage Only Crashes                   | 6.89                                |                                             |  |          |
| All Crashes                                    | 8.68                                |                                             |  |          |
| Index of Crash Frequency                       | 2.77                                |                                             |  |          |
| Index of Crash Cost                            | 1.87                                |                                             |  |          |

| RoadHAT 4D                       |                                     | Index of Crash Frequency and Cost - Form F1 |  | Page 2/2 |
|----------------------------------|-------------------------------------|---------------------------------------------|--|----------|
| Settings: Indiana local settings |                                     | Version: Version 4.1                        |  |          |
| Location                         | Ronald Reagan Pkwy. & Stafford Road |                                             |  |          |
| Plainfield, Indiana              |                                     |                                             |  |          |
| GIS                              |                                     |                                             |  |          |
| Post                             |                                     |                                             |  |          |
| Analyst                          | JLH                                 |                                             |  |          |
| Date                             | 5/14/2026                           |                                             |  |          |
| <b>Comments:</b>                 |                                     |                                             |  |          |
|                                  |                                     |                                             |  |          |

## **ATTACHEMNT B: TRAFFIC COUNTS**

---

Summary  
Study Name: Stafford Road and Ronald Reagan Pkwy  
Project: Stafford Road and Ronald Reagan Pkwy  
Project Code:  
Legs and Movements:  
Bin Size: 15 minutes  
Time Zone: America/Indiana/Indianapolis  
Date Range: 2026-02-02 - 2026-02-27  
Time Range: 00:00:00 - 23:59:59  
Location: Stafford Road and Ronald Reagan Pkwy  
Latitude and Longitude: 39.69776955,-86.33552166

AM Peak: 07:15-08:15  
Midday Peak: 15:00-16:00  
PM Peak: 16:30-17:30  
Custom ID:  
Tags:

Articulated Truck

| Entry      | Ronald Reagan Pkwy |                  |       |      |        | Ronald Reagan Pkwy |                  |       |      |        | Stafford Road |                  |      |        |           | Stafford Road    |       |      |        |  |
|------------|--------------------|------------------|-------|------|--------|--------------------|------------------|-------|------|--------|---------------|------------------|------|--------|-----------|------------------|-------|------|--------|--|
| Direction  | Northbound         |                  |       |      |        | Southbound         |                  |       |      |        | Eastbound     |                  |      |        |           | Westbound        |       |      |        |  |
| Start Time | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk     | Crosswalk ' Left | Thru | U-Turn | Crosswalk | Crosswalk ' Left | Right | Thru | U-Turn |  |
| 0:00:00    | 0                  | 0                | 5     | 0    | 11     | 0                  | 0                | 0     | 0    | 1      | 3             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 1      |  |
| 0:15:00    | 0                  | 0                | 5     | 0    | 10     | 0                  | 0                | 0     | 0    | 0      | 3             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 0:30:00    | 0                  | 0                | 5     | 0    | 9      | 0                  | 0                | 0     | 0    | 0      | 3             | 0                | 0    | 0      | 0         | 1                | 0     | 0    | 0      |  |
| 0:45:00    | 0                  | 0                | 5     | 0    | 8      | 0                  | 0                | 0     | 0    | 0      | 3             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:00:00    | 0                  | 0                | 5     | 0    | 8      | 0                  | 0                | 0     | 0    | 1      | 3             | 0                | 0    | 0      | 1         | 0                | 0     | 0    | 0      |  |
| 1:15:00    | 0                  | 0                | 4     | 0    | 9      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:30:00    | 0                  | 0                | 3     | 0    | 9      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:45:00    | 0                  | 0                | 4     | 0    | 8      | 0                  | 0                | 0     | 0    | 1      | 3             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:00:00    | 0                  | 0                | 4     | 0    | 7      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:15:00    | 0                  | 0                | 4     | 0    | 7      | 0                  | 0                | 0     | 0    | 0      | 5             | 0                | 0    | 0      | 1         | 0                | 0     | 0    | 0      |  |
| 2:30:00    | 0                  | 0                | 4     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:45:00    | 0                  | 0                | 3     | 0    | 4      | 0                  | 0                | 0     | 0    | 0      | 3             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:00:00    | 0                  | 0                | 3     | 0    | 4      | 0                  | 0                | 0     | 0    | 0      | 3             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:15:00    | 0                  | 0                | 3     | 0    | 4      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:30:00    | 0                  | 0                | 4     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 8             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:45:00    | 0                  | 0                | 3     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 14            | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:00:00    | 0                  | 0                | 3     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 10            | 0                | 0    | 0      | 1         | 0                | 0     | 0    | 0      |  |
| 4:15:00    | 0                  | 0                | 4     | 0    | 4      | 0                  | 0                | 0     | 0    | 0      | 8             | 0                | 0    | 0      | 1         | 0                | 0     | 0    | 0      |  |
| 4:30:00    | 0                  | 0                | 3     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 8             | 0                | 0    | 0      | 1         | 0                | 0     | 0    | 0      |  |
| 4:45:00    | 0                  | 0                | 4     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 6             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:00:00    | 0                  | 0                | 5     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:15:00    | 0                  | 0                | 7     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 5             | 0                | 0    | 0      | 1         | 0                | 0     | 0    | 0      |  |
| 5:30:00    | 0                  | 0                | 7     | 0    | 7      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 1                | 0     | 0    | 0      |  |
| 5:45:00    | 0                  | 0                | 8     | 1    | 8      | 0                  | 0                | 0     | 0    | 0      | 4             | 0                | 0    | 0      | 0         | 1                | 0     | 0    | 1      |  |
| 6:00:00    | 0                  | 0                | 8     | 1    | 8      | 0                  | 0                | 0     | 0    | 1      | 6             | 0                | 0    | 0      | 1         | 1                | 0     | 0    | 0      |  |
| 6:15:00    | 0                  | 0                | 10    | 0    | 11     | 0                  | 0                | 0     | 0    | 1      | 7             | 0                | 0    | 0      | 1         | 0                | 0     | 0    | 1      |  |
| 6:30:00    | 0                  | 0                | 11    | 1    | 11     | 0                  | 0                | 0     | 0    | 1      | 6             | 0                | 0    | 0      | 1         | 1                | 0     | 0    | 1      |  |
| 6:45:00    | 0                  | 0                | 15    | 1    | 14     | 0                  | 0                | 0     | 0    | 1      | 5             | 0                | 0    | 0      | 1         | 0                | 0     | 1    | 1      |  |

|          |   |   |    |   |    |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---|---|----|---|----|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|
| 7:00:00  | 0 | 0 | 13 | 1 | 14 | 0 | 0 | 0 | 0 | 1 | 6  | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 7:15:00  | 0 | 0 | 13 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 7  | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 7:30:00  | 0 | 0 | 12 | 2 | 14 | 0 | 0 | 0 | 1 | 1 | 7  | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 7:45:00  | 0 | 0 | 19 | 3 | 12 | 0 | 0 | 0 | 1 | 2 | 8  | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 8:00:00  | 0 | 0 | 17 | 3 | 12 | 0 | 0 | 0 | 1 | 1 | 10 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 8:15:00  | 0 | 0 | 18 | 3 | 13 | 0 | 0 | 0 | 1 | 2 | 9  | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 8:30:00  | 0 | 0 | 19 | 3 | 14 | 0 | 0 | 0 | 1 | 2 | 10 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 1 | 1 | 0 |
| 8:45:00  | 0 | 0 | 21 | 3 | 14 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 9:00:00  | 0 | 0 | 18 | 3 | 13 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 9:15:00  | 0 | 0 | 19 | 3 | 14 | 0 | 0 | 0 | 1 | 3 | 13 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 9:30:00  | 0 | 0 | 19 | 4 | 15 | 0 | 0 | 0 | 1 | 4 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 9:45:00  | 0 | 0 | 19 | 3 | 16 | 0 | 0 | 0 | 1 | 3 | 13 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 10:00:00 | 0 | 0 | 19 | 4 | 14 | 0 | 0 | 0 | 1 | 3 | 11 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 10:15:00 | 0 | 0 | 19 | 3 | 17 | 0 | 0 | 0 | 1 | 2 | 13 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 1 | 0 |
| 10:30:00 | 0 | 0 | 19 | 4 | 16 | 0 | 0 | 0 | 1 | 3 | 13 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 10:45:00 | 0 | 0 | 19 | 3 | 15 | 0 | 0 | 0 | 1 | 2 | 14 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 0 |
| 11:00:00 | 0 | 0 | 18 | 2 | 14 | 0 | 0 | 0 | 1 | 3 | 14 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 4 | 0 | 1 | 0 |
| 11:15:00 | 0 | 0 | 20 | 3 | 16 | 0 | 0 | 0 | 1 | 3 | 13 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 0 |
| 11:30:00 | 0 | 0 | 17 | 3 | 16 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 0 |
| 11:45:00 | 0 | 0 | 18 | 4 | 15 | 0 | 0 | 0 | 1 | 3 | 16 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 12:00:00 | 0 | 0 | 17 | 3 | 16 | 0 | 0 | 0 | 1 | 3 | 15 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 0 |
| 12:15:00 | 0 | 0 | 16 | 2 | 15 | 0 | 0 | 0 | 1 | 2 | 14 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 12:30:00 | 0 | 0 | 17 | 3 | 16 | 0 | 0 | 0 | 1 | 3 | 15 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 12:45:00 | 0 | 0 | 17 | 3 | 14 | 0 | 0 | 0 | 1 | 2 | 13 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 13:00:00 | 0 | 0 | 15 | 3 | 15 | 0 | 0 | 0 | 1 | 1 | 13 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 13:15:00 | 0 | 0 | 14 | 2 | 15 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 13:30:00 | 0 | 0 | 16 | 3 | 16 | 0 | 0 | 0 | 1 | 2 | 15 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 13:45:00 | 0 | 0 | 15 | 2 | 16 | 0 | 0 | 0 | 1 | 2 | 13 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 14:00:00 | 0 | 0 | 15 | 3 | 19 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 14:15:00 | 0 | 0 | 16 | 3 | 16 | 0 | 0 | 0 | 1 | 1 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 14:30:00 | 0 | 0 | 12 | 2 | 17 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 14:45:00 | 0 | 0 | 14 | 2 | 15 | 0 | 0 | 0 | 1 | 1 | 14 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 15:00:00 | 0 | 0 | 12 | 3 | 14 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 15:15:00 | 0 | 0 | 12 | 2 | 14 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 15:30:00 | 0 | 0 | 10 | 2 | 12 | 0 | 0 | 0 | 0 | 2 | 10 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 15:45:00 | 0 | 0 | 11 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 11 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 16:00:00 | 0 | 0 | 11 | 2 | 14 | 0 | 0 | 0 | 1 | 2 | 10 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 16:15:00 | 0 | 0 | 11 | 2 | 14 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 16:30:00 | 0 | 0 | 10 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 11 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 16:45:00 | 0 | 0 | 10 | 2 | 12 | 0 | 0 | 0 | 1 | 2 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 17:00:00 | 0 | 0 | 11 | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 11 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 17:15:00 | 0 | 0 | 11 | 2 | 13 | 0 | 0 | 0 | 1 | 2 | 10 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 17:30:00 | 0 | 0 | 10 | 2 | 12 | 0 | 0 | 0 | 1 | 2 | 10 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 17:45:00 | 0 | 0 | 12 | 3 | 11 | 0 | 0 | 0 | 1 | 1 | 10 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 18:00:00 | 0 | 0 | 9  | 2 | 12 | 0 | 0 | 0 | 1 | 1 | 11 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| 18:15:00 | 0 | 0 | 9  | 2 | 11 | 0 | 0 | 0 | 1 | 2 | 9  | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 18:30:00 | 0 | 0 | 9  | 2 | 11 | 0 | 0 | 0 | 1 | 1 | 11 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 |
| 18:45:00 | 0 | 0 | 8  | 1 | 10 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 19:00:00 | 0 | 0 | 7  | 1 | 10 | 0 | 0 | 0 | 0 | 1 | 8  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 19:15:00 | 0 | 0 | 6  | 1 | 9  | 0 | 0 | 0 | 0 | 1 | 9  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |



|          |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19:30:00 | 0 | 0 | 7 | 1 | 10 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 19:45:00 | 0 | 0 | 7 | 1 | 10 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| 20:00:00 | 0 | 0 | 5 | 0 | 9  | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 20:15:00 | 0 | 0 | 5 | 1 | 8  | 0 | 0 | 0 | 1 | 1 | 6 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 20:30:00 | 0 | 0 | 5 | 1 | 7  | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |
| 20:45:00 | 0 | 0 | 5 | 0 | 6  | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| 21:00:00 | 0 | 0 | 6 | 1 | 7  | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| 21:15:00 | 0 | 0 | 5 | 0 | 7  | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 21:30:00 | 0 | 0 | 7 | 1 | 6  | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:45:00 | 0 | 0 | 6 | 1 | 6  | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00:00 | 0 | 0 | 6 | 0 | 8  | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 22:15:00 | 0 | 0 | 5 | 1 | 8  | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:30:00 | 0 | 0 | 4 | 1 | 8  | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:45:00 | 0 | 0 | 6 | 0 | 8  | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 23:00:00 | 0 | 0 | 5 | 0 | 7  | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 23:15:00 | 0 | 0 | 6 | 0 | 8  | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:30:00 | 0 | 0 | 6 | 1 | 8  | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:45:00 | 0 | 0 | 5 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

| Bicycle    | Ronald Reagan Pkwy |                  |       |      |        | Ronald Reagan Pkwy |                  |       |      |        | Stafford Road |                  |      |        |           | Stafford Road    |       |      |        |  |
|------------|--------------------|------------------|-------|------|--------|--------------------|------------------|-------|------|--------|---------------|------------------|------|--------|-----------|------------------|-------|------|--------|--|
| Entry      | Northbound         |                  |       |      |        | Southbound         |                  |       |      |        | Eastbound     |                  |      |        |           | Westbound        |       |      |        |  |
| Direction  | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk     | Crosswalk ' Left | Thru | U-Turn | Crosswalk | Crosswalk ' Left | Right | Thru | U-Turn |  |
| Start Time |                    |                  |       |      |        |                    |                  |       |      |        |               |                  |      |        |           |                  |       |      |        |  |
| 0:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 0:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 0:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 0:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:30:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:45:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 11:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 11:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |



|            |                    |                  |       |      |        |                    |                  |       |      |        |               |                  |      |        |  |               |                  |       |      |        |   |   |   |
|------------|--------------------|------------------|-------|------|--------|--------------------|------------------|-------|------|--------|---------------|------------------|------|--------|--|---------------|------------------|-------|------|--------|---|---|---|
| Bus        |                    |                  |       |      |        |                    |                  |       |      |        |               |                  |      |        |  |               |                  |       |      |        |   |   |   |
| Entry      | Ronald Reagan Pkwy |                  |       |      |        | Ronald Reagan Pkwy |                  |       |      |        | Stafford Road |                  |      |        |  | Stafford Road |                  |       |      |        |   |   |   |
| Direction  | Northbound         |                  |       |      |        | Southbound         |                  |       |      |        | Eastbound     |                  |      |        |  | Westbound     |                  |       |      |        |   |   |   |
| Start Time | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk     | Crosswalk ' Left | Thru | U-Turn |  | Crosswalk     | Crosswalk ' Left | Right | Thru | U-Turn |   |   |   |
| 0:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:15:00    | 0                  | 0                | 1     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:30:00    | 0                  | 0                | 0     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:30:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:45:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 11:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 11:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |



| Light<br>Entry<br>Direction | Ronald Reagan Pkwy |                  |       |      |        | Ronald Reagan Pkwy |                  |       |      |        | Stafford Road |                  |      |        |           | Stafford Road    |       |      |        |   |   |    |   |
|-----------------------------|--------------------|------------------|-------|------|--------|--------------------|------------------|-------|------|--------|---------------|------------------|------|--------|-----------|------------------|-------|------|--------|---|---|----|---|
|                             | Northbound         |                  |       |      |        | Southbound         |                  |       |      |        | Eastbound     |                  |      |        |           | Westbound        |       |      |        |   |   |    |   |
|                             | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk     | Crosswalk ' Left | Thru | U-Turn | Crosswalk | Crosswalk ' Left | Right | Thru | U-Turn |   |   |    |   |
| 0:00:00                     | 0                  | 0                | 11    | 0    | 17     | 0                  | 0                | 0     | 2    | 1      | 22            | 0                | 0    | 0      | 3         | 2                | 0     | 0    | 0      | 1 | 3 | 2  | 0 |
| 0:15:00                     | 0                  | 0                | 12    | 0    | 18     | 0                  | 0                | 0     | 1    | 2      | 21            | 0                | 0    | 0      | 2         | 1                | 0     | 0    | 0      | 0 | 3 | 2  | 0 |
| 0:30:00                     | 0                  | 0                | 12    | 0    | 15     | 0                  | 0                | 0     | 2    | 1      | 31            | 0                | 0    | 0      | 9         | 3                | 0     | 0    | 0      | 0 | 2 | 2  | 0 |
| 0:45:00                     | 0                  | 0                | 10    | 0    | 12     | 0                  | 0                | 0     | 1    | 1      | 18            | 0                | 0    | 0      | 2         | 2                | 0     | 0    | 0      | 0 | 2 | 2  | 0 |
| 1:00:00                     | 0                  | 0                | 8     | 0    | 10     | 0                  | 0                | 0     | 1    | 1      | 12            | 0                | 0    | 0      | 3         | 1                | 0     | 0    | 0      | 0 | 1 | 1  | 0 |
| 1:15:00                     | 0                  | 0                | 6     | 0    | 10     | 0                  | 0                | 0     | 0    | 2      | 12            | 0                | 0    | 0      | 6         | 1                | 0     | 0    | 0      | 0 | 2 | 1  | 0 |
| 1:30:00                     | 0                  | 0                | 7     | 0    | 9      | 0                  | 0                | 0     | 0    | 2      | 11            | 0                | 0    | 0      | 4         | 1                | 0     | 0    | 0      | 1 | 1 | 1  | 0 |
| 1:45:00                     | 0                  | 0                | 7     | 0    | 8      | 0                  | 0                | 0     | 1    | 2      | 8             | 0                | 0    | 0      | 3         | 1                | 0     | 0    | 0      | 0 | 1 | 1  | 0 |
| 2:00:00                     | 0                  | 0                | 7     | 0    | 8      | 0                  | 0                | 0     | 1    | 1      | 9             | 0                | 0    | 0      | 2         | 1                | 0     | 0    | 0      | 0 | 1 | 1  | 0 |
| 2:15:00                     | 0                  | 0                | 6     | 0    | 10     | 0                  | 0                | 0     | 2    | 1      | 11            | 0                | 0    | 0      | 1         | 1                | 0     | 0    | 0      | 0 | 1 | 1  | 0 |
| 2:30:00                     | 0                  | 0                | 9     | 0    | 12     | 0                  | 0                | 0     | 2    | 2      | 14            | 0                | 0    | 0      | 10        | 3                | 0     | 0    | 0      | 0 | 1 | 1  | 0 |
| 2:45:00                     | 0                  | 0                | 12    | 0    | 13     | 0                  | 0                | 0     | 2    | 2      | 15            | 0                | 0    | 0      | 2         | 2                | 0     | 0    | 0      | 0 | 1 | 1  | 0 |
| 3:00:00                     | 0                  | 0                | 9     | 1    | 13     | 0                  | 0                | 0     | 2    | 1      | 18            | 0                | 0    | 0      | 3         | 2                | 0     | 0    | 0      | 0 | 1 | 1  | 0 |
| 3:15:00                     | 0                  | 0                | 10    | 0    | 18     | 0                  | 0                | 0     | 2    | 2      | 18            | 0                | 0    | 0      | 1         | 2                | 0     | 0    | 0      | 0 | 1 | 2  | 0 |
| 3:30:00                     | 0                  | 0                | 14    | 0    | 20     | 0                  | 0                | 0     | 4    | 2      | 22            | 0                | 0    | 0      | 1         | 3                | 0     | 0    | 0      | 1 | 2 | 1  | 0 |
| 3:45:00                     | 0                  | 0                | 24    | 0    | 20     | 0                  | 0                | 0     | 3    | 3      | 24            | 0                | 0    | 0      | 2         | 4                | 0     | 0    | 0      | 0 | 3 | 3  | 0 |
| 4:00:00                     | 0                  | 0                | 33    | 0    | 24     | 0                  | 0                | 0     | 3    | 5      | 28            | 0                | 0    | 0      | 3         | 3                | 0     | 0    | 0      | 0 | 2 | 5  | 0 |
| 4:15:00                     | 0                  | 0                | 56    | 1    | 31     | 0                  | 0                | 0     | 4    | 11     | 27            | 0                | 0    | 0      | 1         | 5                | 0     | 0    | 0      | 0 | 3 | 6  | 0 |
| 4:30:00                     | 0                  | 0                | 94    | 1    | 35     | 0                  | 0                | 0     | 3    | 9      | 35            | 0                | 0    | 0      | 5         | 5                | 0     | 0    | 0      | 1 | 4 | 9  | 0 |
| 4:45:00                     | 0                  | 0                | 124   | 2    | 47     | 0                  | 0                | 0     | 4    | 14     | 30            | 0                | 0    | 0      | 4         | 5                | 0     | 0    | 0      | 1 | 3 | 10 | 0 |
| 5:00:00                     | 0                  | 0                | 65    | 2    | 53     | 0                  | 0                | 0     | 5    | 12     | 47            | 0                | 0    | 0      | 8         | 8                | 0     | 0    | 0      | 1 | 4 | 10 | 0 |
| 5:15:00                     | 0                  | 0                | 120   | 3    | 87     | 0                  | 0                | 0     | 5    | 16     | 51            | 0                | 0    | 0      | 6         | 6                | 0     | 0    | 0      | 1 | 5 | 10 | 0 |
| 5:30:00                     | 0                  | 0                | 156   | 4    | 151    | 0                  | 0                | 0     | 4    | 20     | 81            | 1                | 0    | 0      | 6         | 8                | 0     | 0    | 0      | 1 | 5 | 12 | 0 |
| 5:45:00                     | 0                  | 0                | 199   | 10   | 147    | 0                  | 0                | 0     | 5    | 23     | 72            | 1                | 0    | 0      | 4         | 11               | 0     | 0    | 0      | 1 | 4 | 13 | 0 |
| 6:00:00                     | 0                  | 0                | 118   | 3    | 89     | 0                  | 0                | 0     | 4    | 18     | 64            | 1                | 0    | 0      | 15        | 7                | 0     | 0    | 0      | 1 | 4 | 8  | 0 |
| 6:15:00                     | 0                  | 0                | 157   | 3    | 153    | 0                  | 0                | 0     | 5    | 20     | 67            | 1                | 0    | 0      | 11        | 10               | 0     | 0    | 0      | 1 | 5 | 10 | 0 |
| 6:30:00                     | 0                  | 0                | 193   | 4    | 189    | 0                  | 0                | 0     | 6    | 20     | 86            | 1                | 0    | 0      | 17        | 14               | 0     | 0    | 0      | 2 | 6 | 16 | 0 |
| 6:45:00                     | 0                  | 0                | 248   | 6    | 190    | 0                  | 0                | 0     | 4    | 23     | 97            | 1                | 0    | 0      | 13        | 15               | 0     | 0    | 0      | 2 | 5 | 21 | 0 |
| 7:00:00                     | 0                  | 0                | 162   | 4    | 132    | 0                  | 0                | 0     | 3    | 15     | 105           | 1                | 0    | 0      | 10        | 10               | 0     | 0    | 0      | 2 | 3 | 13 | 0 |
| 7:15:00                     | 0                  | 0                | 199   | 4    | 177    | 0                  | 0                | 0     | 4    | 20     | 101           | 1                | 0    | 0      | 11        | 11               | 0     | 0    | 0      | 1 | 4 | 10 | 0 |
| 7:30:00                     | 0                  | 0                | 188   | 4    | 204    | 0                  | 0                | 0     | 5    | 29     | 123           | 0                | 0    | 0      | 14        | 15               | 0     | 0    | 0      | 3 | 4 | 15 | 0 |
| 7:45:00                     | 0                  | 0                | 218   | 6    | 223    | 0                  | 0                | 0     | 5    | 36     | 114           | 1                | 0    | 0      | 17        | 11               | 0     | 0    | 0      | 1 | 5 | 16 | 0 |
| 8:00:00                     | 0                  | 0                | 149   | 6    | 155    | 0                  | 0                | 0     | 5    | 15     | 98            | 1                | 0    | 0      | 14        | 10               | 0     | 0    | 0      | 2 | 4 | 9  | 0 |
| 8:15:00                     | 0                  | 0                | 129   | 5    | 150    | 0                  | 0                | 0     | 6    | 15     | 94            | 1                | 0    | 0      | 9         | 11               | 1     | 0    | 0      | 2 | 4 | 11 | 0 |
| 8:30:00                     | 0                  | 0                | 116   | 3    | 142    | 1                  | 0                | 0     | 5    | 17     | 89            | 1                | 0    | 0      | 10        | 11               | 0     | 0    | 0      | 2 | 4 | 11 | 0 |
| 8:45:00                     | 0                  | 0                | 115   | 4    | 144    | 0                  | 0                | 0     | 6    | 16     | 75            | 1                | 0    | 0      | 12        | 13               | 1     | 0    | 0      | 2 | 4 | 7  | 0 |
| 9:00:00                     | 0                  | 0                | 84    | 4    | 103    | 0                  | 0                | 0     | 5    | 12     | 67            | 1                | 0    | 0      | 12        | 8                | 0     | 0    | 0      | 2 | 4 | 8  | 0 |
| 9:15:00                     | 0                  | 0                | 82    | 2    | 97     | 0                  | 0                | 0     | 8    | 10     | 64            | 0                | 0    | 0      | 11        | 10               | 0     | 0    | 0      | 2 | 4 | 8  | 0 |
| 9:30:00                     | 0                  | 0                | 79    | 3    | 99     | 0                  | 0                | 0     | 6    | 12     | 72            | 0                | 0    | 0      | 10        | 9                | 0     | 0    | 0      | 2 | 5 | 8  | 0 |
| 9:45:00                     | 0                  | 0                | 83    | 4    | 106    | 0                  | 0                | 0     | 5    | 15     | 64            | 0                | 0    | 0      | 9         | 8                | 1     | 0    | 0      | 2 | 5 | 8  | 0 |
| 10:00:00                    | 0                  | 0                | 73    | 3    | 87     | 1                  | 0                | 0     | 5    | 13     | 65            | 0                | 0    | 0      | 11        | 9                | 0     | 0    | 0      | 2 | 4 | 8  | 0 |
| 10:15:00                    | 0                  | 0                | 77    | 4    | 93     | 0                  | 0                | 0     | 6    | 14     | 71            | 0                | 0    | 0      | 10        | 8                | 0     | 0    | 0      | 2 | 5 | 8  | 0 |
| 10:30:00                    | 0                  | 0                | 74    | 3    | 96     | 0                  | 0                | 0     | 5    | 13     | 71            | 0                | 0    | 0      | 11        | 9                | 1     | 0    | 0      | 2 | 4 | 9  | 0 |
| 10:45:00                    | 0                  | 0                | 84    | 3    | 100    | 0                  | 0                | 0     | 6    | 13     | 66            | 1                | 0    | 0      | 9         | 8                | 0     | 0    | 0      | 2 | 6 | 12 | 0 |
| 11:00:00                    | 0                  | 0                | 83    | 3    | 94     | 0                  | 0                | 0     | 5    | 15     | 72            | 1                | 0    | 0      | 12        | 9                | 1     | 0    | 0      | 3 | 6 | 12 | 0 |
| 11:15:00                    | 0                  | 0                | 88    | 3    | 94     | 1                  | 0                | 0     | 6    | 14     | 72            | 0                | 0    | 0      | 13        | 10               | 0     | 0    | 0      | 3 | 5 | 14 | 0 |



|          |   |   |     |   |     |   |   |   |    |    |     |   |   |   |    |    |   |   |   |    |    |    |   |
|----------|---|---|-----|---|-----|---|---|---|----|----|-----|---|---|---|----|----|---|---|---|----|----|----|---|
| 11:30:00 | 0 | 0 | 89  | 2 | 104 | 0 | 0 | 0 | 6  | 18 | 76  | 1 | 0 | 0 | 14 | 10 | 0 | 0 | 0 | 3  | 6  | 13 | 0 |
| 11:45:00 | 0 | 0 | 93  | 3 | 107 | 0 | 0 | 0 | 4  | 19 | 78  | 0 | 0 | 0 | 11 | 10 | 0 | 0 | 0 | 3  | 6  | 14 | 0 |
| 12:00:00 | 0 | 0 | 84  | 3 | 101 | 1 | 0 | 0 | 6  | 14 | 80  | 0 | 0 | 0 | 14 | 12 | 0 | 0 | 0 | 4  | 5  | 13 | 0 |
| 12:15:00 | 0 | 0 | 87  | 3 | 108 | 1 | 0 | 0 | 6  | 14 | 90  | 1 | 0 | 0 | 12 | 12 | 0 | 0 | 0 | 3  | 7  | 13 | 0 |
| 12:30:00 | 0 | 0 | 93  | 3 | 106 | 0 | 0 | 0 | 7  | 18 | 88  | 0 | 0 | 0 | 13 | 13 | 1 | 0 | 0 | 3  | 5  | 11 | 0 |
| 12:45:00 | 0 | 0 | 85  | 2 | 106 | 1 | 0 | 0 | 6  | 16 | 89  | 0 | 0 | 0 | 11 | 12 | 0 | 0 | 0 | 2  | 7  | 11 | 0 |
| 13:00:00 | 0 | 0 | 89  | 3 | 97  | 0 | 0 | 0 | 5  | 14 | 93  | 0 | 0 | 0 | 12 | 12 | 0 | 0 | 0 | 3  | 5  | 11 | 0 |
| 13:15:00 | 0 | 0 | 103 | 2 | 99  | 1 | 0 | 0 | 6  | 18 | 90  | 0 | 0 | 0 | 13 | 11 | 0 | 0 | 0 | 3  | 6  | 12 | 0 |
| 13:30:00 | 0 | 0 | 122 | 3 | 118 | 1 | 0 | 0 | 7  | 20 | 97  | 1 | 0 | 0 | 21 | 13 | 0 | 0 | 0 | 3  | 7  | 13 | 0 |
| 13:45:00 | 0 | 0 | 131 | 2 | 110 | 1 | 0 | 0 | 7  | 21 | 89  | 0 | 0 | 0 | 17 | 11 | 0 | 0 | 0 | 3  | 6  | 14 | 0 |
| 14:00:00 | 0 | 0 | 112 | 2 | 112 | 1 | 0 | 0 | 4  | 18 | 102 | 1 | 0 | 0 | 26 | 13 | 1 | 0 | 0 | 5  | 6  | 12 | 0 |
| 14:15:00 | 0 | 0 | 126 | 3 | 123 | 1 | 0 | 0 | 5  | 23 | 116 | 0 | 0 | 0 | 27 | 12 | 0 | 0 | 0 | 3  | 5  | 13 | 0 |
| 14:30:00 | 0 | 0 | 146 | 5 | 127 | 1 | 0 | 0 | 6  | 23 | 140 | 1 | 0 | 0 | 34 | 17 | 0 | 0 | 0 | 11 | 6  | 18 | 0 |
| 14:45:00 | 0 | 0 | 156 | 9 | 134 | 1 | 0 | 0 | 6  | 20 | 139 | 1 | 0 | 0 | 29 | 15 | 0 | 0 | 0 | 8  | 7  | 13 | 0 |
| 15:00:00 | 0 | 0 | 129 | 6 | 156 | 1 | 0 | 0 | 5  | 16 | 142 | 0 | 0 | 0 | 33 | 16 | 0 | 0 | 0 | 12 | 7  | 15 | 0 |
| 15:15:00 | 0 | 0 | 152 | 3 | 181 | 1 | 0 | 0 | 8  | 18 | 137 | 1 | 0 | 0 | 23 | 14 | 1 | 0 | 0 | 7  | 8  | 19 | 0 |
| 15:30:00 | 0 | 0 | 153 | 3 | 187 | 0 | 0 | 0 | 6  | 13 | 197 | 0 | 0 | 0 | 33 | 19 | 0 | 0 | 0 | 13 | 8  | 21 | 0 |
| 15:45:00 | 0 | 0 | 168 | 3 | 188 | 1 | 0 | 0 | 7  | 18 | 166 | 0 | 0 | 0 | 36 | 18 | 0 | 0 | 0 | 8  | 7  | 21 | 0 |
| 16:00:00 | 0 | 0 | 163 | 2 | 193 | 1 | 0 | 0 | 8  | 14 | 162 | 0 | 0 | 0 | 28 | 18 | 0 | 0 | 0 | 9  | 8  | 20 | 0 |
| 16:15:00 | 0 | 0 | 177 | 2 | 199 | 0 | 0 | 0 | 8  | 15 | 162 | 0 | 0 | 0 | 21 | 13 | 0 | 0 | 0 | 9  | 9  | 21 | 0 |
| 16:30:00 | 0 | 0 | 177 | 2 | 202 | 0 | 0 | 0 | 12 | 15 | 192 | 1 | 0 | 0 | 29 | 15 | 0 | 0 | 0 | 8  | 10 | 23 | 0 |
| 16:45:00 | 0 | 0 | 178 | 2 | 190 | 1 | 0 | 0 | 8  | 15 | 166 | 0 | 0 | 0 | 33 | 18 | 0 | 0 | 0 | 7  | 11 | 24 | 0 |
| 17:00:00 | 0 | 0 | 167 | 2 | 192 | 1 | 0 | 0 | 7  | 15 | 168 | 0 | 0 | 0 | 27 | 17 | 0 | 0 | 0 | 10 | 8  | 20 | 0 |
| 17:15:00 | 0 | 0 | 172 | 1 | 208 | 1 | 0 | 0 | 7  | 17 | 180 | 0 | 0 | 0 | 18 | 12 | 0 | 0 | 0 | 5  | 7  | 16 | 0 |
| 17:30:00 | 0 | 0 | 180 | 1 | 181 | 0 | 0 | 0 | 7  | 15 | 167 | 1 | 0 | 0 | 20 | 12 | 1 | 0 | 0 | 4  | 7  | 14 | 0 |
| 17:45:00 | 0 | 0 | 186 | 2 | 157 | 1 | 0 | 0 | 7  | 13 | 141 | 1 | 0 | 0 | 15 | 10 | 0 | 0 | 0 | 4  | 6  | 12 | 0 |
| 18:00:00 | 0 | 0 | 153 | 2 | 140 | 0 | 0 | 0 | 7  | 13 | 147 | 0 | 0 | 0 | 16 | 12 | 0 | 0 | 0 | 3  | 5  | 11 | 0 |
| 18:15:00 | 0 | 0 | 158 | 2 | 142 | 0 | 0 | 0 | 5  | 13 | 131 | 0 | 0 | 0 | 13 | 11 | 0 | 0 | 0 | 3  | 6  | 10 | 0 |
| 18:30:00 | 0 | 0 | 99  | 1 | 118 | 0 | 0 | 0 | 5  | 11 | 108 | 1 | 0 | 0 | 14 | 10 | 0 | 0 | 0 | 2  | 5  | 8  | 0 |
| 18:45:00 | 0 | 0 | 81  | 2 | 103 | 0 | 0 | 0 | 5  | 12 | 104 | 0 | 0 | 0 | 9  | 9  | 0 | 0 | 0 | 1  | 5  | 8  | 0 |
| 19:00:00 | 0 | 0 | 68  | 1 | 86  | 0 | 0 | 0 | 4  | 7  | 84  | 0 | 0 | 0 | 10 | 8  | 0 | 0 | 0 | 1  | 3  | 6  | 0 |
| 19:15:00 | 0 | 0 | 65  | 1 | 82  | 0 | 0 | 0 | 4  | 8  | 83  | 0 | 0 | 0 | 8  | 10 | 0 | 0 | 0 | 1  | 3  | 6  | 0 |
| 19:30:00 | 0 | 0 | 56  | 1 | 74  | 0 | 0 | 0 | 4  | 6  | 75  | 0 | 0 | 0 | 8  | 7  | 0 | 0 | 0 | 1  | 3  | 5  | 0 |
| 19:45:00 | 0 | 0 | 55  | 1 | 69  | 0 | 0 | 0 | 4  | 5  | 75  | 0 | 0 | 0 | 5  | 5  | 0 | 0 | 0 | 1  | 5  | 6  | 0 |
| 20:00:00 | 0 | 0 | 50  | 1 | 61  | 0 | 0 | 0 | 4  | 6  | 78  | 0 | 0 | 0 | 7  | 7  | 0 | 0 | 0 | 1  | 4  | 5  | 0 |
| 20:15:00 | 0 | 0 | 48  | 1 | 59  | 0 | 0 | 0 | 4  | 6  | 69  | 0 | 0 | 0 | 5  | 6  | 0 | 0 | 0 | 1  | 5  | 6  | 0 |
| 20:30:00 | 0 | 0 | 45  | 1 | 59  | 0 | 0 | 0 | 4  | 6  | 64  | 0 | 0 | 0 | 6  | 8  | 0 | 0 | 0 | 0  | 4  | 5  | 0 |
| 20:45:00 | 0 | 0 | 41  | 1 | 51  | 0 | 0 | 0 | 5  | 6  | 52  | 0 | 0 | 0 | 5  | 5  | 0 | 0 | 0 | 1  | 3  | 4  | 0 |
| 21:00:00 | 0 | 0 | 42  | 1 | 42  | 0 | 0 | 0 | 4  | 8  | 52  | 0 | 0 | 0 | 6  | 6  | 0 | 0 | 0 | 1  | 2  | 6  | 0 |
| 21:15:00 | 0 | 0 | 51  | 1 | 45  | 0 | 0 | 0 | 4  | 8  | 52  | 0 | 0 | 0 | 5  | 5  | 0 | 0 | 0 | 0  | 3  | 4  | 0 |
| 21:30:00 | 0 | 0 | 41  | 1 | 46  | 0 | 0 | 0 | 3  | 4  | 45  | 0 | 0 | 0 | 12 | 7  | 0 | 0 | 0 | 1  | 2  | 3  | 0 |
| 21:45:00 | 0 | 0 | 36  | 1 | 41  | 0 | 0 | 0 | 4  | 5  | 42  | 0 | 0 | 0 | 4  | 5  | 0 | 0 | 0 | 0  | 3  | 3  | 0 |
| 22:00:00 | 0 | 0 | 34  | 1 | 43  | 0 | 0 | 0 | 3  | 5  | 37  | 0 | 0 | 0 | 5  | 7  | 0 | 0 | 0 | 1  | 3  | 3  | 0 |
| 22:15:00 | 0 | 0 | 33  | 1 | 49  | 0 | 0 | 0 | 4  | 6  | 40  | 0 | 0 | 0 | 4  | 8  | 0 | 0 | 0 | 0  | 3  | 4  | 0 |
| 22:30:00 | 0 | 0 | 29  | 1 | 40  | 0 | 0 | 0 | 5  | 5  | 39  | 0 | 0 | 0 | 12 | 10 | 0 | 0 | 0 | 1  | 3  | 4  | 0 |
| 22:45:00 | 0 | 0 | 32  | 1 | 40  | 0 | 0 | 0 | 6  | 4  | 41  | 0 | 0 | 0 | 6  | 7  | 0 | 0 | 0 | 1  | 3  | 4  | 0 |
| 23:00:00 | 0 | 0 | 22  | 1 | 43  | 0 | 0 | 0 | 4  | 3  | 43  | 0 | 0 | 0 | 17 | 5  | 0 | 0 | 0 | 2  | 3  | 4  | 0 |
| 23:15:00 | 0 | 0 | 19  | 1 | 36  | 0 | 0 | 0 | 4  | 2  | 35  | 0 | 0 | 0 | 20 | 5  | 0 | 0 | 0 | 3  | 3  | 4  | 0 |
| 23:30:00 | 0 | 0 | 18  | 1 | 41  | 0 | 0 | 0 | 2  | 2  | 34  | 0 | 0 | 0 | 13 | 5  | 0 | 0 | 0 | 7  | 4  | 6  | 0 |
| 23:45:00 | 0 | 0 | 16  | 0 | 28  | 0 | 0 | 0 | 2  | 2  | 21  | 0 | 0 | 0 | 8  | 2  | 0 | 0 | 0 | 1  | 3  | 4  | 0 |



Other Motorized Vehicle

| Entry      | Ronald Reagan Pkwy |                  |       |      |        | Ronald Reagan Pkwy |                  |       |      |        | Stafford Road |                  |      |        |           | Stafford Road    |       |      |        |  |
|------------|--------------------|------------------|-------|------|--------|--------------------|------------------|-------|------|--------|---------------|------------------|------|--------|-----------|------------------|-------|------|--------|--|
| Direction  | Northbound         |                  |       |      |        | Southbound         |                  |       |      |        | Eastbound     |                  |      |        |           | Westbound        |       |      |        |  |
| Start Time | Crosswalk          | Crosswalk \ Left | Right | Thru | U-Turn | Crosswalk          | Crosswalk \ Left | Right | Thru | U-Turn | Crosswalk     | Crosswalk \ Left | Thru | U-Turn | Crosswalk | Crosswalk \ Left | Right | Thru | U-Turn |  |
| 0:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 0:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 0:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 0:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 1:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 2:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 3:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 4:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 5:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 6:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 7:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 8:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 9:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:30:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 10:45:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 11:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |
| 11:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0         | 0                | 0     | 0    | 0      |  |

[illegible]

|            |                    |                  |       |      |        |                    |                  |       |      |        |               |                  |      |        |  |               |                  |       |      |        |   |   |   |
|------------|--------------------|------------------|-------|------|--------|--------------------|------------------|-------|------|--------|---------------|------------------|------|--------|--|---------------|------------------|-------|------|--------|---|---|---|
| Pedestrian |                    |                  |       |      |        |                    |                  |       |      |        |               |                  |      |        |  |               |                  |       |      |        |   |   |   |
| Entry      | Ronald Reagan Pkwy |                  |       |      |        | Ronald Reagan Pkwy |                  |       |      |        | Stafford Road |                  |      |        |  | Stafford Road |                  |       |      |        |   |   |   |
| Direction  | Northbound         |                  |       |      |        | Southbound         |                  |       |      |        | Eastbound     |                  |      |        |  | Westbound     |                  |       |      |        |   |   |   |
| Start Time | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk     | Crosswalk ' Left | Thru | U-Turn |  | Crosswalk     | Crosswalk ' Left | Right | Thru | U-Turn |   |   |   |
| 0:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:00:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:15:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:30:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 9:45:00    | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:30:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:45:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 11:00:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 11:15:00   | 0                  | 0                | 0     | 0    | 0      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      |  | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |

[illegible]

| SingleUnitTruck |                    |                  |       |      |        |                    |                  |       |      |        |               |                  |      |        |   |               |                  |       |      |        |   |   |   |
|-----------------|--------------------|------------------|-------|------|--------|--------------------|------------------|-------|------|--------|---------------|------------------|------|--------|---|---------------|------------------|-------|------|--------|---|---|---|
| Entry           | Ronald Reagan Pkwy |                  |       |      |        | Ronald Reagan Pkwy |                  |       |      |        | Stafford Road |                  |      |        |   | Stafford Road |                  |       |      |        |   |   |   |
| Direction       | Northbound         |                  |       |      |        | Southbound         |                  |       |      |        | Eastbound     |                  |      |        |   | Westbound     |                  |       |      |        |   |   |   |
| Start Time      | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk          | Crosswalk ' Left | Right | Thru | U-Turn | Crosswalk     | Crosswalk : Left | Thru | U-Turn |   | Crosswalk     | Crosswalk : Left | Right | Thru | U-Turn |   |   |   |
| 0:00:00         | 0                  | 0                | 0     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:15:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 0             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:30:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 0:45:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:00:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:15:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:30:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 1:45:00         | 0                  | 0                | 0     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:00:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:15:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:30:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 2:45:00         | 0                  | 0                | 0     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:00:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:15:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:30:00         | 0                  | 0                | 0     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 3:45:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:00:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:15:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:30:00         | 0                  | 0                | 0     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 2             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 4:45:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:00:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:15:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:30:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 5:45:00         | 0                  | 0                | 1     | 0    | 1      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:00:00         | 0                  | 0                | 2     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:15:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 2             | 0                | 0    | 0      | 0 | 1             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:30:00         | 0                  | 0                | 1     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 1             | 0                | 0    | 0      | 0 | 1             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 6:45:00         | 0                  | 0                | 2     | 0    | 2      | 0                  | 0                | 0     | 0    | 0      | 3             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:00:00         | 0                  | 0                | 2     | 0    | 4      | 0                  | 0                | 0     | 0    | 0      | 3             | 0                | 0    | 0      | 0 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:15:00         | 0                  | 0                | 4     | 0    | 4      | 0                  | 0                | 0     | 0    | 0      | 2             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 7:30:00         | 0                  | 0                | 5     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 2             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 0      | 0 | 1 | 0 |
| 7:45:00         | 0                  | 0                | 5     | 0    | 6      | 0                  | 0                | 0     | 0    | 0      | 5             | 0                | 0    | 0      | 1 | 1             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:00:00         | 0                  | 0                | 5     | 0    | 6      | 0                  | 0                | 0     | 0    | 1      | 4             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 8:15:00         | 0                  | 0                | 4     | 0    | 6      | 0                  | 0                | 0     | 0    | 1      | 6             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 1      | 0 | 1 | 0 |
| 8:30:00         | 0                  | 0                | 5     | 0    | 6      | 0                  | 0                | 0     | 0    | 1      | 5             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 1      | 0 | 1 | 0 |
| 8:45:00         | 0                  | 0                | 6     | 0    | 6      | 0                  | 0                | 0     | 1    | 1      | 10            | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 1      | 0 | 0 | 0 |
| 9:00:00         | 0                  | 0                | 6     | 0    | 6      | 0                  | 0                | 0     | 0    | 0      | 6             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 1      | 0 | 0 | 0 |
| 9:15:00         | 0                  | 0                | 6     | 0    | 7      | 0                  | 0                | 0     | 0    | 0      | 9             | 0                | 0    | 0      | 2 | 1             | 0                | 0     | 0    | 0      | 0 | 1 | 0 |
| 9:30:00         | 0                  | 0                | 5     | 0    | 5      | 0                  | 0                | 0     | 0    | 1      | 29            | 0                | 0    | 0      | 1 | 1             | 0                | 0     | 0    | 1      | 0 | 1 | 0 |
| 9:45:00         | 0                  | 0                | 5     | 0    | 5      | 0                  | 0                | 0     | 0    | 0      | 13            | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 1      | 0 | 1 | 0 |
| 10:00:00        | 0                  | 0                | 5     | 0    | 6      | 0                  | 0                | 0     | 0    | 0      | 6             | 0                | 0    | 0      | 1 | 1             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |
| 10:15:00        | 0                  | 0                | 5     | 1    | 6      | 0                  | 0                | 0     | 0    | 0      | 5             | 0                | 0    | 0      | 1 | 1             | 0                | 0     | 0    | 1      | 0 | 0 | 0 |
| 10:30:00        | 0                  | 0                | 5     | 0    | 6      | 0                  | 0                | 0     | 0    | 1      | 5             | 0                | 0    | 0      | 1 | 0             | 0                | 0     | 0    | 1      | 0 | 1 | 0 |
| 10:45:00        | 0                  | 0                | 5     | 0    | 6      | 0                  | 0                | 0     | 0    | 0      | 6             | 0                | 0    | 0      | 1 | 1             | 0                | 0     | 0    | 1      | 0 | 1 | 0 |
| 11:00:00        | 0                  | 0                | 4     | 1    | 6      | 0                  | 0                | 0     | 0    | 1      | 4             | 0                | 0    | 0      | 1 | 1             | 0                | 0     | 0    | 1      | 0 | 0 | 0 |
| 11:15:00        | 0                  | 0                | 4     | 0    | 6      | 0                  | 0                | 0     | 0    | 1      | 5             | 0                | 0    | 0      | 1 | 1             | 0                | 0     | 0    | 0      | 0 | 0 | 0 |

|          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:30:00 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 11:45:00 | 0 | 0 | 6 | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 12:00:00 | 0 | 0 | 7 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 12:15:00 | 0 | 0 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 12:30:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 13:00:00 | 0 | 0 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 13:30:00 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 13:45:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00:00 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 14:30:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 14:45:00 | 0 | 0 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 15:00:00 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 15:30:00 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 15:45:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 16:00:00 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15:00 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30:00 | 0 | 0 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45:00 | 0 | 0 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00:00 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15:00 | 0 | 0 | 3 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30:00 | 0 | 0 | 3 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45:00 | 0 | 0 | 3 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00:00 | 0 | 0 | 3 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15:00 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30:00 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45:00 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00:00 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:15:00 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:30:00 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:45:00 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:00:00 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:15:00 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:30:00 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20:45:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:00:00 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:15:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:30:00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:45:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:15:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:30:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:45:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:15:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:30:00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:45:00 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



| Entry<br>Direction<br>Start Time | Ronald Reagan Pkwy<br>Northbound |           |           |           |      |       | Ronald Reagan Pkwy<br>Southbound |        |            |            |            |            | Stafford Road<br>Eastbound |       |      |        |           |   | Stafford Road<br>Westbound |   |      |       |      |        |   |
|----------------------------------|----------------------------------|-----------|-----------|-----------|------|-------|----------------------------------|--------|------------|------------|------------|------------|----------------------------|-------|------|--------|-----------|---|----------------------------|---|------|-------|------|--------|---|
|                                  | Crosswalk                        |           | Crosswalk |           | Left | Right | Thru                             | U-Turn | Crosswalk  |            | Crosswalk  |            | Left                       | Right | Thru | U-Turn | Crosswalk |   | Crosswalk                  |   | Left | Right | Thru | U-Turn |   |
|                                  | Eastbound                        | Westbound | Eastbound | Westbound |      |       |                                  |        | Northbound | Southbound | Northbound | Southbound |                            |       |      |        |           |   |                            |   |      |       |      |        |   |
| 0:00:00                          | 0                                | 0         | 16        | 0         | 30   | 0     | 0                                | 0      | 2          | 2          | 26         | 0          | 0                          | 0     | 3    | 2      | 0         | 0 | 0                          | 1 | 3    | 3     | 0    | 0      | 0 |
| 0:15:00                          | 0                                | 0         | 18        | 0         | 30   | 0     | 0                                | 0      | 1          | 2          | 24         | 0          | 0                          | 0     | 2    | 1      | 0         | 0 | 0                          | 0 | 3    | 2     | 0    | 0      | 0 |
| 0:30:00                          | 0                                | 0         | 18        | 0         | 26   | 0     | 0                                | 0      | 2          | 1          | 35         | 0          | 0                          | 0     | 9    | 4      | 0         | 0 | 0                          | 0 | 2    | 2     | 0    | 0      | 0 |
| 0:45:00                          | 0                                | 0         | 16        | 0         | 22   | 0     | 0                                | 0      | 1          | 1          | 22         | 0          | 0                          | 0     | 2    | 2      | 0         | 0 | 0                          | 0 | 2    | 2     | 0    | 0      | 0 |
| 1:00:00                          | 0                                | 0         | 14        | 0         | 19   | 0     | 0                                | 0      | 1          | 2          | 16         | 0          | 0                          | 0     | 4    | 1      | 0         | 0 | 0                          | 0 | 1    | 1     | 0    | 0      | 0 |
| 1:15:00                          | 0                                | 0         | 11        | 0         | 21   | 0     | 0                                | 0      | 0          | 2          | 17         | 0          | 0                          | 0     | 6    | 1      | 0         | 0 | 0                          | 0 | 2    | 1     | 0    | 0      | 0 |
| 1:30:00                          | 0                                | 0         | 11        | 0         | 20   | 0     | 0                                | 0      | 0          | 2          | 16         | 0          | 0                          | 0     | 4    | 1      | 0         | 0 | 0                          | 1 | 1    | 1     | 0    | 0      | 0 |
| 1:45:00                          | 0                                | 0         | 11        | 0         | 18   | 0     | 0                                | 0      | 1          | 3          | 12         | 0          | 0                          | 0     | 3    | 1      | 0         | 0 | 0                          | 0 | 1    | 1     | 0    | 0      | 0 |
| 2:00:00                          | 0                                | 0         | 12        | 0         | 16   | 0     | 0                                | 0      | 1          | 1          | 14         | 0          | 0                          | 0     | 2    | 1      | 0         | 0 | 0                          | 0 | 1    | 1     | 0    | 0      | 0 |
| 2:15:00                          | 0                                | 0         | 11        | 0         | 18   | 0     | 0                                | 0      | 2          | 1          | 17         | 0          | 0                          | 0     | 2    | 1      | 0         | 0 | 0                          | 0 | 1    | 1     | 0    | 0      | 0 |
| 2:30:00                          | 0                                | 0         | 14        | 0         | 18   | 0     | 0                                | 0      | 2          | 2          | 19         | 0          | 0                          | 0     | 10   | 3      | 0         | 0 | 0                          | 0 | 1    | 1     | 0    | 0      | 0 |
| 2:45:00                          | 0                                | 0         | 15        | 0         | 18   | 0     | 0                                | 0      | 2          | 2          | 19         | 0          | 0                          | 0     | 2    | 2      | 0         | 0 | 0                          | 0 | 1    | 1     | 0    | 0      | 0 |
| 3:00:00                          | 0                                | 0         | 13        | 1         | 18   | 0     | 0                                | 0      | 2          | 1          | 22         | 0          | 0                          | 0     | 3    | 2      | 0         | 0 | 0                          | 0 | 1    | 1     | 0    | 0      | 0 |
| 3:15:00                          | 0                                | 0         | 14        | 0         | 23   | 0     | 0                                | 0      | 2          | 2          | 23         | 0          | 0                          | 0     | 1    | 2      | 0         | 0 | 0                          | 0 | 1    | 2     | 0    | 0      | 0 |
| 3:30:00                          | 0                                | 0         | 18        | 0         | 26   | 0     | 0                                | 0      | 4          | 2          | 31         | 0          | 0                          | 0     | 1    | 3      | 0         | 0 | 0                          | 1 | 2    | 1     | 0    | 0      | 0 |
| 3:45:00                          | 0                                | 0         | 28        | 0         | 26   | 0     | 0                                | 0      | 3          | 3          | 39         | 0          | 0                          | 0     | 2    | 4      | 0         | 0 | 0                          | 0 | 3    | 3     | 0    | 0      | 0 |
| 4:00:00                          | 0                                | 0         | 37        | 0         | 30   | 0     | 0                                | 0      | 3          | 5          | 39         | 0          | 0                          | 0     | 4    | 3      | 0         | 0 | 0                          | 0 | 2    | 5     | 0    | 0      | 0 |
| 4:15:00                          | 0                                | 0         | 61        | 1         | 36   | 0     | 0                                | 0      | 4          | 11         | 36         | 0          | 0                          | 0     | 2    | 5      | 0         | 0 | 0                          | 0 | 3    | 6     | 0    | 0      | 0 |
| 4:30:00                          | 0                                | 0         | 97        | 1         | 41   | 0     | 0                                | 0      | 3          | 9          | 45         | 0          | 0                          | 0     | 6    | 5      | 0         | 0 | 0                          | 1 | 4    | 9     | 0    | 0      | 0 |
| 4:45:00                          | 0                                | 0         | 129       | 2         | 53   | 0     | 0                                | 0      | 4          | 14         | 37         | 0          | 0                          | 0     | 4    | 5      | 0         | 0 | 0                          | 1 | 3    | 10    | 0    | 0      | 0 |
| 5:00:00                          | 0                                | 0         | 71        | 2         | 59   | 0     | 0                                | 0      | 5          | 12         | 52         | 0          | 0                          | 0     | 8    | 8      | 0         | 0 | 0                          | 1 | 4    | 10    | 0    | 0      | 0 |
| 5:15:00                          | 0                                | 0         | 128       | 3         | 94   | 0     | 0                                | 0      | 5          | 16         | 57         | 0          | 0                          | 0     | 7    | 6      | 0         | 0 | 0                          | 1 | 5    | 10    | 0    | 0      | 0 |
| 5:30:00                          | 0                                | 0         | 164       | 4         | 160  | 0     | 0                                | 0      | 4          | 20         | 86         | 1          | 0                          | 0     | 6    | 9      | 0         | 0 | 0                          | 1 | 5    | 12    | 0    | 0      | 0 |
| 5:45:00                          | 0                                | 0         | 208       | 11        | 156  | 0     | 0                                | 0      | 5          | 23         | 77         | 1          | 0                          | 0     | 4    | 12     | 0         | 0 | 0                          | 1 | 4    | 14    | 0    | 0      | 0 |
| 6:00:00                          | 0                                | 0         | 128       | 4         | 99   | 0     | 0                                | 0      | 4          | 19         | 71         | 1          | 0                          | 0     | 16   | 8      | 0         | 0 | 0                          | 1 | 4    | 8     | 0    | 0      | 0 |
| 6:15:00                          | 0                                | 0         | 168       | 3         | 166  | 0     | 0                                | 0      | 5          | 21         | 76         | 1          | 0                          | 0     | 12   | 11     | 0         | 0 | 0                          | 1 | 5    | 11    | 0    | 0      | 0 |
| 6:30:00                          | 0                                | 0         | 205       | 5         | 202  | 0     | 0                                | 0      | 6          | 21         | 94         | 1          | 0                          | 0     | 18   | 16     | 0         | 0 | 0                          | 2 | 6    | 17    | 0    | 0      | 0 |
| 6:45:00                          | 0                                | 0         | 265       | 7         | 206  | 0     | 0                                | 0      | 4          | 24         | 105        | 1          | 0                          | 0     | 15   | 15     | 0         | 0 | 0                          | 3 | 5    | 22    | 0    | 0      | 0 |
| 7:00:00                          | 0                                | 0         | 177       | 5         | 150  | 0     | 0                                | 0      | 3          | 16         | 114        | 1          | 0                          | 0     | 11   | 11     | 0         | 0 | 0                          | 4 | 3    | 14    | 0    | 0      | 0 |
| 7:15:00                          | 0                                | 0         | 217       | 6         | 193  | 0     | 0                                | 0      | 5          | 21         | 110        | 1          | 0                          | 0     | 13   | 12     | 0         | 0 | 0                          | 3 | 4    | 10    | 0    | 0      | 0 |
| 7:30:00                          | 0                                | 0         | 205       | 6         | 223  | 0     | 0                                | 0      | 6          | 30         | 133        | 0          | 0                          | 0     | 16   | 16     | 0         | 0 | 0                          | 5 | 4    | 16    | 0    | 0      | 0 |
| 7:45:00                          | 0                                | 0         | 242       | 9         | 241  | 0     | 0                                | 0      | 6          | 38         | 128        | 1          | 0                          | 0     | 19   | 13     | 0         | 0 | 0                          | 3 | 5    | 17    | 0    | 0      | 0 |
| 8:00:00                          | 0                                | 0         | 171       | 9         | 173  | 0     | 0                                | 0      | 6          | 17         | 113        | 1          | 0                          | 0     | 16   | 11     | 0         | 0 | 0                          | 5 | 4    | 10    | 0    | 0      | 0 |
| 8:15:00                          | 0                                | 0         | 151       | 8         | 169  | 0     | 0                                | 0      | 7          | 18         | 110        | 1          | 0                          | 0     | 12   | 12     | 1         | 0 | 0                          | 5 | 4    | 13    | 0    | 0      | 0 |
| 8:30:00                          | 0                                | 0         | 140       | 6         | 163  | 1     | 0                                | 0      | 6          | 20         | 104        | 1          | 0                          | 0     | 13   | 13     | 0         | 0 | 0                          | 6 | 5    | 13    | 0    | 0      | 0 |
| 8:45:00                          | 0                                | 0         | 142       | 7         | 164  | 0     | 0                                | 0      | 8          | 19         | 97         | 1          | 0                          | 0     | 15   | 14     | 1         | 0 | 0                          | 6 | 4    | 8     | 0    | 0      | 0 |
| 9:00:00                          | 0                                | 0         | 108       | 7         | 122  | 0     | 0                                | 0      | 6          | 14         | 85         | 1          | 0                          | 0     | 15   | 9      | 0         | 0 | 0                          | 6 | 4    | 9     | 0    | 0      | 0 |
| 9:15:00                          | 0                                | 0         | 107       | 5         | 118  | 0     | 0                                | 0      | 9          | 13         | 86         | 0          | 0                          | 0     | 15   | 12     | 0         | 0 | 0                          | 5 | 4    | 10    | 0    | 0      | 0 |
| 9:30:00                          | 0                                | 0         | 103       | 7         | 119  | 0     | 0                                | 0      | 7          | 17         | 113        | 0          | 0                          | 0     | 13   | 11     | 0         | 0 | 0                          | 5 | 5    | 10    | 0    | 0      | 0 |
| 9:45:00                          | 0                                | 0         | 107       | 7         | 127  | 0     | 0                                | 0      | 6          | 18         | 90         | 0          | 0                          | 0     | 12   | 9      | 1         | 0 | 0                          | 5 | 5    | 10    | 0    | 0      | 0 |
| 10:00:00                         | 0                                | 0         | 97        | 7         | 107  | 1     | 0                                | 0      | 6          | 16         | 82         | 0          | 0                          | 0     | 14   | 11     | 0         | 0 | 0                          | 4 | 4    | 9     | 0    | 0      | 0 |
| 10:15:00                         | 0                                | 0         | 101       | 8         | 116  | 0     | 0                                | 0      | 7          | 16         | 89         | 0          | 0                          | 0     | 13   | 10     | 0         | 0 | 0                          | 5 | 6    | 9     | 0    | 0      | 0 |
| 10:30:00                         | 0                                | 0         | 98        | 7         | 118  | 0     | 0                                | 0      | 6          | 17         | 89         | 0          | 0                          | 0     | 13   | 10     | 1         | 0 | 0                          | 6 | 4    | 11    | 0    | 0      | 0 |
| 10:45:00                         | 0                                | 0         | 108       | 6         | 121  | 0     | 0                                | 0      | 7          | 15         | 86         | 1          | 0                          | 0     | 12   | 10     | 0         | 0 | 0                          | 7 | 6    | 14    | 0    | 0      | 0 |
| 11:00:00                         | 0                                | 0         | 105       | 6         | 114  | 0     | 0                                | 0      | 6          | 19         | 90         | 1          | 0                          | 0     | 15   | 12     | 1         | 0 | 0                          | 8 | 6    | 13    | 0    | 0      | 0 |
| 11:15:00                         | 0                                | 0         | 112       | 6         | 116  | 1     | 0                                | 0      | 7          | 18         | 90         | 0          | 0                          | 0     | 16   | 12     | 0         | 0 | 0                          | 7 | 5    | 15    | 0    | 0      | 0 |
| 11:30:00                         | 0                                | 0         | 111       | 5         | 126  | 0     | 0                                | 0      | 7          | 21         | 93         | 1          | 0                          | 0     | 16   | 12     | 0         | 0 | 0                          | 7 | 6    | 15    | 0    | 0      | 0 |
| 11:45:00                         | 0                                | 0         | 118       | 8         | 127  | 0     | 0                                | 0      | 5          | 23         | 98         | 0          | 0                          | 0     | 13   | 11     | 0         | 0 | 0                          | 6 | 6    | 16    | 0    | 0      | 0 |



|          |                       |   |       |     |       |    |                  |   |       |      |      |    |            |   |      |     |   |            |   |      |     |     |   |
|----------|-----------------------|---|-------|-----|-------|----|------------------|---|-------|------|------|----|------------|---|------|-----|---|------------|---|------|-----|-----|---|
| 12:00:00 | 0                     | 0 | 108   | 6   | 122   | 1  | 0                | 0 | 7     | 18   | 99   | 0  | 0          | 0 | 16   | 13  | 0 | 0          | 0 | 8    | 5   | 15  | 0 |
| 12:15:00 | 0                     | 0 | 109   | 5   | 129   | 1  | 0                | 0 | 7     | 17   | 108  | 1  | 0          | 0 | 15   | 13  | 0 | 0          | 0 | 7    | 7   | 15  | 0 |
| 12:30:00 | 0                     | 0 | 115   | 6   | 127   | 0  | 0                | 0 | 8     | 22   | 108  | 0  | 0          | 0 | 16   | 15  | 1 | 0          | 0 | 6    | 5   | 12  | 0 |
| 12:45:00 | 0                     | 0 | 107   | 5   | 125   | 1  | 0                | 0 | 7     | 19   | 107  | 0  | 0          | 0 | 13   | 14  | 0 | 0          | 0 | 4    | 7   | 12  | 0 |
| 13:00:00 | 0                     | 0 | 108   | 6   | 117   | 0  | 0                | 0 | 6     | 16   | 110  | 0  | 0          | 0 | 14   | 13  | 0 | 0          | 0 | 6    | 5   | 12  | 0 |
| 13:15:00 | 0                     | 0 | 122   | 4   | 119   | 1  | 0                | 0 | 7     | 21   | 106  | 0  | 0          | 0 | 15   | 13  | 0 | 0          | 0 | 5    | 6   | 14  | 0 |
| 13:30:00 | 0                     | 0 | 143   | 6   | 140   | 1  | 0                | 0 | 8     | 23   | 117  | 1  | 0          | 0 | 23   | 14  | 0 | 0          | 0 | 6    | 7   | 15  | 0 |
| 13:45:00 | 0                     | 0 | 151   | 4   | 131   | 1  | 0                | 0 | 8     | 24   | 108  | 0  | 0          | 0 | 20   | 13  | 0 | 0          | 0 | 6    | 6   | 15  | 0 |
| 14:00:00 | 0                     | 0 | 131   | 6   | 136   | 1  | 0                | 0 | 5     | 20   | 119  | 1  | 0          | 0 | 29   | 15  | 1 | 0          | 0 | 8    | 6   | 13  | 0 |
| 14:15:00 | 0                     | 0 | 148   | 6   | 144   | 1  | 0                | 0 | 6     | 25   | 133  | 0  | 0          | 0 | 30   | 14  | 0 | 0          | 0 | 6    | 5   | 15  | 0 |
| 14:30:00 | 0                     | 0 | 163   | 7   | 149   | 1  | 0                | 0 | 7     | 26   | 157  | 1  | 0          | 0 | 36   | 18  | 0 | 0          | 0 | 14   | 6   | 20  | 0 |
| 14:45:00 | 0                     | 0 | 174   | 11  | 154   | 1  | 0                | 0 | 7     | 22   | 161  | 1  | 0          | 0 | 32   | 17  | 0 | 0          | 0 | 11   | 7   | 15  | 0 |
| 15:00:00 | 0                     | 0 | 146   | 9   | 176   | 1  | 0                | 0 | 6     | 18   | 159  | 0  | 0          | 0 | 35   | 17  | 0 | 0          | 0 | 15   | 7   | 16  | 0 |
| 15:15:00 | 0                     | 0 | 169   | 5   | 200   | 1  | 0                | 0 | 9     | 21   | 153  | 1  | 0          | 0 | 26   | 16  | 1 | 0          | 0 | 10   | 8   | 21  | 0 |
| 15:30:00 | 0                     | 0 | 168   | 5   | 203   | 0  | 0                | 0 | 6     | 16   | 212  | 0  | 0          | 0 | 34   | 20  | 0 | 0          | 0 | 15   | 8   | 23  | 0 |
| 15:45:00 | 0                     | 0 | 184   | 5   | 205   | 1  | 0                | 0 | 8     | 19   | 183  | 0  | 0          | 0 | 39   | 20  | 0 | 0          | 0 | 12   | 7   | 23  | 0 |
| 16:00:00 | 0                     | 0 | 179   | 4   | 212   | 1  | 0                | 0 | 9     | 17   | 178  | 0  | 0          | 0 | 29   | 19  | 0 | 0          | 0 | 11   | 8   | 21  | 0 |
| 16:15:00 | 0                     | 0 | 192   | 4   | 217   | 0  | 0                | 0 | 9     | 17   | 178  | 0  | 0          | 0 | 23   | 14  | 0 | 0          | 0 | 12   | 9   | 22  | 0 |
| 16:30:00 | 0                     | 0 | 191   | 4   | 219   | 0  | 0                | 0 | 13    | 17   | 207  | 1  | 0          | 0 | 31   | 17  | 0 | 0          | 0 | 11   | 10  | 24  | 0 |
| 16:45:00 | 0                     | 0 | 192   | 4   | 207   | 1  | 0                | 0 | 9     | 17   | 181  | 0  | 0          | 0 | 36   | 19  | 0 | 0          | 0 | 10   | 11  | 25  | 0 |
| 17:00:00 | 0                     | 0 | 180   | 4   | 213   | 1  | 0                | 0 | 8     | 16   | 182  | 0  | 0          | 0 | 30   | 18  | 0 | 0          | 0 | 13   | 8   | 21  | 0 |
| 17:15:00 | 0                     | 0 | 186   | 3   | 229   | 1  | 0                | 0 | 8     | 19   | 194  | 0  | 0          | 0 | 21   | 12  | 0 | 0          | 0 | 7    | 7   | 17  | 0 |
| 17:30:00 | 0                     | 0 | 193   | 3   | 200   | 0  | 0                | 0 | 8     | 17   | 180  | 1  | 0          | 0 | 22   | 12  | 1 | 0          | 0 | 6    | 7   | 15  | 0 |
| 17:45:00 | 0                     | 0 | 201   | 5   | 175   | 1  | 0                | 0 | 8     | 14   | 153  | 1  | 0          | 0 | 17   | 11  | 0 | 0          | 0 | 6    | 6   | 13  | 0 |
| 18:00:00 | 0                     | 0 | 165   | 4   | 162   | 0  | 0                | 0 | 8     | 14   | 161  | 0  | 0          | 0 | 18   | 13  | 0 | 0          | 0 | 5    | 5   | 13  | 0 |
| 18:15:00 | 0                     | 0 | 169   | 4   | 162   | 0  | 0                | 0 | 6     | 15   | 143  | 0  | 0          | 0 | 15   | 13  | 0 | 0          | 0 | 5    | 6   | 11  | 0 |
| 18:30:00 | 0                     | 0 | 109   | 3   | 135   | 0  | 0                | 0 | 6     | 12   | 122  | 1  | 0          | 0 | 15   | 11  | 0 | 0          | 0 | 4    | 5   | 9   | 0 |
| 18:45:00 | 0                     | 0 | 90    | 3   | 118   | 0  | 0                | 0 | 5     | 13   | 116  | 0  | 0          | 0 | 10   | 10  | 0 | 0          | 0 | 2    | 5   | 9   | 0 |
| 19:00:00 | 0                     | 0 | 76    | 2   | 100   | 0  | 0                | 0 | 4     | 8    | 94   | 0  | 0          | 0 | 11   | 8   | 0 | 0          | 0 | 2    | 3   | 7   | 0 |
| 19:15:00 | 0                     | 0 | 72    | 2   | 95    | 0  | 0                | 0 | 4     | 9    | 94   | 0  | 0          | 0 | 9    | 10  | 0 | 0          | 0 | 2    | 3   | 6   | 0 |
| 19:30:00 | 0                     | 0 | 64    | 2   | 87    | 0  | 0                | 0 | 4     | 7    | 85   | 0  | 0          | 0 | 9    | 7   | 0 | 0          | 0 | 2    | 4   | 6   | 0 |
| 19:45:00 | 0                     | 0 | 63    | 2   | 83    | 0  | 0                | 0 | 4     | 6    | 83   | 0  | 0          | 0 | 6    | 5   | 0 | 0          | 0 | 3    | 5   | 8   | 0 |
| 20:00:00 | 0                     | 0 | 56    | 1   | 73    | 0  | 0                | 0 | 4     | 7    | 86   | 0  | 0          | 0 | 8    | 7   | 0 | 0          | 0 | 2    | 4   | 6   | 0 |
| 20:15:00 | 0                     | 0 | 53    | 2   | 69    | 0  | 0                | 0 | 5     | 7    | 76   | 0  | 0          | 0 | 7    | 7   | 0 | 0          | 0 | 2    | 5   | 7   | 0 |
| 20:30:00 | 0                     | 0 | 50    | 2   | 68    | 0  | 0                | 0 | 4     | 6    | 71   | 0  | 0          | 0 | 6    | 9   | 0 | 0          | 0 | 1    | 4   | 7   | 0 |
| 20:45:00 | 0                     | 0 | 47    | 1   | 58    | 0  | 0                | 0 | 5     | 7    | 59   | 0  | 0          | 0 | 6    | 7   | 0 | 0          | 0 | 3    | 3   | 6   | 0 |
| 21:00:00 | 0                     | 0 | 49    | 2   | 51    | 0  | 0                | 0 | 5     | 9    | 59   | 0  | 0          | 0 | 7    | 8   | 0 | 0          | 0 | 3    | 2   | 8   | 0 |
| 21:15:00 | 0                     | 0 | 57    | 1   | 53    | 0  | 0                | 0 | 4     | 8    | 58   | 0  | 0          | 0 | 6    | 7   | 0 | 0          | 0 | 1    | 3   | 4   | 0 |
| 21:30:00 | 0                     | 0 | 48    | 2   | 53    | 0  | 0                | 0 | 3     | 5    | 51   | 0  | 0          | 0 | 12   | 10  | 0 | 0          | 0 | 1    | 2   | 3   | 0 |
| 21:45:00 | 0                     | 0 | 43    | 2   | 48    | 0  | 0                | 0 | 4     | 6    | 47   | 0  | 0          | 0 | 5    | 7   | 0 | 0          | 0 | 0    | 3   | 3   | 0 |
| 22:00:00 | 0                     | 0 | 41    | 1   | 52    | 0  | 0                | 0 | 3     | 5    | 44   | 0  | 0          | 0 | 6    | 9   | 0 | 0          | 0 | 1    | 3   | 4   | 0 |
| 22:15:00 | 0                     | 0 | 39    | 2   | 58    | 0  | 0                | 0 | 4     | 7    | 46   | 0  | 0          | 0 | 4    | 8   | 0 | 0          | 0 | 0    | 3   | 4   | 0 |
| 22:30:00 | 0                     | 0 | 34    | 2   | 49    | 0  | 0                | 0 | 5     | 6    | 45   | 0  | 0          | 0 | 12   | 10  | 0 | 0          | 0 | 1    | 3   | 4   | 0 |
| 22:45:00 | 0                     | 0 | 39    | 1   | 49    | 0  | 0                | 0 | 6     | 4    | 47   | 0  | 0          | 0 | 6    | 7   | 0 | 0          | 0 | 2    | 3   | 5   | 0 |
| 23:00:00 | 0                     | 0 | 28    | 1   | 51    | 0  | 0                | 0 | 4     | 4    | 49   | 0  | 0          | 0 | 17   | 5   | 0 | 0          | 0 | 3    | 3   | 5   | 0 |
| 23:15:00 | 0                     | 0 | 26    | 1   | 45    | 0  | 0                | 0 | 4     | 2    | 40   | 0  | 0          | 0 | 20   | 5   | 0 | 0          | 0 | 3    | 3   | 4   | 0 |
| 23:30:00 | 0                     | 0 | 24    | 2   | 50    | 0  | 0                | 0 | 2     | 2    | 40   | 0  | 0          | 0 | 13   | 5   | 0 | 0          | 0 | 7    | 4   | 6   | 0 |
| 23:45:00 | 0                     | 0 | 22    | 0   | 40    | 0  | 0                | 0 | 2     | 2    | 26   | 0  | 0          | 0 | 8    | 2   | 0 | 0          | 0 | 1    | 3   | 5   | 0 |
|          | 0                     | 0 | 9845  | 351 | 10416 | 21 | 0                | 0 | 493   | 1242 | 8462 | 27 | 0          | 0 | 1278 | 922 | 9 | 0          | 0 | 395  | 425 | 964 | 0 |
|          | Total NB =            |   | 20633 |     |       |    | Total SB =       |   | 10224 |      |      |    | Total EB = |   | 2209 |     |   | Total WB = |   | 1784 |     |     |   |
|          | Total Ronald Reagan = |   | 30857 |     |       |    | Total Stafford = |   | 3993  |      |      |    |            |   |      |     |   |            |   |      |     |     |   |

## **ATTACHEMNT C: VIRTUAL MEETING MINUTES & FIELD CHECK MINUTES**



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## MEETING MINUTES

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|                     |                                                                                 |                   |                          |
|---------------------|---------------------------------------------------------------------------------|-------------------|--------------------------|
| <b>Location:</b>    | Virtual – Microsoft Teams                                                       | <b>Date:</b>      | Wednesday, April 1, 2026 |
| <b>Regarding:</b>   | Intersections of Stafford Rd & Quaker Blvd and Stafford Rd & Ronald Reagan Pwky | <b>Time:</b>      | 3:00 PM EDT              |
| <b>Prepared by:</b> | Emily Schmidt                                                                   | <b>Proj. No.:</b> |                          |

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The meeting was organized to obtain feedback regarding the two intersections in Plainfield and to set a time for the future field check. Items discussed are as follows:

Attendees:

Scott Singleton, Director of Engineering, Town of Plainfield  
Joe Smock, Deputy Chief, Town of Plainfield  
Doug Schnarr, Plainfield Police Department  
Emily Schmidt, Project Manager, Infrastructure Engineering, Inc.  
Jordan Hennessy, Civil Engineer, Infrastructure Engineering, Inc.

Information Presented/Discussed:

1. Introductions
2. Emily Siler provided a summary of the two project locations in their existing condition and the initial crash data:
  - a. Stafford Rd & Quaker Blvd
    - i. Signalized intersection
    - ii. Quaker Blvd is divided with median
    - iii. NB – Left turn lane, two thru lanes, right turn lane
    - iv. SB – Left turn lane, two thru lanes, right turn lane
    - v. EB – Left turn lane, two thru lanes
    - vi. WB – Left turn lane, thru lane, right turn lane
    - vii. NB & SB left turn lanes are protected
    - viii. EB & WB left turn lanes are protected/permissive (flashing arrow)
    - ix. NB & SB right turn lanes have an overlap
    - x. Pedestrian crossing on east approach only
  - b. Stafford Rd & Ronald Reagan Pwky
    - i. Signalized intersection
    - ii. Raised medians on all approaches
    - iii. NB – Two left turn lanes, two thru lanes

- iv. SB – Left turn lane, two thru lanes, right turn lane
    - 1. Future additional left turn lane
  - v. EB – Left turn lane, thru lane, 2 right turn lanes
    - 1. Right turn lanes are channelized
    - 2. Outside right turn lane is protected from Columbia Rd
  - vi. WB – Left turn lane, thru lane, right turn lane
  - vii. NB & SB left turn lanes are protected
  - viii. EB & WB left turn lanes are protected/permissive (5 sign head doghouse)
  - ix. EB right turn lanes are free flowing with arrows.
  - x. Pedestrian crossing on north approach only
3. Discussion with Town of Plainfield and Plainfield Police about intersections
- a. Stafford Rd & Quaker Blvd
    - i. Issues with left turns on flashing yellows (at Stafford).
    - ii. In general, there are issues with people running red lights.
    - iii. The town is undergoing projects to the west of Stafford and Quaker. There is interest in continuing increased pedestrian access up to Quaker.
  - b. Stafford Rd & Ronald Reagan Pwky
    - i. The barrier installation has provided positive impact in regard to traffic flow.
    - ii. There has been interest in changing this intersection to an at grade roundabout. American Structurepoint is currently evaluating this.
4. Future Meetings
- a. Field Check Meetings
    - i. *Field check has been scheduled for May 4<sup>th</sup>, 2026*
5. Commitments
- a. The town of plainfield will provide screenshots of Miovision Data for turn movements.
  - b. Joe Smock will reach out to patrol officers for feedback before the field check meeting

Attachments:

- 1. Initial Summary of Crash Data

These minutes are final unless IEI is notified of desired modifications within seven (7) calendar days of their distribution.



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## MEETING MINUTES

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|                     |                                                                                                           |                   |                                    |
|---------------------|-----------------------------------------------------------------------------------------------------------|-------------------|------------------------------------|
| <b>Location:</b>    | Intersections of Stafford Rd & Quaker Blvd<br>and Stafford Rd & Ronald Reagan Pwky<br>Plainfield, Indiana | <b>Date:</b>      | Monday, May 4 <sup>th</sup> , 2026 |
| <b>Regarding:</b>   | Intersections of Stafford Rd & Quaker Blvd<br>and Stafford Rd & Ronald Reagan Pwky                        | <b>Time:</b>      | 1:00 PM EDT                        |
| <b>Prepared by:</b> | Emily Schmidt                                                                                             | <b>Proj. No.:</b> |                                    |

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The meeting was organized to obtain on-site feedback regarding the two intersections in Plainfield. Items discussed are as follows:

Attendees:

Jennifer Dunn, Senior Data Planner, IMPO  
Scott Singleton, Director of Engineering, Town of Plainfield  
Joe Smock, Deputy Chief, Town of Plainfield  
Doug Schnarr, Plainfield Police Department  
Emily Schmidt, Project Manager, Infrastructure Engineering, Inc.  
Jordan Hennessy, Civil Engineer, Infrastructure Engineering, Inc.

Information Presented/Discussed:

1. Introductions
2. Stafford Rd & Quaker Blvd
  - a. Vertical curve sightlines across the crown of Quaker Blvd could be causing some of the poor left turn decisions.
  - b. Shoulder on Quaker Blvd is not needed anymore. The Town would like to have the long-term solution of narrowing Quaker Blvd to the north of Stafford Rd up to US 40.
  - c. It was noted that traffic is heavier on Sundays around the Lakeside Dr intersection.
  - d. A short-term solution could be to change the left turn movements from Stafford Rd to protected movements. We would have to consider the traffic counts and the LOS for the turning movements.
  - e. Another short-term solution would be to add striping in taper areas to discourage the areas being used as merging lanes.
  - f. For the Lakeside Dr areas, a potential short term solution is converting the right lane to right turn only may alleviate some issues.
  - g. Verify whether signals are needed on both sides of the intersection for Stafford Rd.

3. Stafford Rd & Ronald Reagan Pwky

- a. The Town has received interest in developing the SW corner of the intersection. Proposals to develop the land have included a right in-right out of Midfield Ct onto Ronald Reagan Pkwy. The Town believes that while a right in-right out of Midfield Ct is unlikely, any future development would most likely require Columbia Rd and Stafford Rd to become a signalized intersection. This signal would have to be tied to the timing of the signal at Stafford Rd and Ronald Reagan Pkwy.
- b. The Town noted that the wooded section along the west side of Columbia Rd is a protected area due to Indiana Bats.
- c. The Town is unsure of the long-term potential traffic volume along Ronald Reagan Pkwy. The long-term goal is for the road to continue north until it connects with I-65. This could see an increase in traffic volume and may require widening Ronald Reagan Pkwy to 6 lanes wide.
- d. The Town noted that a large number of the sideswipe and rear end accidents happen during shift change hours when there is a high volume of drivers at this intersection.
- e. IEI noted that there are no streetlights along Ronald Reagan Pkwy.
- f. It was also noted that the pavement markings, especially in the dedicated right turn lane, were very faded and difficult to see.
- g. The Town also noted that there is an extra receiving lane on the east leg of the intersection.
- h. Some short term solutions that were discussed include updating pavement markings and improving signal timings. Also there is a potential to add milled corrugations in the gore area between the two right turn lanes.

These minutes are final unless IEI is notified of desired modifications within seven (7) calendar days of their distribution.

## **ATTACHEMNT D: COST ESTIMATE & SCHEMATICS**

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**PRELIMINARY COST ESTIMATE**  
**Stafford Rd and Ronald Reagan Pwky - Short Term - (Hendricks County)**

| ITEM NO.                                      | DESCRIPTION                                                      | QUANTITY | UNIT | UNIT PRICE                   | AMOUNT             |
|-----------------------------------------------|------------------------------------------------------------------|----------|------|------------------------------|--------------------|
| 1                                             | Mobilization and Demobilization (6%)                             | 1        | LSUM | \$2,000.00                   | \$2,000.00         |
| 2                                             | Construction Engineering (5%)                                    | 1        | LSUM | \$1,700.00                   | \$1,700.00         |
| 3                                             | Maintaining Traffic (5%)                                         | 1        | LSUM | \$1,700.00                   | \$1,700.00         |
| 4                                             | Line, Thermoplastic, Solid, White, 4 In                          | 1335     | LFT  | \$2.50                       | \$3,337.50         |
| 5                                             | Line, Thermoplastic, Solid, Yellow, 4 In                         | 360      | LFT  | \$2.50                       | \$900.00           |
| 6                                             | Line, Thermoplastic, Solid, White, 8 In                          | 550      | LFT  | \$4.00                       | \$2,200.00         |
| 7                                             | Transverse Marking, Thermoplastic, Crosshatch Line, White, 12 In | 165      | LFT  | \$8.00                       | \$1,320.00         |
| 9                                             | Line, Thermoplastic, for Buzz Strips, 8 in                       | 1728     | LFT  | \$15.00                      | \$25,920.00        |
| 10                                            | Milled HMA Corrugations, Conventional                            | 440      | LFT  | \$1.00                       | \$440.00           |
| 12                                            | Contingencies (15%)                                              | 1        | LSUM | \$5,100.00                   | \$5,100.00         |
|                                               |                                                                  |          |      | <i>CONSTRUCTION SUBTOTAL</i> | \$44,617.50        |
| <b>CONSTRUCTION TOTAL</b>                     |                                                                  |          |      | <i>USE</i>                   | <b>\$44,700.00</b> |
| <b>PRELIMINARY ENGINEERING ESTIMATE (10%)</b> |                                                                  |          |      | <i>USE</i>                   | <b>\$4,470.00</b>  |
|                                               | Utility Coordination                                             | 1        | LSUM | \$5,000                      | \$5,000.00         |
|                                               |                                                                  |          |      | <b>TOTAL</b>                 | <b>\$5,000.00</b>  |
| <b>SITE PREPARATION TOTAL</b>                 |                                                                  |          |      | <i>USE</i>                   | <b>\$5,000.00</b>  |
| <b>OVERALL PROJECT TOTAL</b>                  |                                                                  |          |      |                              | <b>\$54,170.00</b> |

This Cost Estimate makes the following assumptions:

1. Unit price estimates based on stand-alone project
2. Quantities are based off conceptual layout and not actual design
3. Paint Pavement Markings estimated for all approaches

**PRELIMINARY COST ESTIMATE**  
**Stafford Rd and Ronald Reagan Pwky - Long Term - (Hendricks County)**

| ITEM NO.                                      | DESCRIPTION                          | QUANTITY | UNIT                         | UNIT PRICE     | AMOUNT                 |
|-----------------------------------------------|--------------------------------------|----------|------------------------------|----------------|------------------------|
| 1                                             | Mobilization and Demobilization (6%) | 1        | LSUM                         | \$893,400.00   | \$893,400.00           |
| 2                                             | Construction Engineering (5%)        | 1        | LSUM                         | \$744,500.00   | \$744,500.00           |
| 3                                             | Clearing ROW (2.5%)                  | 1        | LSUM                         | \$372,300.00   | \$372,300.00           |
| 4                                             | Maintaining Traffic (10%)            | 1        | LSUM                         | \$1,489,100.00 | \$1,489,100.00         |
| 5                                             | Common Excavation                    | 5225     | CYS                          | \$30.00        | \$156,750.00           |
| 6                                             | Borrow                               | 53335    | CYS                          | \$20.00        | \$1,066,700.00         |
| 7                                             | Curb, Removal                        | 3000     | LFT                          | \$20.00        | \$60,000.00            |
| 8                                             | Curb, Concrete                       | 36000    | LFT                          | \$50.00        | \$1,800,000.00         |
| 9                                             | Sidewalk, Concrete                   | 1340     | SYS                          | \$75.00        | \$100,500.00           |
| 10                                            | HMA Surface                          | 5116     | TON                          | \$120.00       | \$613,920.00           |
| 11                                            | HMA Intermediate                     | 4263     | TON                          | \$100.00       | \$426,300.00           |
| 12                                            | HMA Base                             | 5115     | TON                          | \$90.00        | \$460,350.00           |
| 13                                            | Subgrade Treatment                   | 31000    | SYS                          | \$25.00        | \$775,000.00           |
| 14                                            | Raised Concrete Median Curb          | 340      | SYS                          | \$150.00       | \$51,000.00            |
| 15                                            | Traffic Signal Head Removal          | 1        | EACH                         | \$10,000.00    | \$10,000.00            |
| 16                                            | Misc. Traffic Signal Equipment       | 1        | LSUM                         | \$75,000.00    | \$75,000.00            |
| 17                                            | Pavement Markings                    | 1        | LSUM                         | \$125,000.00   | \$125,000.00           |
| 18                                            | Lighting                             | 1        | LSUM                         | \$120,000.00   | \$120,000.00           |
| 19                                            | Signing                              | 1        | LSUM                         | \$50,000.00    | \$50,000.00            |
| 20                                            | Drainage                             | 1        | LSUM                         | \$3,000,000.00 | \$3,000,000.00         |
| 21                                            | Bridge                               | 1        | LSUM                         | \$6,000,000.00 | \$6,000,000.00         |
| 22                                            | Contingencies (20%)                  | 1        | LSUM                         | \$1,119,100.00 | \$1,119,100.00         |
|                                               |                                      |          | <b>CONSTRUCTION SUBTOTAL</b> |                | \$19,508,920.00        |
| <b>CONSTRUCTION TOTAL</b>                     |                                      |          |                              | <b>USE</b>     | <b>\$19,509,000.00</b> |
| <b>PRELIMINARY ENGINEERING ESTIMATE (10%)</b> |                                      |          |                              | <b>USE</b>     | <b>\$2,927,000.00</b>  |
|                                               | Utility Coordination                 | 1        | LSUM                         | \$500,000      | \$500,000.00           |
|                                               | ROW Acquisition                      | 1        | LSUM                         | \$800,000      | \$800,000.00           |
| <b>TOTAL</b>                                  |                                      |          |                              |                | <b>\$1,300,000.00</b>  |
| <b>SITE PREPARATION TOTAL</b>                 |                                      |          |                              | <b>USE</b>     | <b>\$1,300,000.00</b>  |
| <b>OVERALL PROJECT TOTAL</b>                  |                                      |          |                              |                | <b>\$23,736,000.00</b> |

This Cost Estimate makes the following assumptions:

1. Unit price estimates based on standalone project
2. Bridge Pay Item includes the bridge superstructure, bridge substructure, MSE walls, etc.
3. Quantities are based off conceptual layout and not actual design
4. Police enforcement is not included in this estimate

## Economic Evaluation - Form F5

|                                                |                              |  |         |
|------------------------------------------------|------------------------------|--|---------|
| Alternative                                    | Echelon                      |  |         |
| <b>INPUT</b> <u>Collapse</u>                   |                              |  |         |
| Number of Crashes (crash/period)               |                              |  |         |
| Fatal and Incapacitating Injury Crashes        |                              |  | 6       |
| Non-Incapacitating and Possible Injury Crashes |                              |  | 5       |
| Property Damage Only Crashes                   |                              |  | 81      |
| Road Type                                      | City Arterial Intersection ▾ |  |         |
| Average Crash Costs (\$)                       |                              |  |         |
| Fatal and Incapacitating Injury Crashes        |                              |  | 1840100 |
| Non-Incapacitating and Possible Injury Crashes |                              |  | 393200  |
| Property Damage Only Crashes                   |                              |  | 40200   |
| Crash Cost Year (yyyy)                         |                              |  | 2017    |
| First Year with Crash Data (yyyy)              |                              |  | 2022    |
| Last Year with Crash Data (yyyy)               |                              |  | 2024    |
| Present Year (yyyy)                            |                              |  | 2026    |
| Implementation Year (yyyy)                     |                              |  | 2030    |
| Inflation Rate (%)                             |                              |  | 2       |
| Interest Rate (%)                              |                              |  | 4       |
| Annual Traffic Growth Rate (%)                 |                              |  | 2       |
| Total Traffic Growth Factor                    |                              |  | 2       |
| Future Traffic Growth Period (years)           |                              |  | 25      |

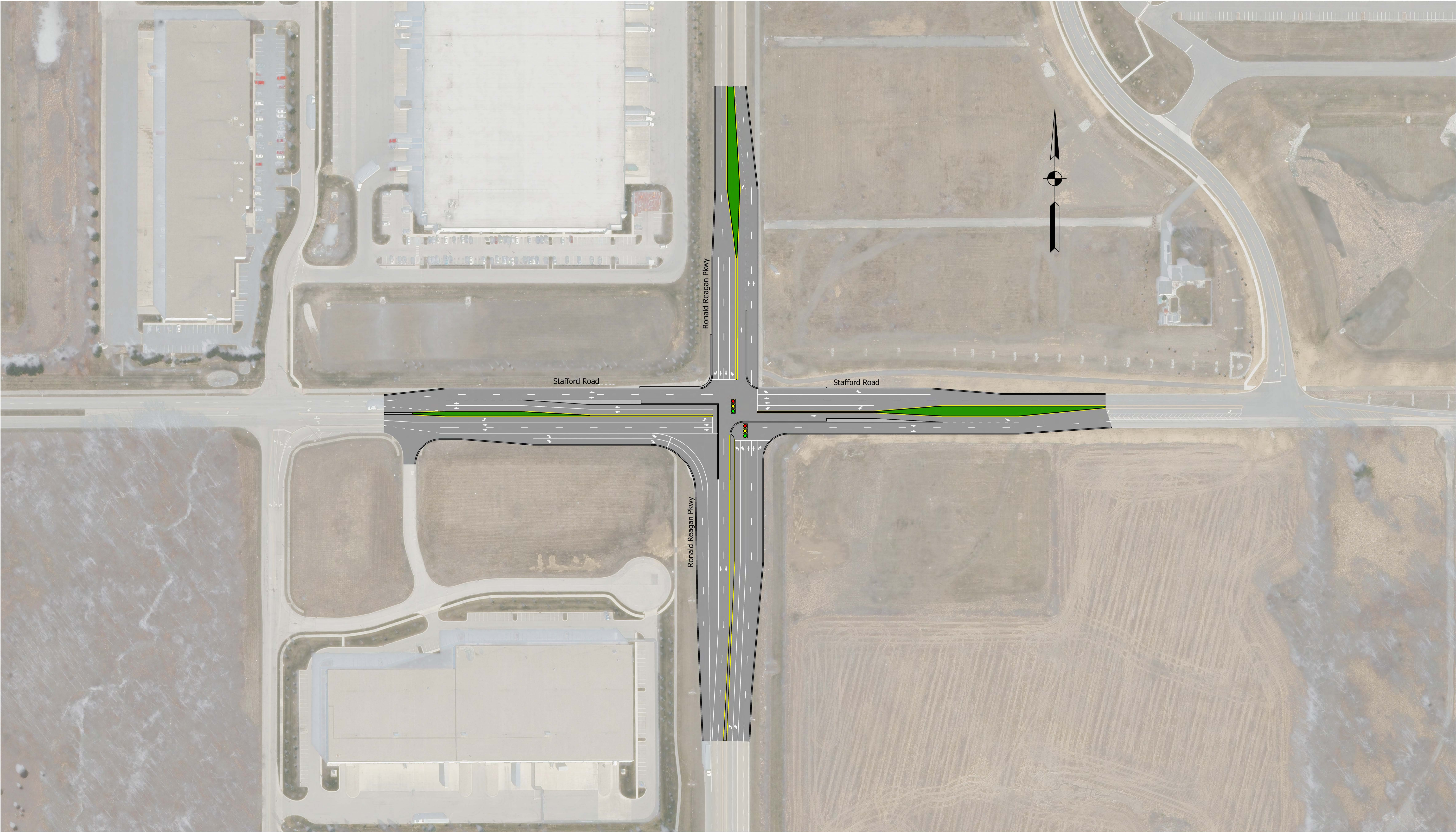
**COUNTERMEASURES** Collapse AllCountermeasure 1 Collapse[C] Copy

|                                                |             |
|------------------------------------------------|-------------|
| Description                                    | Echelon     |
| Crash Reduction Factors (%)                    |             |
| Fatal and Incapacitating Injury Crashes        | 33          |
| Non-Incapacitating and Possible Injury Crashes | 33          |
| Property Damage Only Crashes                   | 29.3        |
| Number of Target Crashes (crash/period)        |             |
| Fatal and Incapacitating Injury Crashes        | 6           |
| Non-Incapacitating and Possible Injury Crashes | 5           |
| Property Damage Only Crashes                   | 81          |
| Countermeasure Service Life (years)            | 30          |
| Countermeasure Capital Cost (\$)               | 23736000.00 |
| Countermeasure Annual Maintenance Cost (\$)    | 7500.00     |
| Countermeasure Salvage Value (\$)              | 0.00        |

[+] Add**OUTPUT**

|                                |            |
|--------------------------------|------------|
| Total Crashes Saved            | 10.227     |
| FI Crashes Saved               | 0.552      |
| NI Crashes Saved               | 0.645      |
| PDO Crashes Saved              | 9.029      |
| Equivalent Annual Benefit (\$) | 2,346,895  |
| Equivalent Annual Cost (\$)    | 1,173,351  |
| Present Worth Benefit (\$)     | 58,672,387 |
| Present Worth Cost (\$)        | 29,333,786 |
| Net Annual Benefit (\$)        | 1,173,544  |
| Present Worth Net Benefit (\$) | 29,338,601 |
| Benefit-Cost Ratio             | 2.00       |





Z:\2024\RONALD REAGAN PKWY & STAFFORD RD, PLAINFIELD\DWG\EXHIBIT-4, ECHELON.DWG



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|                             |  |                    |  |
|-----------------------------|--|--------------------|--|
| RECOMMENDED<br>FOR APPROVAL |  | XX/XX/2024<br>DATE |  |
| DESIGNED: XXX               |  | DRAWN: XXX         |  |
| CHECKED: JAH                |  | CHECKED: JAH       |  |

|                                                                  |  |
|------------------------------------------------------------------|--|
| TOWN OF<br>PLAINFIELD                                            |  |
| PROPOSED ECHELON INTERCHANGE<br>STAFFORD RD & RONALD REAGAN PKWY |  |

|                               |                    |      |
|-------------------------------|--------------------|------|
| HORIZONTAL SCALE<br>1" = 100' | BRIDGE FILE<br>N/A |      |
| VERTICAL SCALE<br>N/A         | DESIGNATION<br>--  |      |
| SURVEY BOOK                   | SHEETS             |      |
|                               | ----               | of X |
| CONTRACT<br>--                | PROJECT<br>--      |      |



## **ATTACHEMNT E: PREVIOUS INTERSECTION ALTERNATIVES STUDY**



# ***INTERSECTION ALTERNATIVES STUDY***

## ***RONALD REAGAN PARKWAY & STAFFORD ROAD PLAINFIELD, INDIANA***

---

***PREPARED FOR***



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***OCTOBER 2024***



## COPYRIGHT

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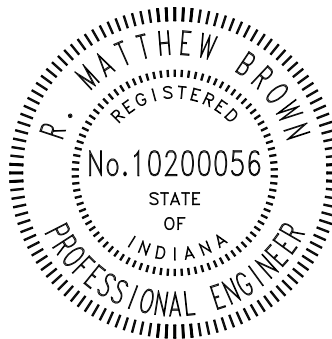
## ***CERTIFICATION***

I certify that this **INTERSECTIONS ALTERNATIVE STUDY** has been prepared by me and under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.

A&F ENGINEERING CO., LLC



October 9, 2024  
R. Matt Brown, P.E.  
Indiana Registration 10200056



Trevor Reich, E.I.  
Senior Traffic Engineer

## ***INTRODUCTION & PURPOSE***

This **INTERSECTION ALTERNATIVES STUDY**, prepared for the Town of Plainfield, will determine the effectiveness and feasibility of four different intersection alternatives at the intersection of Ronald Reagan Parkway & Stafford Road in Plainfield, Indiana.

## ***SCOPE OF WORK***

The scope of work for this analysis is as follows:

First, make use of existing turning movement traffic volume counts between the hours of 6:30 A.M. to 8:30 A.M. and 4:00 P.M. to 6:00 P.M. during a typical weekday in August 2022 at the intersection of Ronald Reagan Parkway & Stafford Road.

Second, estimate future traffic volumes along the corridor for a 20-year horizon at a 1.8% non-compounded annual growth rate.

Third, identify four different feasible intersection alternatives.

Fourth, recalculate turning movement traffic volumes corresponding to each of the intersection alternatives.

Fifth, using the future traffic projections, conduct a capacity/level of service analysis at the intersection of Ronald Reagan Parkway & Stafford Road for each of the intersection alternatives.

Finally, prepare an **INTERSECTION ALTERNATIVES STUDY** report documenting all data, analyses, and results.

## ***YEAR 2022 TRAFFIC DATA***

Turning movement traffic volume counts were collected by A&F Engineering at the study intersection between the hours of 6:30 AM to 8:30 AM and 4:00 PM to 6:00 PM during a typical weekday in August 2022 under good weather conditions as part of a previously completed Corridor Study for Ronald Reagan Parkway. The year 2022 traffic volumes are included in **Table 1** and the intersection county summary sheets are included in the **Appendix**.

## **YEAR 2042 BACKGROUND TRAFFIC VOLUMES**

The horizon year for this study is 2042. In order to account for annual growth in traffic that would occur due to future development over the next 20 years, an annual growth rate is applied to the existing traffic volumes. A 1.8% per year non-compounded growth rate was considered for this analysis. Therefore, a growth rate factor of 1.36 was applied to the year 2022 traffic volumes to obtain year 2042 background traffic volumes shown in **Table 1**.

TABLE 1 – TRAFFIC VOLUME SUMMARY: RONALD REAGAN PARKWAY & STAFFORD ROAD

| <b>AM PEAK HOUR</b> |            |      |       |            |      |       |           |      |       |           |      |       |
|---------------------|------------|------|-------|------------|------|-------|-----------|------|-------|-----------|------|-------|
| Traffic Volumes     | Northbound |      |       | Southbound |      |       | Eastbound |      |       | Westbound |      |       |
|                     | Left       | Thru | Right | Left       | Thru | Right | Left      | Thru | Right | Left      | Thru | Right |
| 2022                | 835        | 861  | 50    | 21         | 374  | 45    | 71        | 60   | 835   | 7         | 93   | 19    |
| 2042                | 1136       | 1171 | 68    | 29         | 509  | 61    | 97        | 82   | 1136  | 10        | 126  | 26    |
| <b>PM PEAK HOUR</b> |            |      |       |            |      |       |           |      |       |           |      |       |
| Traffic Volumes     | Northbound |      |       | Southbound |      |       | Eastbound |      |       | Westbound |      |       |
|                     | Left       | Thru | Right | Left       | Thru | Right | Left      | Thru | Right | Left      | Thru | Right |
| 2022                | 651        | 819  | 15    | 23         | 755  | 25    | 104       | 91   | 651   | 34        | 86   | 37    |
| 2042                | 885        | 1114 | 20    | 31         | 1027 | 34    | 141       | 124  | 885   | 46        | 117  | 50    |

## **INTERSECTION ALTERNATIVES**

The previously Completed Corridor Study for Ronald Reagan Parkway highlighted the current capacity constraints at the intersection of Ronald Reagan Parkway & Stafford Road. The current intersection geometrics cannot adequately service the existing traffic volumes with the existing intersection control. This is primarily a result of the high northbound left-turn and eastbound right-turn volumes in addition to the high northbound and southbound through volumes on Ronald Reagan Parkway. The following intersection alternatives have been selected as possible solutions for the intersection.

- At-Grade Roundabout
- Teardrop Roundabout Interchange
- Echelon Intersection
- Single-Point Urban Interchange

Figures showing the conceptual proposed layouts for each intersection alternative are included in the **Appendix**.

## **CAPACITY ANALYSIS**

The "efficiency" of an intersection is based on its ability to accommodate the traffic volumes that approach the intersection. It is defined by the Level-of-Service (LOS) of the intersection. The LOS is determined by a series of calculations commonly called a "capacity analysis". Input data into a capacity analysis include traffic volumes, intersection geometry, and number and use of lanes. To determine the LOS at each of the study intersections, a capacity analysis has been made using the recognized computer program *Synchro/SimTraffic*<sup>1</sup>. This program allows intersections to be analyzed and optimized using the capacity calculation methods outlined within the *Highway Capacity Manual (HCM 7<sup>th</sup> Edition)*<sup>2</sup>. Roundabout capacity analyses were conducted using the recognized computer program *SIDRA*<sup>3</sup> with the INDOT *SIDRA* parameters. The following list shows the delays related to the levels of service for unsignalized intersections:

| <u>Level of Service</u> | <u>Control Delay (seconds/vehicle)</u><br><u>SIGNALIZED/ROUNDOABOUT</u> |
|-------------------------|-------------------------------------------------------------------------|
| A                       | Less than or equal to 10                                                |
| B                       | Between 10.1 and 20                                                     |
| C                       | Between 20.1 and 35                                                     |
| D                       | Between 35.1 and 55                                                     |
| E                       | Between 55.1 and 80                                                     |
| F                       | greater than 80                                                         |

It should be noted that the capacity analysis for the single-point urban interchange was conducted using *Synchro*'s capacity analysis methods because the *HCM 7<sup>th</sup> Edition* does not support capacity analysis for intersections with more than four approaches. While the *HCM 7<sup>th</sup> Edition* considers roundabouts as unsignalized intersections, the INDOT *SIDRA* parameters make use of the signalized average delay thresholds for a more direct comparison of traffic signals and roundabouts. The following table summarizes the level of service results for each intersection alternative. The *Synchro (HCM 7<sup>th</sup> Edition)* and *SIDRA 9.1* intersection reports illustrating the capacity analysis results are included in the **Appendix**.

<sup>1</sup> *Synchro/SimTraffic 12*, Cubic Transportation Systems, 2023.

<sup>2</sup> *Highway Capacity Manual (HCM), 7<sup>th</sup> Edition* Transportation Research Board, The National Academics of Sciences, Washington, DC, 2022.

<sup>3</sup> *SIDRA INTERSECTION 9.1*, Akcelik and Associates Pty Ltd, 2023



**TABLE 2 – LEVEL OF SERVICE SUMMARY: RONALD REAGAN PARKWAY & STAFFORD ROAD**

| APPROACH            | AM PEAK   |          |          |          |          |          | PM PEAK   |          |          |          |          |          |
|---------------------|-----------|----------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|
|                     | Scenarios |          |          |          |          |          | Scenarios |          |          |          |          |          |
|                     | 1A        | 1B       | 2B       | 3B       | 4B       | 5B       | 1A        | 1B       | 2B       | 3B       | 4B       | 5B       |
| Northbound Approach | D         | D        | B        | B        | A        | F        | D         | D        | A        | B        | A        | F        |
| Southbound Approach | D         | F        | C        | B        | A        | D        | C         | E        | B        | A        | A        | D        |
| Eastbound Approach  | F         | F        | A        | A        | B        | F        | F         | F        | A        | A        | B        | F        |
| Westbound Approach  | F         | F        | C        | A        | A        | B        | F         | F        | B        | A        | B        | C        |
| <b>Intersection</b> | <b>D</b>  | <b>E</b> | <b>B</b> | <b>A</b> | <b>A</b> | <b>F</b> | <b>D</b>  | <b>E</b> | <b>A</b> | <b>A</b> | <b>A</b> | <b>F</b> |

Scenario A considers year 2022 traffic volumes.

Scenario B considers year 2042 traffic volumes.

Scenario 1 considers existing intersection conditions.

Scenario 2 considers a multilane roundabout at grade.

Scenario 3 considers a teardrop roundabout interchange with Ronald Reagan Parkway remaining free flow under Stafford Road.

Scenario 4 considers an echelon intersection with the northbound & eastbound approaches meeting at grade and the southbound & westbound approaches meeting at the elevated intersection.

Scenario 5 considers a single-point urban interchange with Ronald Reagan Parkway remaining free flow under Stafford Road.

Capacity analyses for the multilane at-grade roundabout, the tear-drop roundabout interchange, and the echelon intersection scenarios show that these three alternatives will operate at acceptable levels of service during the AM and PM Peak hours when considering year 2042 traffic volumes. The capacity analyses have also shown that the current intersection configuration and the single-point urban interchange will both operate below acceptable levels of service during the AM and PM peak hours when considering year 2042 traffic volumes.

# ***INTERSECTION ALTERNATIVES REPORT***

## ***APPENDIX***



***8365 Keystone Crossing Boulevard, Suite 201  
Indianapolis, IN 46240  
Phone: (317) 202-0864 Fax: (317) 202-0908***

## *TRAFFIC VOLUME COUNT*

Stafford Road and Ronald Reagan Pkwy

AM Peak

Direction

Start Time

|                                 | Northbound |       |       |              | Southbound |       |       |              | Eastbound |       |       |             | Westbound |       |       |             | Int Total    |
|---------------------------------|------------|-------|-------|--------------|------------|-------|-------|--------------|-----------|-------|-------|-------------|-----------|-------|-------|-------------|--------------|
|                                 | Left       | Thru  | Right | App Total    | Left       | Thru  | Right | App Total    | Left      | Thru  | Right | App Total   | Left      | Thru  | Right | App Total   |              |
| 6:30:00                         | 220        | 225   | 8     | <b>453</b>   | 4          | 87    | 7     | <b>98</b>    | 30        | 18    | 0     | <b>48</b>   | 0         | 22    | 4     | <b>26</b>   | <b>625</b>   |
| 6:45:00                         | 289        | 272   | 27    | <b>588</b>   | 6          | 90    | 19    | <b>115</b>   | 17        | 13    | 0     | <b>30</b>   | 2         | 42    | 6     | <b>50</b>   | <b>783</b>   |
| 7:00:00                         | 163        | 185   | 7     | <b>355</b>   | 3          | 94    | 9     | <b>106</b>   | 14        | 12    | 0     | <b>26</b>   | 3         | 17    | 3     | <b>23</b>   | <b>510</b>   |
| 7:15:00                         | 163        | 179   | 8     | <b>350</b>   | 8          | 103   | 10    | <b>121</b>   | 10        | 17    | 0     | <b>27</b>   | 2         | 12    | 6     | <b>20</b>   | <b>518</b>   |
| <b>Grand Total</b>              | 835        | 861   | 50    | <b>1746</b>  | 21         | 374   | 45    | <b>440</b>   | 71        | 60    | 0     | <b>131</b>  | 7         | 93    | 19    | <b>119</b>  | <b>2436</b>  |
| <b>% Approach</b>               | 47.8%      | 49.3% | 2.9%  |              | 4.8%       | 85.0% | 10.2% |              | 54.2%     | 45.8% | 0.0%  |             | 5.9%      | 78.2% | 16.0% |             |              |
| <b>% Total</b>                  | 34.3%      | 35.3% | 2.1%  | <b>71.7%</b> | 0.9%       | 15.4% | 1.8%  | <b>18.1%</b> | 2.9%      | 2.5%  | 0.0%  | <b>5.4%</b> | 0.3%      | 3.8%  | 0.8%  | <b>4.9%</b> |              |
| <b>PHF (6:30 - 7:30 )</b>       | 0.722      | 0.791 | 0.463 |              | 0.742      | 0.656 | 0.908 |              | 0.592     | 0.909 | 0.592 | 0.833       | 0.682     | 0.583 | 0.554 | 0.792       | 0.595        |
| <b>Lights and Motorcycles</b>   | 767        | 826   | 49    | <b>1642</b>  | 21         | 337   | 42    | <b>400</b>   | 69        | 60    | 0     | <b>129</b>  | 6         | 91    | 19    | <b>116</b>  | <b>2287</b>  |
| <b>% Lights and Motorcycles</b> | 33.5%      | 36.1% | 2.1%  | <b>71.8%</b> | 0.9%       | 14.7% | 1.8%  | <b>17.5%</b> | 3.0%      | 2.6%  | 0.0%  | 5.6%        | 0.3%      | 4.0%  | 0.8%  | <b>5.1%</b> | <b>93.9%</b> |
| <b>Heavy</b>                    | 68         | 35    | 1     | <b>104</b>   | 0          | 37    | 3     | <b>40</b>    | 2         | 0     | 0     | <b>2</b>    | 1         | 2     | 0     | <b>3</b>    | <b>149</b>   |
| <b>% Heavy</b>                  | 45.6%      | 23.5% | 0.7%  | <b>69.8%</b> | 0.0%       | 24.8% | 2.0%  | <b>26.8%</b> | 1.3%      | 0.0%  | 0.0%  | <b>1.3%</b> | 0.7%      | 1.3%  | 0.0%  | <b>2.0%</b> | <b>6.1%</b>  |

Stafford Road and Ronald Reagan Pkwy

PM Peak

Direction

Start Time

| Direction                | Northbound |       |       |           |       | Southbound |       |           |       |       | Eastbound |           |       |       |       | Westbound |           |     |  |  |  |
|--------------------------|------------|-------|-------|-----------|-------|------------|-------|-----------|-------|-------|-----------|-----------|-------|-------|-------|-----------|-----------|-----|--|--|--|
| Start Time               | Left       | Thru  | Right | App Total | Left  | Thru       | Right | App Total | Left  | Thru  | Right     | App Total | Left  | Thru  | Right | App Total | Int Total |     |  |  |  |
|                          | 16:30:00   | 155   | 184   | 4         | 343   | 7          | 187   | 5         | 199   | 22    | 29        | 0         | 51    | 8     | 20    | 3         | 31        | 624 |  |  |  |
|                          | 16:45:00   | 170   | 207   | 7         | 384   | 7          | 211   | 5         | 223   | 33    | 29        | 0         | 62    | 9     | 27    | 10        | 46        | 715 |  |  |  |
|                          | 17:00:00   | 155   | 210   | 2         | 367   | 5          | 182   | 4         | 191   | 27    | 19        | 0         | 46    | 14    | 19    | 9         | 42        | 646 |  |  |  |
|                          | 17:15:00   | 171   | 218   | 2         | 391   | 4          | 175   | 11        | 190   | 22    | 14        | 0         | 36    | 3     | 20    | 15        | 38        | 655 |  |  |  |
| Grand Total              | 651        | 819   | 15    | 1485      | 23    | 755        | 25    | 803       | 104   | 91    | 0         | 195       | 34    | 86    | 37    | 157       | 2640      |     |  |  |  |
| % Approach               | 43.8%      | 55.2% | 1.0%  |           | 2.9%  | 94.0%      | 3.1%  |           | 53.3% | 46.7% | 0.0%      |           | 21.7% | 54.8% | 23.6% |           |           |     |  |  |  |
| % Total                  | 24.7%      | 31.0% | 0.6%  | 56.3%     | 0.9%  | 28.6%      | 0.9%  | 30.4%     | 3.9%  | 3.4%  | 0.0%      | 7.4%      | 1.3%  | 3.3%  | 1.4%  | 5.9%      |           |     |  |  |  |
| PHF (16:30 - 17:30)      | 0.952      | 0.939 | 0.536 | 0.949     | 0.821 | 0.895      | 0.568 | 0.900     | 0.788 | 0.784 | #DIV/0!   | 0.786     | 0.607 | 0.796 | 0.617 | 0.853     | 0.923     |     |  |  |  |
| Lights and Motorcycles   | 595        | 776   | 14    | 1385      | 23    | 720        | 22    | 765       | 98    | 89    | 0         | 187       | 31    | 84    | 37    | 152       | 2489      |     |  |  |  |
| % Lights and Motorcycles | 23.9%      | 31.2% | 0.6%  | 55.6%     | 0.9%  | 28.9%      | 0.9%  | 30.7%     | 3.9%  | 3.6%  | 0.0%      | 7.5%      | 1.2%  | 3.4%  | 1.5%  | 6.1%      | 94.3%     |     |  |  |  |
| Heavy                    | 56         | 43    | 1     | 100       | 0     | 35         | 3     | 38        | 6     | 2     | 0         | 8         | 3     | 2     | 0     | 5         | 151       |     |  |  |  |
| % Heavy                  | 37.1%      | 28.5% | 0.7%  | 66.2%     | 0.0%  | 23.2%      | 2.0%  | 25.2%     | 4.0%  | 1.3%  | 0.0%      | 5.3%      | 2.0%  | 1.3%  | 0.0%  | 3.3%      | 5.7%      |     |  |  |  |

## ***INTERSECTION ALTERNATIVE FIGURES***





Z:\2024\RONALD REAGAN PKWY & STAFFORD RD, PLAINFIELD\DWG\EXHIBIT-1 RAB.DWG



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|-----------------------------|--|--------------------|--|
| RECOMMENDED<br>FOR APPROVAL |  | XX/XX/2024<br>DATE |  |
| DESIGNED: XXX               |  | DRAWN: XXX         |  |
| CHECKED: JAH                |  | CHECKED: JAH       |  |

|                                                         |  |
|---------------------------------------------------------|--|
| TOWN OF<br>PLAINFIELD                                   |  |
| PROPOSED ROUNDABOUT<br>STAFFORD RD & RONALD REAGAN PKWY |  |

|                              |                    |      |
|------------------------------|--------------------|------|
| HORIZONTAL SCALE<br>1" = 50' | BRIDGE FILE<br>N/A |      |
| VERTICAL SCALE<br>N/A        | DESIGNATION<br>--  |      |
| SURVEY BOOK                  | SHEETS             |      |
|                              | ----               | of X |
| CONTRACT<br>--               | PROJECT<br>--      |      |



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| RECOMMENDED<br>FOR APPROVAL |  | XX/XX/2024<br>DATE |  |
| DESIGNED: XXX               |  | DRAWN: XXX         |  |
| CHECKED: JAH                |  | CHECKED: JAH       |  |

|                                                                     |  |
|---------------------------------------------------------------------|--|
| TOWN OF<br>PLAINFIELD                                               |  |
| PROPOSED ROUNDABOUT INTERCHANGE<br>STAFFORD RD & RONALD REAGAN PKWY |  |

|                               |                    |      |
|-------------------------------|--------------------|------|
| HORIZONTAL SCALE<br>1" = 100' | BRIDGE FILE<br>N/A |      |
| VERTICAL SCALE<br>N/A         | DESIGNATION<br>--  |      |
| SURVEY BOOK                   | SHEETS             |      |
|                               | ----               | of X |
| CONTRACT                      | PROJECT            |      |
| --                            | --                 |      |





Z:\2024\RONALD REAGAN PKWY & STAFFORD RD. PLAINFIELD\DWG\EXHIBIT-3 RAB\_1.DWG



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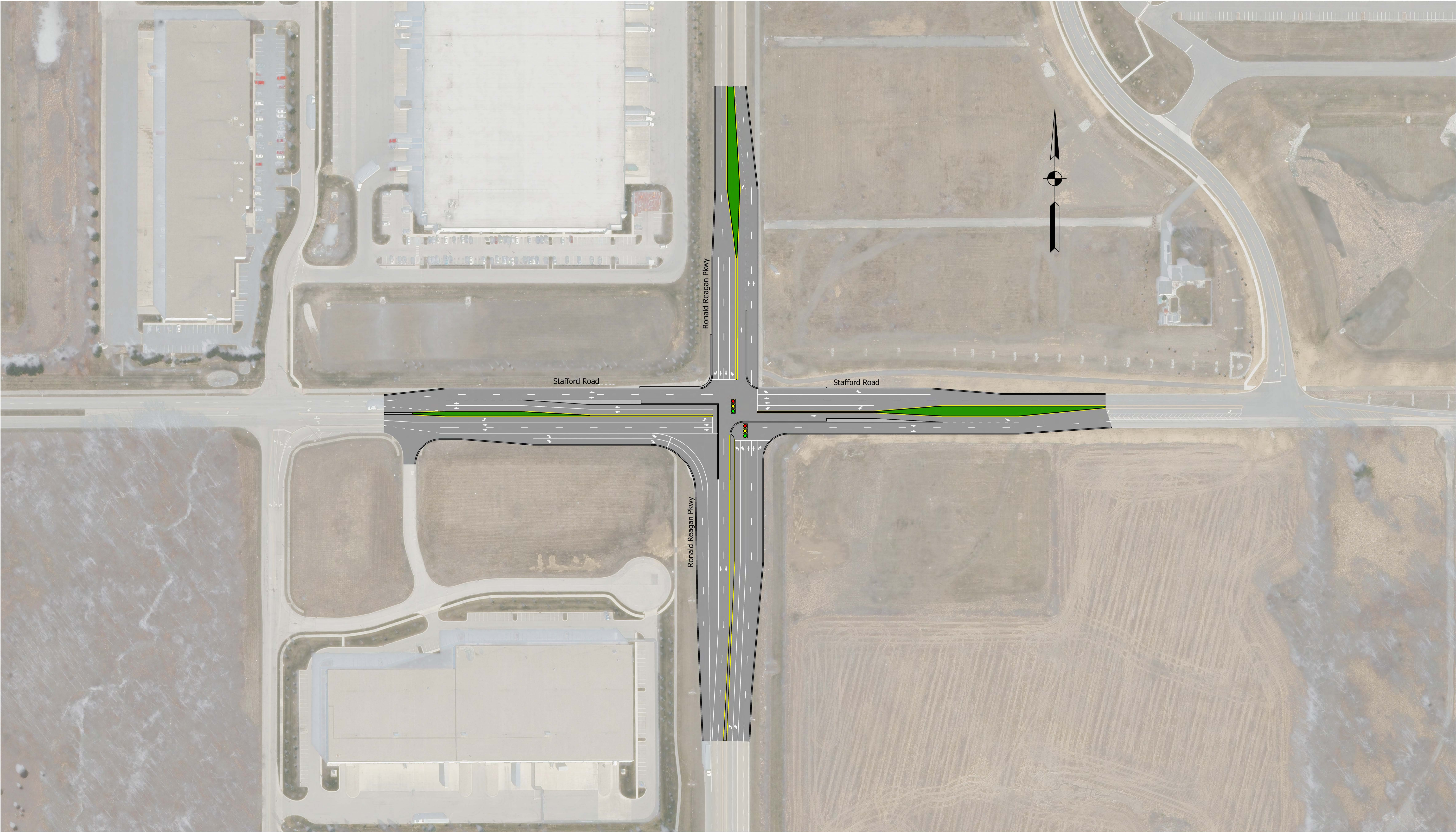
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|                             |  |                    |  |
|-----------------------------|--|--------------------|--|
| RECOMMENDED<br>FOR APPROVAL |  | XX/XX/2024<br>DATE |  |
| DESIGNED: XXX               |  | DRAWN: XXX         |  |
| CHECKED: JAH                |  | CHECKED: JAH       |  |

|                                                                       |  |
|-----------------------------------------------------------------------|--|
| TOWN OF<br>PLAINFIELD                                                 |  |
| PROPOSED SINGLE POINT INTERCHANGE<br>STAFFORD RD & RONALD REAGAN PKWY |  |

|                               |                    |      |
|-------------------------------|--------------------|------|
| HORIZONTAL SCALE<br>1" = 100' | BRIDGE FILE<br>N/A |      |
| VERTICAL SCALE<br>N/A         | DESIGNATION<br>--  |      |
| SURVEY BOOK                   | SHEETS             |      |
|                               | ----               | of X |
| CONTRACT                      | PROJECT            |      |
| --                            | --                 |      |





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|                             |  |                    |  |
|-----------------------------|--|--------------------|--|
| RECOMMENDED<br>FOR APPROVAL |  | XX/XX/2024<br>DATE |  |
| DESIGNED: XXX               |  | DRAWN: XXX         |  |
| CHECKED: JAH                |  | CHECKED: JAH       |  |

|                                                                  |  |
|------------------------------------------------------------------|--|
| TOWN OF<br>PLAINFIELD                                            |  |
| PROPOSED ECHELON INTERCHANGE<br>STAFFORD RD & RONALD REAGAN PKWY |  |

|                               |                    |      |
|-------------------------------|--------------------|------|
| HORIZONTAL SCALE<br>1" = 100' | BRIDGE FILE<br>N/A |      |
| VERTICAL SCALE<br>N/A         | DESIGNATION<br>--  |      |
| SURVEY BOOK                   | SHEETS             |      |
|                               | ----               | of X |
| CONTRACT<br>--                | PROJECT<br>--      |      |



## ***CAPACITY ANALYSIS***

# HCM 6th Signalized Intersection Summary 6: Ronald Reagan Parkway & Stafford Road

Existing AM Peak

|                                                                                                          |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                                                                   | 71                                                                                | 60                                                                                | 0                                                                                 | 7                                                                                 | 93                                                                                | 19                                                                                | 835                                                                                | 861                                                                                 | 50                                                                                  | 21                                                                                  | 374                                                                                 | 45                                                                                  |
| Future Volume (veh/h)                                                                                    | 71                                                                                | 60                                                                                | 0                                                                                 | 7                                                                                 | 93                                                                                | 19                                                                                | 835                                                                                | 861                                                                                 | 50                                                                                  | 21                                                                                  | 374                                                                                 | 45                                                                                  |
| Initial Q (Qb), veh                                                                                      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                      | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                                    | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                   | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                               | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                |
| Adj Flow Rate, veh/h                                                                                     | 91                                                                                | 77                                                                                | 0                                                                                 | 9                                                                                 | 119                                                                               | 24                                                                                | 1071                                                                               | 1104                                                                                | 64                                                                                  | 27                                                                                  | 479                                                                                 | 58                                                                                  |
| Peak Hour Factor                                                                                         | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                               | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Percent Heavy Veh, %                                                                                     | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                  | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   |
| Cap, veh/h                                                                                               | 111                                                                               | 199                                                                               |                                                                                   | 147                                                                               | 141                                                                               | 120                                                                               | 1152                                                                               | 2319                                                                                | 134                                                                                 | 49                                                                                  | 1190                                                                                | 143                                                                                 |
| Arrive On Green                                                                                          | 0.03                                                                              | 0.11                                                                              | 0.00                                                                              | 0.01                                                                              | 0.08                                                                              | 0.08                                                                              | 0.34                                                                               | 0.70                                                                                | 0.70                                                                                | 0.03                                                                                | 0.38                                                                                | 0.38                                                                                |
| Sat Flow, veh/h                                                                                          | 1725                                                                              | 1811                                                                              | 2701                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 3346                                                                               | 3306                                                                                | 192                                                                                 | 1725                                                                                | 3092                                                                                | 373                                                                                 |
| Grp Volume(v), veh/h                                                                                     | 91                                                                                | 77                                                                                | 0                                                                                 | 9                                                                                 | 119                                                                               | 24                                                                                | 1071                                                                               | 574                                                                                 | 594                                                                                 | 27                                                                                  | 266                                                                                 | 271                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                                                                 | 1725                                                                              | 1811                                                                              | 1351                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 1673                                                                               | 1721                                                                                | 1777                                                                                | 1725                                                                                | 1721                                                                                | 1744                                                                                |
| Q Serve(g_s), s                                                                                          | 5.9                                                                               | 7.2                                                                               | 0.0                                                                               | 0.9                                                                               | 11.9                                                                              | 2.4                                                                               | 56.5                                                                               | 27.4                                                                                | 27.4                                                                                | 2.8                                                                                 | 20.6                                                                                | 20.8                                                                                |
| Cycle Q Clear(g_c), s                                                                                    | 5.9                                                                               | 7.2                                                                               | 0.0                                                                               | 0.9                                                                               | 11.9                                                                              | 2.4                                                                               | 56.5                                                                               | 27.4                                                                                | 27.4                                                                                | 2.8                                                                                 | 20.6                                                                                | 20.8                                                                                |
| Prop In Lane                                                                                             | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.11                                                                                | 1.00                                                                                |                                                                                     | 0.21                                                                                |
| Lane Grp Cap(c), veh/h                                                                                   | 111                                                                               | 199                                                                               |                                                                                   | 147                                                                               | 141                                                                               | 120                                                                               | 1152                                                                               | 1207                                                                                | 1247                                                                                | 49                                                                                  | 662                                                                                 | 671                                                                                 |
| V/C Ratio(X)                                                                                             | 0.82                                                                              | 0.39                                                                              |                                                                                   | 0.06                                                                              | 0.84                                                                              | 0.20                                                                              | 0.93                                                                               | 0.48                                                                                | 0.48                                                                                | 0.55                                                                                | 0.40                                                                                | 0.40                                                                                |
| Avail Cap(c_a), veh/h                                                                                    | 111                                                                               | 228                                                                               |                                                                                   | 231                                                                               | 256                                                                               | 217                                                                               | 1632                                                                               | 1207                                                                                | 1247                                                                                | 99                                                                                  | 662                                                                                 | 671                                                                                 |
| HCM Platoon Ratio                                                                                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                       | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                                 | 80.8                                                                              | 75.7                                                                              | 0.0                                                                               | 76.5                                                                              | 83.3                                                                              | 62.4                                                                              | 57.9                                                                               | 12.2                                                                                | 12.2                                                                                | 87.8                                                                                | 41.0                                                                                | 41.0                                                                                |
| Incr Delay (d2), s/veh                                                                                   | 36.7                                                                              | 1.2                                                                               | 0.0                                                                               | 0.2                                                                               | 12.4                                                                              | 0.8                                                                               | 7.7                                                                                | 1.3                                                                                 | 1.3                                                                                 | 9.2                                                                                 | 1.8                                                                                 | 1.8                                                                                 |
| Initial Q Delay(d3), s/veh                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                 | 2.6                                                                               | 3.4                                                                               | 0.0                                                                               | 0.4                                                                               | 6.0                                                                               | 1.1                                                                               | 24.7                                                                               | 10.5                                                                                | 10.8                                                                                | 1.4                                                                                 | 9.0                                                                                 | 9.2                                                                                 |
| Unsig. Movement Delay, s/veh                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh                                                                                    | 117.5                                                                             | 76.9                                                                              | 0.0                                                                               | 76.7                                                                              | 95.7                                                                              | 63.2                                                                              | 65.6                                                                               | 13.6                                                                                | 13.5                                                                                | 97.0                                                                                | 42.8                                                                                | 42.8                                                                                |
| LnGrp LOS                                                                                                | F                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | E                                                                                 | E                                                                                  | B                                                                                   | B                                                                                   | F                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h                                                                                      | 168                                                                               |                                                                                   |                                                                                   | 152                                                                               |                                                                                   |                                                                                   | 2239                                                                               |                                                                                     |                                                                                     | 564                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                                                    | 98.9                                                                              |                                                                                   |                                                                                   | 89.4                                                                              |                                                                                   |                                                                                   | 38.4                                                                               |                                                                                     |                                                                                     | 45.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                                                             | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs                                                                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                 | 11.7                                                                              | 135.0                                                                             | 9.1                                                                               | 27.3                                                                              | 69.8                                                                              | 77.0                                                                              | 15.0                                                                               | 21.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                                  | 6.5                                                                               | 6.5                                                                               | 7.3                                                                               | * 7.1                                                                             | 6.7                                                                               | * 6.5                                                                             | 9.1                                                                                | 7.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                              | 10.5                                                                              | 128.5                                                                             | 10.7                                                                              | * 23                                                                              | 89.3                                                                              | * 50                                                                              | 5.9                                                                                | 25.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                             | 4.8                                                                               | 29.4                                                                              | 2.9                                                                               | 9.2                                                                               | 58.5                                                                              | 22.8                                                                              | 7.9                                                                                | 13.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                                  | 0.0                                                                               | 9.2                                                                               | 0.0                                                                               | 0.2                                                                               | 4.5                                                                               | 3.0                                                                               | 0.0                                                                                | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay, s/veh                                                                                | 45.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                                                              | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 6: Ronald Reagan Parkway & Stafford Road

Existing PM Peak

|                                                                                                          |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                                                                   | 104                                                                               | 91                                                                                | 0                                                                                 | 34                                                                                | 86                                                                                | 37                                                                                | 651                                                                                | 819                                                                                 | 15                                                                                  | 23                                                                                  | 755                                                                                 | 25                                                                                  |
| Future Volume (veh/h)                                                                                    | 104                                                                               | 91                                                                                | 0                                                                                 | 34                                                                                | 86                                                                                | 37                                                                                | 651                                                                                | 819                                                                                 | 15                                                                                  | 23                                                                                  | 755                                                                                 | 25                                                                                  |
| Initial Q (Qb), veh                                                                                      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                      | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                                    | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                   | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                               | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                |
| Adj Flow Rate, veh/h                                                                                     | 113                                                                               | 99                                                                                | 0                                                                                 | 37                                                                                | 93                                                                                | 40                                                                                | 708                                                                                | 890                                                                                 | 16                                                                                  | 25                                                                                  | 821                                                                                 | 27                                                                                  |
| Peak Hour Factor                                                                                         | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %                                                                                     | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                  | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   |
| Cap, veh/h                                                                                               | 113                                                                               | 146                                                                               |                                                                                   | 120                                                                               | 116                                                                               | 99                                                                                | 780                                                                                | 2466                                                                                | 44                                                                                  | 48                                                                                  | 1723                                                                                | 57                                                                                  |
| Arrive On Green                                                                                          | 0.03                                                                              | 0.08                                                                              | 0.00                                                                              | 0.03                                                                              | 0.06                                                                              | 0.06                                                                              | 0.23                                                                               | 0.71                                                                                | 0.71                                                                                | 0.03                                                                                | 0.51                                                                                | 0.51                                                                                |
| Sat Flow, veh/h                                                                                          | 1725                                                                              | 1811                                                                              | 2701                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 3346                                                                               | 3458                                                                                | 62                                                                                  | 1725                                                                                | 3400                                                                                | 112                                                                                 |
| Grp Volume(v), veh/h                                                                                     | 113                                                                               | 99                                                                                | 0                                                                                 | 37                                                                                | 93                                                                                | 40                                                                                | 708                                                                                | 443                                                                                 | 463                                                                                 | 25                                                                                  | 415                                                                                 | 433                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                                                                 | 1725                                                                              | 1811                                                                              | 1351                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 1673                                                                               | 1721                                                                                | 1800                                                                                | 1725                                                                                | 1721                                                                                | 1791                                                                                |
| Q Serve(g_s), s                                                                                          | 5.9                                                                               | 9.6                                                                               | 0.0                                                                               | 3.6                                                                               | 9.1                                                                               | 4.0                                                                               | 37.1                                                                               | 17.9                                                                                | 17.9                                                                                | 2.6                                                                                 | 28.3                                                                                | 28.3                                                                                |
| Cycle Q Clear(g_c), s                                                                                    | 5.9                                                                               | 9.6                                                                               | 0.0                                                                               | 3.6                                                                               | 9.1                                                                               | 4.0                                                                               | 37.1                                                                               | 17.9                                                                                | 17.9                                                                                | 2.6                                                                                 | 28.3                                                                                | 28.3                                                                                |
| Prop In Lane                                                                                             | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.03                                                                                | 1.00                                                                                |                                                                                     | 0.06                                                                                |
| Lane Grp Cap(c), veh/h                                                                                   | 113                                                                               | 146                                                                               |                                                                                   | 120                                                                               | 116                                                                               | 99                                                                                | 780                                                                                | 1227                                                                                | 1284                                                                                | 48                                                                                  | 872                                                                                 | 908                                                                                 |
| V/C Ratio(X)                                                                                             | 1.00                                                                              | 0.68                                                                              |                                                                                   | 0.31                                                                              | 0.80                                                                              | 0.41                                                                              | 0.91                                                                               | 0.36                                                                                | 0.36                                                                                | 0.52                                                                                | 0.48                                                                                | 0.48                                                                                |
| Avail Cap(c_a), veh/h                                                                                    | 113                                                                               | 232                                                                               |                                                                                   | 177                                                                               | 260                                                                               | 221                                                                               | 1658                                                                               | 1227                                                                                | 1284                                                                                | 101                                                                                 | 872                                                                                 | 908                                                                                 |
| HCM Platoon Ratio                                                                                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                       | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                                 | 82.6                                                                              | 80.5                                                                              | 0.0                                                                               | 76.3                                                                              | 83.2                                                                              | 64.1                                                                              | 67.2                                                                               | 10.0                                                                                | 10.0                                                                                | 86.4                                                                                | 28.9                                                                                | 28.9                                                                                |
| Incr Delay (d2), s/veh                                                                                   | 84.6                                                                              | 5.4                                                                               | 0.0                                                                               | 1.4                                                                               | 11.8                                                                              | 2.7                                                                               | 4.4                                                                                | 0.8                                                                                 | 0.8                                                                                 | 8.6                                                                                 | 1.9                                                                                 | 1.8                                                                                 |
| Initial Q Delay(d3), s/veh                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                 | 5.2                                                                               | 4.7                                                                               | 0.0                                                                               | 1.7                                                                               | 4.7                                                                               | 1.9                                                                               | 16.4                                                                               | 7.1                                                                                 | 7.4                                                                                 | 1.3                                                                                 | 12.4                                                                                | 12.9                                                                                |
| Unsig. Movement Delay, s/veh                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh                                                                                    | 167.3                                                                             | 85.9                                                                              | 0.0                                                                               | 77.7                                                                              | 94.9                                                                              | 66.8                                                                              | 71.7                                                                               | 10.8                                                                                | 10.8                                                                                | 95.0                                                                                | 30.8                                                                                | 30.7                                                                                |
| LnGrp LOS                                                                                                | F                                                                                 | F                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | E                                                                                 | E                                                                                  | B                                                                                   | B                                                                                   | F                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h                                                                                      | 212                                                                               |                                                                                   |                                                                                   | 170                                                                               |                                                                                   |                                                                                   | 1614                                                                               |                                                                                     |                                                                                     | 873                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                                                    | 129.3                                                                             |                                                                                   |                                                                                   | 84.5                                                                              |                                                                                   |                                                                                   | 37.5                                                                               |                                                                                     |                                                                                     | 32.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                                                             | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs                                                                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                 | 11.5                                                                              | 135.0                                                                             | 12.0                                                                              | 21.6                                                                              | 48.7                                                                              | 97.8                                                                              | 15.0                                                                               | 18.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                                  | 6.5                                                                               | 6.5                                                                               | 7.3                                                                               | * 7.1                                                                             | 6.7                                                                               | * 6.5                                                                             | 9.1                                                                                | 7.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                              | 10.5                                                                              | 128.5                                                                             | 10.7                                                                              | * 23                                                                              | 89.3                                                                              | * 50                                                                              | 5.9                                                                                | 25.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                             | 4.6                                                                               | 19.9                                                                              | 5.6                                                                               | 11.6                                                                              | 39.1                                                                              | 30.3                                                                              | 7.9                                                                                | 11.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                                  | 0.0                                                                               | 7.3                                                                               | 0.0                                                                               | 0.3                                                                               | 2.9                                                                               | 5.4                                                                               | 0.0                                                                                | 0.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay, s/veh                                                                                | 45.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                                                              | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

10/03/2024

Synchro 12 Report  
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# HCM 6th Signalized Intersection Summary 6: Ronald Reagan Parkway & Stafford Road

Future AM Peak

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 97                                                                                | 82                                                                                | 1136                                                                              | 10                                                                                | 126                                                                               | 26                                                                                | 1136                                                                                | 1171                                                                                | 68                                                                                  | 29                                                                                  | 509                                                                                 | 61                                                                                  |
| Future Volume (veh/h)        | 97                                                                                | 82                                                                                | 1136                                                                              | 10                                                                                | 126                                                                               | 26                                                                                | 1136                                                                                | 1171                                                                                | 68                                                                                  | 29                                                                                  | 509                                                                                 | 61                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                |
| Adj Flow Rate, veh/h         | 124                                                                               | 105                                                                               | 0                                                                                 | 13                                                                                | 162                                                                               | 33                                                                                | 1456                                                                                | 1501                                                                                | 87                                                                                  | 37                                                                                  | 653                                                                                 | 78                                                                                  |
| Peak Hour Factor             | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Percent Heavy Veh, %         | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   |
| Cap, veh/h                   | 106                                                                               | 233                                                                               |                                                                                   | 154                                                                               | 183                                                                               | 155                                                                               | 1512                                                                                | 2236                                                                                | 129                                                                                 | 65                                                                                  | 808                                                                                 | 96                                                                                  |
| Arrive On Green              | 0.03                                                                              | 0.13                                                                              | 0.00                                                                              | 0.01                                                                              | 0.10                                                                              | 0.10                                                                              | 0.45                                                                                | 0.68                                                                                | 0.68                                                                                | 0.04                                                                                | 0.26                                                                                | 0.26                                                                                |
| Sat Flow, veh/h              | 1725                                                                              | 1811                                                                              | 2701                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 3346                                                                                | 3306                                                                                | 191                                                                                 | 1725                                                                                | 3096                                                                                | 369                                                                                 |
| Grp Volume(v), veh/h         | 124                                                                               | 105                                                                               | 0                                                                                 | 13                                                                                | 162                                                                               | 33                                                                                | 1456                                                                                | 778                                                                                 | 810                                                                                 | 37                                                                                  | 363                                                                                 | 368                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1725                                                                              | 1811                                                                              | 1351                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 1673                                                                                | 1721                                                                                | 1777                                                                                | 1725                                                                                | 1721                                                                                | 1745                                                                                |
| Q Serve(g_s), s              | 5.9                                                                               | 10.2                                                                              | 0.0                                                                               | 1.3                                                                               | 16.8                                                                              | 3.3                                                                               | 80.2                                                                                | 50.8                                                                                | 51.5                                                                                | 4.0                                                                                 | 37.5                                                                                | 37.6                                                                                |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 10.2                                                                              | 0.0                                                                               | 1.3                                                                               | 16.8                                                                              | 3.3                                                                               | 80.2                                                                                | 50.8                                                                                | 51.5                                                                                | 4.0                                                                                 | 37.5                                                                                | 37.6                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.11                                                                                | 1.00                                                                                |                                                                                     | 0.21                                                                                |
| Lane Grp Cap(c), veh/h       | 106                                                                               | 233                                                                               |                                                                                   | 154                                                                               | 183                                                                               | 155                                                                               | 1512                                                                                | 1164                                                                                | 1202                                                                                | 65                                                                                  | 449                                                                                 | 455                                                                                 |
| V/C Ratio(X)                 | 1.17                                                                              | 0.45                                                                              |                                                                                   | 0.08                                                                              | 0.88                                                                              | 0.21                                                                              | 0.96                                                                                | 0.67                                                                                | 0.67                                                                                | 0.57                                                                                | 0.81                                                                                | 0.81                                                                                |
| Avail Cap(c_a), veh/h        | 106                                                                               | 233                                                                               |                                                                                   | 229                                                                               | 247                                                                               | 209                                                                               | 1573                                                                                | 1164                                                                                | 1202                                                                                | 95                                                                                  | 449                                                                                 | 455                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 83.7                                                                              | 76.6                                                                              | 0.0                                                                               | 75.2                                                                              | 84.3                                                                              | 60.5                                                                              | 50.5                                                                                | 18.2                                                                                | 18.3                                                                                | 89.9                                                                                | 65.7                                                                                | 65.8                                                                                |
| Incr Delay (d2), s/veh       | 138.6                                                                             | 1.4                                                                               | 0.0                                                                               | 0.2                                                                               | 23.6                                                                              | 0.7                                                                               | 14.6                                                                                | 3.1                                                                                 | 3.0                                                                                 | 7.6                                                                                 | 14.4                                                                                | 14.3                                                                                |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 6.5                                                                               | 4.8                                                                               | 0.0                                                                               | 0.6                                                                               | 9.0                                                                               | 1.5                                                                               | 35.8                                                                                | 20.2                                                                                | 21.1                                                                                | 1.9                                                                                 | 18.1                                                                                | 18.4                                                                                |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 222.3                                                                             | 77.9                                                                              | 0.0                                                                               | 75.4                                                                              | 107.9                                                                             | 61.2                                                                              | 65.1                                                                                | 21.2                                                                                | 21.3                                                                                | 97.5                                                                                | 80.1                                                                                | 80.1                                                                                |
| LnGrp LOS                    | F                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | E                                                                                 | E                                                                                   | C                                                                                   | C                                                                                   | F                                                                                   | F                                                                                   | F                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 229                                                                               |                                                                                   |                                                                                   | 208                                                                               |                                                                                   |                                                                                     | 3044                                                                                |                                                                                     |                                                                                     | 768                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 156.1                                                                             |                                                                                   |                                                                                   | 98.5                                                                              |                                                                                   |                                                                                     | 42.2                                                                                |                                                                                     |                                                                                     | 80.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 13.7                                                                              | 135.0                                                                             | 9.8                                                                               | 31.6                                                                              | 92.6                                                                              | 56.1                                                                              | 15.0                                                                                | 26.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.5                                                                               | 6.5                                                                               | 7.3                                                                               | * 7.1                                                                             | 6.7                                                                               | * 6.5                                                                             | 9.1                                                                                 | 7.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.5                                                                              | 128.5                                                                             | 10.7                                                                              | * 23                                                                              | 89.3                                                                              | * 50                                                                              | 5.9                                                                                 | 25.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.0                                                                               | 53.5                                                                              | 3.3                                                                               | 12.2                                                                              | 82.2                                                                              | 39.6                                                                              | 7.9                                                                                 | 18.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 16.8                                                                              | 0.0                                                                               | 0.3                                                                               | 3.6                                                                               | 3.0                                                                               | 0.0                                                                                 | 0.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

|                           |      |
|---------------------------|------|
| HCM 6th Ctrl Delay, s/veh | 58.1 |
| HCM 6th LOS               | E    |

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

# HCM 6th Signalized Intersection Summary 6: Ronald Reagan Parkway & Stafford Road

Future PM Peak

|                                                                                                          |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                      |  |  |  |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)                                                                                   | 141                                                                               | 124                                                                               | 885                                                                               | 46                                                                                | 117                                                                               | 50                                                                                | 885                                                                                | 1114                                                                                | 20                                                                                  | 31                                                                                  | 1027                                                                                | 34                                                                                  |
| Future Volume (veh/h)                                                                                    | 141                                                                               | 124                                                                               | 885                                                                               | 46                                                                                | 117                                                                               | 50                                                                                | 885                                                                                | 1114                                                                                | 20                                                                                  | 31                                                                                  | 1027                                                                                | 34                                                                                  |
| Initial Q (Qb), veh                                                                                      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                      | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                                    | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                   | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                              | 1811                                                                               | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                | 1811                                                                                |
| Adj Flow Rate, veh/h                                                                                     | 153                                                                               | 135                                                                               | 0                                                                                 | 50                                                                                | 127                                                                               | 54                                                                                | 962                                                                                | 1211                                                                                | 22                                                                                  | 34                                                                                  | 1116                                                                                | 37                                                                                  |
| Peak Hour Factor                                                                                         | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %                                                                                     | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                  | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   | 6                                                                                   |
| Cap, veh/h                                                                                               | 110                                                                               | 164                                                                               |                                                                                   | 119                                                                               | 150                                                                               | 128                                                                               | 1042                                                                               | 2405                                                                                | 44                                                                                  | 54                                                                                  | 1408                                                                                | 47                                                                                  |
| Arrive On Green                                                                                          | 0.03                                                                              | 0.09                                                                              | 0.00                                                                              | 0.03                                                                              | 0.08                                                                              | 0.08                                                                              | 0.31                                                                               | 0.70                                                                                | 0.70                                                                                | 0.03                                                                                | 0.41                                                                                | 0.41                                                                                |
| Sat Flow, veh/h                                                                                          | 1725                                                                              | 1811                                                                              | 2701                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 3346                                                                               | 3458                                                                                | 63                                                                                  | 1725                                                                                | 3399                                                                                | 113                                                                                 |
| Grp Volume(v), veh/h                                                                                     | 153                                                                               | 135                                                                               | 0                                                                                 | 50                                                                                | 127                                                                               | 54                                                                                | 962                                                                                | 602                                                                                 | 631                                                                                 | 34                                                                                  | 565                                                                                 | 588                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                                                                 | 1725                                                                              | 1811                                                                              | 1351                                                                              | 1725                                                                              | 1811                                                                              | 1535                                                                              | 1673                                                                               | 1721                                                                                | 1800                                                                                | 1725                                                                                | 1721                                                                                | 1791                                                                                |
| Q Serve(g_s), s                                                                                          | 5.9                                                                               | 13.5                                                                              | 0.0                                                                               | 4.9                                                                               | 12.8                                                                              | 5.5                                                                               | 51.3                                                                               | 30.3                                                                                | 30.3                                                                                | 3.6                                                                                 | 52.9                                                                                | 52.9                                                                                |
| Cycle Q Clear(g_c), s                                                                                    | 5.9                                                                               | 13.5                                                                              | 0.0                                                                               | 4.9                                                                               | 12.8                                                                              | 5.5                                                                               | 51.3                                                                               | 30.3                                                                                | 30.3                                                                                | 3.6                                                                                 | 52.9                                                                                | 52.9                                                                                |
| Prop In Lane                                                                                             | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.03                                                                                | 1.00                                                                                |                                                                                     | 0.06                                                                                |
| Lane Grp Cap(c), veh/h                                                                                   | 110                                                                               | 164                                                                               |                                                                                   | 119                                                                               | 150                                                                               | 128                                                                               | 1042                                                                               | 1197                                                                                | 1252                                                                                | 54                                                                                  | 713                                                                                 | 742                                                                                 |
| V/C Ratio(X)                                                                                             | 1.39                                                                              | 0.83                                                                              |                                                                                   | 0.42                                                                              | 0.84                                                                              | 0.42                                                                              | 0.92                                                                               | 0.50                                                                                | 0.50                                                                                | 0.63                                                                                | 0.79                                                                                | 0.79                                                                                |
| Avail Cap(c_a), veh/h                                                                                    | 110                                                                               | 226                                                                               |                                                                                   | 160                                                                               | 254                                                                               | 215                                                                               | 1618                                                                               | 1197                                                                                | 1252                                                                                | 98                                                                                  | 713                                                                                 | 742                                                                                 |
| HCM Platoon Ratio                                                                                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                       | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                                 | 83.0                                                                              | 82.6                                                                              | 0.0                                                                               | 74.5                                                                              | 83.5                                                                              | 63.1                                                                              | 61.4                                                                               | 13.2                                                                                | 13.2                                                                                | 88.4                                                                                | 47.2                                                                                | 47.2                                                                                |
| Incr Delay (d2), s/veh                                                                                   | 220.4                                                                             | 15.8                                                                              | 0.0                                                                               | 2.3                                                                               | 12.0                                                                              | 2.2                                                                               | 6.4                                                                                | 1.5                                                                                 | 1.4                                                                                 | 11.5                                                                                | 8.8                                                                                 | 8.5                                                                                 |
| Initial Q Delay(d3), s/veh                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                 | 9.3                                                                               | 7.1                                                                               | 0.0                                                                               | 2.3                                                                               | 6.5                                                                               | 2.5                                                                               | 22.8                                                                               | 12.3                                                                                | 12.9                                                                                | 1.8                                                                                 | 24.6                                                                                | 25.5                                                                                |
| Unsig. Movement Delay, s/veh                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh                                                                                    | 303.4                                                                             | 98.4                                                                              | 0.0                                                                               | 76.8                                                                              | 95.5                                                                              | 65.3                                                                              | 67.8                                                                               | 14.7                                                                                | 14.6                                                                                | 99.9                                                                                | 56.0                                                                                | 55.7                                                                                |
| LnGrp LOS                                                                                                | F                                                                                 | F                                                                                 |                                                                                   | E                                                                                 | F                                                                                 | E                                                                                 | E                                                                                  | B                                                                                   | B                                                                                   | F                                                                                   | E                                                                                   | E                                                                                   |
| Approach Vol, veh/h                                                                                      | 288                                                                               |                                                                                   |                                                                                   | 231                                                                               |                                                                                   |                                                                                   | 2195                                                                               |                                                                                     |                                                                                     | 1187                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                                                    | 207.3                                                                             |                                                                                   |                                                                                   | 84.4                                                                              |                                                                                   |                                                                                   | 37.9                                                                               |                                                                                     |                                                                                     | 57.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                                                             | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs                                                                                     | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                 | 12.3                                                                              | 135.0                                                                             | 13.7                                                                              | 23.8                                                                              | 64.2                                                                              | 83.0                                                                              | 15.0                                                                               | 22.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                                  | 6.5                                                                               | 6.5                                                                               | 7.3                                                                               | * 7.1                                                                             | 6.7                                                                               | * 6.5                                                                             | 9.1                                                                                | 7.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                              | 10.5                                                                              | 128.5                                                                             | 10.7                                                                              | * 23                                                                              | 89.3                                                                              | * 50                                                                              | 5.9                                                                                | 25.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                             | 5.6                                                                               | 32.3                                                                              | 6.9                                                                               | 15.5                                                                              | 53.3                                                                              | 54.9                                                                              | 7.9                                                                                | 14.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                                  | 0.0                                                                               | 12.2                                                                              | 0.0                                                                               | 0.3                                                                               | 4.2                                                                               | 0.0                                                                               | 0.0                                                                                | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay, s/veh                                                                                | 59.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                                                              | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

10/03/2024

Synchro 12 Report  
Page 1

# SITE LAYOUT

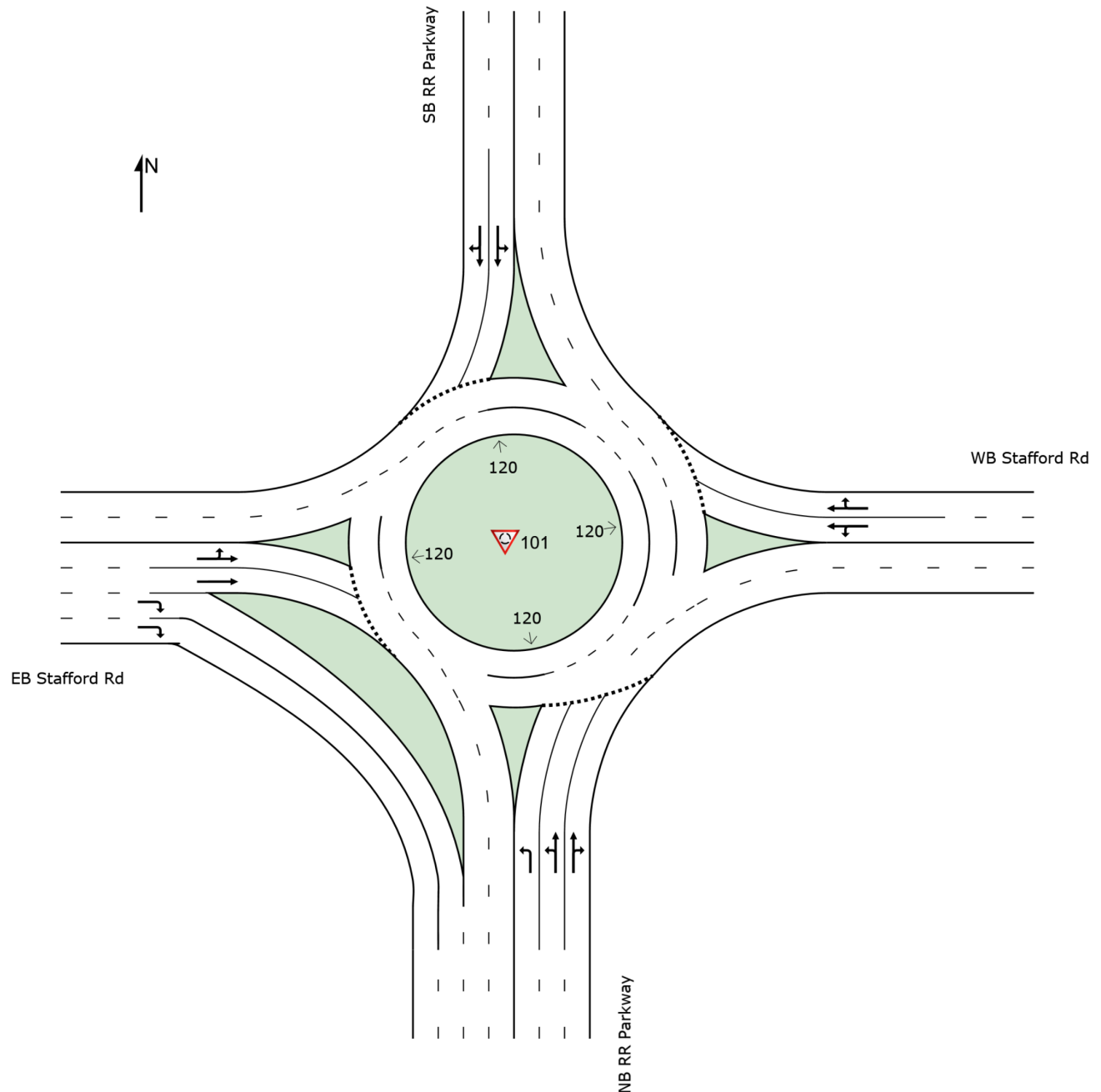
 **Site: 101 [Low Angle - AM (Site Folder: General)]**

RR Parkway & Stafford Rd

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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# MOVEMENT SUMMARY

 Site: 101 [Low Angle - AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

RR Parkway & Stafford Rd

Site Category: (None)

Roundabout

| Vehicle Movement Performance |      |           |                                         |      |                                          |      |                      |                        |                  |                         |                               |           |                |                     |                        |
|------------------------------|------|-----------|-----------------------------------------|------|------------------------------------------|------|----------------------|------------------------|------------------|-------------------------|-------------------------------|-----------|----------------|---------------------|------------------------|
| Mov ID                       | Turn | Mov Class | Demand Flows<br>[ Total HV ]<br>veh/h % |      | Arrival Flows<br>[ Total HV ]<br>veh/h % |      | Deg. Satn<br><br>v/c | Aver. Delay<br><br>sec | Level of Service | 95% Queue<br>[ Veh. veh | Back Of Queue<br>Dist ]<br>ft | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed<br><br>mph |
| South: NB RR Parkway         |      |           |                                         |      |                                          |      |                      |                        |                  |                         |                               |           |                |                     |                        |
| 3                            | L2   | All MCs   | 1495                                    | 8.0  | 1495                                     | 8.0  | 0.781                | 14.7                   | LOS B            | 8.8                     | 233.8                         | 0.74      | 0.75           | 0.85                | 32.7                   |
| 8                            | T1   | All MCs   | 1541                                    | 4.0  | 1541                                     | 4.0  | 0.781                | 7.3                    | LOS A            | 8.8                     | 230.8                         | 0.67      | 0.65           | 0.74                | 36.2                   |
| 18                           | R2   | All MCs   | 89                                      | 2.0  | 89                                       | 2.0  | 0.781                | 6.7                    | LOS A            | 8.7                     | 224.4                         | 0.64      | 0.62           | 0.70                | 35.3                   |
| Approach                     |      |           | 3125                                    | 5.9  | 3125                                     | 5.9  | 0.781                | 10.8                   | LOS B            | 8.8                     | 233.8                         | 0.70      | 0.69           | 0.79                | 34.4                   |
| East: WB Stafford Rd         |      |           |                                         |      |                                          |      |                      |                        |                  |                         |                               |           |                |                     |                        |
| 1                            | L2   | All MCs   | 13                                      | 14.0 | 13                                       | 14.0 | 0.437                | 34.1                   | LOS C            | 1.9                     | 50.1                          | 0.94      | 1.03           | 1.17                | 26.7                   |
| 6                            | T1   | All MCs   | 166                                     | 2.0  | 166                                      | 2.0  | 0.437                | 22.6                   | LOS C            | 2.6                     | 66.7                          | 0.95      | 1.03           | 1.18                | 28.1                   |
| 16                           | R2   | All MCs   | 34                                      | 0.0  | 34                                       | 0.0  | 0.437                | 21.6                   | LOS C            | 2.6                     | 66.7                          | 0.96      | 1.02           | 1.20                | 29.3                   |
| Approach                     |      |           | 213                                     | 2.4  | 213                                      | 2.4  | 0.437                | 23.1                   | LOS C            | 2.6                     | 66.7                          | 0.95      | 1.03           | 1.19                | 28.2                   |
| North: SB RR Parkway         |      |           |                                         |      |                                          |      |                      |                        |                  |                         |                               |           |                |                     |                        |
| 7                            | L2   | All MCs   | 38                                      | 0.0  | 38                                       | 0.0  | 0.889                | 38.1                   | LOS D            | 7.9                     | 212.3                         | 0.97      | 1.29           | 2.07                | 25.6                   |
| 4                            | T1   | All MCs   | 670                                     | 10.0 | 670                                      | 10.0 | 0.889                | 30.3                   | LOS D            | 10.2                    | 273.0                         | 0.99      | 1.31           | 2.12                | 27.0                   |
| 14                           | R2   | All MCs   | 80                                      | 7.0  | 80                                       | 7.0  | 0.889                | 28.0                   | LOS D            | 10.2                    | 273.0                         | 1.00      | 1.32           | 2.16                | 27.3                   |
| Approach                     |      |           | 788                                     | 9.2  | 788                                      | 9.2  | 0.889                | 30.4                   | LOS C            | 10.2                    | 273.0                         | 0.99      | 1.31           | 2.13                | 27.0                   |
| West: EB Stafford Rd         |      |           |                                         |      |                                          |      |                      |                        |                  |                         |                               |           |                |                     |                        |
| 5                            | L2   | All MCs   | 128                                     | 3.0  | 128                                      | 3.0  | 0.104                | 11.2                   | LOS B            | 0.6                     | 14.1                          | 0.60      | 0.69           | 0.60                | 32.7                   |
| 2                            | T1   | All MCs   | 108                                     | 0.0  | 108                                      | 0.0  | 0.104                | 4.9                    | LOS A            | 0.6                     | 14.1                          | 0.60      | 0.49           | 0.60                | 34.7                   |
| 12                           | R2   | All MCs   | 1495                                    | 8.0  | 1495                                     | 8.0  | 0.482                | 3.8                    | LOS A            | 0.0                     | 0.0                           | 0.00      | 0.42           | 0.00                | 36.4                   |
| Approach                     |      |           | 1730                                    | 7.1  | 1730                                     | 7.1  | 0.482                | 4.4                    | LOS A            | 0.6                     | 14.1                          | 0.08      | 0.44           | 0.08                | 36.0                   |
| All Vehicles                 |      |           | 5857                                    | 6.6  | 5857                                     | 6.6  | 0.889                | 12.0                   | LOS B            | 10.2                    | 273.0                         | 0.56      | 0.71           | 0.77                | 33.3                   |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

 **Site: 101 [Low Angle - PM (Site Folder: General)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.6.228**

RR Parkway & Stafford Rd  
Site Category: (None)  
Roundabout

| Vehicle Movement Performance |      |           |                                         |      |                                          |      |                      |                        |                  |                                 |              |           |                |                     |                        |
|------------------------------|------|-----------|-----------------------------------------|------|------------------------------------------|------|----------------------|------------------------|------------------|---------------------------------|--------------|-----------|----------------|---------------------|------------------------|
| Mov ID                       | Turn | Mov Class | Demand Flows<br>[ Total HV ]<br>veh/h % |      | Arrival Flows<br>[ Total HV ]<br>veh/h % |      | Deg. Satn<br><br>v/c | Aver. Delay<br><br>sec | Level of Service | 95% Back Of Queue<br>[ Veh. veh | Dist ]<br>ft | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed<br><br>mph |
| South: NB RR Parkway         |      |           |                                         |      |                                          |      |                      |                        |                  |                                 |              |           |                |                     |                        |
| 3                            | L2   | All MCs   | 952                                     | 9.0  | 952                                      | 9.0  | 0.571                | 13.1                   | LOS B            | 3.9                             | 104.9        | 0.59      | 0.69           | 0.62                | 33.1                   |
| 8                            | T1   | All MCs   | 1198                                    | 5.0  | 1198                                     | 5.0  | 0.571                | 6.2                    | LOS A            | 3.9                             | 103.5        | 0.56      | 0.55           | 0.57                | 36.5                   |
| 18                           | R2   | All MCs   | 22                                      | 7.0  | 22                                       | 7.0  | 0.571                | 6.0                    | LOS A            | 3.9                             | 102.6        | 0.55      | 0.51           | 0.55                | 35.5                   |
| Approach                     |      |           | 2171                                    | 6.8  | 2171                                     | 6.8  | 0.571                | 9.2                    | LOS A            | 3.9                             | 104.9        | 0.57      | 0.61           | 0.59                | 34.9                   |
| East: WB Stafford Rd         |      |           |                                         |      |                                          |      |                      |                        |                  |                                 |              |           |                |                     |                        |
| 1                            | L2   | All MCs   | 49                                      | 9.0  | 49                                       | 9.0  | 0.255                | 18.0                   | LOS B            | 0.9                             | 24.6         | 0.82      | 0.93           | 0.85                | 31.2                   |
| 6                            | T1   | All MCs   | 126                                     | 2.0  | 126                                      | 2.0  | 0.255                | 9.5                    | LOS A            | 1.2                             | 29.4         | 0.81      | 0.87           | 0.82                | 33.1                   |
| 16                           | R2   | All MCs   | 54                                      | 0.0  | 54                                       | 0.0  | 0.255                | 8.9                    | LOS A            | 1.2                             | 29.4         | 0.80      | 0.85           | 0.80                | 34.9                   |
| Approach                     |      |           | 229                                     | 3.0  | 229                                      | 3.0  | 0.255                | 11.2                   | LOS B            | 1.2                             | 29.4         | 0.81      | 0.88           | 0.82                | 33.1                   |
| North: SB RR Parkway         |      |           |                                         |      |                                          |      |                      |                        |                  |                                 |              |           |                |                     |                        |
| 7                            | L2   | All MCs   | 33                                      | 0.0  | 33                                       | 0.0  | 0.811                | 23.0                   | LOS C            | 7.3                             | 189.5        | 0.91      | 1.12           | 1.59                | 31.3                   |
| 4                            | T1   | All MCs   | 1104                                    | 5.0  | 1104                                     | 5.0  | 0.811                | 15.6                   | LOS B            | 8.4                             | 218.7        | 0.92      | 1.11           | 1.57                | 33.2                   |
| 14                           | R2   | All MCs   | 37                                      | 12.0 | 37                                       | 12.0 | 0.811                | 15.3                   | LOS B            | 8.4                             | 218.7        | 0.93      | 1.10           | 1.56                | 32.6                   |
| Approach                     |      |           | 1174                                    | 5.1  | 1174                                     | 5.1  | 0.811                | 15.8                   | LOS B            | 8.4                             | 218.7        | 0.92      | 1.11           | 1.57                | 33.1                   |
| West: EB Stafford Rd         |      |           |                                         |      |                                          |      |                      |                        |                  |                                 |              |           |                |                     |                        |
| 5                            | L2   | All MCs   | 152                                     | 6.0  | 152                                      | 6.0  | 0.170                | 12.4                   | LOS B            | 1.0                             | 26.5         | 0.78      | 0.76           | 0.78                | 32.0                   |
| 2                            | T1   | All MCs   | 133                                     | 2.0  | 133                                      | 2.0  | 0.170                | 6.2                    | LOS A            | 1.0                             | 26.5         | 0.75      | 0.61           | 0.75                | 34.0                   |
| 12                           | R2   | All MCs   | 952                                     | 9.0  | 952                                      | 9.0  | 0.310                | 3.7                    | LOS A            | 0.0                             | 0.0          | 0.00      | 0.42           | 0.00                | 36.5                   |
| Approach                     |      |           | 1237                                    | 7.9  | 1237                                     | 7.9  | 0.310                | 5.1                    | LOS A            | 1.0                             | 26.5         | 0.18      | 0.48           | 0.18                | 35.6                   |
| All Vehicles                 |      |           | 4811                                    | 6.5  | 4811                                     | 6.5  | 0.811                | 9.9                    | LOS A            | 8.4                             | 218.7        | 0.57      | 0.71           | 0.74                | 34.5                   |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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## SITE LAYOUT

 **Site: 102 [Ronald Reagan Pkwy SB & Stafford Rd - AM (Site  
Folder: Future AM Peak - Grade Separation at Stafford)]**

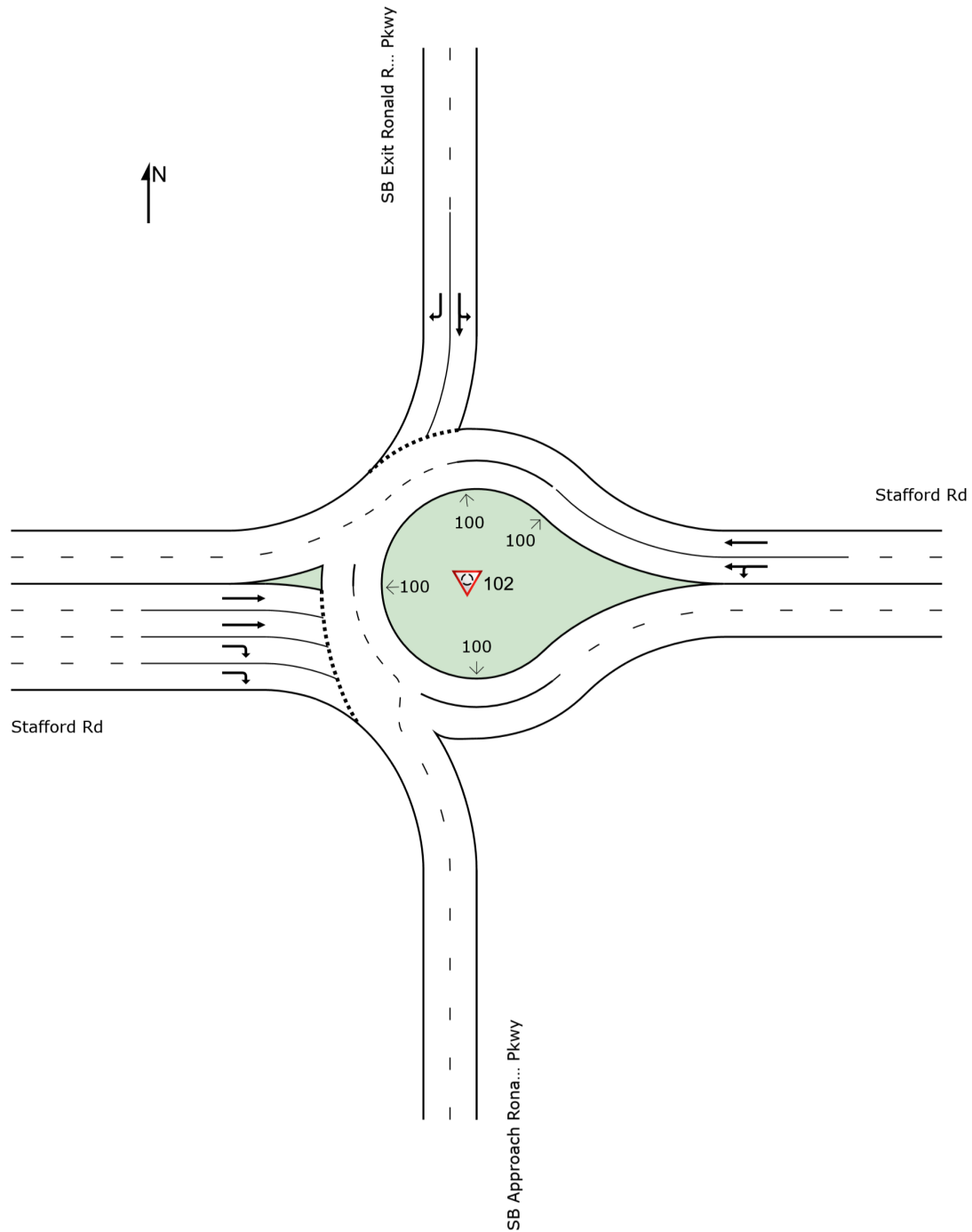
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NA

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



## SITE LAYOUT

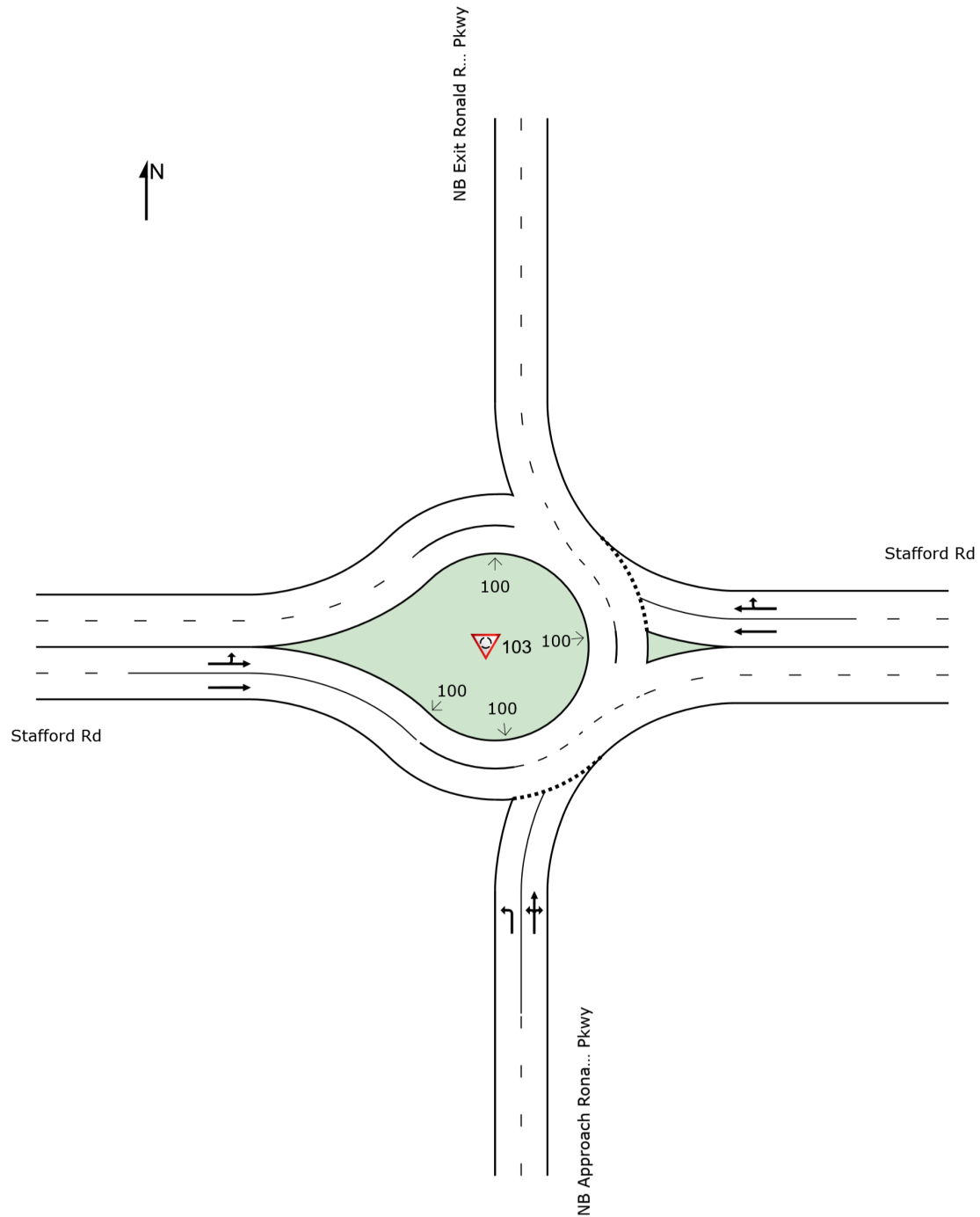
 Site: 103 [Ronald Reagan Pkwy NB & Stafford Rd - AM (Site  
Folder: Future AM Peak - Grade Separation at Stafford)]

NA

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

 **Site: 102 [Ronald Reagan Pkwy SB & Stafford Rd - AM (Site Folder: Future AM Peak - Grade Separation at Stafford)]**  
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Future AM Peak (Network Folder: Future AM Peak - Grade Separation at Stafford)]**

NA  
Site Category: (None)  
Roundabout

| Vehicle Movement Performance      |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
|-----------------------------------|------|-----------|-----------------------|------|-----------------------|------|-----------|-------------|------------------|-------------------|--------------|-----------|----------------|---------------------|-------------|
| Mov ID                            | Turn | Mov Class | Demand Flows          |      | Arrival Flows         |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |              | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                                   |      |           | [ Total HV ]<br>veh/h | %    | [ Total HV ]<br>veh/h | %    |           |             |                  | [ Veh. veh        | Dist ]<br>ft |           |                |                     |             |
| East: Stafford Rd                 |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
| 1                                 | L2   | All MCs   | 13                    | 14.0 | 13                    | 14.0 | 0.608     | 7.5         | LOS A            | 0.0               | 0.0          | 0.00      | 0.36           | 0.00                | 33.9        |
| 6                                 | T1   | All MCs   | 1661                  | 8.0  | 1661                  | 8.0  | 0.608     | 2.4         | LOS A            | 0.0               | 0.0          | 0.00      | 0.35           | 0.00                | 32.2        |
| Approach                          |      |           | 1674                  | 8.0  | 1674                  | 8.0  | 0.608     | 2.5         | LOS A            | 0.0               | 0.0          | 0.00      | 0.35           | 0.00                | 32.3        |
| North: SB Exit Ronald Reagan Pkwy |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
| 7                                 | L2   | All MCs   | 38                    | 0.0  | 38                    | 0.0  | 0.059     | 14.6        | LOS B            | 0.2               | 5.5          | 0.64      | 0.86           | 0.64                | 27.4        |
| 4                                 | T1   | All MCs   | 1                     | 0.0  | 1                     | 0.0  | 0.059     | 8.8         | LOS A            | 0.2               | 5.5          | 0.64      | 0.86           | 0.64                | 31.6        |
| 14                                | R2   | All MCs   | 80                    | 7.0  | 80                    | 7.0  | 0.096     | 8.2         | LOS A            | 0.4               | 9.9          | 0.64      | 0.76           | 0.64                | 31.9        |
| Approach                          |      |           | 120                   | 4.7  | 120                   | 4.7  | 0.096     | 10.3        | LOS B            | 0.4               | 9.9          | 0.64      | 0.79           | 0.64                | 30.6        |
| West: Stafford Rd                 |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
| 2                                 | T1   | All MCs   | 236                   | 2.0  | 236                   | 2.0  | 0.094     | 4.2         | LOS A            | 0.4               | 10.2         | 0.16      | 0.37           | 0.16                | 30.8        |
| 12                                | R2   | All MCs   | 1495                  | 8.0  | 1495                  | 8.0  | 0.496     | 5.0         | LOS A            | 3.5               | 93.9         | 0.23      | 0.46           | 0.23                | 33.6        |
| Approach                          |      |           | 1730                  | 7.2  | 1730                  | 7.2  | 0.496     | 4.9         | LOS A            | 3.5               | 93.9         | 0.22      | 0.45           | 0.22                | 33.4        |
| All Vehicles                      |      |           | 3524                  | 7.5  | 3524                  | 7.5  | 0.608     | 3.9         | LOS A            | 3.5               | 93.9         | 0.13      | 0.42           | 0.13                | 32.9        |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

 **Site: 103 [Ronald Reagan Pkwy NB & Stafford Rd - AM (Site Folder: Future AM Peak - Grade Separation at Stafford)]**  
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Future AM Peak (Network Folder: Future AM Peak - Grade Separation at Stafford)]**

NA  
Site Category: (None)  
Roundabout

| Vehicle Movement Performance          |      |           |                       |     |                       |     |           |             |                  |                   |              |           |                |                     |             |
|---------------------------------------|------|-----------|-----------------------|-----|-----------------------|-----|-----------|-------------|------------------|-------------------|--------------|-----------|----------------|---------------------|-------------|
| Mov ID                                | Turn | Mov Class | Demand Flows          |     | Arrival Flows         |     | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |              | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                                       |      |           | [ Total HV ]<br>veh/h | %   | [ Total HV ]<br>veh/h | %   |           |             |                  | [ Veh. veh        | Dist ]<br>ft |           |                |                     |             |
| South: NB Approach Ronald Reagan Pkwy |      |           |                       |     |                       |     |           |             |                  |                   |              |           |                |                     |             |
| 3                                     | L2   | All MCs   | 1495                  | 8.0 | 1495                  | 8.0 | 0.681     | 12.5        | LOS B            | 5.3               | 140.7        | 0.56      | 0.71           | 0.63                | 28.8        |
| 8                                     | T1   | All MCs   | 1                     | 0.0 | 1                     | 0.0 | 0.681     | 6.0         | LOS A            | 5.2               | 137.7        | 0.55      | 0.70           | 0.61                | 32.8        |
| 18                                    | R2   | All MCs   | 89                    | 2.0 | 89                    | 2.0 | 0.681     | 6.2         | LOS A            | 5.2               | 137.7        | 0.55      | 0.70           | 0.61                | 32.5        |
| Approach                              |      |           | 1586                  | 7.7 | 1586                  | 7.7 | 0.681     | 12.1        | LOS B            | 5.3               | 140.7        | 0.56      | 0.71           | 0.63                | 29.1        |
| East: Stafford Rd                     |      |           |                       |     |                       |     |           |             |                  |                   |              |           |                |                     |             |
| 6                                     | T1   | All MCs   | 179                   | 3.0 | 179                   | 3.0 | 0.174     | 8.3         | LOS A            | 0.9               | 21.7         | 0.75      | 0.78           | 0.75                | 30.8        |
| 16                                    | R2   | All MCs   | 34                    | 0.0 | 34                    | 0.0 | 0.174     | 7.6         | LOS A            | 0.9               | 21.7         | 0.76      | 0.74           | 0.76                | 33.8        |
| Approach                              |      |           | 213                   | 2.5 | 213                   | 2.5 | 0.174     | 8.2         | LOS A            | 0.9               | 21.7         | 0.75      | 0.78           | 0.75                | 31.6        |
| West: Stafford Rd                     |      |           |                       |     |                       |     |           |             |                  |                   |              |           |                |                     |             |
| 5                                     | L2   | All MCs   | 128                   | 3.0 | 128                   | 3.0 | 0.093     | 7.5         | LOS A            | 0.0               | 0.0          | 0.00      | 0.69           | 0.00                | 30.8        |
| 2                                     | T1   | All MCs   | 146                   | 0.0 | 146                   | 0.0 | 0.093     | 2.4         | LOS A            | 0.0               | 0.0          | 0.00      | 0.36           | 0.00                | 36.0        |
| Approach                              |      |           | 274                   | 1.4 | 274                   | 1.4 | 0.093     | 4.8         | LOS A            | 0.0               | 0.0          | 0.00      | 0.51           | 0.00                | 33.3        |
| All Vehicles                          |      |           | 2072                  | 6.3 | 2072                  | 6.3 | 0.681     | 10.8        | LOS B            | 5.3               | 140.7        | 0.51      | 0.69           | 0.56                | 29.8        |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# MOVEMENT SUMMARY

 **Site: 102 [Ronald Reagan Pkwy SB & Stafford Rd - PM (Site Folder: Future PM Peak - Grade Separation at Stafford)]**  
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Future PM Peak (Network Folder: Future PM Peak - Grade Separation at Stafford)]**

NA  
Site Category: (None)  
Roundabout

| Vehicle Movement Performance      |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
|-----------------------------------|------|-----------|-----------------------|------|-----------------------|------|-----------|-------------|------------------|-------------------|--------------|-----------|----------------|---------------------|-------------|
| Mov ID                            | Turn | Mov Class | Demand Flows          |      | Arrival Flows         |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |              | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                                   |      |           | [ Total HV ]<br>veh/h | %    | [ Total HV ]<br>veh/h | %    |           |             |                  | [ Veh. veh        | Dist ]<br>ft |           |                |                     |             |
| East: Stafford Rd                 |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
| 1                                 | L2   | All MCs   | 49                    | 9.0  | 49                    | 9.0  | 0.409     | 7.5         | LOS A            | 0.0               | 0.0          | 0.00      | 0.40           | 0.00                | 33.9        |
| 6                                 | T1   | All MCs   | 1077                  | 8.0  | 1077                  | 8.0  | 0.409     | 2.4         | LOS A            | 0.0               | 0.0          | 0.00      | 0.37           | 0.00                | 32.0        |
| Approach                          |      |           | 1127                  | 8.0  | 1127                  | 8.0  | 0.409     | 2.7         | LOS A            | 0.0               | 0.0          | 0.00      | 0.37           | 0.00                | 32.1        |
| North: SB Exit Ronald Reagan Pkwy |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
| 7                                 | L2   | All MCs   | 33                    | 0.0  | 33                    | 0.0  | 0.040     | 12.5        | LOS B            | 0.1               | 3.4          | 0.52      | 0.78           | 0.52                | 28.7        |
| 4                                 | T1   | All MCs   | 1                     | 0.0  | 1                     | 0.0  | 0.040     | 6.7         | LOS A            | 0.1               | 3.4          | 0.52      | 0.78           | 0.52                | 32.5        |
| 14                                | R2   | All MCs   | 37                    | 12.0 | 37                    | 12.0 | 0.041     | 6.8         | LOS A            | 0.1               | 3.6          | 0.52      | 0.67           | 0.52                | 32.4        |
| Approach                          |      |           | 71                    | 6.2  | 71                    | 6.2  | 0.041     | 9.5         | LOS A            | 0.1               | 3.6          | 0.52      | 0.73           | 0.52                | 30.8        |
| West: Stafford Rd                 |      |           |                       |      |                       |      |           |             |                  |                   |              |           |                |                     |             |
| 2                                 | T1   | All MCs   | 285                   | 4.0  | 285                   | 4.0  | 0.115     | 4.4         | LOS A            | 0.5               | 11.9         | 0.19      | 0.39           | 0.19                | 30.5        |
| 12                                | R2   | All MCs   | 952                   | 9.0  | 952                   | 9.0  | 0.325     | 5.0         | LOS A            | 1.6               | 44.1         | 0.22      | 0.48           | 0.22                | 33.6        |
| Approach                          |      |           | 1237                  | 7.8  | 1237                  | 7.8  | 0.325     | 4.9         | LOS A            | 1.6               | 44.1         | 0.21      | 0.46           | 0.21                | 33.2        |
| All Vehicles                      |      |           | 2434                  | 7.9  | 2434                  | 7.9  | 0.409     | 4.0         | LOS A            | 1.6               | 44.1         | 0.12      | 0.43           | 0.12                | 32.8        |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

 **Site: 103 [Ronald Reagan Pkwy NB & Stafford Rd - PM (Site Folder: Future PM Peak - Grade Separation at Stafford)]**  
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Future PM Peak (Network Folder: Future PM Peak - Grade Separation at Stafford)]**

NA  
Site Category: (None)  
Roundabout

| Vehicle Movement Performance          |      |           |              |              |               |        |           |             |                  |                   |      |           |                |                     |             |
|---------------------------------------|------|-----------|--------------|--------------|---------------|--------|-----------|-------------|------------------|-------------------|------|-----------|----------------|---------------------|-------------|
| Mov ID                                | Turn | Mov Class | Demand Flows |              | Arrival Flows |        | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |      | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed |
|                                       |      |           | [ Total HV ] | [ Total HV ] | [ Veh. veh    | Dist ] |           |             |                  |                   |      |           |                |                     |             |
|                                       |      |           | veh/h        | %            | veh/h         | %      | v/c       | sec         |                  | ft                |      |           |                |                     | mph         |
| South: NB Approach Ronald Reagan Pkwy |      |           |              |              |               |        |           |             |                  |                   |      |           |                |                     |             |
| 3                                     | L2   | All MCs   | 952          | 8.0          | 952           | 8.0    | 0.444     | 11.7        | LOS B            | 2.2               | 57.8 | 0.48      | 0.69           | 0.48                | 28.9        |
| 8                                     | T1   | All MCs   | 1            | 0.0          | 1             | 0.0    | 0.444     | 5.4         | LOS A            | 2.2               | 57.8 | 0.47      | 0.68           | 0.47                | 32.8        |
| 18                                    | R2   | All MCs   | 22           | 2.0          | 22            | 2.0    | 0.444     | 5.5         | LOS A            | 2.2               | 57.8 | 0.47      | 0.68           | 0.47                | 32.4        |
| Approach                              |      |           | 974          | 7.9          | 974           | 7.9    | 0.444     | 11.6        | LOS B            | 2.2               | 57.8 | 0.48      | 0.69           | 0.48                | 29.0        |
| East: Stafford Rd                     |      |           |              |              |               |        |           |             |                  |                   |      |           |                |                     |             |
| 6                                     | T1   | All MCs   | 175          | 3.0          | 175           | 3.0    | 0.137     | 6.5         | LOS A            | 0.6               | 14.6 | 0.60      | 0.63           | 0.60                | 31.6        |
| 16                                    | R2   | All MCs   | 54           | 0.0          | 54            | 0.0    | 0.137     | 6.1         | LOS A            | 0.6               | 14.6 | 0.60      | 0.62           | 0.60                | 34.4        |
| Approach                              |      |           | 229          | 2.3          | 229           | 2.3    | 0.137     | 6.4         | LOS A            | 0.6               | 14.6 | 0.60      | 0.63           | 0.60                | 32.6        |
| West: Stafford Rd                     |      |           |              |              |               |        |           |             |                  |                   |      |           |                |                     |             |
| 5                                     | L2   | All MCs   | 152          | 3.0          | 152           | 3.0    | 0.211     | 7.5         | LOS A            | 0.0               | 0.0  | 0.00      | 0.57           | 0.00                | 32.6        |
| 2                                     | T1   | All MCs   | 222          | 0.0          | 222           | 0.0    | 0.211     | 2.4         | LOS A            | 0.0               | 0.0  | 0.00      | 0.52           | 0.00                | 34.4        |
| Approach                              |      |           | 373          | 1.2          | 373           | 1.2    | 0.211     | 4.5         | LOS A            | 0.0               | 0.0  | 0.00      | 0.54           | 0.00                | 33.7        |
| All Vehicles                          |      |           | 1576         | 5.5          | 1576          | 5.5    | 0.444     | 9.1         | LOS A            | 2.2               | 57.8 | 0.39      | 0.64           | 0.39                | 30.6        |

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

# HCM 7th Signalized Intersection Summary 102: RR Pkwy & Stafford Rd

Future AM Peak  
Echelon; 2 NB Lefts

|                              |  |     |     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
|------------------------------|------------------------------------------------------------------------------------|-----|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|------|-----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                | EBT | EBR | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL | NBT  | NBR | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                    |     |     |  |  |  |     |      |     |  |  |  |
| Traffic Volume (veh/h)       | 0                                                                                  | 0   | 0   | 10                                                                                | 126                                                                               | 26                                                                                | 0   | 0    | 0   | 29                                                                                  | 509                                                                                 | 61                                                                                  |
| Future Volume (veh/h)        | 0                                                                                  | 0   | 0   | 10                                                                                | 126                                                                               | 26                                                                                | 0   | 0    | 0   | 29                                                                                  | 509                                                                                 | 61                                                                                  |
| Initial Q (Qb), veh          |                                                                                    |     |     | 0                                                                                 | 0                                                                                 | 0                                                                                 |     |      |     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          |                                                                                    |     |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |      |     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                    |     |     | No                                                                                |                                                                                   |                                                                                   |     |      |     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                    |     |     | 1811                                                                              | 1811                                                                              | 1811                                                                              |     |      |     | 1811                                                                                | 1811                                                                                | 1811                                                                                |
| Adj Flow Rate, veh/h         |                                                                                    |     |     | 13                                                                                | 162                                                                               | 33                                                                                |     |      |     | 37                                                                                  | 653                                                                                 | 78                                                                                  |
| Peak Hour Factor             |                                                                                    |     |     | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              |     |      |     | 0.78                                                                                | 0.78                                                                                | 0.78                                                                                |
| Percent Heavy Veh, %         |                                                                                    |     |     | 6                                                                                 | 6                                                                                 | 6                                                                                 |     |      |     | 6                                                                                   | 6                                                                                   | 6                                                                                   |
| Cap, veh/h                   |                                                                                    |     |     | 544                                                                               | 1085                                                                              | 484                                                                               |     |      |     | 644                                                                                 | 1285                                                                                | 573                                                                                 |
| Arrive On Green              |                                                                                    |     |     | 0.32                                                                              | 0.32                                                                              | 0.32                                                                              |     |      |     | 0.37                                                                                | 0.37                                                                                | 0.37                                                                                |
| Sat Flow, veh/h              |                                                                                    |     |     | 1725                                                                              | 3441                                                                              | 1535                                                                              |     |      |     | 1725                                                                                | 3441                                                                                | 1535                                                                                |
| Grp Volume(v), veh/h         |                                                                                    |     |     | 13                                                                                | 162                                                                               | 33                                                                                |     |      |     | 37                                                                                  | 653                                                                                 | 78                                                                                  |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |     |     | 1725                                                                              | 1721                                                                              | 1535                                                                              |     |      |     | 1725                                                                                | 1721                                                                                | 1535                                                                                |
| Q Serve(g_s), s              |                                                                                    |     |     | 0.2                                                                               | 1.1                                                                               | 0.5                                                                               |     |      |     | 0.4                                                                                 | 4.7                                                                                 | 1.1                                                                                 |
| Cycle Q Clear(g_c), s        |                                                                                    |     |     | 0.2                                                                               | 1.1                                                                               | 0.5                                                                               |     |      |     | 0.4                                                                                 | 4.7                                                                                 | 1.1                                                                                 |
| Prop In Lane                 |                                                                                    |     |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |      |     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                    |     |     | 544                                                                               | 1085                                                                              | 484                                                                               |     |      |     | 644                                                                                 | 1285                                                                                | 573                                                                                 |
| V/C Ratio(X)                 |                                                                                    |     |     | 0.02                                                                              | 0.15                                                                              | 0.07                                                                              |     |      |     | 0.06                                                                                | 0.51                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                    |     |     | 913                                                                               | 1822                                                                              | 813                                                                               |     |      |     | 1773                                                                                | 3536                                                                                | 1577                                                                                |
| HCM Platoon Ratio            |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                    |     |     | 7.6                                                                               | 7.9                                                                               | 7.7                                                                               |     |      |     | 6.4                                                                                 | 7.8                                                                                 | 6.6                                                                                 |
| Incr Delay (d2), s/veh       |                                                                                    |     |     | 0.0                                                                               | 0.1                                                                               | 0.1                                                                               |     |      |     | 0.0                                                                                 | 0.3                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3), s/veh   |                                                                                    |     |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |     |      |     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |     |     | 0.0                                                                               | 0.3                                                                               | 0.1                                                                               |     |      |     | 0.1                                                                                 | 1.1                                                                                 | 0.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                    |     |     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        |                                                                                    |     |     | 7.6                                                                               | 8.0                                                                               | 7.8                                                                               |     |      |     | 6.5                                                                                 | 8.1                                                                                 | 6.7                                                                                 |
| LnGrp LOS                    |                                                                                    |     |     | A                                                                                 | A                                                                                 | A                                                                                 |     |      |     | A                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                    |     |     |                                                                                   | 208                                                                               |                                                                                   |     |      |     |                                                                                     | 768                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                    |     |     |                                                                                   | 7.9                                                                               |                                                                                   |     |      |     |                                                                                     | 7.9                                                                                 |                                                                                     |
| Approach LOS                 |                                                                                    |     |     |                                                                                   | A                                                                                 |                                                                                   |     |      |     |                                                                                     | A                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                    |     |     |                                                                                   | 6                                                                                 |                                                                                   |     | 8    |     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                    |     |     |                                                                                   | 17.0                                                                              |                                                                                   |     | 15.1 |     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                    |     |     |                                                                                   | 5.0                                                                               |                                                                                   |     | 5.0  |     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                    |     |     |                                                                                   | 33.0                                                                              |                                                                                   |     | 17.0 |     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                    |     |     |                                                                                   | 6.7                                                                               |                                                                                   |     | 3.1  |     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                    |     |     |                                                                                   | 5.3                                                                               |                                                                                   |     | 0.9  |     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                    |     |     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                    |     |     | 7.9                                                                               |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                    |     |     | A                                                                                 |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |

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Synchro 12 Report  
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# HCM 7th Signalized Intersection Summary

## 103: Ronald Reagan Parkway & Stafford Road

Future AM Peak  
Echelon; 2 NB Lefts



| Movement                                                                                                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL  | WBT | WBR | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL | SBT | SBR |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|-----|-----|
| Lane Configurations                                                                                      |  |  |  |      |     |     |  |  |  |     |     |     |
| Traffic Volume (veh/h)                                                                                   | 97                                                                                | 82                                                                                | 1136                                                                              | 0    | 0   | 0   | 1136                                                                              | 1171                                                                              | 68                                                                                | 0   | 0   | 0   |
| Future Volume (veh/h)                                                                                    | 97                                                                                | 82                                                                                | 1136                                                                              | 0    | 0   | 0   | 1136                                                                              | 1171                                                                              | 68                                                                                | 0   | 0   | 0   |
| Initial Q (Qb), veh                                                                                      | 0                                                                                 | 0                                                                                 | 0                                                                                 |      |     |     | 0                                                                                 | 0                                                                                 | 0                                                                                 |     |     |     |
| Lane Width Adj.                                                                                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Ped-Bike Adj(A_pbT)                                                                                      | 1.00                                                                              |                                                                                   | 1.00                                                                              |      |     |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |     |     |
| Parking Bus, Adj                                                                                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Work Zone On Approach                                                                                    | No                                                                                |                                                                                   |                                                                                   |      |     |     | No                                                                                |                                                                                   |                                                                                   |     |     |     |
| Adj Sat Flow, veh/h/ln                                                                                   | 1811                                                                              | 1811                                                                              | 1811                                                                              |      |     |     | 1811                                                                              | 1811                                                                              | 1811                                                                              |     |     |     |
| Adj Flow Rate, veh/h                                                                                     | 124                                                                               | 105                                                                               | 0                                                                                 |      |     |     | 1456                                                                              | 1501                                                                              | 87                                                                                |     |     |     |
| Peak Hour Factor                                                                                         | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              |      |     |     | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              |     |     |     |
| Percent Heavy Veh, %                                                                                     | 6                                                                                 | 6                                                                                 | 6                                                                                 |      |     |     | 6                                                                                 | 6                                                                                 | 6                                                                                 |     |     |     |
| Cap, veh/h                                                                                               | 391                                                                               | 779                                                                               |                                                                                   |      |     |     | 1931                                                                              | 1986                                                                              | 886                                                                               |     |     |     |
| Arrive On Green                                                                                          | 0.23                                                                              | 0.23                                                                              | 0.00                                                                              |      |     |     | 0.58                                                                              | 0.58                                                                              | 0.58                                                                              |     |     |     |
| Sat Flow, veh/h                                                                                          | 1725                                                                              | 3441                                                                              | 2701                                                                              |      |     |     | 3346                                                                              | 3441                                                                              | 1535                                                                              |     |     |     |
| Grp Volume(v), veh/h                                                                                     | 124                                                                               | 105                                                                               | 0                                                                                 |      |     |     | 1456                                                                              | 1501                                                                              | 87                                                                                |     |     |     |
| Grp Sat Flow(s),veh/h/ln                                                                                 | 1725                                                                              | 1721                                                                              | 1351                                                                              |      |     |     | 1673                                                                              | 1721                                                                              | 1535                                                                              |     |     |     |
| Q Serve(g_s), s                                                                                          | 3.0                                                                               | 1.2                                                                               | 0.0                                                                               |      |     |     | 16.6                                                                              | 16.7                                                                              | 1.3                                                                               |     |     |     |
| Cycle Q Clear(g_c), s                                                                                    | 3.0                                                                               | 1.2                                                                               | 0.0                                                                               |      |     |     | 16.6                                                                              | 16.7                                                                              | 1.3                                                                               |     |     |     |
| Prop In Lane                                                                                             | 1.00                                                                              |                                                                                   | 1.00                                                                              |      |     |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |     |     |
| Lane Grp Cap(c), veh/h                                                                                   | 391                                                                               | 779                                                                               |                                                                                   |      |     |     | 1931                                                                              | 1986                                                                              | 886                                                                               |     |     |     |
| V/C Ratio(X)                                                                                             | 0.32                                                                              | 0.13                                                                              |                                                                                   |      |     |     | 0.75                                                                              | 0.76                                                                              | 0.10                                                                              |     |     |     |
| Avail Cap(c_a), veh/h                                                                                    | 644                                                                               | 1285                                                                              |                                                                                   |      |     |     | 2038                                                                              | 2096                                                                              | 935                                                                               |     |     |     |
| HCM Platoon Ratio                                                                                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |      |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Upstream Filter(I)                                                                                       | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |      |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Uniform Delay (d), s/veh                                                                                 | 16.4                                                                              | 15.7                                                                              | 0.0                                                                               |      |     |     | 8.1                                                                               | 8.1                                                                               | 4.8                                                                               |     |     |     |
| Incr Delay (d2), s/veh                                                                                   | 0.5                                                                               | 0.1                                                                               | 0.0                                                                               |      |     |     | 1.6                                                                               | 1.5                                                                               | 0.0                                                                               |     |     |     |
| Initial Q Delay(d3), s/veh                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |     |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |     |     |     |
| %ile BackOfQ(50%),veh/ln                                                                                 | 1.1                                                                               | 0.4                                                                               | 0.0                                                                               |      |     |     | 3.6                                                                               | 3.7                                                                               | 0.2                                                                               |     |     |     |
| Unsig. Movement Delay, s/veh                                                                             |                                                                                   |                                                                                   |                                                                                   |      |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| LnGrp Delay(d), s/veh                                                                                    | 16.9                                                                              | 15.8                                                                              | 0.0                                                                               |      |     |     | 9.6                                                                               | 9.6                                                                               | 4.9                                                                               |     |     |     |
| LnGrp LOS                                                                                                | B                                                                                 | B                                                                                 |                                                                                   |      |     |     | A                                                                                 | A                                                                                 | A                                                                                 |     |     |     |
| Approach Vol, veh/h                                                                                      | 229                                                                               |                                                                                   |                                                                                   |      |     |     | 3044                                                                              |                                                                                   |                                                                                   |     |     |     |
| Approach Delay, s/veh                                                                                    | 16.4                                                                              |                                                                                   |                                                                                   |      |     |     | 9.5                                                                               |                                                                                   |                                                                                   |     |     |     |
| Approach LOS                                                                                             | B                                                                                 |                                                                                   |                                                                                   |      |     |     | A                                                                                 |                                                                                   |                                                                                   |     |     |     |
| Timer - Assigned Phs                                                                                     |                                                                                   |                                                                                   |                                                                                   |      |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
|                                                                                                          | 2                                                                                 |                                                                                   |                                                                                   | 4    |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Phs Duration (G+Y+Rc), s                                                                                 | 34.4                                                                              |                                                                                   |                                                                                   | 16.5 |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Change Period (Y+Rc), s                                                                                  | 5.0                                                                               |                                                                                   |                                                                                   | 5.0  |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Max Green Setting (Gmax), s                                                                              | 31.0                                                                              |                                                                                   |                                                                                   | 19.0 |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Max Q Clear Time (g_c+l1), s                                                                             | 18.7                                                                              |                                                                                   |                                                                                   | 5.0  |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Green Ext Time (p_c), s                                                                                  | 10.7                                                                              |                                                                                   |                                                                                   | 0.7  |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Intersection Summary                                                                                     |                                                                                   |                                                                                   |                                                                                   |      |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| HCM 7th Control Delay, s/veh                                                                             | 10.0                                                                              |                                                                                   |                                                                                   |      |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| HCM 7th LOS                                                                                              | A                                                                                 |                                                                                   |                                                                                   |      |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Notes                                                                                                    |                                                                                   |                                                                                   |                                                                                   |      |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |      |     |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |

# HCM 7th Signalized Intersection Summary 102: RR Pkwy & Stafford Rd

Future PM Peak  
Echelon; 2 NB Lefts

|                              |  |     |     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
|------------------------------|------------------------------------------------------------------------------------|-----|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|------|-----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                | EBT | EBR | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL | NBT  | NBR | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                    |     |     |  |  |  |     |      |     |  |  |  |
| Traffic Volume (veh/h)       | 0                                                                                  | 0   | 0   | 46                                                                                | 117                                                                               | 50                                                                                | 0   | 0    | 0   | 31                                                                                  | 1027                                                                                | 34                                                                                  |
| Future Volume (veh/h)        | 0                                                                                  | 0   | 0   | 46                                                                                | 117                                                                               | 50                                                                                | 0   | 0    | 0   | 31                                                                                  | 1027                                                                                | 34                                                                                  |
| Initial Q (Qb), veh          |                                                                                    |     |     | 0                                                                                 | 0                                                                                 | 0                                                                                 |     |      |     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Lane Width Adj.              |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped-Bike Adj(A_pbT)          |                                                                                    |     |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |      |     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                    |     |     | No                                                                                |                                                                                   |                                                                                   |     |      |     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       |                                                                                    |     |     | 1811                                                                              | 1811                                                                              | 1811                                                                              |     |      |     | 1811                                                                                | 1811                                                                                | 1811                                                                                |
| Adj Flow Rate, veh/h         |                                                                                    |     |     | 50                                                                                | 127                                                                               | 54                                                                                |     |      |     | 34                                                                                  | 1116                                                                                | 37                                                                                  |
| Peak Hour Factor             |                                                                                    |     |     | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |     |      |     | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         |                                                                                    |     |     | 6                                                                                 | 6                                                                                 | 6                                                                                 |     |      |     | 6                                                                                   | 6                                                                                   | 6                                                                                   |
| Cap, veh/h                   |                                                                                    |     |     | 453                                                                               | 904                                                                               | 403                                                                               |     |      |     | 868                                                                                 | 1732                                                                                | 773                                                                                 |
| Arrive On Green              |                                                                                    |     |     | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              |     |      |     | 0.50                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              |                                                                                    |     |     | 1725                                                                              | 3441                                                                              | 1535                                                                              |     |      |     | 1725                                                                                | 3441                                                                                | 1535                                                                                |
| Grp Volume(v), veh/h         |                                                                                    |     |     | 50                                                                                | 127                                                                               | 54                                                                                |     |      |     | 34                                                                                  | 1116                                                                                | 37                                                                                  |
| Grp Sat Flow(s),veh/h/ln     |                                                                                    |     |     | 1725                                                                              | 1721                                                                              | 1535                                                                              |     |      |     | 1725                                                                                | 1721                                                                                | 1535                                                                                |
| Q Serve(g_s), s              |                                                                                    |     |     | 0.9                                                                               | 1.2                                                                               | 1.1                                                                               |     |      |     | 0.4                                                                                 | 10.2                                                                                | 0.5                                                                                 |
| Cycle Q Clear(g_c), s        |                                                                                    |     |     | 0.9                                                                               | 1.2                                                                               | 1.1                                                                               |     |      |     | 0.4                                                                                 | 10.2                                                                                | 0.5                                                                                 |
| Prop In Lane                 |                                                                                    |     |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |      |     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       |                                                                                    |     |     | 453                                                                               | 904                                                                               | 403                                                                               |     |      |     | 868                                                                                 | 1732                                                                                | 773                                                                                 |
| V/C Ratio(X)                 |                                                                                    |     |     | 0.11                                                                              | 0.14                                                                              | 0.13                                                                              |     |      |     | 0.04                                                                                | 0.64                                                                                | 0.05                                                                                |
| Avail Cap(c_a), veh/h        |                                                                                    |     |     | 565                                                                               | 1127                                                                              | 503                                                                               |     |      |     | 1453                                                                                | 2898                                                                                | 1293                                                                                |
| HCM Platoon Ratio            |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           |                                                                                    |     |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     |                                                                                    |     |     | 12.0                                                                              | 12.1                                                                              | 12.0                                                                              |     |      |     | 5.4                                                                                 | 7.8                                                                                 | 5.4                                                                                 |
| Incr Delay (d2), s/veh       |                                                                                    |     |     | 0.1                                                                               | 0.1                                                                               | 0.1                                                                               |     |      |     | 0.0                                                                                 | 0.4                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   |                                                                                    |     |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |     |      |     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     |                                                                                    |     |     | 0.3                                                                               | 0.4                                                                               | 0.3                                                                               |     |      |     | 0.1                                                                                 | 2.6                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                    |     |     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        |                                                                                    |     |     | 12.1                                                                              | 12.1                                                                              | 12.2                                                                              |     |      |     | 5.4                                                                                 | 8.2                                                                                 | 5.4                                                                                 |
| LnGrp LOS                    |                                                                                    |     |     | B                                                                                 | B                                                                                 | B                                                                                 |     |      |     | A                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          |                                                                                    |     |     |                                                                                   | 231                                                                               |                                                                                   |     |      |     |                                                                                     | 1187                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                    |     |     |                                                                                   | 12.1                                                                              |                                                                                   |     |      |     |                                                                                     | 8.0                                                                                 |                                                                                     |
| Approach LOS                 |                                                                                    |     |     |                                                                                   | B                                                                                 |                                                                                   |     |      |     |                                                                                     | A                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                    |     |     |                                                                                   | 6                                                                                 |                                                                                   |     | 8    |     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                    |     |     |                                                                                   | 26.5                                                                              |                                                                                   |     | 16.2 |     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                    |     |     |                                                                                   | 5.0                                                                               |                                                                                   |     | 5.0  |     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                    |     |     |                                                                                   | 36.0                                                                              |                                                                                   |     | 14.0 |     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                    |     |     |                                                                                   | 12.2                                                                              |                                                                                   |     | 3.2  |     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                    |     |     |                                                                                   | 9.3                                                                               |                                                                                   |     | 0.7  |     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                    |     |     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th Control Delay, s/veh |                                                                                    |     |     | 8.7                                                                               |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |
| HCM 7th LOS                  |                                                                                    |     |     | A                                                                                 |                                                                                   |                                                                                   |     |      |     |                                                                                     |                                                                                     |                                                                                     |

# HCM 7th Signalized Intersection Summary

## 103: Ronald Reagan Parkway & Stafford Road

Future PM Peak  
Echelon; 2 NB Lefts



| Movement                                                                                                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL | WBT  | WBR | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL | SBT | SBR |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|------|-----|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|-----|-----|
| Lane Configurations                                                                                      |  |  |  |     |      |     |  |  |  |     |     |     |
| Traffic Volume (veh/h)                                                                                   | 141                                                                               | 124                                                                               | 885                                                                               | 0   | 0    | 0   | 885                                                                               | 1114                                                                              | 20                                                                                | 0   | 0   | 0   |
| Future Volume (veh/h)                                                                                    | 141                                                                               | 124                                                                               | 885                                                                               | 0   | 0    | 0   | 885                                                                               | 1114                                                                              | 20                                                                                | 0   | 0   | 0   |
| Initial Q (Qb), veh                                                                                      | 0                                                                                 | 0                                                                                 | 0                                                                                 |     |      |     | 0                                                                                 | 0                                                                                 | 0                                                                                 |     |     |     |
| Lane Width Adj.                                                                                          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Ped-Bike Adj(A_pbT)                                                                                      | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |     |     |
| Parking Bus, Adj                                                                                         | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Work Zone On Approach                                                                                    | No                                                                                |                                                                                   |                                                                                   |     |      |     | No                                                                                |                                                                                   |                                                                                   |     |     |     |
| Adj Sat Flow, veh/h/ln                                                                                   | 1811                                                                              | 1811                                                                              | 1811                                                                              |     |      |     | 1811                                                                              | 1811                                                                              | 1811                                                                              |     |     |     |
| Adj Flow Rate, veh/h                                                                                     | 153                                                                               | 135                                                                               | 0                                                                                 |     |      |     | 962                                                                               | 1211                                                                              | 22                                                                                |     |     |     |
| Peak Hour Factor                                                                                         | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |     |      |     | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |     |     |     |
| Percent Heavy Veh, %                                                                                     | 6                                                                                 | 6                                                                                 | 6                                                                                 |     |      |     | 6                                                                                 | 6                                                                                 | 6                                                                                 |     |     |     |
| Cap, veh/h                                                                                               | 422                                                                               | 843                                                                               |                                                                                   |     |      |     | 1829                                                                              | 1881                                                                              | 839                                                                               |     |     |     |
| Arrive On Green                                                                                          | 0.24                                                                              | 0.24                                                                              | 0.00                                                                              |     |      |     | 0.55                                                                              | 0.55                                                                              | 0.55                                                                              |     |     |     |
| Sat Flow, veh/h                                                                                          | 1725                                                                              | 3441                                                                              | 2701                                                                              |     |      |     | 3346                                                                              | 3441                                                                              | 1535                                                                              |     |     |     |
| Grp Volume(v), veh/h                                                                                     | 153                                                                               | 135                                                                               | 0                                                                                 |     |      |     | 962                                                                               | 1211                                                                              | 22                                                                                |     |     |     |
| Grp Sat Flow(s),veh/h/ln                                                                                 | 1725                                                                              | 1721                                                                              | 1351                                                                              |     |      |     | 1673                                                                              | 1721                                                                              | 1535                                                                              |     |     |     |
| Q Serve(g_s), s                                                                                          | 3.5                                                                               | 1.5                                                                               | 0.0                                                                               |     |      |     | 8.8                                                                               | 11.8                                                                              | 0.3                                                                               |     |     |     |
| Cycle Q Clear(g_c), s                                                                                    | 3.5                                                                               | 1.5                                                                               | 0.0                                                                               |     |      |     | 8.8                                                                               | 11.8                                                                              | 0.3                                                                               |     |     |     |
| Prop In Lane                                                                                             | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |      |     | 1.00                                                                              |                                                                                   | 1.00                                                                              |     |     |     |
| Lane Grp Cap(c), veh/h                                                                                   | 422                                                                               | 843                                                                               |                                                                                   |     |      |     | 1829                                                                              | 1881                                                                              | 839                                                                               |     |     |     |
| V/C Ratio(X)                                                                                             | 0.36                                                                              | 0.16                                                                              |                                                                                   |     |      |     | 0.53                                                                              | 0.64                                                                              | 0.03                                                                              |     |     |     |
| Avail Cap(c_a), veh/h                                                                                    | 647                                                                               | 1292                                                                              |                                                                                   |     |      |     | 2233                                                                              | 2296                                                                              | 1024                                                                              |     |     |     |
| HCM Platoon Ratio                                                                                        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Upstream Filter(I)                                                                                       | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |     |      |     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |     |     |     |
| Uniform Delay (d), s/veh                                                                                 | 15.0                                                                              | 14.2                                                                              | 0.0                                                                               |     |      |     | 6.9                                                                               | 7.6                                                                               | 5.0                                                                               |     |     |     |
| Incr Delay (d2), s/veh                                                                                   | 0.5                                                                               | 0.1                                                                               | 0.0                                                                               |     |      |     | 0.2                                                                               | 0.4                                                                               | 0.0                                                                               |     |     |     |
| Initial Q Delay(d3), s/veh                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |     |      |     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |     |     |     |
| %ile BackOfQ(50%),veh/ln                                                                                 | 1.3                                                                               | 0.5                                                                               | 0.0                                                                               |     |      |     | 2.2                                                                               | 3.1                                                                               | 0.1                                                                               |     |     |     |
| Unsig. Movement Delay, s/veh                                                                             |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| LnGrp Delay(d), s/veh                                                                                    | 15.5                                                                              | 14.3                                                                              | 0.0                                                                               |     |      |     | 7.2                                                                               | 8.1                                                                               | 5.0                                                                               |     |     |     |
| LnGrp LOS                                                                                                | B                                                                                 | B                                                                                 |                                                                                   |     |      |     | A                                                                                 | A                                                                                 | A                                                                                 |     |     |     |
| Approach Vol, veh/h                                                                                      | 288                                                                               |                                                                                   |                                                                                   |     |      |     | 2195                                                                              |                                                                                   |                                                                                   |     |     |     |
| Approach Delay, s/veh                                                                                    | 15.0                                                                              |                                                                                   |                                                                                   |     |      |     | 7.6                                                                               |                                                                                   |                                                                                   |     |     |     |
| Approach LOS                                                                                             | B                                                                                 |                                                                                   |                                                                                   |     |      |     | A                                                                                 |                                                                                   |                                                                                   |     |     |     |
| Timer - Assigned Phs                                                                                     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
|                                                                                                          | 2                                                                                 |                                                                                   |                                                                                   |     | 4    |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Phs Duration (G+Y+Rc), s                                                                                 | 31.2                                                                              |                                                                                   |                                                                                   |     | 16.7 |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Change Period (Y+Rc), s                                                                                  | 5.0                                                                               |                                                                                   |                                                                                   |     | 5.0  |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Max Green Setting (Gmax), s                                                                              | 32.0                                                                              |                                                                                   |                                                                                   |     | 18.0 |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Max Q Clear Time (g_c+l1), s                                                                             | 13.8                                                                              |                                                                                   |                                                                                   |     | 5.5  |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Green Ext Time (p_c), s                                                                                  | 12.4                                                                              |                                                                                   |                                                                                   |     | 1.0  |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Intersection Summary                                                                                     |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
|                                                                                                          |                                                                                   |                                                                                   | 8.5                                                                               |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
|                                                                                                          |                                                                                   |                                                                                   | A                                                                                 |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Notes                                                                                                    |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| User approved pedestrian interval to be less than phase max green.                                       |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |
| Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |     |      |     |                                                                                   |                                                                                   |                                                                                   |     |     |     |

10/03/2024

Synchro 12 Report  
Page 2



Lanes, Volumes, Timings  
103: RR Pkwy Ramps & Stafford Rd

Future AM Peak  
Single Point Interchange

|                         |                                                                                    |                                                                                    |  |                                                                                    |                                                                                    |  |                                                                                      |  |                                                                                      |  |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                                                                                                                 | EBT                                                                                                                                                                 | EBR2                                                                              | WBL                                                                                                                                                                 | WBT                                                                                                                                                                 | WBR2                                                                              | SEL                                                                                                                                                                    | SER2                                                                                | NWL                                                                                                                                                                     | NWR2                                                                                |                                                                                     |
| Lane Configurations     |   |   |  |   |   |  |   |  |   |  |                                                                                     |
| Traffic Volume (vph)    | 97                                                                                                                                                                  | 82                                                                                                                                                                  | 1136                                                                              | 10                                                                                                                                                                  | 126                                                                                                                                                                 | 26                                                                                | 29                                                                                                                                                                     | 61                                                                                  | 1136                                                                                                                                                                    | 68                                                                                  |                                                                                     |
| Future Volume (vph)     | 97                                                                                                                                                                  | 82                                                                                                                                                                  | 1136                                                                              | 10                                                                                                                                                                  | 126                                                                                                                                                                 | 26                                                                                | 29                                                                                                                                                                     | 61                                                                                  | 1136                                                                                                                                                                    | 68                                                                                  |                                                                                     |
| Satd. Flow (prot)       | 3400                                                                                                                                                                | 3610                                                                                                                                                                | 1495                                                                              | 3072                                                                                                                                                                | 3539                                                                                                                                                                | 1615                                                                              | 3502                                                                                                                                                                   | 1509                                                                                | 3242                                                                                                                                                                    | 1583                                                                                |                                                                                     |
| Flt Permitted           | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                                  |                                                                                     | 0.950                                                                                                                                                                   |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3400                                                                                                                                                                | 3610                                                                                                                                                                | 1495                                                                              | 3072                                                                                                                                                                | 3539                                                                                                                                                                | 1615                                                                              | 3502                                                                                                                                                                   | 1509                                                                                | 3242                                                                                                                                                                    | 1583                                                                                |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     | 87                                                                                |                                                                                                                                                                        | 87                                                                                  |                                                                                                                                                                         | 87                                                                                  |                                                                                     |
| Peak Hour Factor        | 0.76                                                                                                                                                                | 0.76                                                                                                                                                                | 0.76                                                                              | 0.76                                                                                                                                                                | 0.76                                                                                                                                                                | 0.76                                                                              | 0.76                                                                                                                                                                   | 0.76                                                                                | 0.76                                                                                                                                                                    | 0.76                                                                                |                                                                                     |
| Heavy Vehicles (%)      | 3%                                                                                                                                                                  | 0%                                                                                                                                                                  | 8%                                                                                | 14%                                                                                                                                                                 | 2%                                                                                                                                                                  | 0%                                                                                | 0%                                                                                                                                                                     | 7%                                                                                  | 8%                                                                                                                                                                      | 2%                                                                                  |                                                                                     |
| Shared Lane Traffic (%) |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                        |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 128                                                                                                                                                                 | 108                                                                                                                                                                 | 1495                                                                              | 13                                                                                                                                                                  | 166                                                                                                                                                                 | 34                                                                                | 38                                                                                                                                                                     | 80                                                                                  | 1495                                                                                                                                                                    | 89                                                                                  |                                                                                     |
| Turn Type               | Prot                                                                                                                                                                | NA                                                                                                                                                                  | Perm                                                                              | Prot                                                                                                                                                                | NA                                                                                                                                                                  | Perm                                                                              | Prot                                                                                                                                                                   | Perm                                                                                | Prot                                                                                                                                                                    | Perm                                                                                |                                                                                     |
| Protected Phases        | 7                                                                                                                                                                   | 4                                                                                                                                                                   |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                   |                                                                                   | 1                                                                                                                                                                      |                                                                                     | 5                                                                                                                                                                       |                                                                                     |                                                                                     |
| Permitted Phases        |                                                                                                                                                                     |                                                                                                                                                                     | 4                                                                                 |                                                                                                                                                                     |                                                                                                                                                                     | 8                                                                                 |                                                                                                                                                                        | 1                                                                                   |                                                                                                                                                                         | 5                                                                                   |                                                                                     |
| Total Split (s)         | 17.9                                                                                                                                                                | 89.0                                                                                                                                                                | 89.0                                                                              | 14.5                                                                                                                                                                | 85.6                                                                                                                                                                | 85.6                                                                              | 46.5                                                                                                                                                                   | 46.5                                                                                | 46.5                                                                                                                                                                    | 46.5                                                                                |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 | 7.5                                                                               | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 | 7.5                                                                               | 7.5                                                                                                                                                                    | 7.5                                                                                 | 7.5                                                                                                                                                                     | 7.5                                                                                 |                                                                                     |
| Act Effct Green (s)     | 10.4                                                                                                                                                                | 81.5                                                                                                                                                                | 81.5                                                                              | 7.0                                                                                                                                                                 | 78.1                                                                                                                                                                | 78.1                                                                              | 39.0                                                                                                                                                                   | 39.0                                                                                | 39.0                                                                                                                                                                    | 39.0                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.07                                                                                                                                                                | 0.54                                                                                                                                                                | 0.54                                                                              | 0.05                                                                                                                                                                | 0.52                                                                                                                                                                | 0.52                                                                              | 0.26                                                                                                                                                                   | 0.26                                                                                | 0.26                                                                                                                                                                    | 0.26                                                                                |                                                                                     |
| v/c Ratio               | 0.54                                                                                                                                                                | 0.06                                                                                                                                                                | 1.84                                                                              | 0.09                                                                                                                                                                | 0.09                                                                                                                                                                | 0.04                                                                              | 0.04                                                                                                                                                                   | 0.18                                                                                | 1.78                                                                                                                                                                    | 0.19                                                                                |                                                                                     |
| Control Delay (s/veh)   | 76.6                                                                                                                                                                | 16.3                                                                                                                                                                | 408.3                                                                             | 70.0                                                                                                                                                                | 18.3                                                                                                                                                                | 0.1                                                                               | 41.8                                                                                                                                                                   | 7.7                                                                                 | 386.2                                                                                                                                                                   | 9.4                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                                                                                                                    | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay (s/veh)     | 76.6                                                                                                                                                                | 16.3                                                                                                                                                                | 408.3                                                                             | 70.0                                                                                                                                                                | 18.3                                                                                                                                                                | 0.1                                                                               | 41.8                                                                                                                                                                   | 7.7                                                                                 | 386.2                                                                                                                                                                   | 9.4                                                                                 |                                                                                     |
| LOS                     | E                                                                                                                                                                   | B                                                                                                                                                                   | F                                                                                 | E                                                                                                                                                                   | B                                                                                                                                                                   | A                                                                                 | D                                                                                                                                                                      | A                                                                                   | F                                                                                                                                                                       | A                                                                                   |                                                                                     |
| Approach Delay (s/veh)  |                                                                                                                                                                     | 359.3                                                                                                                                                               |                                                                                   |                                                                                                                                                                     | 18.5                                                                                                                                                                |                                                                                   |                                                                                                                                                                        |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                                                                                                     | F                                                                                                                                                                   |                                                                                   |                                                                                                                                                                     | B                                                                                                                                                                   |                                                                                   |                                                                                                                                                                        |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |
| Queue Length 50th (ft)  | 63                                                                                                                                                                  | 25                                                                                                                                                                  | ~2209                                                                             | 6                                                                                                                                                                   | 42                                                                                                                                                                  | 0                                                                                 | 14                                                                                                                                                                     | 0                                                                                   | ~1122                                                                                                                                                                   | 2                                                                                   |                                                                                     |
| Queue Length 95th (ft)  | 83                                                                                                                                                                  | 34                                                                                                                                                                  | #1961                                                                             | 15                                                                                                                                                                  | 52                                                                                                                                                                  | 0                                                                                 | 25                                                                                                                                                                     | 22                                                                                  | #994                                                                                                                                                                    | 28                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                                                                                                     | 869                                                                                                                                                                 |                                                                                   |                                                                                                                                                                     | 1130                                                                                                                                                                |                                                                                   |                                                                                                                                                                        |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    | 430                                                                                                                                                                 |                                                                                                                                                                     |                                                                                   | 300                                                                                                                                                                 |                                                                                                                                                                     | 300                                                                               |                                                                                                                                                                        |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 235                                                                                                                                                                 | 1961                                                                                                                                                                | 812                                                                               | 143                                                                                                                                                                 | 1842                                                                                                                                                                | 882                                                                               | 910                                                                                                                                                                    | 456                                                                                 | 842                                                                                                                                                                     | 475                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                      | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                      | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                      | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.54                                                                                                                                                                | 0.06                                                                                                                                                                | 1.84                                                                              | 0.09                                                                                                                                                                | 0.09                                                                                                                                                                | 0.04                                                                              | 0.04                                                                                                                                                                   | 0.18                                                                                | 1.78                                                                                                                                                                    | 0.19                                                                                |                                                                                     |

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 1.84

Intersection Signal Delay (s/veh): 330.8

Intersection LOS: F

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

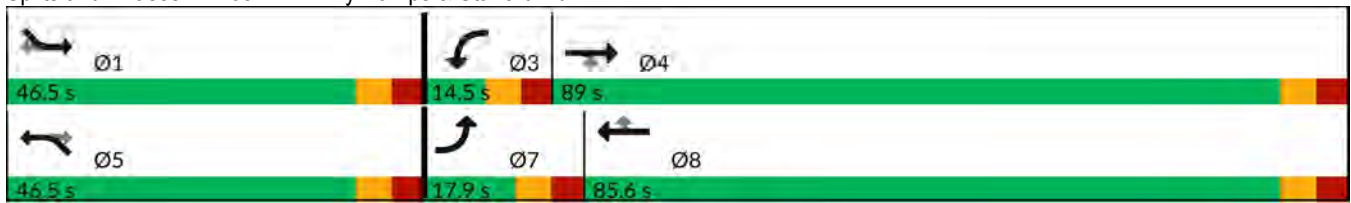
# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
103: RR Pkwy Ramps & Stafford Rd

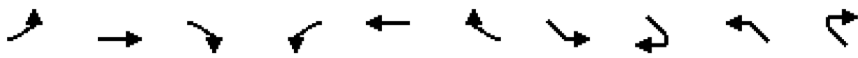
Future AM Peak  
Single Point Interchange

Splits and Phases: 103: RR Pkwy Ramps & Stafford Rd



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Future PM Peak  
Single Point Interchange

|                         |  |       |       |       |      |      |       |      |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|------|------|-------|------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR2  | WBL   | WBT  | WBR2 | SEL   | SER2 | NWL   | NWR2 |
| Lane Configurations     | ↔↔                                                                                 | ↕↕    | ↗     | ↔↔    | ↕↕   | ↗    | ↔↔    | ↗    | ↔↔    | ↗    |
| Traffic Volume (vph)    | 141                                                                                | 124   | 885   | 46    | 117  | 50   | 31    | 34   | 885   | 20   |
| Future Volume (vph)     | 141                                                                                | 124   | 885   | 46    | 117  | 50   | 31    | 34   | 885   | 20   |
| Satd. Flow (prot)       | 3303                                                                               | 3539  | 1482  | 3213  | 3539 | 1615 | 3502  | 1442 | 3213  | 1509 |
| Flt Permitted           | 0.950                                                                              |       |       | 0.950 |      |      | 0.950 |      | 0.950 |      |
| Satd. Flow (perm)       | 3303                                                                               | 3539  | 1482  | 3213  | 3539 | 1615 | 3502  | 1442 | 3213  | 1509 |
| Satd. Flow (RTOR)       |                                                                                    |       |       |       |      | 87   |       | 87   |       | 87   |
| Peak Hour Factor        | 0.93                                                                               | 0.93  | 0.93  | 0.92  | 0.93 | 0.93 | 0.93  | 0.93 | 0.93  | 0.93 |
| Heavy Vehicles (%)      | 6%                                                                                 | 2%    | 9%    | 9%    | 2%   | 0%   | 0%    | 12%  | 9%    | 7%   |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |      |      |       |      |       |      |
| Lane Group Flow (vph)   | 152                                                                                | 133   | 952   | 50    | 126  | 54   | 33    | 37   | 952   | 22   |
| Turn Type               | Prot                                                                               | NA    | Perm  | Prot  | NA   | Perm | Prot  | Perm | Prot  | Perm |
| Protected Phases        | 7                                                                                  | 4     |       | 3     | 8    |      | 1     |      | 5     |      |
| Permitted Phases        |                                                                                    |       | 4     |       |      | 8    |       | 1    |       | 5    |
| Total Split (s)         | 19.6                                                                               | 89.0  | 89.0  | 14.5  | 83.9 | 83.9 | 46.5  | 46.5 | 46.5  | 46.5 |
| Total Lost Time (s)     | 7.5                                                                                | 7.5   | 7.5   | 7.5   | 7.5  | 7.5  | 7.5   | 7.5  | 7.5   | 7.5  |
| Act Effct Green (s)     | 12.1                                                                               | 81.5  | 81.5  | 7.0   | 76.4 | 76.4 | 39.0  | 39.0 | 39.0  | 39.0 |
| Actuated g/C Ratio      | 0.08                                                                               | 0.54  | 0.54  | 0.05  | 0.51 | 0.51 | 0.26  | 0.26 | 0.26  | 0.26 |
| v/c Ratio               | 0.57                                                                               | 0.07  | 1.18  | 0.34  | 0.07 | 0.06 | 0.04  | 0.08 | 1.14  | 0.05 |
| Control Delay (s/veh)   | 75.5                                                                               | 16.4  | 127.0 | 75.6  | 18.9 | 1.0  | 41.7  | 0.4  | 126.3 | 0.2  |
| Queue Delay             | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay (s/veh)     | 75.5                                                                               | 16.4  | 127.0 | 75.6  | 18.9 | 1.0  | 41.7  | 0.4  | 126.3 | 0.2  |
| LOS                     | E                                                                                  | B     | F     | E     | B    | A    | D     | A    | F     | A    |
| Approach Delay (s/veh)  |                                                                                    | 108.7 |       |       | 27.0 |      |       |      |       |      |
| Approach LOS            |                                                                                    | F     |       |       | C    |      |       |      |       |      |
| Queue Length 50th (ft)  | 75                                                                                 | 31    | ~1114 | 24    | 32   | 0    | 12    | 0    | ~558  | 0    |
| Queue Length 95th (ft)  | 114                                                                                | 48    | #1376 | 48    | 50   | 7    | 27    | 0    | #693  | 0    |
| Internal Link Dist (ft) |                                                                                    | 869   |       |       | 1130 |      |       |      |       |      |
| Turn Bay Length (ft)    | 430                                                                                |       |       | 300   |      | 300  |       |      |       |      |
| Base Capacity (vph)     | 266                                                                                | 1922  | 805   | 149   | 1802 | 865  | 910   | 439  | 835   | 456  |
| Starvation Cap Reductn  | 0                                                                                  | 0     | 0     | 0     | 0    | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn   | 0                                                                                  | 0     | 0     | 0     | 0    | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn     | 0                                                                                  | 0     | 0     | 0     | 0    | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio       | 0.57                                                                               | 0.07  | 1.18  | 0.34  | 0.07 | 0.06 | 0.04  | 0.08 | 1.14  | 0.05 |

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 1.18

Intersection Signal Delay (s/veh): 104.5

Intersection LOS: F

Intersection Capacity Utilization 73.1%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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