Prepared for:

VDOT

Route 5 Traffic Operational & Safety Analysis

HENRICO COUNTY, VIRGINIA

Prepared by:

RK&K

Responsive People • Creative Solutions

JULY 2024

Traffic Safety and Operational Analysis

For

Route 5 (New Market Rd) – Varina Rd to Four Mile Run Pkwy

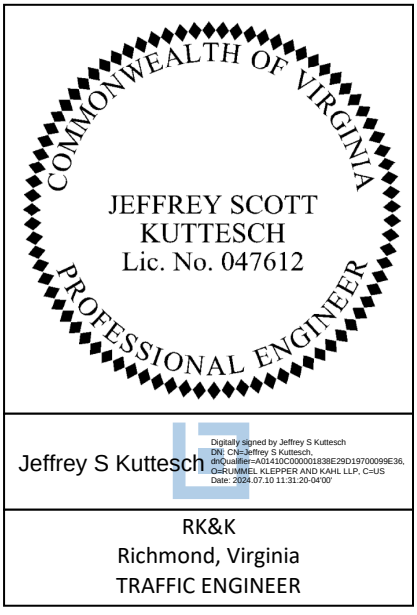
Henrico County, Virginia

Prepared for:
Virginia Department of Transportation

Prepared by:

RK&K
2100 East Cary Street, Suite 309
Richmond, Virginia 23223

July 10, 2024



Jeffrey S Kuttesch

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MEMORANDUM

Date: May 10, 2024

To: VDOT Richmond District

From: RK&K

Re: Route 5 Traffic Operational and Safety Analysis

1. INTRODUCTION

RK&K was contracted by VDOT to perform an operational and safety analysis for the Route 5 (New Market Road) corridor between Wilson Road/Varina Road and Four Mile Run Parkway in Richmond, Virginia. The purpose of this memorandum is to present the existing crash history, capacity analysis results, and improvement recommendations.

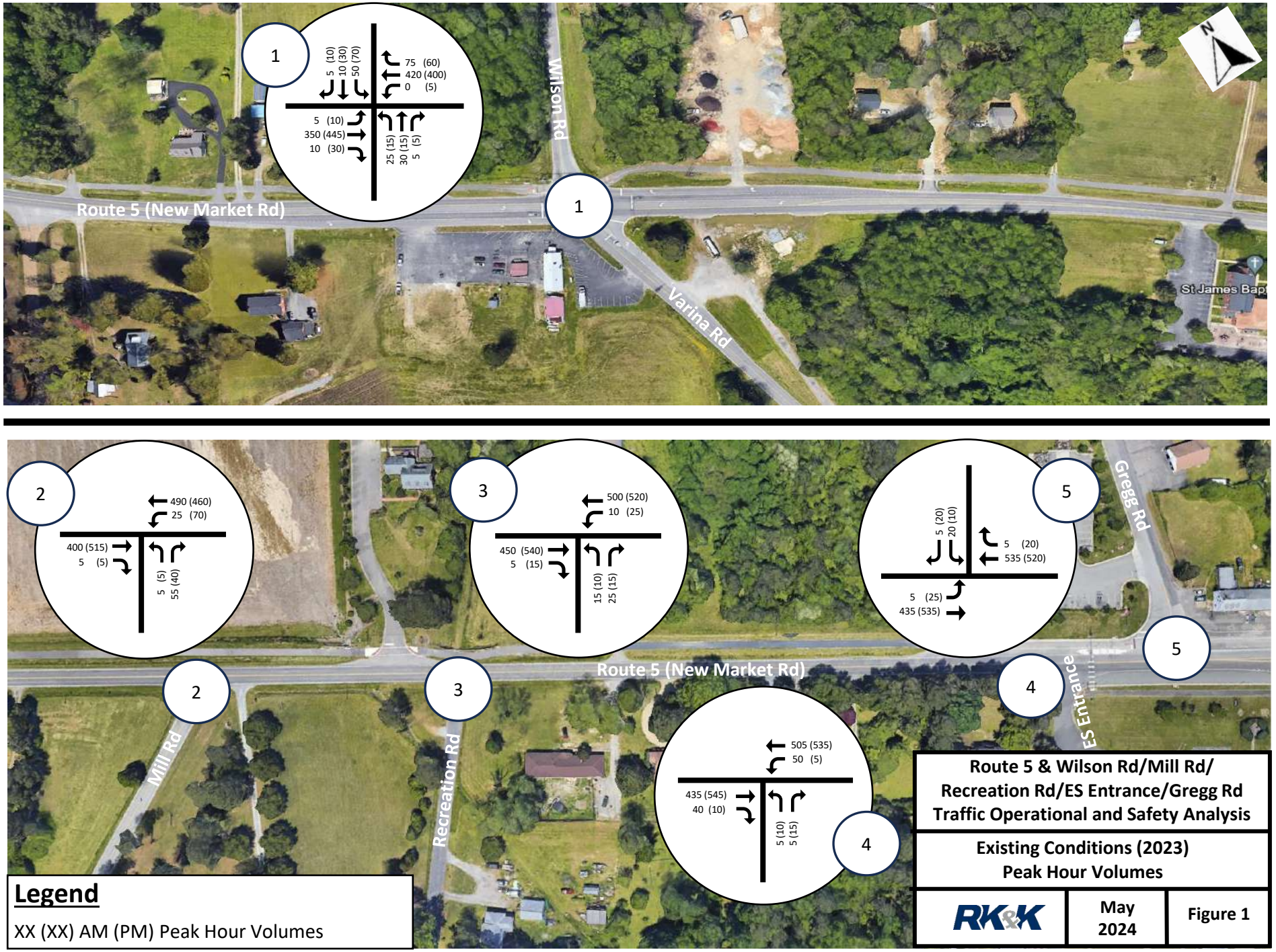
2. STUDY AREA & EXISTING CONDITIONS

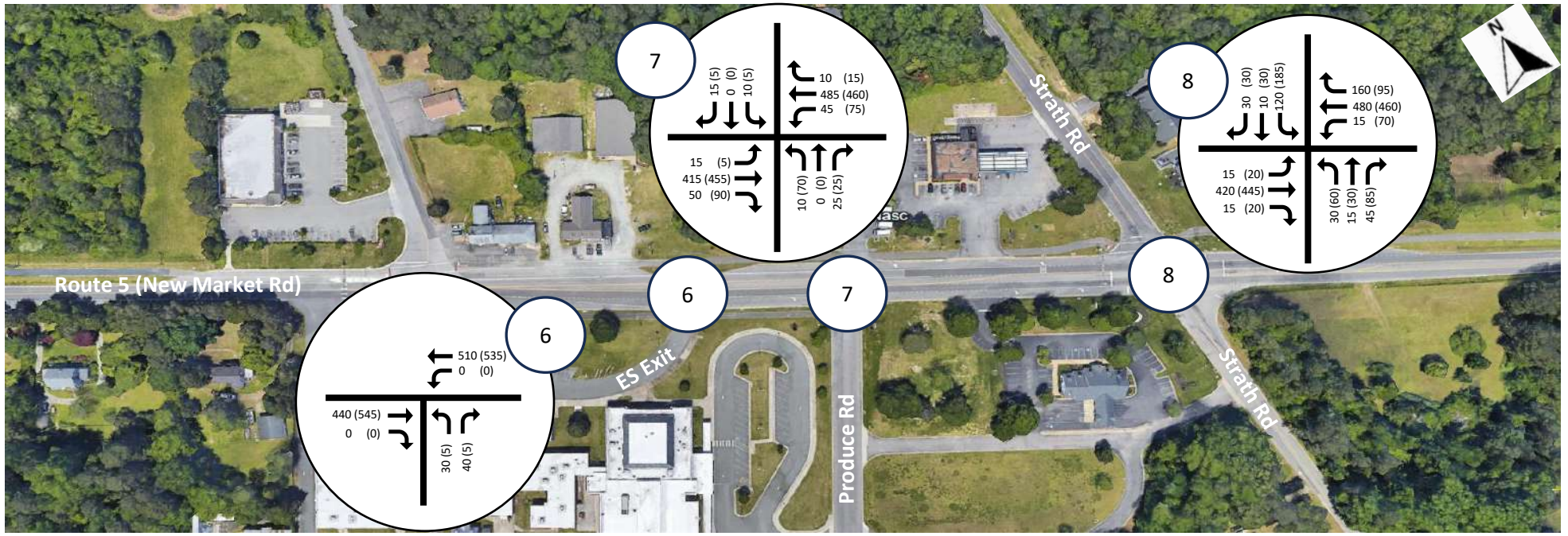
The analysis evaluated the following intersections:

1. Route 5 at Wilson Road/Varina Road (signalized)
2. Route 5 at Mill Road (unsignalized)
3. Route 5 at Recreation Road (unsignalized)
4. Route 5 at Varina Elementary School (E.S.) Entrance (unsignalized)
5. Route 5 at Gregg Road (unsignalized)
6. Route 5 at Varina Elementary School (E.S.) Exit (unsignalized)
7. Route 5 at Produce Road (unsignalized)
8. Route 5 at Strath Road (signalized)
9. Route 5 at Wood Mill Drive/Buffin Road (unsignalized)
10. Route 5 at Doran Road (unsignalized)
11. Route 5 at Four Mile Run Parkway (unsignalized)

For the purpose of this study, Route 5 is assumed to run in the east-west direction. All study roadways have an existing two-lane, undivided cross-section. The I-295 and Route 5 interchange is located approximately 2,000 feet east of the project area. The terrain within the study area is flat to gently rolling, with varying land uses along the corridor including residential, commercial, agricultural, and institutional. The Virginia Capital Multi-Use Trail runs parallel to Route 5 along the north side between Wilson Road and Doran Road within the study limits.

Figure 1 and **Figure 2** present an overview of the project study area along with the study intersections and corresponding existing AM (7:00 AM-8:00AM) and PM (4:45PM-5:45PM) peak hour volumes (2023).


1
5 (10)
10 (30)
50 (70)
75 (60)
420 (400)
0 (5)
5 (10)
350 (445)
10 (30)
25 (15)
30 (15)
5 (5)
Wilson Rd
Route 5 (New Market Rd)
1
Varina Rd
St James Bap
2
490 (460)
25 (70)
400 (515)
5 (5)
5 (5)
55 (40)
3
500 (520)
10 (25)
450 (540)
5 (15)
15 (10)
25 (15)
5
5 (20)
20 (10)
5 (20)
535 (520)
5 (25)
435 (535)
Gregg Rd
Route 5 (New Market Rd)
2
3
4
5
ES Entrance
Mill Rd
Recreation Rd
505 (535)
50 (5)
435 (545)
40 (10)
5 (10)
5 (15)
4
Legend
XX (XX) AM (PM) Peak Hour Volumes
Route 5 & Wilson Rd/Mill Rd/
Recreation Rd/ES Entrance/Gregg Rd
Traffic Operational and Safety Analysis
Existing Conditions (2023)
Peak Hour Volumes
RK&K
May
2024
Figure 1



Route 5 & E.S. Exit/Produce Rd/Strath Rd/ Buffin Rd/Doran Rd/Four Mile Run Pkwy Traffic Operational and Safety Analysis

Existing Conditions (2023) Peak Hour Volumes

RK&K	May 2024	Figure 2

Table 1 presents the functional classification of the roadways within the study area.

Table 1. Roadway Classification

Road Name	VDOT Functional Class*	Posted Speed Limit
Route 5	Minor Arterial	45 mph
Wilson Rd	Local	45 mph
Varina Rd	Major Collector	45 mph
Mill Rd	Local	45 mph
Recreation Rd	Local	25 mph
Varina E.S. Entrance/Exit	Local	Unposted
Gregg Rd	Local	25 mph
Produce Rd	Local	Unposted
Strath Rd	Major Collector	45 mph
Wood Mill Dr	Local	25 mph
Buffin Rd	Local	45 mph
Doran Rd	Major Collector	35 mph
Four Mile Run Pkwy	Local	25 mph

**Source - VDOT Pathways for Planning*

3. VOLUME DEVELOPMENT

Turning movement and pedestrian counts were collected on December 5, 2023 (schools in session) at all study intersections, except for Route 5 at Doran Road for which counts were collected on November 28, 2023. The raw counts are included in **Appendix A**. Traffic counts were balanced between study intersections for Existing (2023) Conditions. Peak hour factors and heavy vehicle percentages were derived from the counts. Heavy vehicles were differentiated based on FHWA vehicle classification, which included single unit trucks (classes 4-7) and combination trucks (classes 8-13). Heavy vehicle percentages by movement were calculated as the proportion of total trucks out of the total movement volumes.

Existing (2023) Condition peak hour traffic volumes were projected to the Design Year (2045) based on the application of growth rates approved by VDOT. Growth rates were determined based on VDOT's Pathways for Planning (P4P) historical AADT data, outputs from the Richmond Tri-Cities Travel Demand Model (TDM), and VDOT's P4P route analysis function. Historic AADT is provided in **Table 2**. **Table 3** shows the outputs and calculated growth rates from the Richmond Tri-Cities TDM. **Table 4** shows the growth rates calculated from the P4P Route Analysis linear trend analysis. **Table 5** shows the recommended growth rates used in the analysis.

Nelson Farm Residential Development is to be constructed north of Route 5 along Wilson Road with an expected opening year of 2036. A traffic assessment was completed by Kimley Horn in December 2022 and is included in **Appendix G**. The development will include a total of 460 single-family detached housing units, 370 single-family attached housing units, and 170 multi-family apartment units. Projected site trips at the intersection of Route 5 and Wilson Road/Varina Road are assumed from the traffic assessment and carried through the study network in line with the trip distributions, also assumed from the traffic assessment.

A review of the historical AADT showed growth rates of 1.0-1.5% along Route 5 with volumes peaking in 2015 and decreasing slightly since. Volumes on side streets, where data was available, showed higher growth than Route 5. TDM outputs showed a 1.0% per year increase in volumes through 2045 on Route 5 and between 2.5%-3.0% increase per year on Strath Road and Mill Road. Though Doran Road had a

compounded 10-year growth rate of 3.5%, the TDM and P4P database showed growth closer to 1.4-1.7%. Therefore, a growth rate of 1.0% was used for Doran Road due to the limited available space for development along the roadway.

Based on the findings above a 1.0% growth rate was used to grow traffic volumes on Route 5 (consistent with the Nelson Farm TIA) and all side streets, with the exception of Mill Road and Strath Road south of Route 5, where a growth rate of 3.0% was used based on the TDM outputs. The Nelson Farm development trips were not grown with these rates, but rather added on top of the background growth. Peak hour turning movement volumes used for Design Year (2045) analysis are provided in Section 7.

Table 2. Historic AADT

AADT Year	Route 5	Varina Road	Doran Road
	Study Corridor	S of Route 5	N of Route 5
2010	8,276	756	1,615
2011	8,169	746	1,594
2012	7,798	712	1,522
2013	8,247	750	1,680
2014	8,513	774	1,734
2015	9,963	906	2,030
2016	9,436	717	1,805
2017	9,289	706	1,777
2018	9,223	705	1,779
2019	9,169	852	2,199
2020	7,661	712	1,837
2021	8,386	779	2,011
2022	8,648	748	2,347
2010-2019 (10-Year CAGR)	**1.1%**	**1.3%**	**3.5%**
2014-2019 (5-Year CAGR)	**1.5%**	**1.9%**	**4.9%**

Table 3. Richmond Tri-Cities TDM AADT

Roadway	Location	2017	2045	2017-2045 Growth Rate (28-Year)
Route 5	W of Wilson/Varina	20,740	27,796	1.1%
	E of Wilson/Varina	15,920	21,552	1.1%
	W of Mill	15,920	21,552	1.1%
	E of Mill	18,278	26,824	1.4%
	W of Strath	15,874	23,956	1.5%
	E of Strath	22,798	27,978	0.7%
	W of Wood Mill/Buffin	22,798	27,978	0.7%
	E of Wood Mill/Buffin	22,798	27,674	0.7%
	W of Doran	22,798	27,674	0.7%
	E of Doran	27,774	35,540	0.9%
Varina Road	S of Route 5	4,820	6,244	0.9%
Mill Road	S of Route 5	2,358	5,272	2.9%
Strath Road	N of Route 5	14,018	16,200	0.5%
	S of Route 5	224	436	2.4%
Buffin Road	S of Route 5	-	304	-
Doran Road	N of Route 5	5,312	8,594	1.7%

Table 4. P4P Route Analysis

Roadway	Location	Growth Rate* (1997-2019, 2022)
Route 5	W of Wilson/Varina	1.4%
	E of Wilson/Varina	0.5%
	W of Strath	1.4%
	E of Strath	1.4%
	W of Doran	2.1%
	E of Doran	1.4%
Varina Road	S of Route 5	2.1%
Strath Road	N of Route 5	1.4%
	S of Route 5	2.1%
Doran Road	N of Route 5	1.4%

**P4P linear trend calculation with a minimum growth rate of 0.5%.*

Table 5. Recommended Growth Rates

Roadway	Location	Recommended Growth Rate
Route 5	W of Wilson/Varina	1.0%
	E of Wilson/Varina	1.0%
	W of Mill	1.0%
	E of Mill	1.0%
	W of Strath	1.0%
	E of Strath	1.0%
	W of Wood Mill/Buffin	1.0%
	E of Wood Mill/Buffin	1.0%
	W of Doran	1.0%
	E of Doran	1.0%
Varina Road	S of Route 5	1.0%
Mill Road	S of Route 5	3.0%
Strath Road	N of Route 5	1.0%
	S of Route 5	3.0%
Buffin Road	S of Route 5	1.0%
Doran Road	N of Route 5	1.0%

4. SAFETY ANALYSIS

Five-year (January 2018 to December 2022) crash data was extracted from the P4P database while crash reports were provided by VDOT. It should be noted that pandemic-era (2020-2021) crash data is only included for comparison purposes, as data is considered skewed due to changes in travel patterns across the county. Crash data was summarized by year, location, weather conditions, time of day, type and severity, causes, and other relevant information to identify crash patterns. **Table 6** presents a summary of crash statistics and **Table 7** presents a comparison to statewide rates.

Table 6. Summary of Total Crashes

Route 5 from Wilson Road/ Varina Road to Four Mile Run Parkway		Number of Crashes/ Year					5-Year Total Crashes	Mean Crashes Per Year	%
		2018	2019	2020	2021	2022			
CRASH TYPE	1. Rear End	10	8	12	9	8	47	9.4	39%
	2. Angle	7	7	6	8	1	29	5.8	24%
	3. Head On	0	1	1	0	1	3	0.6	3%
	4. Sideswipe - Same Direction	0	0	0	1	0	1	0.2	1%
	5. Sideswipe - Opposite Direction	1	0	0	0	0	1	0.2	1%
	6. Fixed Object in Road	1	0	0	0	0	1	0.2	1%
	9. Fixed Object - Off Road	6	2	5	2	3	18	3.6	15%
	10. Deer	4	2	1	3	3	13	2.6	11%
	12. Ped	0	1	0	0	0	1	0.2	1%
	13. Bicyclist	2	0	1	1	0	4	0.8	3%
	16. Other	1	0	0	0	0	1	0.2	1%
	Total Crashes	**32**	**21**	**26**	**24**	**16**	**119**	**23.8**	**100%**
SEVERITY	A. Severe Injury	1	0	0	0	0	1	0.2	1%
	B. Visible Injury	5	6	5	3	7	26	5.2	22%
	C. Nonvisible Injury	0	1	0	0	0	1	0.2	1%
	K. Fatal Injury	0	0	0	0	0	0	0.0	0%
	PDO. Property Damage Only	26	14	21	21	9	91	18.2	76%
	KAB	**6**	**6**	**5**	**3**	**7**	**27**	**5.4**	**23%**
LIGHTING CONDITIONS	1. Dawn	1	0	1	1	0	3	0.6	3%
	2. Daylight	19	12	16	12	12	71	14.2	60%
	3. Dusk	0	0	0	3	0	3	0.6	3%
	4. Darkness - Road Lighted	0	1	2	1	4	8	1.6	6%
	5. Darkness - Road Not Lighted	11	8	7	7	0	33	6.6	27%
	6. Darkness - Unknown Road Lighting	1	0	0	0	0	1	0.2	1%
SURFACE CONDITIONS	1. Dry	24	17	19	21	15	96	19.2	81%
	2. Wet	5	4	7	3	1	20	4.0	16%
	3. Snowy	1	0	0	0	0	1	0.2	1%
	4. Icy	1	0	0	0	0	1	0.2	1%
	9. Water (Standing, Moving)	1	0	0	0	0	1	0.2	1%

Table 7. Statewide Crash Rate Comparison

Crash Rates	Total Crashes	Segment Crash Rate*	Statewide Crash Rate**
Total	119	370.26	143.33
Fatal	0	0.00	1.89
Non-Fatal Injury	28	87.12	47.36

**Per 100 Million Vehicle Miles*

***Based on 2019 Statewide Crash Rates for Rural Minor Arterial*

During the study period, a total of 119 crashes were reported within the study limits. **Figure 3** through **Figure 9** display the collision diagrams for the corridor. Key highlights from the crash analysis are as follows:

- The reported crash history includes no fatalities and 28 injury crashes. The remaining 91 crashes were property-damage-only (PDO) incidents.
- The total and non-fatal injury crash rates for the corridor significantly exceeded the statewide rates.
- The most frequent crash type was rear end crashes that accounted for 47 (or 39%) of total crashes. A majority (29 or 62%) of these crashes occurred in the eastbound direction, mainly approaching intersections where vehicles may be required to make sudden stops to avoid a collision with vehicles slowing or stopping to turn onto a side street.
- Angle crashes were the next most frequent crash type accounting for 29 (or 24%) of total crashes.
- Roadway surface/weather conditions did not seem to have a significant impact on the intersection safety; of the reported crashes, 23 (19%) were reported on non-dry surface conditions.
- A total of 13 collisions with deer were reported during the 5-year analysis period. A majority (10 or 77%) of these crashes occurred between Wilson Rd and Recreation Rd, mostly during nighttime hours. The same stretch of Route 5 also recorded 9 out of a total of 16 fixed object – off road crashes for the corridor.
- Existing warning signs such as deer crossing (W11-3), "WATCH FOR TURNING VEHICLES", and intersection geometry signs (W2-1, W2-8, W2-3) are posted throughout the study corridor.
- There was one severe injury (A) crash during the study period that occurred on July 21, 2018. A summary of the crash report indicated that a vehicle traveling northbound on Buffin Road passed the stop sign at Route 5, lost control of the vehicle, and struck a utility guy-line on the other side of the intersection due to passenger distractions. The crash occurred under dark (road not lighted) and dry roadway conditions.
- The intersection of Route 5 at Doran Road experienced the highest number of intersection crashes (22, 18% of total crashes). Crashes at this intersection have been summarized in a previously submitted memo.

Crash #	Document Number	Conditions
1	181475074	Dark (Road Not Lighted), Dry
2	181815146	Day, Dry
3	183025146	Day, Dry
4	212235162	Day, Dry
5	212875246	Dark (Road Not Lighted), Dry
6	213355230	Dawn, Dry
7	213485097	Day, Dry

Crash Data Source: VDOT Pathways for Planning Database

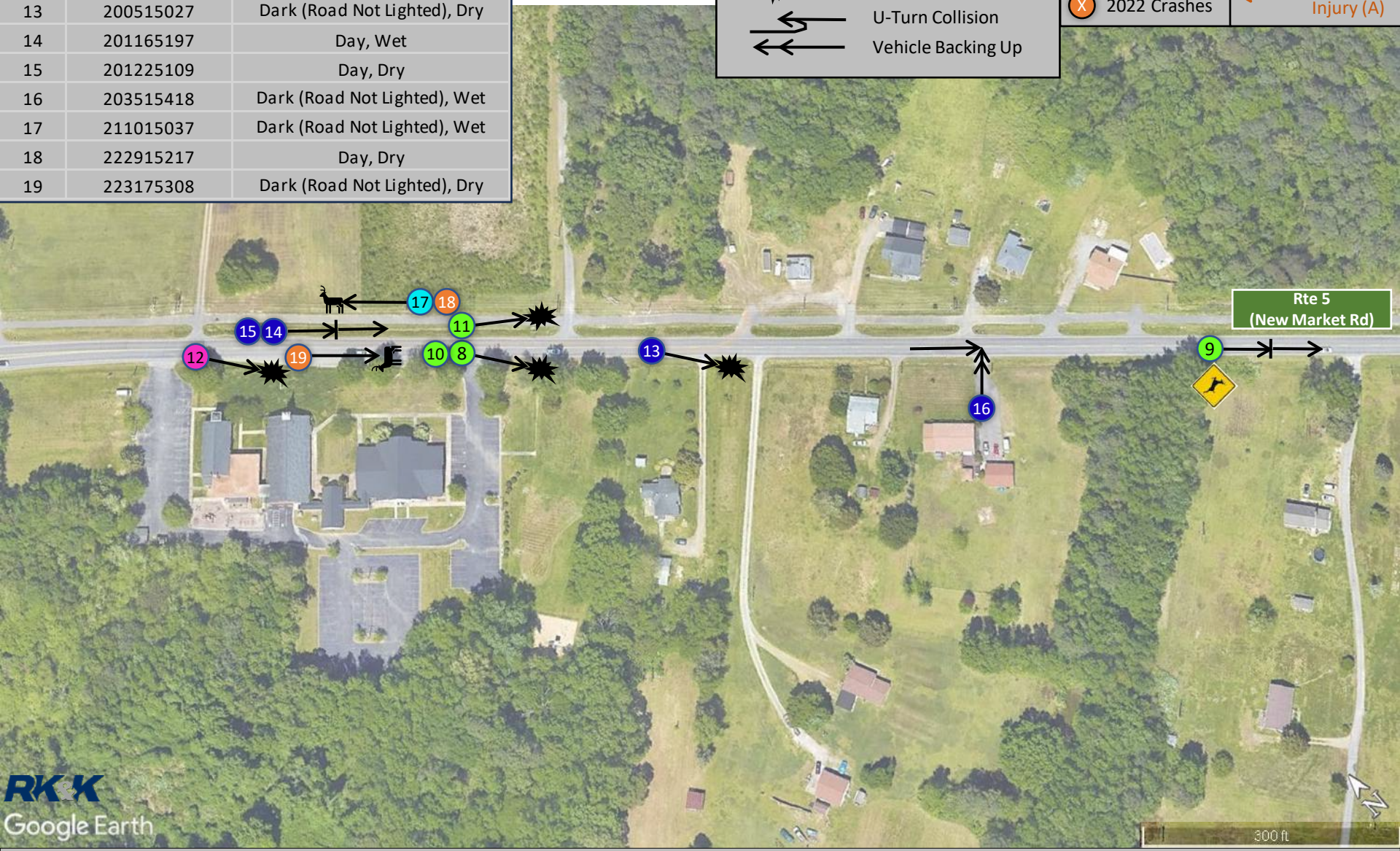
Crash #	Document Number	Conditions
8	180695234	Dark (Road Not Lighted), Dry
9	181415414	Day, Dry
10	181645013	Dark (Road Not Lighted), Fog, Dry
11	182095071	Dark (Road Not Lighted), Wet
12	190075027	Dark (Road Not Lighted), Dry
13	200515027	Dark (Road Not Lighted), Dry
14	201165197	Day, Wet
15	201225109	Day, Dry
16	203515418	Dark (Road Not Lighted), Wet
17	211015037	Dark (Road Not Lighted), Wet
18	222915217	Day, Dry
19	223175308	Dark (Road Not Lighted), Dry

Vehicle Direction
Rear End Collision
Head On Collision
Sideswipe
Angle Collision
Fixed Object Collision
U-Turn Collision
Vehicle Backing Up

Collision Symbols

2018 Crashes
2019 Crashes
2020 Crashes
2021 Crashes
2022 Crashes

Pedestrian
Bicyclist
Deer
Severe Injury (A)

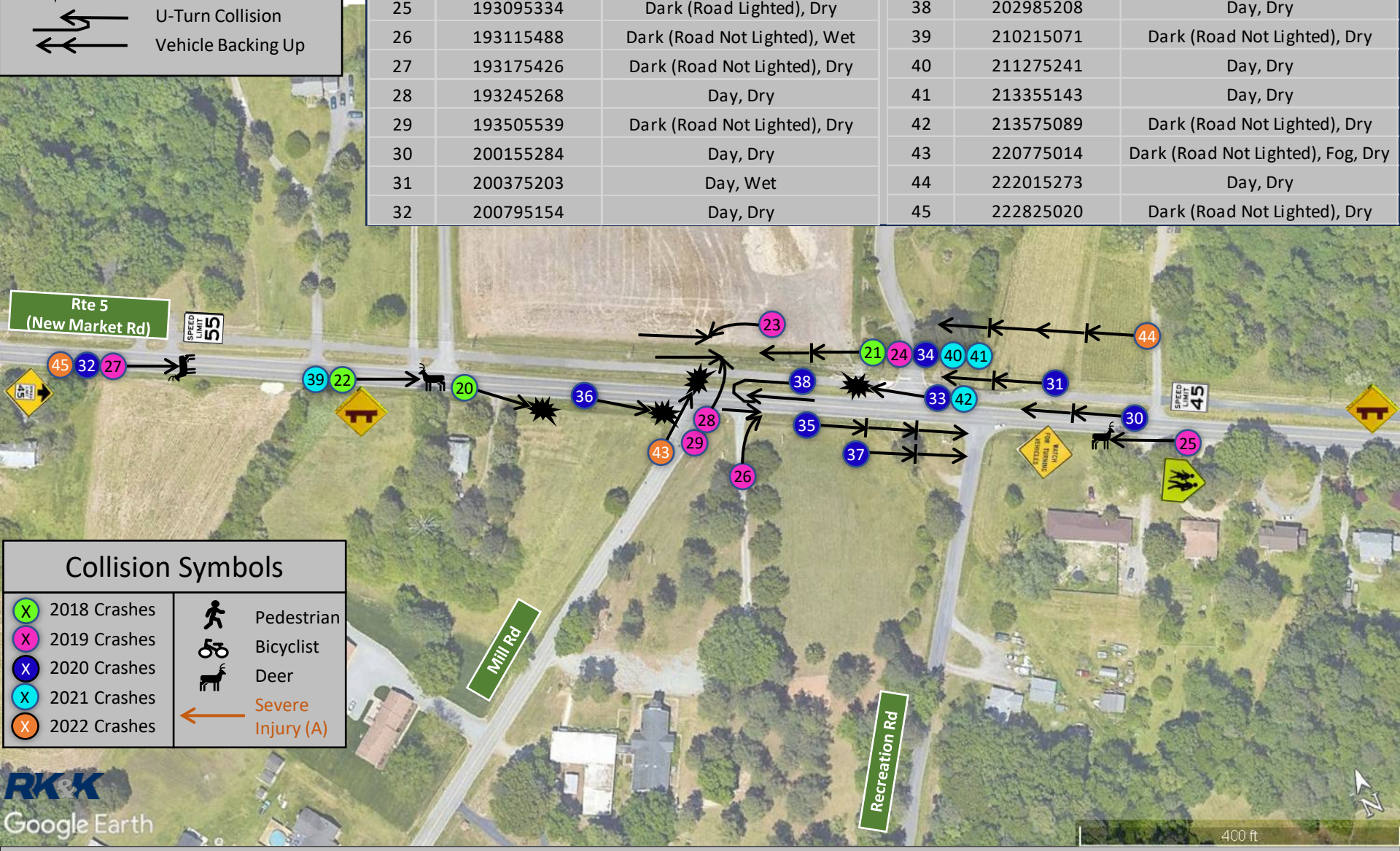


Crash Data Source: VDOT Pathways for Planning Database

- Vehicle Direction
- Rear End Collision
- Head On Collision
- Sideswipe
- Angle Collision
- Fixed Object Collision
- U-Turn Collision
- Vehicle Backing Up

Crash #	Document Number	Conditions
20	181405356	Dark (Road Not Lighted), Water
21	181625399	Day, Wet
22	183015367	Dark (Road Not Lighted), Dry
23	190195052	Day, Dry
24	190545148	Day, Wet
25	193095334	Dark (Road Lighted), Dry
26	193115488	Dark (Road Not Lighted), Wet
27	193175426	Dark (Road Not Lighted), Dry
28	193245268	Day, Dry
29	193505539	Dark (Road Not Lighted), Dry
30	200155284	Day, Dry
31	200375203	Day, Wet
32	200795154	Day, Dry

Crash #	Document Number	Conditions
33	201255148	Day, Dry
34	201525138	Day, Dry
35	201915009	Day, Dry
36	202025129	Dawn, Dry
37	202585164	Day, Dry
38	202985208	Day, Dry
39	210215071	Dark (Road Not Lighted), Dry
40	211275241	Day, Dry
41	213355143	Day, Dry
42	213575089	Dark (Road Not Lighted), Dry
43	220775014	Dark (Road Not Lighted), Fog, Dry
44	222015273	Day, Dry
45	222825020	Dark (Road Not Lighted), Dry



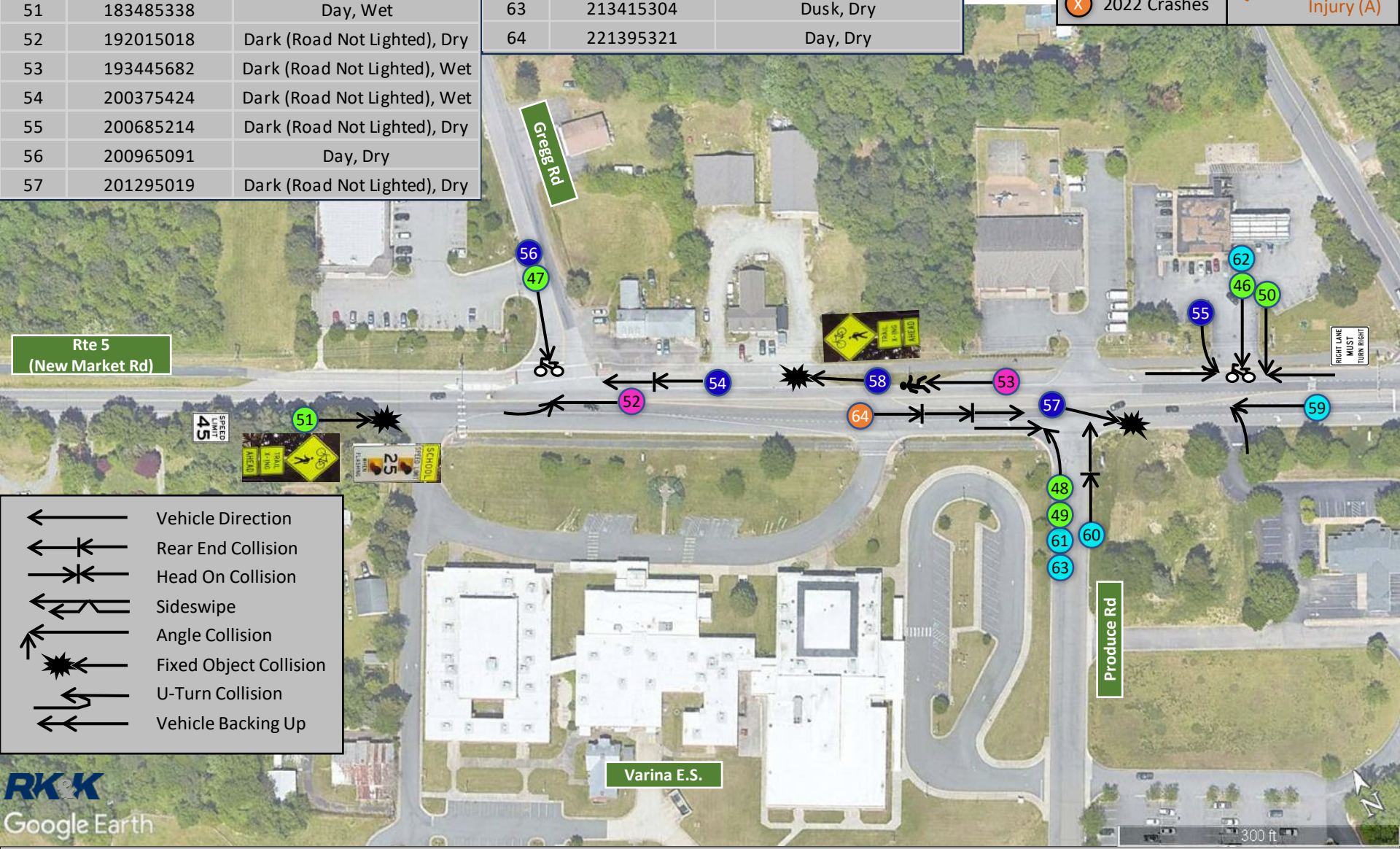
Crash Data Source: VDOT Pathways for Planning Database

Crash #	Document Number	Conditions
46	180565136	Day, Dry
47	180565190	Day, Dry
48	181055068	Day, Dry
49	182995181	Dark (Lighting Unknown), Dry
50	183405183	Day, Dry
51	183485338	Day, Wet
52	192015018	Dark (Road Not Lighted), Dry
53	193445682	Dark (Road Not Lighted), Wet
54	200375424	Dark (Road Not Lighted), Wet
55	200685214	Dark (Road Not Lighted), Dry
56	200965091	Day, Dry
57	201295019	Dark (Road Not Lighted), Dry

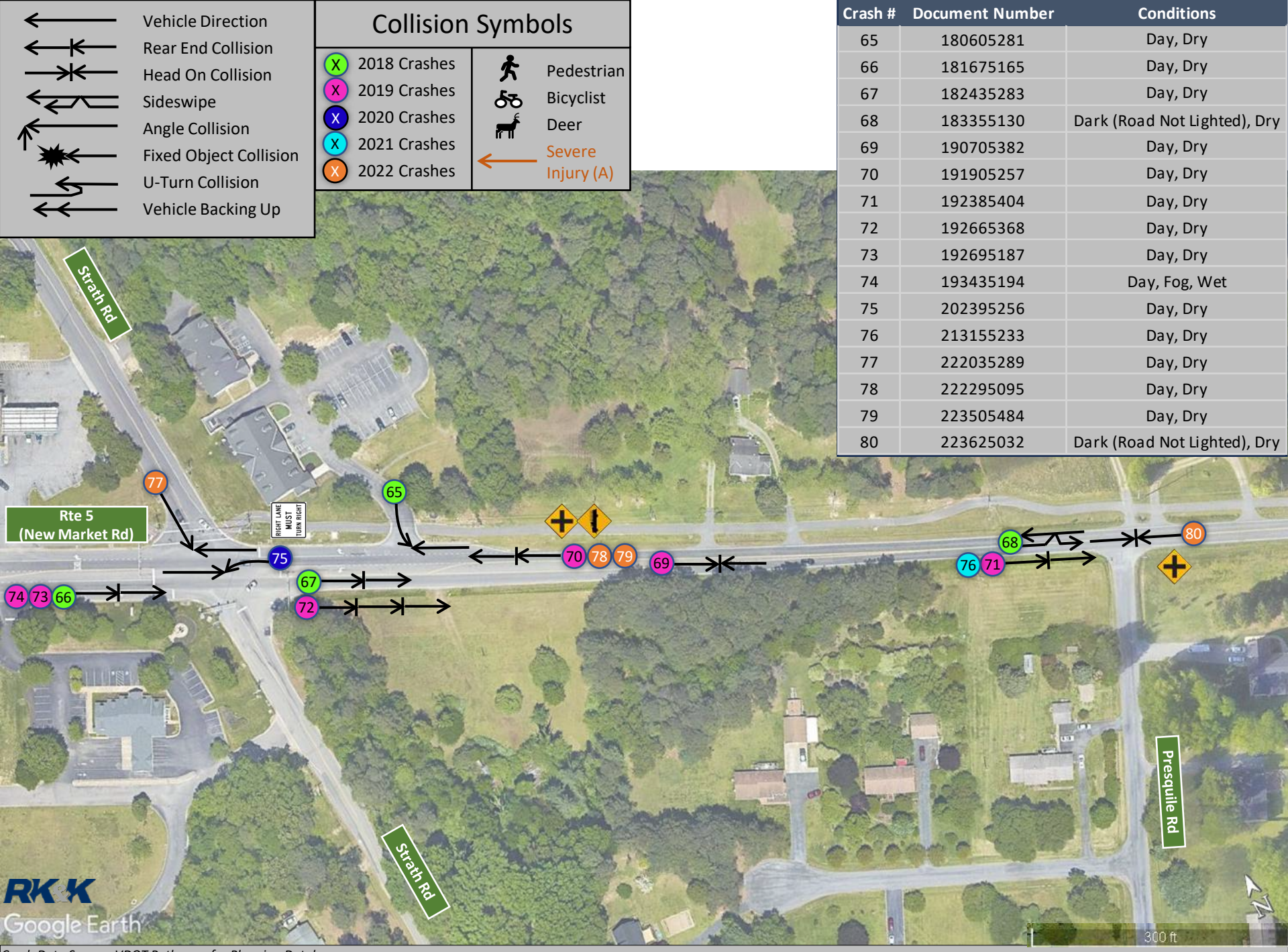
Crash #	Document Number	Conditions
58	202835200	Day, Dry
59	211445392	Day, Dry
60	211485289	Dusk, Wet
61	211525443	Day, Dry
62	212785008	Day, Dry
63	213415304	Dusk, Dry
64	221395321	Day, Dry

Collision Symbols

- 2018 Crashes
- 2019 Crashes
- 2020 Crashes
- 2021 Crashes
- 2022 Crashes
- Pedestrian
- Bicyclist
- Deer
- Severe Injury (A)



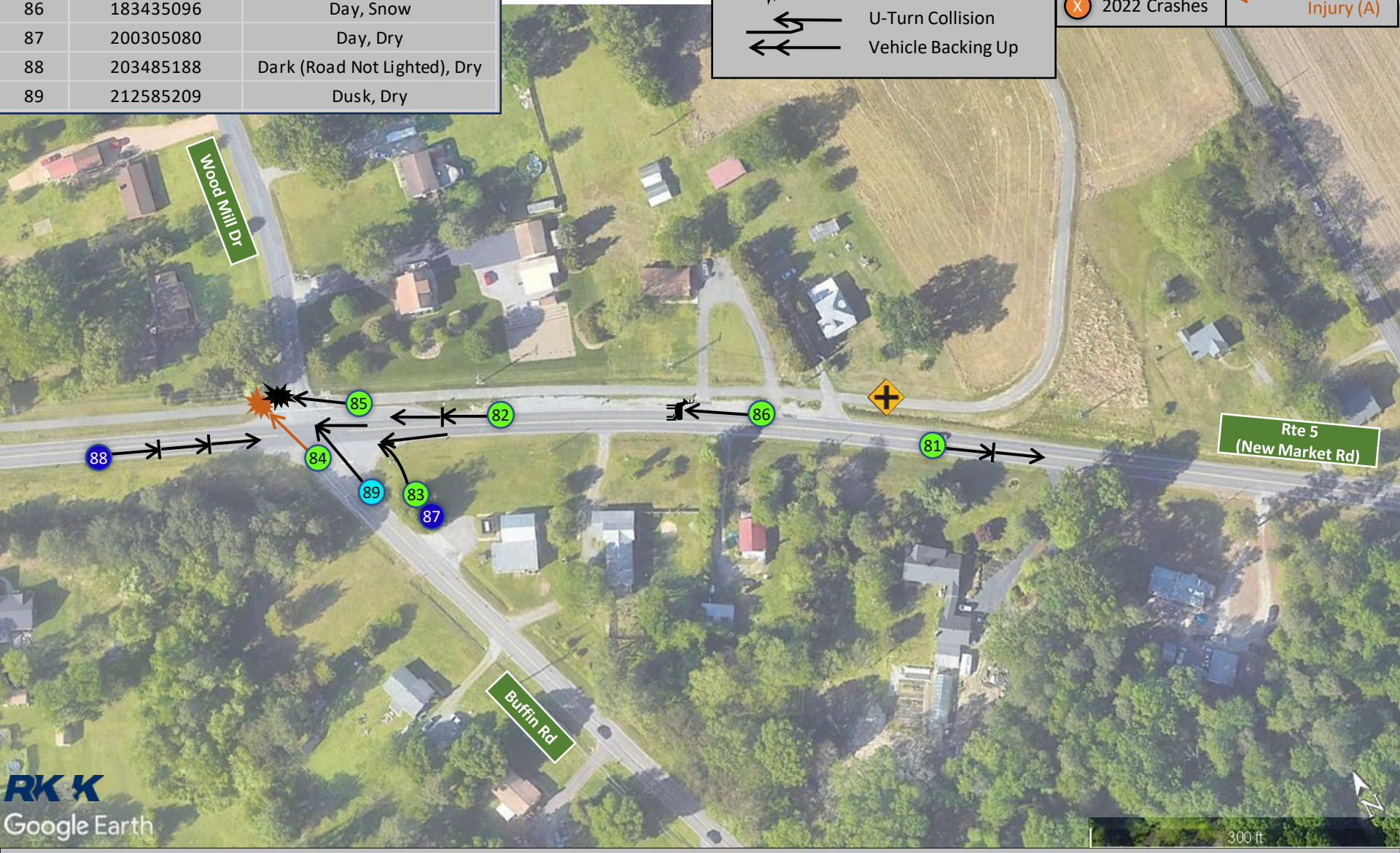
Crash Data Source: VDOT Pathways for Planning Database



Crash #	Document Number	Conditions
65	180605281	Day, Dry
66	181675165	Day, Dry
67	182435283	Day, Dry
68	183355130	Dark (Road Not Lighted), Dry
69	190705382	Day, Dry
70	191905257	Day, Dry
71	192385404	Day, Dry
72	192665368	Day, Dry
73	192695187	Day, Dry
74	193435194	Day, Fog, Wet
75	202395256	Day, Dry
76	213155233	Day, Dry
77	222035289	Day, Dry
78	222295095	Day, Dry
79	223505484	Day, Dry
80	223625032	Dark (Road Not Lighted), Dry

Crash Data Source: VDOT Pathways for Planning Database

Crash #	Document Number	Conditions
81	180305247	Day, Dry
82	180685118	Day, Dry
83	181085171	Day, Dry
84	182025030	Dark (Road Not Lighted), Dry
85	182715937	Dark (Road Not Lighted), Wet
86	183435096	Day, Snow
87	200305080	Day, Dry
88	203485188	Dark (Road Not Lighted), Dry
89	212585209	Dusk, Dry



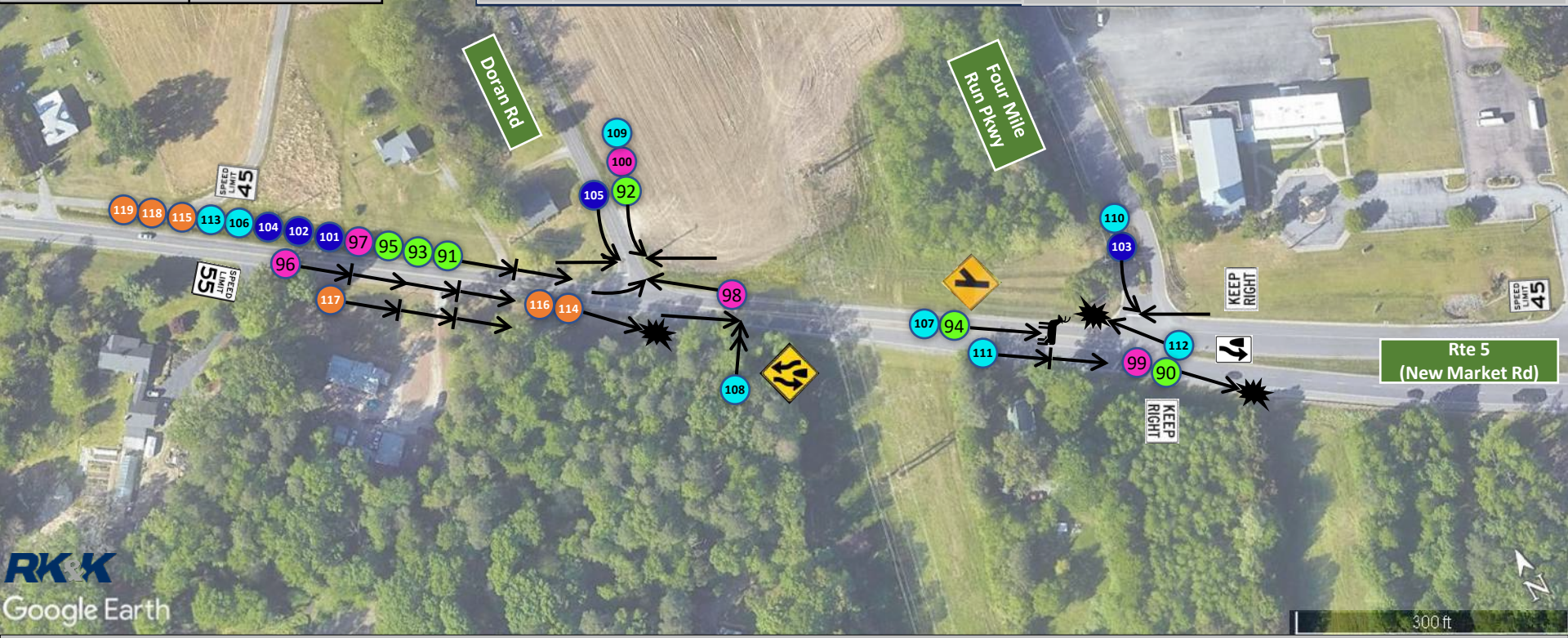
Crash Data Source: VDOT Pathways for Planning Database

- Vehicle Direction
- Rear End Collision
- Head On Collision
- Sideswipe
- Angle Collision
- Fixed Object Collision
- U-Turn Collision
- Vehicle Backing Up

Collision Symbols

- 2018 Crashes
- 2019 Crashes
- 2020 Crashes
- 2021 Crashes
- 2022 Crashes
- Pedestrian
- Bicyclist
- Deer
- Severe Injury (A)

Crash #	Document Number	Conditions	Crash #	Document Number	Conditions
90	180095174	Dawn, Icy	105	203525031	Dark (Road Not Lighted), Wet
91	180235499	Day, Dry	106	210635280	Day, Dry
92	180665348	Dark (Road Not Lighted), Dry	107	210865070	Dark (Road Not Lighted), Dry
93	180725341	Day, Dry	108	210975372	Dark (Road Lighted), Dry
94	183265220	Dark (Road Not Lighted), Dry	109	211115239	Day, Dry
95	183515001	Day, Wet	110	211185296	Day, Dry
96	190095276	Dark (Road Not Lighted), Dry	111	213065140	Day, Dry
97	190185360	Day, Dry	112	213025504	Dark (Road Not Lighted), Dry
98	190835057	Day, Dry	113	213655209	Dark (Road Not Lighted), Wet
99	190865009	Dark (Road Not Lighted), Dry	114	220385348	Day, Dry
100	192615318	Day, Dry	115	220465001	Day, Dry
101	200385005	Day, Wet	116	220785195	Day, Dry
102	201075211	Day, Dry	117	222065442	Day, Wet
103	203025170	Dark (Road Lighted), Fog, Wet	118	222175251	Day, Dry
104	203285350	Dark (Road Not Lighted), Dry	119	222395187	Day, Dry



Crash Data Source: VDOT Pathways for Planning Database

5. SIGNAL WARRANT ANALYSIS

Signal warrant analyses were developed to determine if signalization would be a consideration for the following two study intersections with Route 5 using the 2023 turning movement counts. The intersections were selected due to the projected delays for the design year (2045).

- Wood Mill Drive/Buffin Road
- Four Mile Run Pkwy

The warrant analysis utilized *Pagone's Theorem* to estimate the percentage of right turns from the minor streets to include in the analysis. The calculations were based on the following formula, in addition to factors determined by the approach lane configuration for each intersection and the average hourly volumes on the major street (Route 5).

$$R_{adj} = R \times [1 - (f_{minor} - f_{main})]$$

It should be noted that the adjusted right-turn volume is calculated for each hour. Therefore, the factors in the above equation might vary for each hour depending on the major and minor street volume. The factors' estimating procedure is explained in the following sections.

5.1. Wood Mill Drive/Buffin Road

The turning movement counts used for the signal warrant analysis at Wood Mill Drive/ Buffin Road were collected on December 5, 2023. f_{minor} and f_{main} values are calculated for each hour in the entire 12-hour count duration. f_{main}, also called mainline congestion factor, for northbound and southbound minor street is based on the sum of eastbound and westbound through and right turn volumes. For example, in the first hour (7 – 8 AM), the sum of eastbound through and right-turn movement counts is 574 veh/hr, therefore, f_{main} is 0.1. f_{minor}, also called minor street adjustment factor, is based on the minor street volume and lane configuration of each minor street approach.

2		R > 3T	0.60
		3T ≥ R > T/3	0.40
		R ≤ T/3	0.20
3		Any configuration with an exclusive right turn lane ≥ 500 ft. long. (See note* for shorter right turn lanes)	0.75

Mainline Congestion Factor (f_{main})			
Mainline volume per lane (veh/hr/lane)	f_{main}	Mainline volume per lane (veh/hr/lane)	f_{main}
0 - 399	0.0	1100 – 1199	0.40
400 – 499	0.05	1200 – 1299	0.45
500 – 599	0.10	1300 – 1399	0.50
600 – 699	0.15	1400 – 1499	0.55
700 – 799	0.20	1500 – 1599	0.60
800 – 899	0.25	1600 – 1699	0.65
900 – 999	0.30	1700 – 1799	0.70
1000 – 1099	0.35	1800 - 1899	0.75

The turning movement counts for Wood Mill Drive/Buffin Road intersection, after adjusting for right-turning movements, are shown in **Table 8** below. The variables resulted in reducing the right-turn volumes by 69% for northbound and 33% for southbound.

Table 8. Adjusted Turning Movement Counts at Wood Mill/Buffin Road

Hours	Major St: Route 5	Major St: Route 5	Minor Street: Buffin Rd	Minor Street: Wood Mill Rd	Total
	Eastbound	Westbound	Northbound	Southbound	
7 - 8 AM	575	630	96	14	1315
8 - 9 AM	349	445	16	13	822
9 - 10 AM	272	281	20	6	579
10 - 11 AM	249	247	18	8	522
11 - 12 PM	253	237	27	8	525
12 - 1 PM	294	256	16	7	573
1 - 2 PM	251	288	20	16	575
2 - 3 PM	387	327	83	8	805
3 - 4 PM	527	394	46	12	979
4 - 5 PM	644	569	25	10	1248
5 - 6 PM	643	593	13	14	1262
6 - 7 PM	379	403	10	10	802

5.2. Four Mile Run Parkway

The same procedure as explained above is used for the T-intersection of Route 5 and Four-Mile Run Parkway. The turning movement counts used for the signal warrant analysis at this intersection were collected on December 5, 2023. f_{minor} and f_{main} values were calculated for each hour in the 12-hour duration; however, for the calculation of f_{main} only the through movement was considered because of the presence of an exclusive right-turn lane. For example, in the first hour (7 – 8 AM), the sum of westbound through movement count is 626 veh/hr, therefore, f_{main} is 0.15. The lane configuration of the minor street is one lane sharing both right- and left-turning movements. As such, the value of f_{minor} is 0.05. The turning movement counts for the Four Mile Run Parkway intersection after adjusting for right-turning movements are shown in **Table 9** below. The variables resulted in reducing the right-turn volumes by 33%.

Table 9. Adjusted Turning Movement Counts – Four Mile Run Parkway

Hours	Major St: Route 5 Eastbound	Major St: Route 5 Westbound	Minor Street: Four Mile Run Southbound	Total
7 - 8 AM	623	645	137	1405
8 - 9 AM	404	451	91	946
9 - 10 AM	311	309	45	665
10 - 11 AM	278	274	29	581
11 - 12 PM	262	254	37	553
12 - 1 PM	317	280	33	630
1 - 2 PM	289	305	34	628
2 - 3 PM	389	403	38	830
3 - 4 PM	570	428	43	1041
4 - 5 PM	701	649	50	1400
5 - 6 PM	688	682	57	1427
6 - 7 PM	379	473	38	890

The result of the signal warrant analyses, conducted using 100% volume factors as contained in the MUTCD Part 4, have been provided in **Table 10** with details included in **Appendix B**.

Table 10. Summary of MUTCD Signal Warrant Analysis

MUTCD Signal Warrants	Wood Mill/Buffin Warrant Satisfied?	Four Mile Run Warrant Satisfied?
Warrant 1: Eight-Hour Vehicular Volume	No	No
Warrant 2: Four-Hour Vehicular Volume	No	No
Warrant 3: Peak Hour	No	No
Warrant 4: Pedestrian Volume	No	No
Warrant 5: School Crossing	No	No
Warrant 6: Coordinated Signal System	No	No
Warrant 7: Crash Experience	No	No
Warrant 8: Roadway Network	No – 3 hours met for Condition A	No – 4 hours met for Condition A
Warrant 9: Intersection Near a Grade Crossing	N/A	N/A

A summary of the findings is provided below:

- For Wood Mill Drive/Buffin Road, Eight-Hour Vehicular Volume Warrant (Warrant #1) was **not** met; however, 1 hour out of the required 8 hours of Warrant #1B was met.
- For Four Mile Run Parkway, Eight-Hour Vehicular Volume Warrant (Warrant #1) was not met; however, 1 hour out of the required 8 hours of Warrant #1B, and 1 hour out of the required 8 hours of Warrant #1C were met.
- Four-Hour Vehicular Volume Warrant (Warrant #2) was **not** met; however, 1 hour out of the required 4 hours were met for both Wood Mill Drive/Buffin Road and Four Mile Run Parkway.
- No other signal warrants were met.

Based on the above findings, *installation of a traffic signal at the intersections of Route 5 and Wood Mill Drive/Buffin Road and Route 5 and Four Mile Run Parkway is not warranted.*

6. EXISTING (2023) CONDITION OPERATIONAL ANALYSIS

The Existing (2023) Condition analysis of study intersections along Route 5 were performed using guidelines contained in VDOT's *Traffic Operations and Safety Analysis Manual (TOSAM version 2.0)*. For this analysis, the existing roadway geometries and balanced network 2023 peak hour turning movement volumes (as shown in Figures 1 & 2) were entered into *Synchro (Version 11)* Software to create an Existing Conditions (2023) traffic model. Signal timings corresponding to each peak hour were provided by VDOT and incorporated into the model.

VDOT completed a speed limit study in March 2023 for a 0.36-mile segment of Route 5 that included a crash analysis, resulting in lowering of the speed limit from 55 mph to 45 mph within the segment of Route 5 from Doran Road to Four Mile Run Parkway. The reduced speed is captured in the existing conditions analysis.

The model simulations to estimate simulated delay per vehicle (seconds) and maximum queue length (feet) were performed using the microscopic tool *SimTraffic* for a total of 10 simulation runs. The results of the Existing (2023) operational analysis are provided in **Table 11** with details included in **Appendix C**.
All intersections operate at overall acceptable levels of service. Select side street movements on the eastern end of the corridor operate with LOS E/F, though are expected to experience lower delay outside of the peak periods.

Table 11: Existing (2023) Conditions Intersection Analysis

Study Intersection	Movement	2023 AM Peak Hour – Existing			2023 PM Peak Hour – Existing		
		2023 Volume (vph)	HCM Delay (s/veh)	Max Q (Feet)	2023 Volume (vph)	HCM Delay (s/veh)	Max Q (Feet)
Route 5 @ Wilson Rd/ Varina Rd	EB	365	12.2	163	485	21.5	186
	WB	495	20.7	174	465	20.1	187
	NB	60	29.3	65	35	30.2	56
	SB	65	30.6	96	110	32.3	114
	Overall	**985**	**18.7**	-	**1,095**	**22.3**	-
Route 5 @ Mill Rd	EB	405	0.0	2	520	0.0	-
	WB	515	0.4	104	530	1.2	141
	NB	60	12.4	43	45	14.3	36
	SB	-	-	-	-	-	-
	Overall	**980**	-	-	**1,095**	-	-
Route 5 @ Recreation Rd	EB	455	0.0	-	555	0.0	-
	WB	510	0.2	57	545	0.4	112
	NB	40	15.6	55	25	18.9	73
	SB	-	-	-	-	-	-
	Overall	**1,005**	-	-	**1,125**	-	-
Route 5 @ ES Entrance	EB	475	0.0	30	555	0.0	39
	WB	555	0.8	117	540	0.1	69
	NB	10	17.4	36	25	17.3	62
	SB	-	-	-	-	-	-
	Overall	**1,040**	-	-	**1,120**	-	-
Route 5 @ Gregg Rd	EB	440	0.1	53	560	0.4	114
	WB	540	0.0	58	540	0.0	28
	NB	-	-	-	-	-	-
	SB	25	14.1	43	30	16.9	53
	Overall	**1,005**	-	-	**1,130**	-	-
Route 5 @ ES Exit	EB	440	0.0	20	545	0.0	**2**
	WB	510	0.0	-	535	0.0	**4**
	NB	70	16.9	78	10	21.3	63
	SB	-	-	-	-	-	-
	Overall	**1,020**	-	-	**1,090**	-	-
Route 5 @ Produce Rd/ Business Dvwys	EB	480	0.3	91	550	0.1	49
	WB	540	0.8	75	550	1.2	70
	NB	35	18.6	91	95	43.3	114
	SB	25	19.4	36	10	22.1	28
	Overall	**1,080**	-	-	**1,205**	-	-
Route 5 @ Strath Rd	EB	450	23.0	246	485	34.3	307
	WB	655	24.8	282	625	28.0	323
	NB	90	36.8	112	175	43.9	161
	SB	160	36.5	161	245	49.3	253
	Overall	**1,355**	**26.0**	-	**1,530**	**34.7**	-

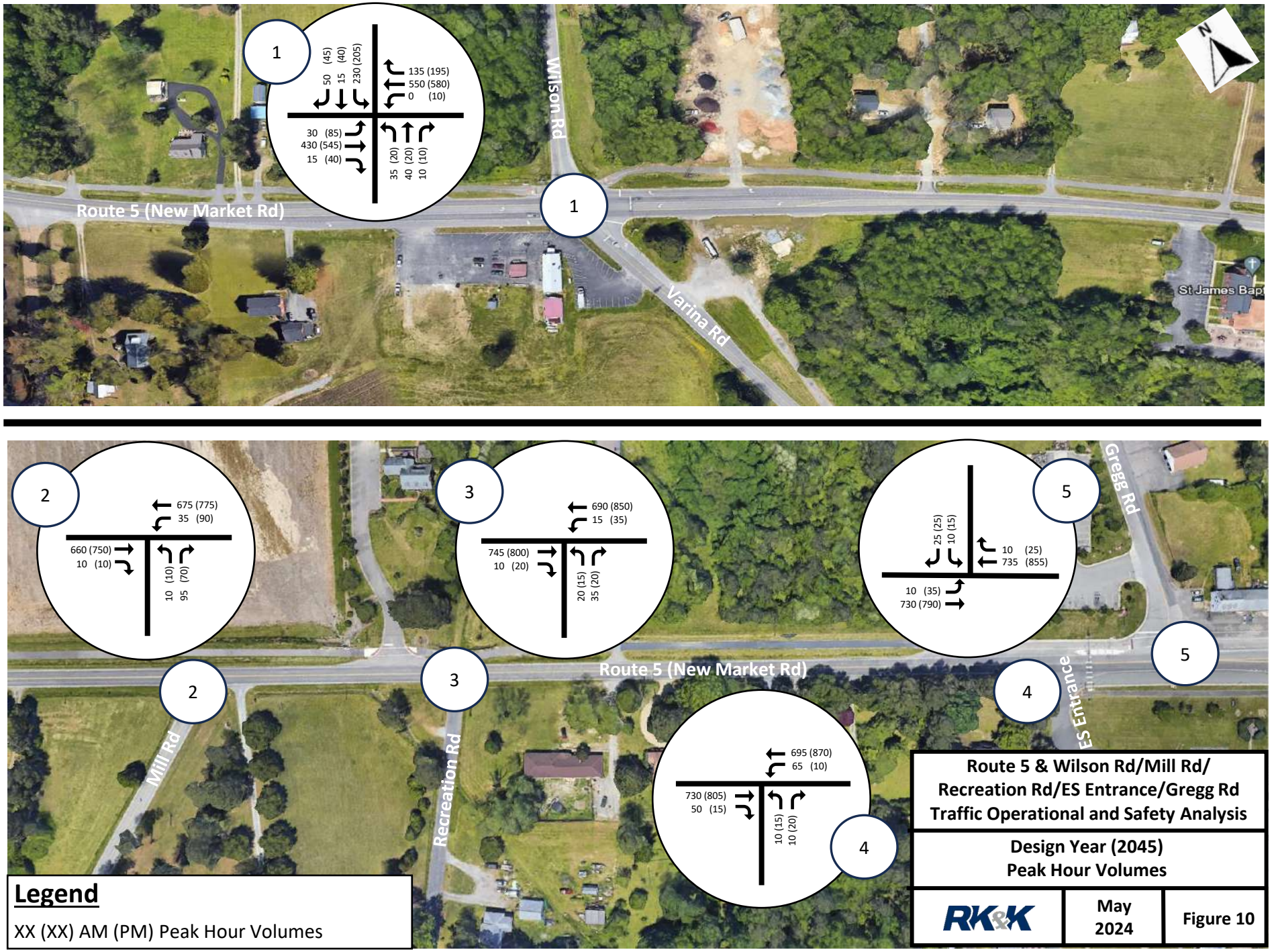
Route 5 @ Wood Mill Dr/ Buffin Rd	*EB*	*585*	*0.1*	*22*	*715*	*0.1*	*24*
	WB	*645*	*0.9*	*57*	*635*	*0.2*	*6*
	NB	*160*	*55.6*	*243*	*25*	*37.8*	*47*
	SB	*25*	*37.4*	*79*	*25*	*35.0*	*65*
	Overall	***1,415***	*-*	*-*	***1,400***	*-*	*-*
Route 5 @ Doran Rd	*EB*	*560*	*0.4*	*199*	*705*	*0.5*	*294*
	WB	*705*	*0.0*	*23*	*680*	*0.0*	*13*
	NB	*-*	*-*	*-*	*-*	*-*	*-*
	SB	*125*	*58.8*	*191*	*100*	*62.0*	*191*
	Overall	***1,390***	*-*	*-*	***1,485***	*-*	*-*
Route 5 @ Four Mile Run Pkwy	*EB*	*625*	*0.4*	*39*	*730*	*0.8*	*59*
	WB	*650*	*0.0*	*2*	*710*	*0.0*	*9*
	NB	*-*	*-*	*-*	*-*	*-*	*-*
	SB	*160*	*63.9*	*187*	*75*	*36.9*	*95*
	Overall	***1,435***	*-*	*-*	***1,515***	*-*	*-*

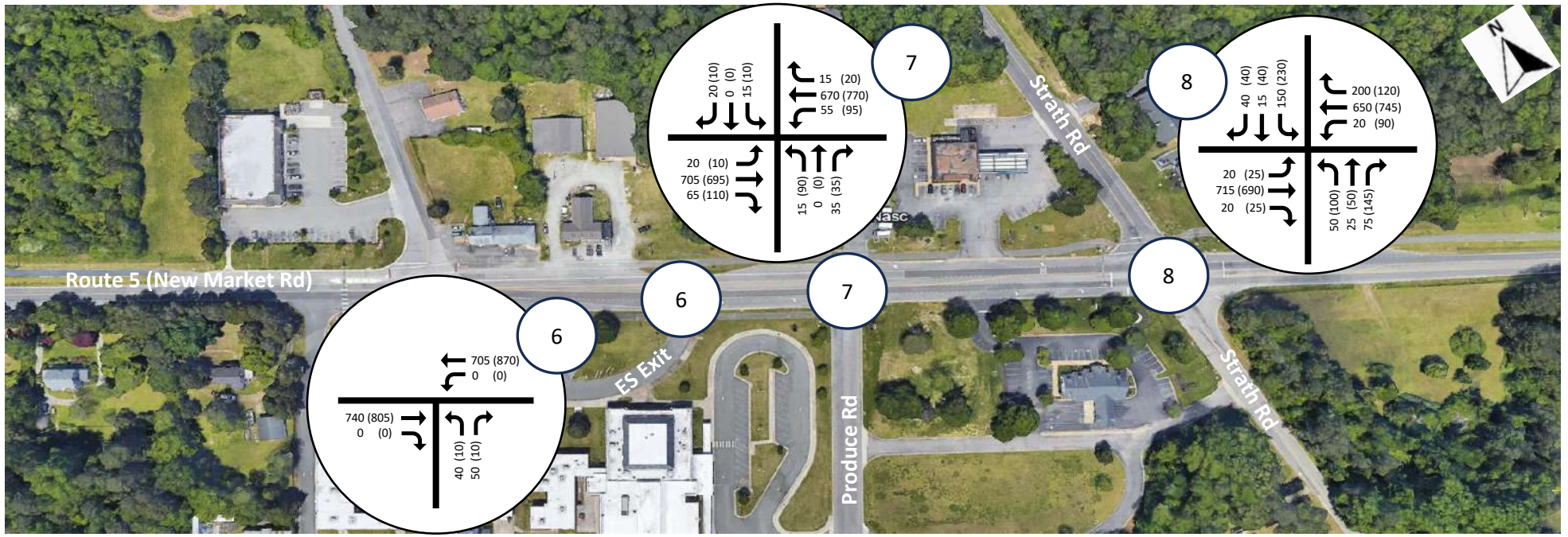
Note: Delay values highlighted in Green, Yellow, Orange, and Red indicate LOS C or better, LOS D, LOS E, and LOS F, respectively.

7. FUTURE YEAR (2045) NO-BUILD CONDITION OPERATIONAL ANALYSIS

The Future Year (2045) No-Build scenario was analyzed to identify potential deficiencies at intersections along the Route 5 corridor without any capacity improvements. The vehicular traffic movement counts were projected to the Future Year (see **Section 3**) and Future Year peak hour factors were identified as the maximum of 0.92 or the count-derived value, in line with VDOT's *TOSAM* guidelines.

Figure 10 and **Figure 11** show the projected peak hour vehicular volume for the Future Year at all intersections that were used for both the No-Build and Build Conditions described in Sections 7 and 8, respectively.


1
50 (45)
15 (40)
230 (205)
135 (195)
550 (580)
0 (10)
30 (85)
430 (545)
15 (40)
35 (20)
40 (20)
10 (10)
Wilson Rd
Route 5 (New Market Rd)
1
Varina Rd
St James Bap
2
675 (775)
35 (90)
660 (750)
10 (10)
10 (10)
95 (70)
3
690 (850)
15 (35)
745 (800)
10 (20)
20 (15)
35 (20)
5
25 (25)
10 (15)
10 (25)
735 (855)
10 (35)
730 (790)
Gregg Rd
Route 5 (New Market Rd)
2
3
4
5
ES Entrance
Mill Rd
Recreation Rd
695 (870)
65 (10)
730 (805)
50 (15)
10 (15)
10 (20)
4
Legend
XX (XX) AM (PM) Peak Hour Volumes
Route 5 & Wilson Rd/Mill Rd/
Recreation Rd/ES Entrance/Gregg Rd
Traffic Operational and Safety Analysis
Design Year (2045)
Peak Hour Volumes
RK&K
May
2024
Figure 10



Legend

XX (XX) AM (PM) Peak Hour Volumes

Route 5 & E.S. Exit/Produce Rd/Strath Rd/ Buffin Rd/Doran Rd/Four Mile Run Pkwy Traffic Operational and Safety Analysis

Design Year (2045) Peak Hour Volumes

RK&K | May 2024 | Figure 11

Table 12 summarizes the performance of study intersections, and the detailed analyses are presented in **Appendix D**. The following text highlights the main findings of the analyses:

- The signalized intersection of Route 5 and Wilson Rd/Varina Rd is expected to operate at a LOS of C for both the AM and PM peak periods with overall delays in the low 30 seconds.
- The minor street approaches of Strath Road at Route 5 are projected to operate at a LOS D and E during the AM and PM peak hours, respectively. Additional capacity in the form of turn lane additions, signal operation changes, or alternative intersection control are recommended.
- The unsignalized side street approaches at Wood Mill Dr/Buffin Road are expected to operate at LOS F during both AM and PM peak hours; however, extended delays are only expected during a short 30-minute period corresponding to arrival and dismissal times for the Mehfoud Elementary School located on Buffin Rd (south leg). Additionally, left-turn lanes were recently added on Route 5 at this intersection to improve safety and capacity.
- The unsignalized side street approaches at Produce Road are also expected to operate at LOS F during the PM peak hour. It should be noted, however, that the peak hour count taken at the Produce Road intersection reflects 2:20-3:30 PM (peak school dismissal time) and not the actual network-wide PM peak hour; therefore, actual peak hour delays are likely to be lower.
- LOS F is expected at the southbound approach at Doran Rd and Four Mile Run Pkwy to Route 5. Signalization and roundabout options have been recommended as possible intersection control alternatives to alleviate delays at this location.

Table 12: Future Year (2045) No-Build Scenario Intersection Analysis

Study Intersection	Movement	2045 AM Peak Hour – No-Build			2045 PM Peak Hour – No-Build		
		2045 Volume (vph)	HCM Delay (s/veh)	Max Q (Feet)	2045 Volume (vph)	HCM Delay (s/veh)	Max Q (Feet)
Route 5 @ Wilson Rd/ Varina Rd	EB	475	17.2	251	670	24.7	306
	WB	685	37.2	414	785	34.7	429
	NB	85	46.0	109	50	43.1	65
	SB	295	54.5	306	290	49.4	245
	Overall	**1,540**	**34.8**	-	**1,795**	**33.6**	-
Route 5 @ Mill Rd	EB	670	0.0	0	760	0.0	15
	WB	710	0.5	171	865	1.0	284
	NB	105	20.6	81	80	26.7	120
	SB	-	-	-	-	-	-
	Overall	**1,485**	-	-	**1,705**	-	-
Route 5 @ Recreation Rd	EB	755	0.0	-	820	0.0	47
	WB	705	0.2	76	885	0.4	249
	NB	55	29.8	82	35	42.1	127
	SB	-	-	-	-	-	-
	Overall	**1,515**	-	-	**1,740**	-	-
Route 5 @ ES Entrance	EB	780	0.0	159	820	0.0	545
	WB	760	0.9	130	880	0.1	107
	NB	20	36.2	56	35	38.7	162
	SB	-	-	-	-	-	-
	Overall	**1,560**	-	-	**1,735**	-	-
Route 5 @ Gregg Rd	EB	740	0.1	115	825	0.4	128
	WB	745	0.0	244	880	0.0	104
	NB	-	-	-	-	-	-
	SB	35	24.0	70	40	42.7	227
	Overall	**1,520**	-	-	**1,745**	-	-
Route 5 @ ES Exit	EB	740	0.0	146	805	0.0	271
	WB	705	0.0	36	870	0.0	17
	NB	90	40.7	143	20	54.5	99
	SB	-	-	-	-	-	-
	Overall	**1,535**	-	-	**1,695**	-	-
Route 5 @ Produce Rd/ Business Dvwys	EB	790	0.2	156	815	0.1	167
	WB	740	0.8	105	885	1.1	116
	NB	50	49.1	199	125	625.3	718
	SB	35	52.2	69	20	71.5	125
	Overall	**1,615**	-	-	**1,845**	-	-

Route 5 @ Strath Rd	*EB*	*755*	*54.0*	*348*	*740*	*63.8*	*351*
	WB	*870*	*35.7*	*462*	*955*	*64.8*	*1,272*
	NB	*150*	*54.0*	*202*	*295*	*72.8*	*580*
	SB	*205*	*52.2*	*226*	*310*	*60.9*	*357*
	Overall	***1,980***	***45.5***	*-*	***2,300***	***64.5***	*-*
Route 5 @ Wood Mill Dr/ Buffin Rd	*EB*	*940*	*0.1*	*26*	*1,065*	*0.1*	*102*
	WB	*855*	*1.0*	*88*	*965*	*0.2*	*133*
	NB	*205*	*691.3*	*1,259*	*35*	*237.3*	*143*
	SB	*40*	*339.9*	*223*	*40*	*220.9*	*247*
	Overall	***2,040***	*-*	*-*	***2,105***	*-*	*-*
Route 5 @ Doran Rd	*EB*	*905*	*0.4*	*613*	*1,055*	*0.5*	*822*
	WB	*930*	*0.0*	*26*	*1,020*	*0.0*	*20*
	NB	*-*	*-*	*-*	*-*	*-*	*-*
	SB	*155*	*622.2*	*916*	*125*	*642.2*	*912*
	Overall	***1,990***	*-*	*-*	***2,200***	*-*	*-*
Route 5 @ Four Mile Run Pkwy	*EB*	*980*	*0.4*	*47*	*1,085*	*0.8*	*91*
	WB	*860*	*0.0*	*0*	*1,060*	*0.0*	*15*
	NB	*-*	*-*	*-*	*-*	*-*	*-*
	SB	*200*	*579.8*	*479*	*95*	*420.1*	*217*
	Overall	***2,040***	*-*	*-*	***2,240***	*-*	*-*

Note: Delay values highlighted in Green, Yellow, Orange, and Red indicate LOS C or better, LOS D, LOS E, and LOS F, respectively. Growth Factor of 1.66 is used for Mill Rd and Strath Rd, and 1.22 is used for all other roads.

8. 2045 BUILD ALTERNATIVES

Based on the findings of the operational analyses and the signal warrant evaluation, measures to enhance safety and operational efficiency along Route 5 were identified. The following are the proposed alternatives at each specified location for the design year.

1. Route 5 at Varina Road/Wilson Road

Per the rezoning request for the Nelson Farm Residential Development to be constructed North of Route 5 (Traffic Impact Analysis completed in December 2022), a southbound right-turn lane is to be installed under that project (shown in **Figure 12**). The turn lane was not included in the analysis under this study and, as no significant safety or operational issues were identified at this location, no additional improvements are proposed.

2. Route 5 at Mill Road

Build Condition 1 – Realign Mill Rd to intersect Route 5 closer to a perpendicular approach and relocate the intersection approximately 150 feet west of the existing intersection. Install a new westbound left-turn lane with a 100-foot storage length. The intersection would operate under stop control with a stop approach for Mill Road. The conceptual layout for this improvement is shown in **Figure 13**. The

estimated total project cost for this alternative is $5,711,000 with the full cost estimate breakdown included in **Appendix F**.

Build Condition 2 – Realign to approximately 150 feet west of the existing intersection. Realign the existing driveway west of the proposed roundabout along Route 5. The intersection would operate as a single-lane roundabout. The conceptual layout for this improvement is shown in **Figure 14**. The estimated total project cost for this alternative is $7,201,000 with the full cost estimate breakdown included in **Appendix F**.

3. Route 5 between Varina Elementary School and Strath Road

Segment – Install an 11-foot two-way left-turn lane (TWLTL) between Varina Elementary School entrance and Produce Road. Stripe out the existing shoulder pavement between school entrances.

Route 5 at Produce Road – Install channelization island with 50-foot radius to existing eastbound right-turn lane.

Route 5 at Valero/C&F Bank Driveways (200 feet west of Strath Road) – Convert both driveways to right-in/right-out configuration. Alternative exits are available via Strath Rd.

The conceptual layout for these improvements is shown in **Figure 15**. The estimated total project cost for the above improvements is $2,776,000 with the full cost estimate breakdown included in **Appendix F**.

4. Route 5 at Strath Road

Build Condition 1 – Install turn lanes for Strath Road at the intersection with Route 5. This condition proposes a new 350-foot southbound left-turn lane and a new 150-foot northbound left-turn lane. Provide necessary widening on Strath Rd to develop left-turn lanes and align shifted through lanes with receiving lanes. Install channelizing island to existing northbound right-turn. Analysis results shown in **Section 9** project operational improvements in delay and queueing with the proposed turn lanes. The conceptual layout for this improvement is shown in **Figure 17**. The estimated total project cost for this alternative is $3,337,000 with the full cost estimate breakdown included in **Appendix F**.

Build Condition 2 – Install single-lane roundabout with right-turn bypass lanes on the northbound and southbound approaches. Eastbound and westbound approaches will also operate with a right-turn lane; however, they will not enter the roundabout circulatory roadway. Analysis results shown in **Section 9** project operational improvements in delay and queueing under roundabout control. The conceptual layout for this improvement is shown in **Figure 16** and **Figure 18**. The estimated total project cost for this alternative is $5,768,000 with the full cost estimate breakdown included in **Appendix F**.

5. Route 5 at Doran Road

Build Condition 1 – Install traffic signal, 300-foot eastbound left-turn lane, and crosswalks across all legs. The signal control would operate with a leading protected-permitted left-turn mode in the eastbound direction. Signalization may help address the angle crashes shown at the intersection and improve the delay and queueing experienced by the side street (Build results shown in **Section 9**). The conceptual layout for this improvement is shown in **Figure 19**. The estimated total project cost for this alternative is $6,206,000 with the full cost estimate breakdown included in **Appendix F**.

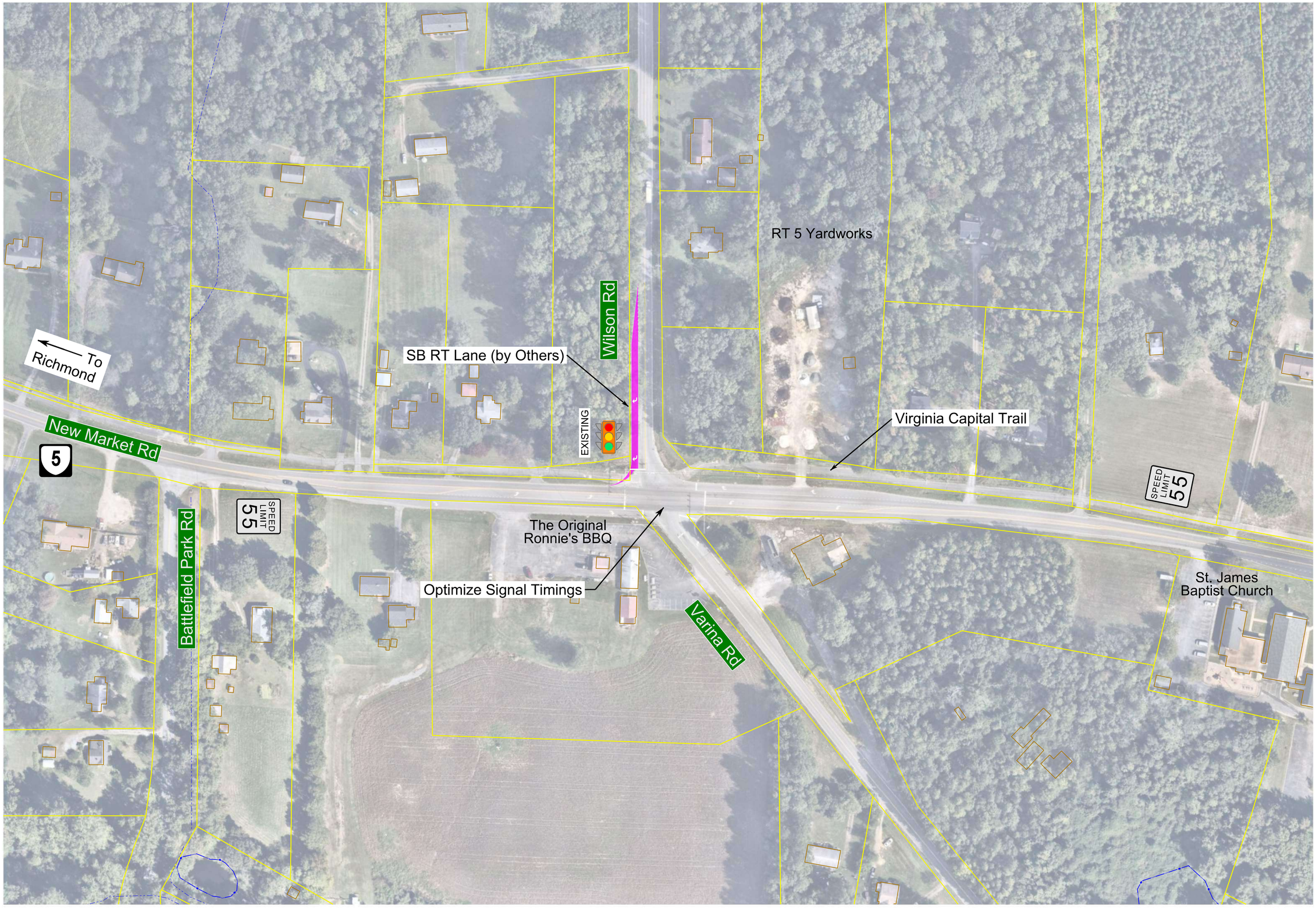
Build Condition 2 – Install single-lane roundabout and realign Doran Road to connect to Route 5 with a lesser skew. The roundabout will include an eastbound left-turn lane and a westbound right-turn lane. The roundabout option would minimize potential conflict of angle collisions by regulating left-turns from the major street; however, this configuration is anticipated to require additional right-of-way to accommodate the roundabout with the appropriate diameter and splitter islands at each approach. The roundabout is also projected to improve delay and queueing experienced by the side street (Build results shown in **Section 9**). The conceptual layout for this improvement is shown in **Figure 20**. The estimated total project cost for this alternative is $7,094,000 with the full cost estimate breakdown included in **Appendix F**.

Build Condition 3 – Realign Buffin Road to intersect with Doran Road as a single-lane roundabout with right-turn lanes along Route 5. The rerouted Future Year (2045) peak hour volumes are shown in **Figure 21** and the conceptual layout for this improvement is shown in **Figure 22**. The estimated total project cost for this alternative is $11,466,000 with the full cost estimate breakdown included in **Appendix F**.

In line with the crash statistics and findings represented above, the following safety countermeasures are presented for consideration:

- Based on the frequency of rear end crashes, particularly at unsignalized intersections and along the 2-lane segment on Route 5, installation of left-turn lanes will allow separation of slow and stopping turning vehicles from the mainline through traffic.
- Installation of right-turn and right-in-right-out channelization islands at business driveways in the area between Gregg Rd and Strath Rd are expected to reduce conflict points and better define lane use. It should be noted that left-turn restrictions are proposed only at locations where an alternative exit point exist.
- Realigning skewed side street approaches to intersect with Route 5 at a right angle is expected to improve sight lines for all vehicles, reducing the potential for angle crashes at the intersection.
- Roundabouts offer the potential to reduce rear end and angle crashes, as well as provide physical barriers to slow traffic approaching an intersection.

Route 5 Safety & Operations Study - Inset - Varina Rd/Wilson Rd



N

SCALE
0 100' 200'

Legend

- Proposed Road (by Others)
- Existing GIS Parcel Boundaries
- Traffic Signal

Route 5 Safety & Operations Study - Inset 1 - Mill Rd Alternative 1 (Realign, Add Left Turn Lane)

N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety and Operations Study - Henrico County, Virginia - UPC 120008

These plans are unfinished and unapproved and are not to be used for any type of construction or the acquisition of Right of Way. Additional Easements for Right of Way may be required beyond the proposed right-of-way shown on these plans.

Imagery Courtesy of the Commonwealth of Virginia.

Route 5 Safety & Operations Study - Inset 1 - Mill Rd Alternative 2 (Roundabout)

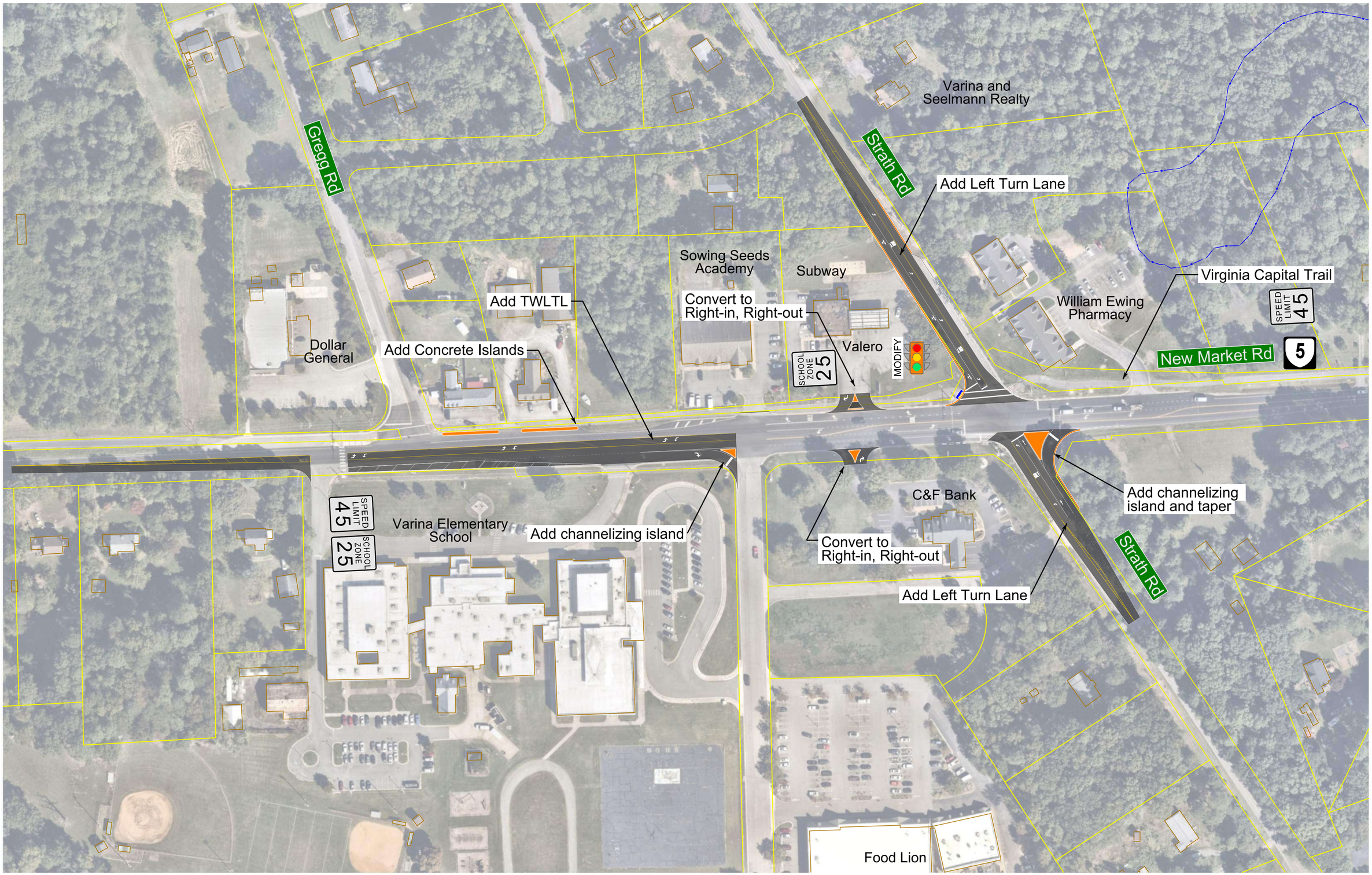
N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety & Ops Study - Inset 2 - Alternative 1 (Access Mgmt and Strath Signal LTL's)



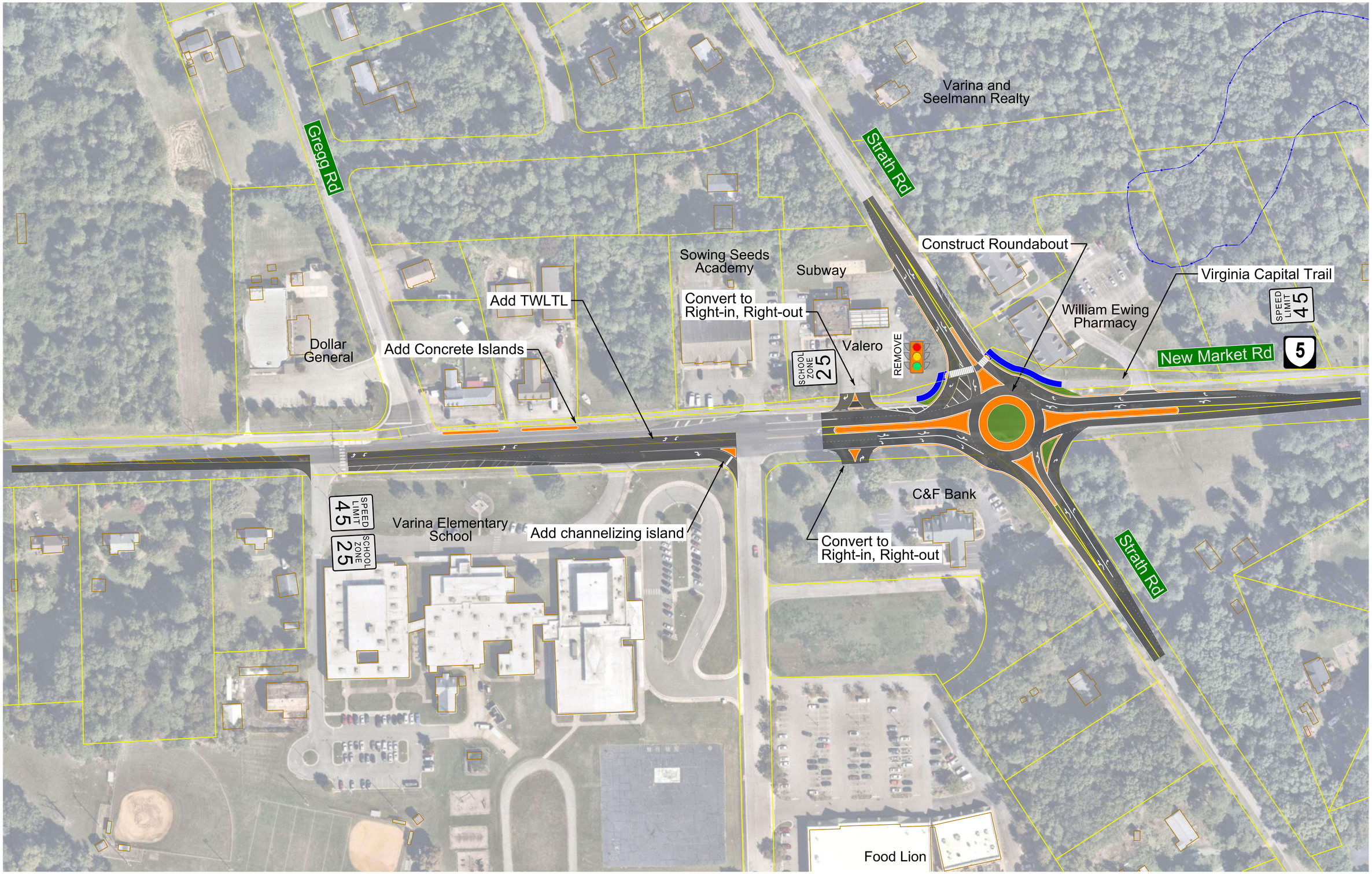
N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety & Ops Study - Inset 2 - Alternative 2 (Access Mgmt and Strath Rd Roundabout)



N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety and Operations Study - Henrico County, Virginia - UPC 120008

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Imagery Courtesy of the Commonwealth of Virginia.

Route 5 Safety & Operations Study - Inset 3 - Strath Road Alternative 1 (Add Left Turn Lanes)

N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety and Operations Study - Henrico County, Virginia - UPC 120008

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Imagery Courtesy of the Commonwealth of Virginia.

Route 5 Safety & Operations Study - Inset 3 - Strath Road Alternative 2 (Roundabout)

N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety & Operations Study - Inset 4 - Doran Road Alternative 1 (Signal)

N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety and Operations Study - Henrico County, Virginia - UPC 120008

These plans are unfinished and unapproved and are not to be used for any type of construction or the acquisition of Right of Way. Additional Easements for Right of Way may be required beyond the proposed right-of-way shown on these plans.

Imagery Courtesy of the Commonwealth of Virginia.

Route 5 Safety & Operations Study - Inset 4 - Doran Road Alternative 2 (3-Leg Roundabout)

N

SCALE
0 100' 200'

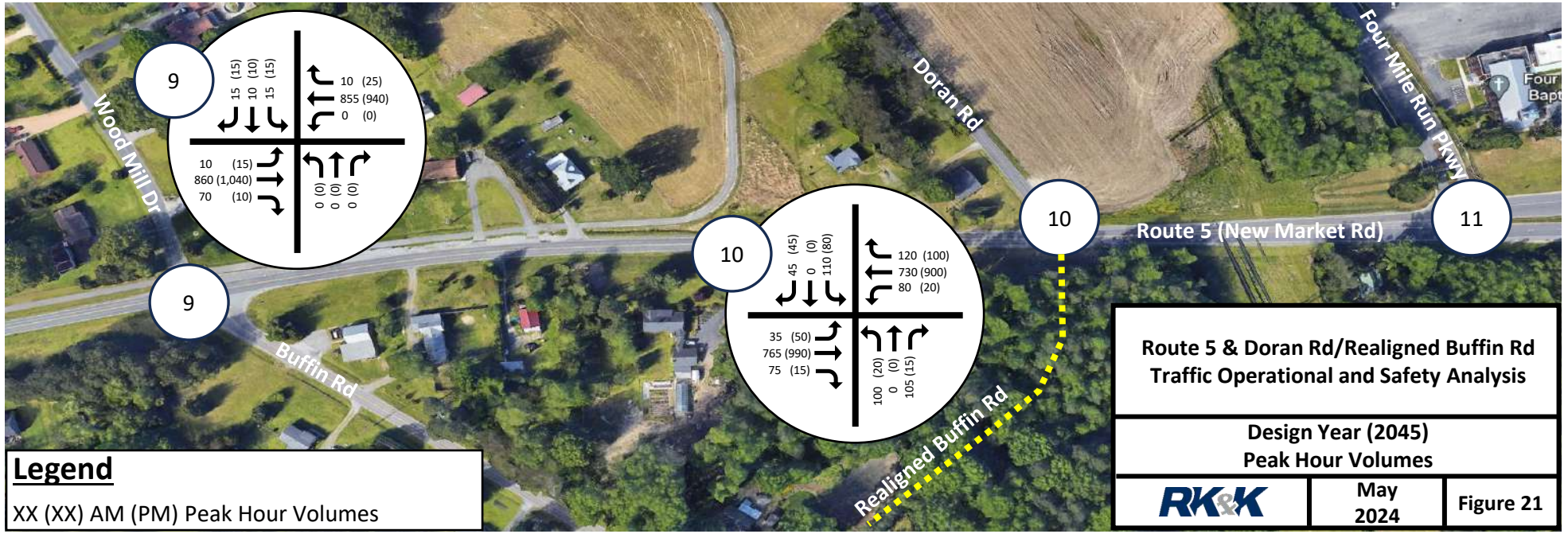
Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety and Operations Study - Henrico County, Virginia - UPC 120008

These plans are unfinished and unapproved and are not to be used for any type of construction or the acquisition of Right of Way. Additional Easements for Right of Way may be required beyond the proposed right-of-way shown on these plans.

Imagery Courtesy of the Commonwealth of Virginia.



Legend

XX (XX) AM (PM) Peak Hour Volumes

Route 5 & Doran Rd/Realigned Buffin Rd Traffic Operational and Safety Analysis

Design Year (2045) Peak Hour Volumes

RK&K	May 2024	Figure 21

Route 5 Safety & Operations Study - Inset 4 - Doran Road Alternative 3 (4-Leg Roundabout)

N

SCALE
0 100' 200'

Legend

- Proposed Road
- Proposed Concrete Island, Apron
- Proposed Shared Use Path
- Proposed Grass Area
- Existing GIS Parcel Boundaries

Route 5 Safety and Operations Study - Henrico County, Virginia - UPC 120008

These plans are unfinished and unapproved and are not to be used for any type of construction or the acquisition of Right of Way. Additional Easements for Right of Way may be required beyond the proposed right-of-way shown on these plans.

Imagery Courtesy of the Commonwealth of Virginia.

9. 2045 BUILD ALTERNATIVES OPERATIONAL ANALYSIS

The Future Year (2045) Build scenarios were analyzed to evaluate the expected traffic operations at intersections where build improvements have been proposed under **Section 8.** The analysis incorporated Future Year (2045) volumes as contained in **Figures 10** and **11**. Similar methodologies as described in **Section 6** were utilized to conduct operational analyses for signalized and stop-controlled intersections while *Sidra* (Version 9) software used to model proposed roundabouts (Build Condition 2 at Mill Road, Strath Road, and Doran Road).

Table 13 summarizes the results of the performance of study intersections, and the detailed outputs are presented in **Appendix E**. The following text summarizes the operational analysis results:

- At the intersection of Route 5 and Mill Road, both Build Conditions (unsignalized with left-turn lane and roundabout) are projected to provide LOS C or better for all approaches.
- At the intersection of Route 5 and Recreation Road, the Build alternative is expected to provide LOS D for the stop-controlled approach in the AM peak hour while LOS E can be expected for the PM peak hour.
- At the intersection of Route 5 and Strath Road, the signalized alternative is expected to provide LOS D or better for all approaches while the roundabout alternative is expected to provide lower delays (maximum 18.0 seconds) for all approaches. Queue lengths are also expected to be shorter for the roundabout alternative.
- At the T-intersection of Route 5 and Doran Road, both Build alternatives are expected to provide LOS C or better for all approaches in the design year; however, the roundabout alternative is expected to provide shorter delays and queues for the minor street approach (Doran Road) during both peak hours.
- With the realignment of Buffin Road to the Route 5 and Doran Road intersection, the roundabout alternative is expected to provide LOS C or better for all approaches in the design year and overall LOS B during both peak hours.

Table 13: Future Year (2045) Build Scenario Intersection Analysis – AM Peak Hour

Study Intersection	Movement	2045 AM Peak Volume (vph)	2045 AM Peak Hour – Build 1		2045 AM Peak Hour – Build 2	
			HCM Delay (s/veh)	Max Q (Feet)	Sidra Delay (s/veh)	Max Q (Feet)
Route 5 @ Mill Rd	*EB*	*670*	*0.0*	-	*11.1*	*180*
	WB	*710*	*0.5*	*51*	*10.6*	*215*
	NB	*105*	*20.4*	*85*	*8.0*	*28*
	Overall	***1,485***	-	-	***10.6***	-
Route 5 @ Recreation Rd	*EB*	*755*	*0.0*	-	-	-
	WB	*705*	*0.2*	*36*	-	-
	NB	*55*	*29.5*	*81*	-	-
	SB	-	-	-	-	-
	Overall	***1,515***	-	-	-	-

Route 5 @ Strath Rd	*EB*	*755*	*26.5*	*314*	*12.5*	*216*
	WB	*870*	*19.7*	*300*	*8.5*	*150*
	NB	*150*	*27.7*	*119*	*7.9*	*34*
	SB	*205*	*29.5*	*157*	*7.3*	*47*
	Overall	***1,980***	***23.8***	*-*	***9.8***	*-*
Route 5 @ Doran Rd	*EB*	*905*	*6.1*	*219*	*13.4*	*230*
	WB	*930*	*18.1*	*389*	*13.7*	*410*
	SB	*155*	*33.6*	*141*	*11.9*	*57*
	Overall	***1,990***	***13.9***	*-*	***13.4***	*-*
Route 5 @ Doran Rd/ Realigned Buffin Rd	*EB*	*945*	*-*	*-*	*13.5*	*307*
	WB	*930*	*-*	*-*	*12.6*	*226*
	NB	*195*	*-*	*-*	*29.9*	*149*
	SB	*155*	*-*	*-*	*18.2*	*87*
	Overall	***2,225***	*-*	*-*	***15.0***	*-*

Note: Delay values highlighted in Green, Yellow, Orange, and Red indicate LOS C or better, LOS D, LOS E, and LOS F, respectively.

Table 14: Future Year (2045) Build Scenario Intersection Analysis – PM Peak Hour

Study Intersection	Movement	2045 PM Peak Volume (vph)	2045 PM Peak Hour – Build 1		2045 PM Peak Hour – Build 2	
			HCM Delay (s/veh)	Max Q (Feet)	Sidra Delay (s/veh)	Max Q (Feet)
Route 5 @ Mill Rd	*EB*	*760*	*0.0*	*4*	*13.9*	*222*
	WB	*865*	*1.0*	*69*	*14.7*	*380*
	NB	*80*	*25.1*	*73*	*8.8*	*26*
	Overall	***1,705***	*-*	*-*	***14.1***	*-*
Route 5 @ Recreation Rd	*EB*	*820*	*0.0*	*2*	*-*	*-*
	WB	*885*	*0.4*	*53*	*-*	*-*
	NB	*35*	*40.3*	*84*	*-*	*-*
	Overall	***1,740***	*-*	*-*	*-*	*-*
Route 5 @ Strath Rd	*EB*	*740*	*55.3*	*338*	*16.1*	*360*
	WB	*955*	*35.8*	*726*	*13.2*	*294*
	NB	*295*	*42.3*	*254*	*9.8*	*67*
	SB	*310*	*38.0*	*211*	*18.0*	*164*
	Overall	***2,300***	***43.2***	*-*	***14.4***	*-*
Route 5 @ Doran Rd	*EB*	*1,055*	*5.9*	*225*	*15.4*	*355*
	WB	*1,020*	*16.2*	*425*	*10.8*	*230*
	SB	*125*	*33.1*	*148*	*13.2*	*53*
	Overall	***2,200***	***12.2***	*-*	***13.1***	*-*

Route 5 @ Doran Rd/ Realigned Buffin Rd	*EB*	*1,065*	-	-	*18.7*	*383*
	WB	*1,020*	-	-	*11.9*	*253*
	NB	*35*	-	-	*19.9*	*27*
	SB	*125*	-	-	*15.1*	*60*
	Overall	***2,245***	-	-	***15.4***	-

Note: Delay values highlighted in Green, Yellow, Orange, and Red indicate LOS C or better, LOS D, LOS E, and LOS F, respectively.

10. CONCLUSIONS & RECOMMENDATIONS

[TO BE PROVIDED AFTER PUBLIC MEETINGS]

Appendices

Appendix A – Traffic Counts
Appendix B – Signal Warrant Evaluations
Appendix C – Existing Conditions (2023) Operational Analysis Reports
- C1. Unsignalized Intersections
- C2. Signalized Intersections
- C3. Queueing Results

Appendix D – Design Year (2045) No-Build Condition Operational Analysis Reports
- D1. Unsignalized Intersections
- D2. Signalized Intersections
- D3. Queueing Results

Appendix E – Design Year (2045) Build Condition Operational Analysis Reports
- E1. Unsignalized Intersections
- E2. Signalized Intersections
- E3. Roundabouts
- E4. Queueing Results

Appendix F – Cost Estimates
Appendix G – Nelson Farm Development TIA

Appendix A:
Traffic Counts

Data Collection Group

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File Name : New Market and Wilson
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Peds

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08:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
09:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
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Total	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
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Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
01:15 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
01:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
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03:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
03:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
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08:30 AM	2	2	9	0	13	6	94	0	0	100	0	6	5	0	11	3	43	0	0	46	0	170	170
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Total	5	34	74	0	113	45	250	2	0	297	3	16	26	0	45	15	286	2	0	303	0	758	758
04:00 PM	1	7	17	0	25	11	73	3	0	87	1	7	3	0	11	11	109	1	0	121	0	244	244
04:15 PM	0	9	20	0	29	12	86	1	0	99	1	6	3	0	10	3	88	0	0	91	0	229	229
04:30 PM	0	11	17	0	28	16	87	1	0	104	0	8	4	0	12	3	94	1	0	98	0	242	242
04:45 PM	4	12	14	0	30	8	101	1	0	110	1	4	1	0	6	7	121	4	0	132	0	278	278
Total	5	39	68	0	112	47	347	6	0	400	3	25	11	0	39	24	412	6	0	442	0	993	993
05:00 PM	0	8	24	0	32	17	88	0	0	105	0	2	3	0	5	4	104	2	0	110	0	252	252
05:15 PM	0	7	16	0	23	16	107	0	1	123	1	6	6	0	13	10	100	3	0	113	1	272	273
05:30 PM	3	3	16	0	22	18	100	0	0	118	1	3	2	0	6	7	118	0	0	125	0	271	271
05:45 PM	0	6	14	0	20	9	101	1	0	111	0	2	6	0	8	6	103	0	0	109	0	248	248
Total	3	24	70	0	97	60	396	1	1	457	2	13	17	0	32	27	425	5	0	457	1	1043	1044
06:00 PM	1	7	10	0	18	9	79	0	0	88	1	4	5	0	10	8	78	1	0	87	0	203	203
06:15 PM	1	4	11	0	16	15	81	0	0	96	0	2	0	0	2	5	73	2	0	80	0	194	194
06:30 PM	1	4	8	0	13	7	60	0	0	67	1	2	3	0	6	2	50	0	0	52	0	138	138
06:45 PM	1	4	8	0	13	5	62	0	0	67	1	1	2	0	4	2	48	0	0	50	0	134	134
Total	4	19	37	0	60	36	282	0	0	318	3	9	10	0	22	17	249	3	0	269	0	669	669
Grand Total	34	264	572	0	870	519	3153	18	1	3690	28	239	168	0	435	166	3002	30	0	3198	1	8193	8194
Apprch %	3.9	30.3	65.7			14.1	85.4	0.5			6.4	54.9	38.6			5.2	93.9	0.9					
Total %	0.4	3.2	7		10.6	6.3	38.5	0.2		45	0.3	2.9	2.1		5.3	2	36.6	0.4		39	0	100	
Passenger Veh	32	258	534		824	489	2935	18		3443	26	232	154		412	151	2795	27		2973	0	0	7652
% Passenger Veh	94.1	97.7	93.4	0	94.7	94.2	93.1	100	100	93.3	92.9	97.1	91.7	0	94.7	91	93.1	90	0	93	0	0	93.4
Trucks	2	6	38		46	30	218	0		248	2	7	14		23	15	207	3		225	0	0	542
% Trucks	5.9	2.3	6.6	0	5.3	5.8	6.9	0	0	6.7	7.1	2.9	8.3	0	5.3	9	6.9	10	0	7	0	0	6.6

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	Wilson Rd From North				New Market Rd From East				Varina Rd From South				New Market Rd From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	3	13	16	15	98	0	113	**2**	5	5	12	2	**95**	0	**97**	238
07:30 AM	**2**	2	11	15	17	**121**	0	**138**	0	9	5	14	1	90	1	92	259
07:45 AM	1	3	14	18	**20**	118	0	138	1	**10**	**9**	**20**	**6**	80	**2**	88	**264**
08:00 AM	0	**4**	**19**	**23**	14	89	**1**	104	1	9	7	17	1	65	1	67	211
Total Volume	3	12	57	72	66	426	1	493	4	33	26	63	10	330	4	344	972
% App. Total	4.2	16.7	79.2		13.4	86.4	0.2		6.3	52.4	41.3		2.9	95.9	1.2		
PHF	.375	.750	.750	.783	.825	.880	.250	.893	.500	.825	.722	.788	.417	.868	.500	.887	.920
Passenger Veh	3	12	52	67	66	403	1	470	4	32	24	60	7	311	4	322	919
% Passenger Veh	100	100	91.2	93.1	100	94.6	100	95.3	100	97.0	92.3	95.2	70.0	94.2	100	93.6	94.5
Trucks	0	0	5	5	0	23	0	23	0	1	2	3	3	19	0	22	53
% Trucks	0	0	8.8	6.9	0	5.4	0	4.7	0	3.0	7.7	4.8	30.0	5.8	0	6.4	5.5

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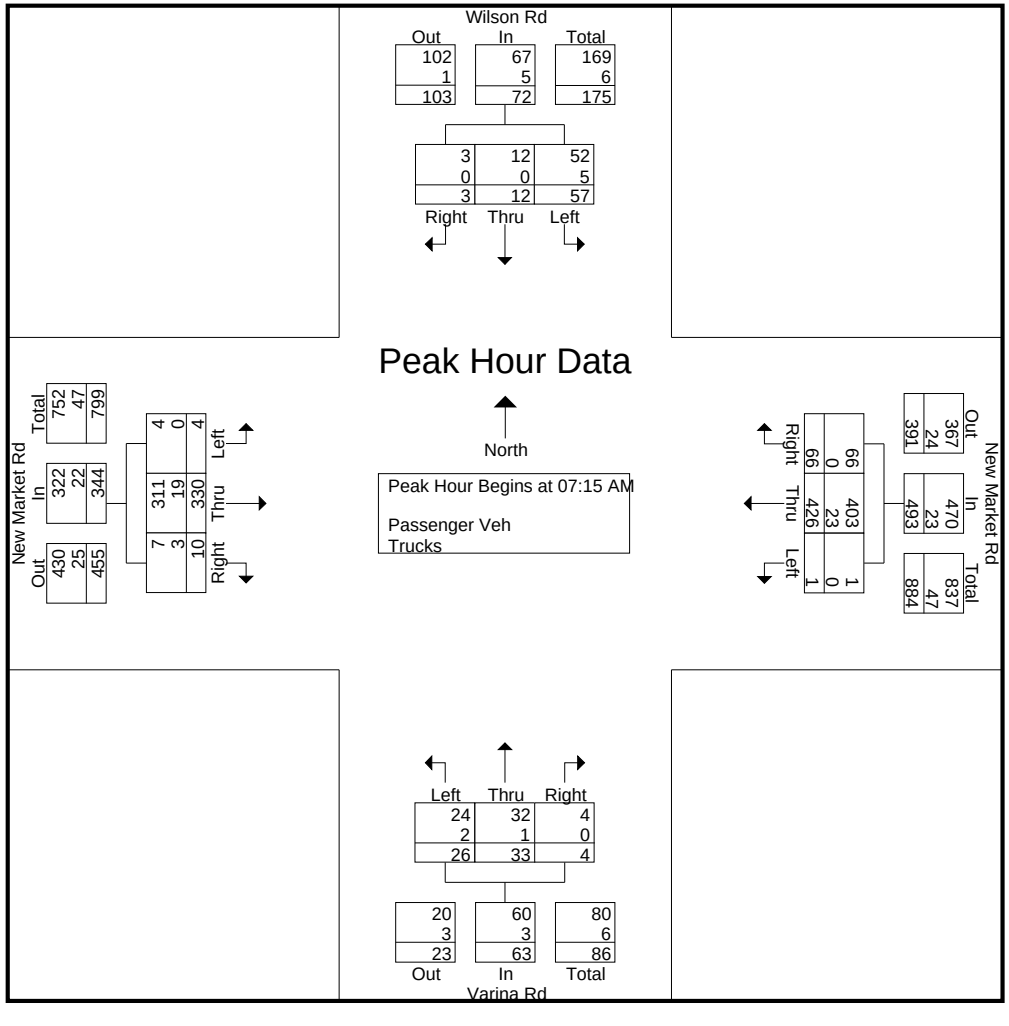

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	Wilson Rd From North				New Market Rd From East				Varina Rd From South				New Market Rd From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	0	6	10	16	7	37	0	44	0	3	1	4	2	**61**	1	**64**	128
01:00 PM	0	8	**16**	**24**	**14**	39	0	53	0	8	**6**	**14**	3	41	0	44	135
01:15 PM	0	**9**	11	20	8	55	0	63	0	4	0	4	2	58	**2**	62	149
01:30 PM	0	6	8	14	11	**59**	**1**	**71**	0	**10**	3	13	**4**	51	0	55	**153**
Total Volume	0	29	45	74	40	190	1	231	0	25	10	35	11	211	3	225	565
% App. Total	0	39.2	60.8		17.3	82.3	0.4		0	71.4	28.6		4.9	93.8	1.3		
PHF	.000	.806	.703	.771	.714	.805	.250	.813	.000	.625	.417	.625	.688	.865	.375	.879	.923
Passenger Veh	0	29	40	69	40	175	1	216	0	24	9	33	10	185	3	198	516
% Passenger Veh	0	100	88.9	93.2	100	92.1	100	93.5	0	96.0	90.0	94.3	90.9	87.7	100	88.0	91.3
Trucks	0	0	5	5	0	15	0	15	0	1	1	2	1	26	0	27	49
% Trucks	0	0	11.1	6.8	0	7.9	0	6.5	0	4.0	10.0	5.7	9.1	12.3	0	12.0	8.7

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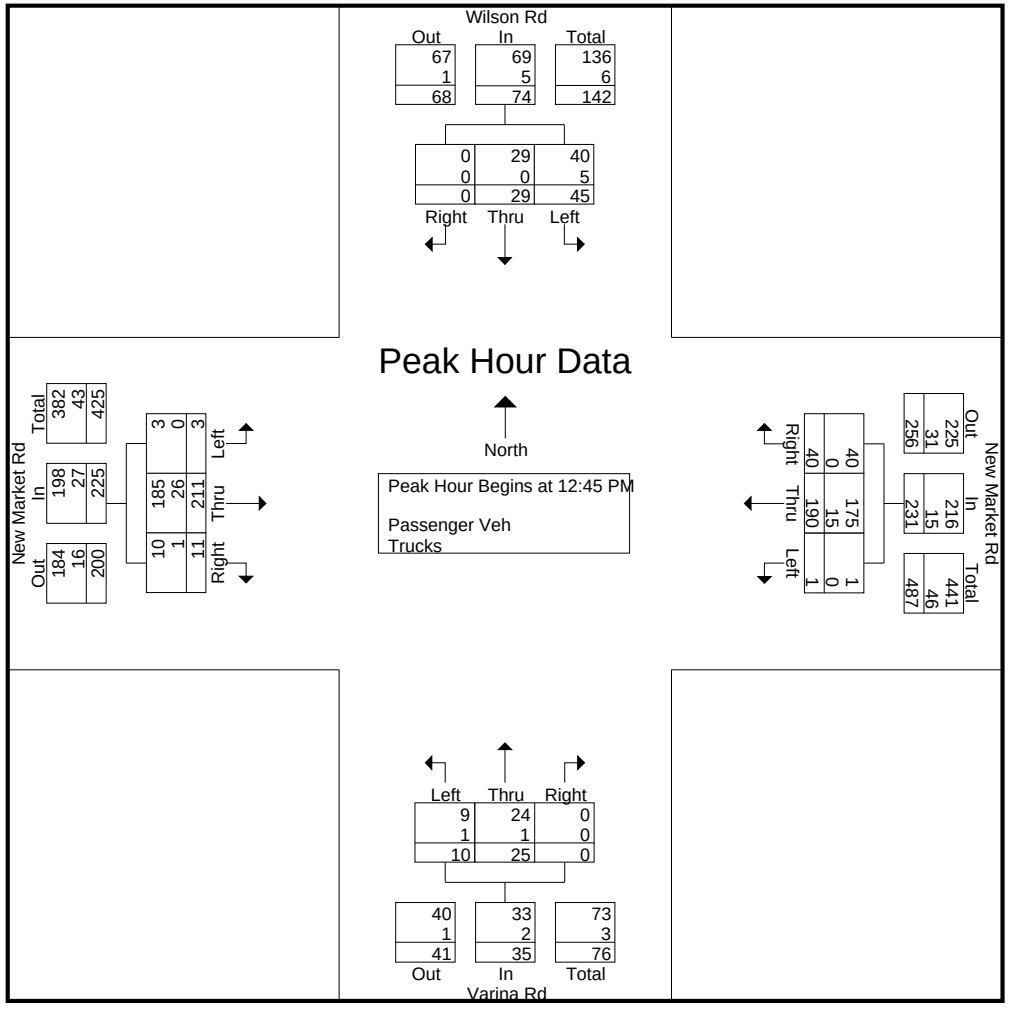

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	Wilson Rd From North				New Market Rd From East				Varina Rd From South				New Market Rd From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**4**	**12**	14	30	8	101	**1**	110	**1**	4	1	6	7	**121**	**4**	**132**	**278**
05:00 PM	0	8	**24**	**32**	17	88	0	105	0	2	3	5	4	104	2	110	252
05:15 PM	0	7	16	23	16	**107**	0	**123**	1	**6**	**6**	**13**	**10**	100	3	113	272
05:30 PM	3	3	16	22	**18**	100	0	118	1	3	2	6	7	118	0	125	271
Total Volume	7	30	70	107	59	396	1	456	3	15	12	30	28	443	9	480	1073
% App. Total	6.5	28	65.4		12.9	86.8	0.2		10	50	40		5.8	92.3	1.9		
PHF	.438	.625	.729	.836	.819	.925	.250	.927	.750	.625	.500	.577	.700	.915	.563	.909	.965
Passenger Veh	7	27	70	104	57	379	1	437	3	15	12	30	28	435	8	471	1042
% Passenger Veh	100	90.0	100	97.2	96.6	95.7	100	95.8	100	100	100	100	100	98.2	88.9	98.1	97.1
Trucks	0	3	0	3	2	17	0	19	0	0	0	0	0	8	1	9	31
% Trucks	0	10.0	0	2.8	3.4	4.3	0	4.2	0	0	0	0	0	1.8	11.1	1.9	2.9

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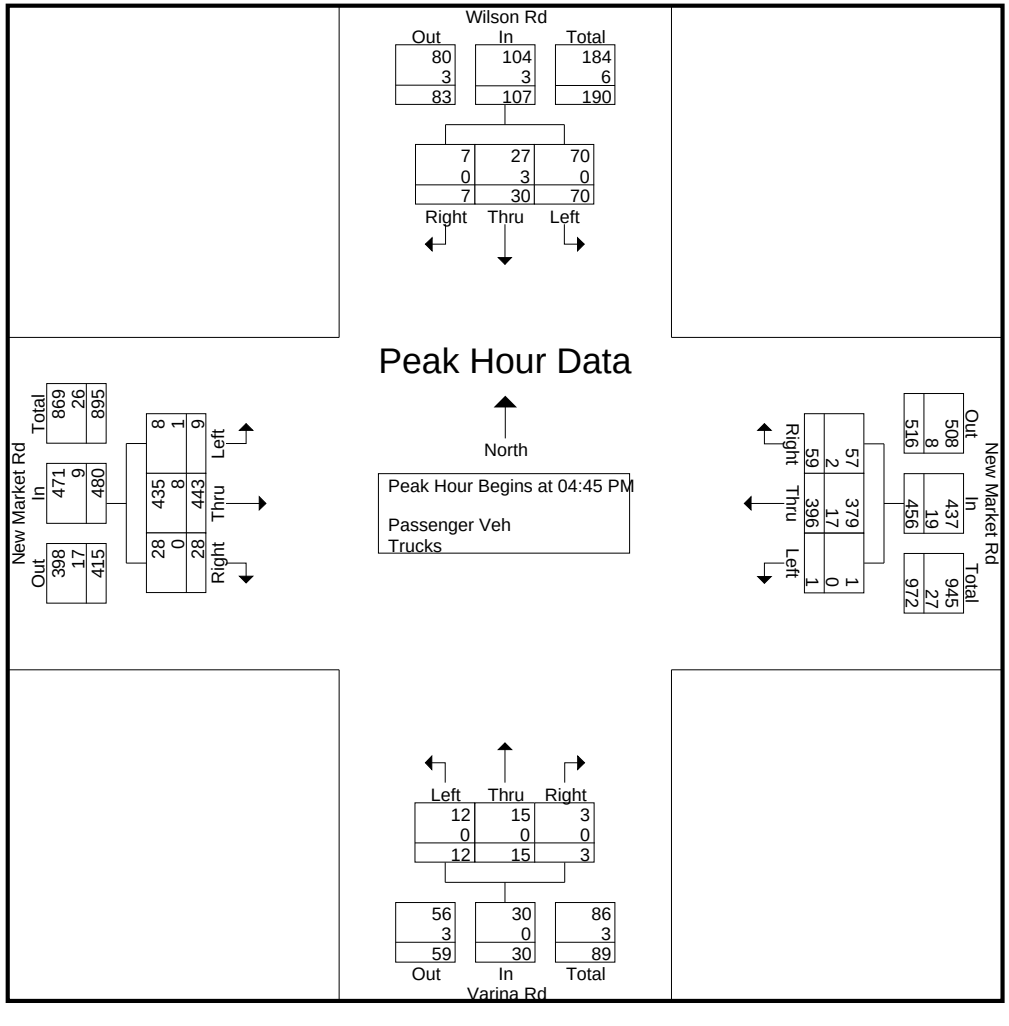

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Groups Printed- Peds

	From North						New Market Rd From East						Mill Rd From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0					
Total %																									0	0	

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Groups Printed- Passenger Veh - Trucks

	From North						New Market Rd From East						Mill Rd From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	94	5	0	0	99	9	0	0	0	0	9	0	81	0	0	0	81	0	189	189
07:15 AM	0	0	0	0	0	0	0	114	8	0	0	122	9	0	1	0	0	10	0	109	0	0	0	109	0	241	241
07:30 AM	0	0	0	0	0	0	0	142	5	0	0	147	21	0	0	0	0	21	1	105	0	0	0	106	0	274	274
07:45 AM	0	0	0	0	0	0	0	126	5	0	0	131	13	0	0	0	0	13	0	99	0	0	0	99	0	243	243
Total	0	0	0	0	0	0	0	476	23	0	0	499	52	0	1	0	0	53	1	394	0	0	0	395	0	947	947
08:00 AM	0	0	0	0	0	0	0	104	3	0	0	107	11	0	0	0	0	11	0	77	0	0	0	77	0	195	195
08:15 AM	0	0	0	0	0	0	0	99	5	0	0	104	10	0	0	0	0	10	0	72	0	0	0	72	0	186	186
08:30 AM	0	0	0	0	0	0	0	100	1	0	0	101	12	0	1	0	0	13	0	47	0	0	0	47	0	161	161
08:45 AM	0	0	0	0	0	0	0	94	5	0	0	99	10	0	0	0	0	10	2	62	0	0	0	64	0	173	173
Total	0	0	0	0	0	0	0	397	14	0	0	411	43	0	1	0	0	44	2	258	0	0	0	260	0	715	715
09:00 AM	0	0	0	0	0	0	0	61	3	0	0	64	6	0	1	0	0	7	0	40	0	0	0	40	0	111	111
09:15 AM	0	0	0	0	0	0	0	66	7	0	0	73	4	0	0	0	0	4	1	60	0	0	0	61	0	138	138
09:30 AM	0	0	0	0	0	0	0	42	4	0	0	46	10	0	1	0	0	11	0	50	0	0	0	50	0	107	107
09:45 AM	0	0	0	0	0	0	0	56	5	0	0	61	6	0	0	0	0	6	0	48	0	0	0	48	0	115	115
Total	0	0	0	0	0	0	0	225	19	0	0	244	26	0	2	0	0	28	1	198	0	0	0	199	0	471	471
10:00 AM	0	0	0	0	0	0	0	46	2	0	0	48	10	0	1	0	0	11	2	48	0	0	0	50	0	109	109
10:15 AM	0	0	0	0	0	0	0	63	3	0	0	66	6	0	1	0	0	7	0	37	0	0	0	37	0	110	110
10:30 AM	0	0	0	0	0	0	0	46	4	0	0	50	5	0	1	0	0	6	0	41	0	0	0	41	0	97	97
10:45 AM	0	0	0	0	0	0	0	48	4	0	0	52	3	0	1	0	0	4	0	35	0	0	0	35	0	91	91
Total	0	0	0	0	0	0	0	203	13	0	0	216	24	0	4	0	0	28	2	161	0	0	0	163	0	407	407
11:00 AM	0	0	0	0	0	0	0	49	6	0	0	55	2	0	0	0	0	2	0	48	0	0	0	48	0	105	105
11:15 AM	0	0	0	0	0	0	0	46	6	0	0	52	7	0	3	0	0	10	0	55	0	0	0	55	0	117	117
11:30 AM	0	0	0	0	0	0	0	29	7	0	0	36	12	0	0	0	0	12	0	44	0	0	0	44	0	92	92
11:45 AM	0	0	0	0	0	0	0	56	11	0	0	67	8	0	1	1	0	10	0	49	0	0	0	49	0	126	126
Total	0	0	0	0	0	0	0	180	30	0	0	210	29	0	4	1	0	34	0	196	0	0	0	196	0	440	440
12:00 PM	0	0	0	0	0	0	0	48	9	0	0	57	8	0	0	0	0	8	0	48	0	0	0	48	0	113	113
12:15 PM	0	0	0	0	0	0	0	52	7	0	0	59	9	0	0	0	0	9	1	53	0	0	0	54	0	122	122
12:30 PM	0	0	0	0	0	0	0	46	4	0	0	50	6	0	0	0	0	6	0	61	0	0	0	61	0	117	117
12:45 PM	0	0	0	0	0	0	0	47	6	0	0	53	13	0	0	0	0	13	1	69	0	0	0	70	0	136	136
Total	0	0	0	0	0	0	0	193	26	0	0	219	36	0	0	0	0	36	2	231	0	0	0	233	0	488	488
01:00 PM	0	0	0	0	0	0	0	54	9	0	0	63	8	0	1	0	0	9	0	55	0	0	0	55	0	127	127
01:15 PM	0	0	0	0	0	0	0	61	16	0	0	77	13	0	0	0	0	13	0	66	0	0	0	66	0	156	156
01:30 PM	0	0	0	0	0	0	0	67	8	0	0	75	12	0	0	0	0	12	1	61	0	0	0	62	0	149	149
01:45 PM	0	0	0	0	0	0	0	47	6	0	0	53	6	0	0	0	0	6	4	59	0	0	0	63	0	122	122
Total	0	0	0	0	0	0	0	229	39	0	0	268	39	0	1	0	0	40	5	241	0	0	0	246	0	554	554
02:00 PM	0	0	0	0	0	0	0	64	6	0	0	70	11	0	1	0	0	12	1	73	0	0	0	74	0	156	156

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Groups Printed- Passenger Veh - Trucks

	From North						New Market Rd From East						Mill Rd From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
02:15 PM	0	0	0	0	0	0	0	100	5	0	0	105	7	0	2	0	0	9	1	59	0	0	0	60	0	174	174
02:30 PM	0	0	0	0	0	0	0	59	12	0	0	71	8	0	0	0	0	8	1	69	0	0	0	70	0	149	149
02:45 PM	0	0	0	0	0	0	0	70	10	0	0	80	5	0	1	0	0	6	0	67	0	0	0	67	0	153	153
Total	0	0	0	0	0	0	0	293	33	0	0	326	31	0	4	0	0	35	3	268	0	0	0	271	0	632	632
03:00 PM	0	0	0	0	0	0	0	49	7	0	0	56	5	0	0	0	0	5	0	73	0	0	0	73	0	134	134
03:15 PM	0	0	0	0	0	0	0	80	7	0	0	87	4	0	0	0	0	4	1	92	0	0	0	93	0	184	184
03:30 PM	0	0	0	0	0	0	0	81	12	0	0	93	7	0	0	0	0	7	1	88	0	0	0	89	0	189	189
03:45 PM	0	0	0	0	0	0	0	85	14	0	0	99	9	0	0	0	0	9	1	105	0	0	0	106	0	214	214
Total	0	0	0	0	0	0	0	295	40	0	0	335	25	0	0	0	0	25	3	358	0	0	0	361	0	721	721
04:00 PM	0	0	0	0	0	0	0	88	12	0	0	100	11	0	0	0	0	11	1	126	0	0	0	127	0	238	238
04:15 PM	0	0	0	0	0	0	0	97	17	0	0	114	10	0	1	0	0	11	1	107	0	0	0	108	0	233	233
04:30 PM	0	0	0	0	0	0	0	101	24	0	0	125	19	0	0	0	0	19	2	111	0	0	0	113	0	257	257
04:45 PM	0	0	0	0	0	0	0	118	16	0	0	134	3	0	0	0	0	3	0	137	0	0	0	137	0	274	274
Total	0	0	0	0	0	0	0	404	69	0	0	473	43	0	1	0	0	44	4	481	0	0	0	485	0	1002	1002
05:00 PM	0	0	0	0	0	0	0	106	13	0	0	119	12	0	0	0	0	12	0	125	0	0	0	125	0	256	256
05:15 PM	0	0	0	0	0	0	0	120	20	0	0	140	7	0	0	0	0	7	1	115	0	0	0	116	0	263	263
05:30 PM	0	0	0	0	0	0	0	113	17	0	0	130	17	0	1	0	0	18	0	136	0	0	0	136	0	284	284
05:45 PM	0	0	0	0	0	0	0	112	16	0	0	128	5	0	0	0	0	5	1	119	0	0	0	120	0	253	253
Total	0	0	0	0	0	0	0	451	66	0	0	517	41	0	1	0	0	42	2	495	0	0	0	497	0	1056	1056
06:00 PM	0	0	0	0	0	0	0	95	15	0	0	110	8	0	0	0	0	8	1	96	0	0	0	97	0	215	215
06:15 PM	0	0	0	0	0	0	0	84	12	0	0	96	8	0	2	0	0	10	1	84	0	0	0	85	0	191	191
06:30 PM	0	0	0	0	0	0	0	65	9	0	0	74	8	0	1	0	0	9	0	60	0	0	0	60	0	143	143
06:45 PM	0	0	0	0	0	0	0	64	12	0	0	76	1	0	0	0	0	1	0	52	0	0	0	52	0	129	129
Total	0	0	0	0	0	0	0	308	48	0	0	356	25	0	3	0	0	28	2	292	0	0	0	294	0	678	678
Grand Total	0	0	0	0	0	0	0	3654	420	0	0	4074	414	0	22	1	0	437	27	3573	0	0	0	3600	0	8111	8111
Apprch %	0	0	0	0			0	89.7	10.3	0			94.7	0	5	0.2			0.8	99.2	0	0					
Total %	0	0	0	0		0	0	45	5.2	0		50.2	5.1	0	0.3	0		5.4	0.3	44.1	0	0		44.4	0	100	
Passenger Veh	0	0	0	0		0	0	3421	406	0		3827	405	0	21	1		427	22	3364	0	0		3386	0	0	7640
% Passenger Veh	0	0	0	0	0	0	0	93.6	96.7	0	0	93.9	97.8	0	95.5	100	0	97.7	81.5	94.2	0	0	0	94.1	0	0	94.2
Trucks	0	0	0	0		0	0	233	14	0		247	9	0	1	0		10	5	209	0	0		214	0	0	471
% Trucks	0	0	0	0	0	0	0	6.4	3.3	0	0	6.1	2.2	0	4.5	0	0	2.3	18.5	5.8	0	0	0	5.9	0	0	5.8

Data Collection Group

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File Name : New Market and Mill
Site Code :
Start Date : 12/5/2023
Page No : 3

	From North					New Market Rd From East					Mill Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	0	114	**8**	0	122	9	0	**1**	0	10	0	**109**	0	0	**109**	241
07:30 AM	0	0	0	0	0	0	**142**	5	0	**147**	**21**	0	0	0	**21**	**1**	105	0	0	106	**274**
07:45 AM	0	0	0	0	0	0	126	5	0	131	13	0	0	0	13	0	99	0	0	99	243
08:00 AM	0	0	0	0	0	0	104	3	0	107	11	0	0	0	11	0	77	0	0	77	195
Total Volume	0	0	0	0	0	0	486	21	0	507	54	0	1	0	55	1	390	0	0	391	953
% App. Total	0	0	0	0		0	95.9	4.1	0		98.2	0	1.8	0		0.3	99.7	0	0		
PHF	.000	.000	.000	.000	.000	.000	.856	.656	.000	.862	.643	.000	.250	.000	.655	.250	.894	.000	.000	.897	.870
Passenger Veh	0	0	0	0	0	0	463	19	0	482	53	0	1	0	54	0	368	0	0	368	904
% Passenger Veh	0	0	0	0	0	0	95.3	90.5	0	95.1	98.1	0	100	0	98.2	0	94.4	0	0	94.1	94.9
Trucks	0	0	0	0	0	0	23	2	0	25	1	0	0	0	1	1	22	0	0	23	49
% Trucks	0	0	0	0	0	0	4.7	9.5	0	4.9	1.9	0	0	0	1.8	100	5.6	0	0	5.9	5.1

Data Collection Group

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File Name : New Market and Mill
Site Code :
Start Date : 12/5/2023
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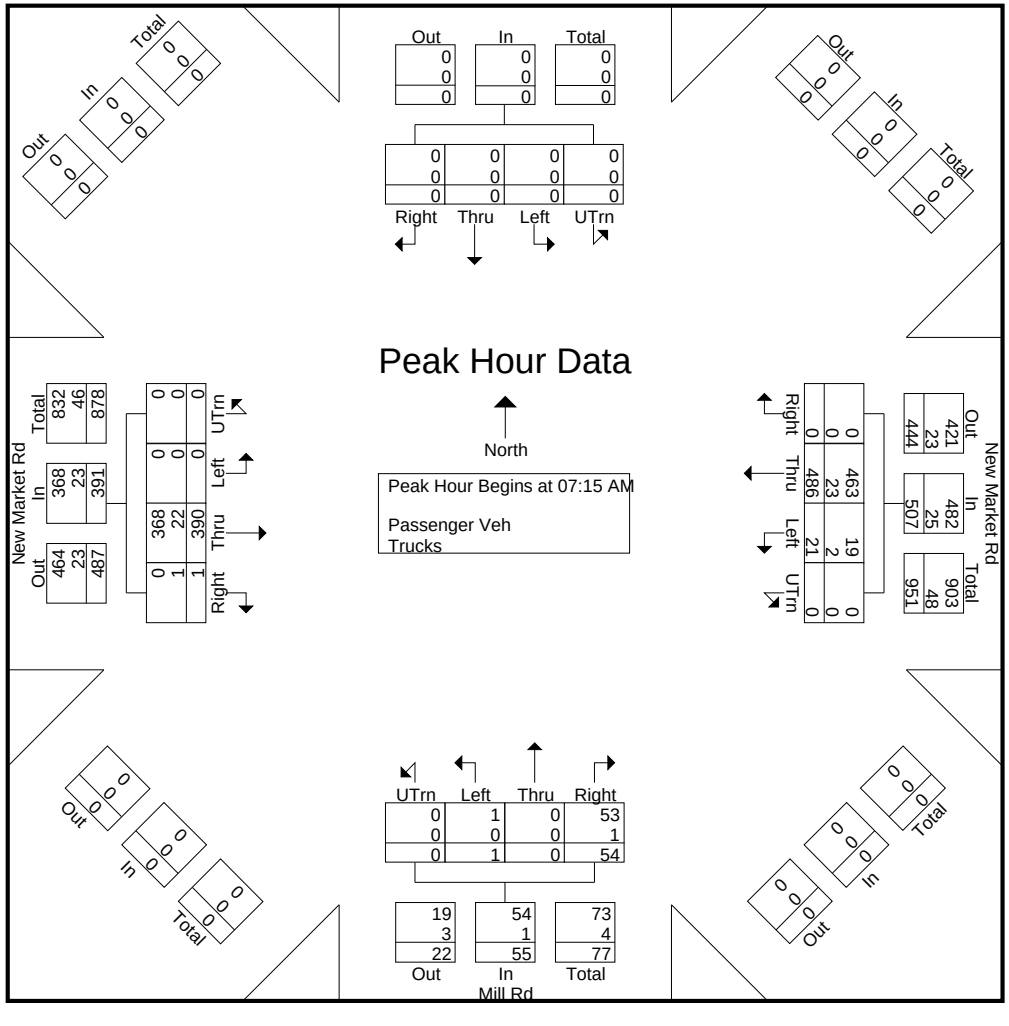

Data Collection Group

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File Name : New Market and Mill
Site Code :
Start Date : 12/5/2023

	From North					New Market Rd From East					Mill Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:45 PM																					
12:45 PM	0	0	0	0	0	0	47	6	0	53	**13**	0	0	0	**13**	**1**	**69**	0	0	**70**	136
01:00 PM	0	0	0	0	0	0	54	9	0	63	8	0	**1**	0	9	0	55	0	0	55	127
01:15 PM	0	0	0	0	0	0	61	**16**	0	**77**	13	0	0	0	13	0	66	0	0	66	**156**
01:30 PM	0	0	0	0	0	0	**67**	8	0	75	12	0	0	0	12	1	61	0	0	62	149
Total Volume	0	0	0	0	0	0	229	39	0	268	46	0	1	0	47	2	251	0	0	253	568
% App. Total	0	0	0	0		0	85.4	14.6	0		97.9	0	2.1	0		0.8	99.2	0	0		
PHF	.000	.000	.000	.000	.000	.000	.854	.609	.000	.870	.885	.000	.250	.000	.904	.500	.909	.000	.000	.904	.910
Passenger Veh	0	0	0	0	0	0	215	37	0	252	45	0	1	0	46	1	230	0	0	231	529
% Passenger Veh	0	0	0	0	0	0	93.9	94.9	0	94.0	97.8	0	100	0	97.9	50.0	91.6	0	0	91.3	93.1
Trucks	0	0	0	0	0	0	14	2	0	16	1	0	0	0	1	1	21	0	0	22	39
% Trucks	0	0	0	0	0	0	6.1	5.1	0	6.0	2.2	0	0	0	2.1	50.0	8.4	0	0	8.7	6.9

Data Collection Group

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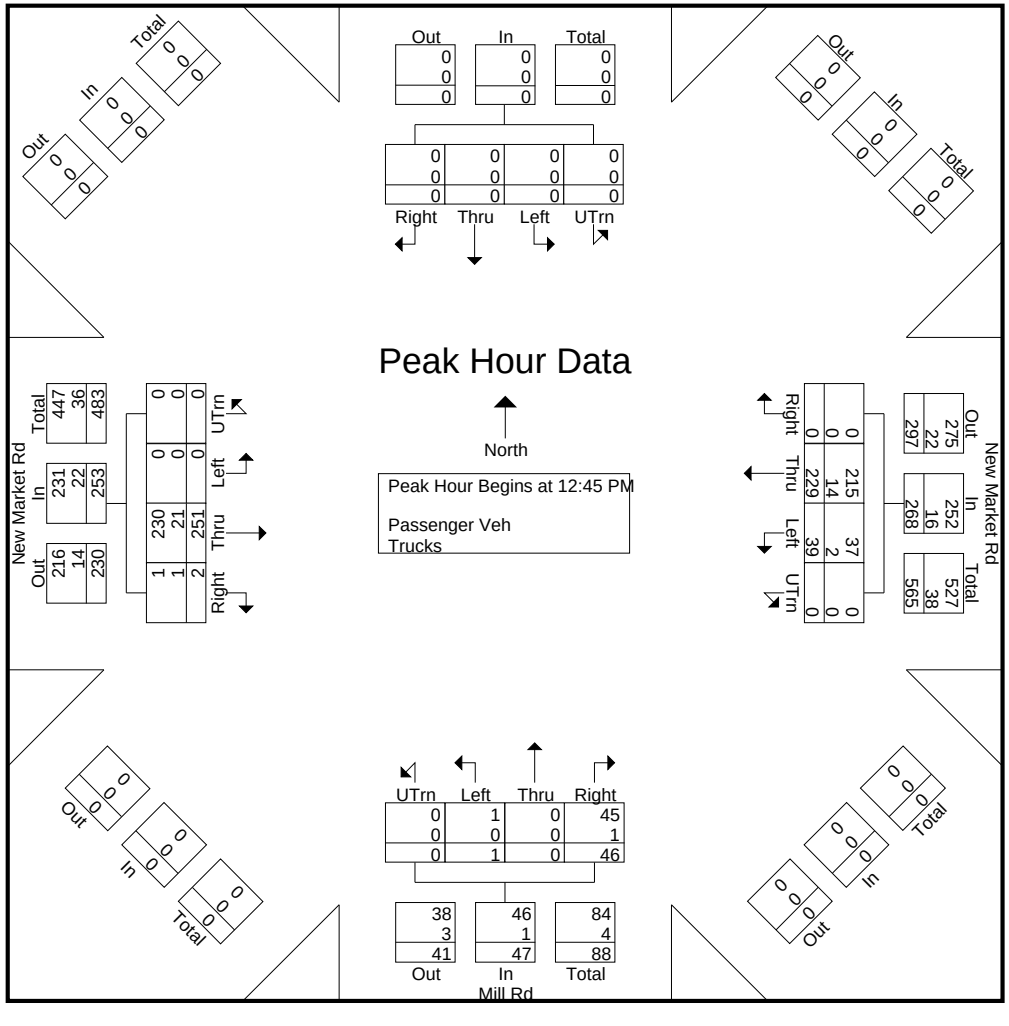
File Name : New Market and Mill
Site Code :
Start Date : 12/5/2023
Page No : 6



Data Collection Group

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File Name : New Market and Mill
Site Code :
Start Date : 12/5/2023
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	From North					New Market Rd From East					Mill Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	118	16	0	134	3	0	0	0	3	0	**137**	0	0	**137**	274
05:00 PM	0	0	0	0	0	0	106	13	0	119	12	0	0	0	12	0	125	0	0	125	256
05:15 PM	0	0	0	0	0	0	**120**	**20**	0	**140**	7	0	0	0	7	**1**	115	0	0	116	263
05:30 PM	0	0	0	0	0	0	113	17	0	130	**17**	0	**1**	0	**18**	0	136	0	0	136	**284**
Total Volume	0	0	0	0	0	0	457	66	0	523	39	0	1	0	40	1	513	0	0	514	1077
% App. Total	0	0	0	0		0	87.4	12.6	0		97.5	0	2.5	0		0.2	99.8	0	0		
PHF	.000	.000	.000	.000	.000	.000	.952	.825	.000	.934	.574	.000	.250	.000	.556	.250	.936	.000	.000	.938	.948
Passenger Veh	0	0	0	0	0	0	438	66	0	504	39	0	1	0	40	1	501	0	0	502	1046
% Passenger Veh	0	0	0	0	0	0	95.8	100	0	96.4	100	0	100	0	100	100	97.7	0	0	97.7	97.1
Trucks	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	0	12	0	0	12	31
% Trucks	0	0	0	0	0	0	4.2	0	0	3.6	0	0	0	0	0	0	2.3	0	0	2.3	2.9

Data Collection Group

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File Name : New Market and Mill
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Start Date : 12/5/2023
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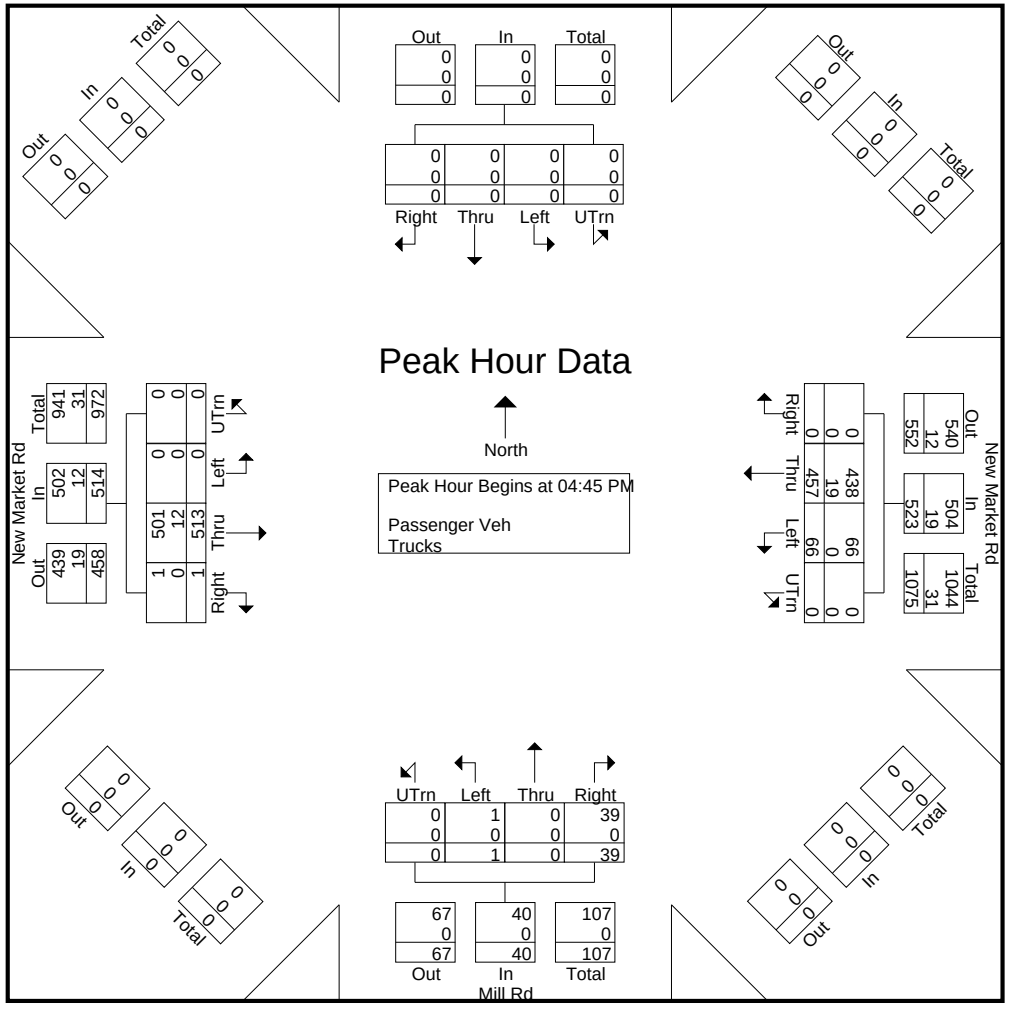

Data Collection Group

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File Name : New Market and Recreation
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Peds

	New Market Rd From East				Recreation Rd From South				New Market Rd From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

Data Collection Group

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File Name : New Market and Recreation
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Passenger Veh - Trucks

	New Market Rd From East				Recreation Rd From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	93	1	0	94	5	5	0	10	0	96	0	96	200
07:15 AM	125	2	0	127	8	3	0	11	1	115	0	116	254
07:30 AM	140	2	0	142	6	2	0	8	0	125	0	125	275
07:45 AM	135	1	0	136	2	2	0	4	4	111	0	115	255
Total	493	6	0	499	21	12	0	33	5	447	0	452	984
08:00 AM	101	1	0	102	3	5	0	8	1	84	0	85	195
08:15 AM	98	3	0	101	1	5	0	6	0	79	0	79	186
08:30 AM	102	2	0	104	3	0	0	3	1	63	0	64	171
08:45 AM	89	0	0	89	6	6	0	12	3	63	0	66	167
Total	390	6	0	396	13	16	0	29	5	289	0	294	719
04:00 PM	96	4	0	100	2	0	0	2	2	134	0	136	238
04:15 PM	117	5	0	122	3	1	0	4	1	116	0	117	243
04:30 PM	124	6	0	130	5	2	0	7	4	117	0	121	258
04:45 PM	135	3	0	138	2	0	0	2	1	134	0	135	275
Total	472	18	0	490	12	3	0	15	8	501	0	509	1014
05:00 PM	118	6	0	124	5	1	0	6	6	129	0	135	265
05:15 PM	136	11	0	147	4	3	0	7	3	117	0	120	274
05:30 PM	128	1	0	129	3	1	0	4	2	154	0	156	289
05:45 PM	127	8	0	135	1	1	0	2	1	123	0	124	261
Total	509	26	0	535	13	6	0	19	12	523	0	535	1089
06:00 PM	109	3	0	112	2	4	0	6	2	98	0	100	218
06:15 PM	95	1	0	96	1	1	0	2	7	85	0	92	190
06:30 PM	70	3	0	73	1	1	0	2	5	66	0	71	146
06:45 PM	77	1	0	78	0	0	0	0	1	54	0	55	133
Total	351	8	0	359	4	6	0	10	15	303	0	318	687
Grand Total	2215	64	0	2279	63	43	0	106	45	2063	0	2108	4493
Apprch %	97.2	2.8	0		59.4	40.6	0		2.1	97.9	0		
Total %	49.3	1.4	0	50.7	1.4	1	0	2.4	1	45.9	0	46.9	
Passenger Veh	2109	61	0	2170	60	42	0	102	45	1975	0	2020	4292
% Passenger Veh	95.2	95.3	0	95.2	95.2	97.7	0	96.2	100	95.7	0	95.8	95.5
Trucks	106	3	0	109	3	1	0	4	0	88	0	88	201
% Trucks	4.8	4.7	0	4.8	4.8	2.3	0	3.8	0	4.3	0	4.2	4.5

Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Recreation
Site Code :
Start Date : 12/5/2023

	New Market Rd From East				Recreation Rd From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	93	1	0	94	5	**5**	0	10	0	96	0	96	200
07:15 AM	125	**2**	0	127	**8**	3	0	**11**	1	115	0	116	254
07:30 AM	**140**	2	0	**142**	6	2	0	8	0	**125**	0	**125**	**275**
07:45 AM	135	1	0	136	2	2	0	4	**4**	111	0	115	255
Total Volume	493	6	0	499	21	12	0	33	5	447	0	452	984
% App. Total	98.8	1.2	0		63.6	36.4	0		1.1	98.9	0		
PHF	.880	.750	.000	.879	.656	.600	.000	.750	.313	.894	.000	.904	.895
Passenger Veh	463	6	0	469	20	12	0	32	5	422	0	427	928
% Passenger Veh	93.9	100	0	94.0	95.2	100	0	97.0	100	94.4	0	94.5	94.3
Trucks	30	0	0	30	1	0	0	1	0	25	0	25	56
% Trucks	6.1	0	0	6.0	4.8	0	0	3.0	0	5.6	0	5.5	5.7

Data Collection Group

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File Name : New Market and Recreation
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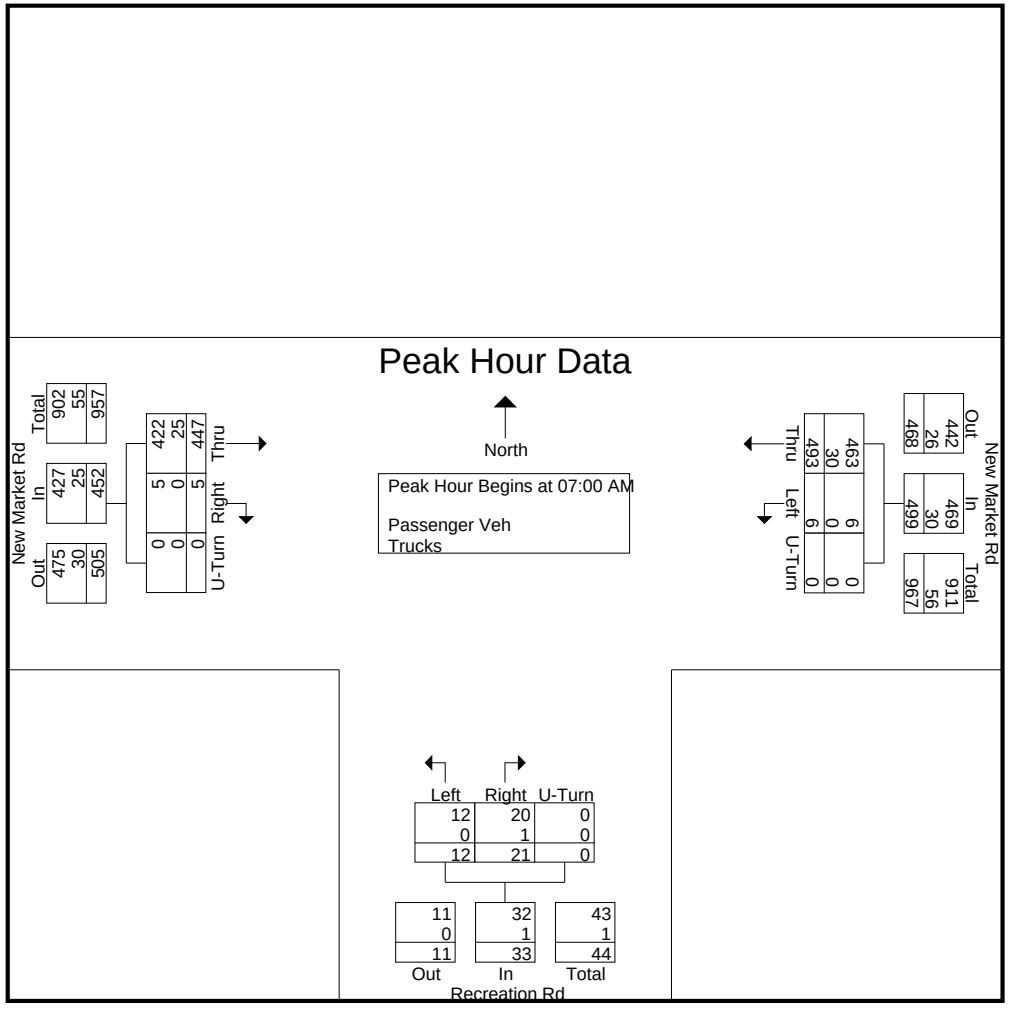

Data Collection Group

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File Name : New Market and Recreation
Site Code :
Start Date : 12/5/2023

	New Market Rd From East				Recreation Rd From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	135	3	0	138	2	0	0	2	1	134	0	135	275
05:00 PM	118	6	0	124	**5**	1	0	6	**6**	129	0	135	265
05:15 PM	**136**	**11**	0	**147**	4	**3**	0	**7**	3	117	0	120	274
05:30 PM	128	1	0	129	3	1	0	4	2	**154**	0	**156**	**289**
Total Volume	517	21	0	538	14	5	0	19	12	534	0	546	1103
% App. Total	96.1	3.9	0		73.7	26.3	0		2.2	97.8	0		
PHF	.950	.477	.000	.915	.700	.417	.000	.679	.500	.867	.000	.875	.954
Passenger Veh	499	20	0	519	13	4	0	17	12	525	0	537	1073
% Passenger Veh	96.5	95.2	0	96.5	92.9	80.0	0	89.5	100	98.3	0	98.4	97.3
Trucks	18	1	0	19	1	1	0	2	0	9	0	9	30
% Trucks	3.5	4.8	0	3.5	7.1	20.0	0	10.5	0	1.7	0	1.6	2.7

Data Collection Group

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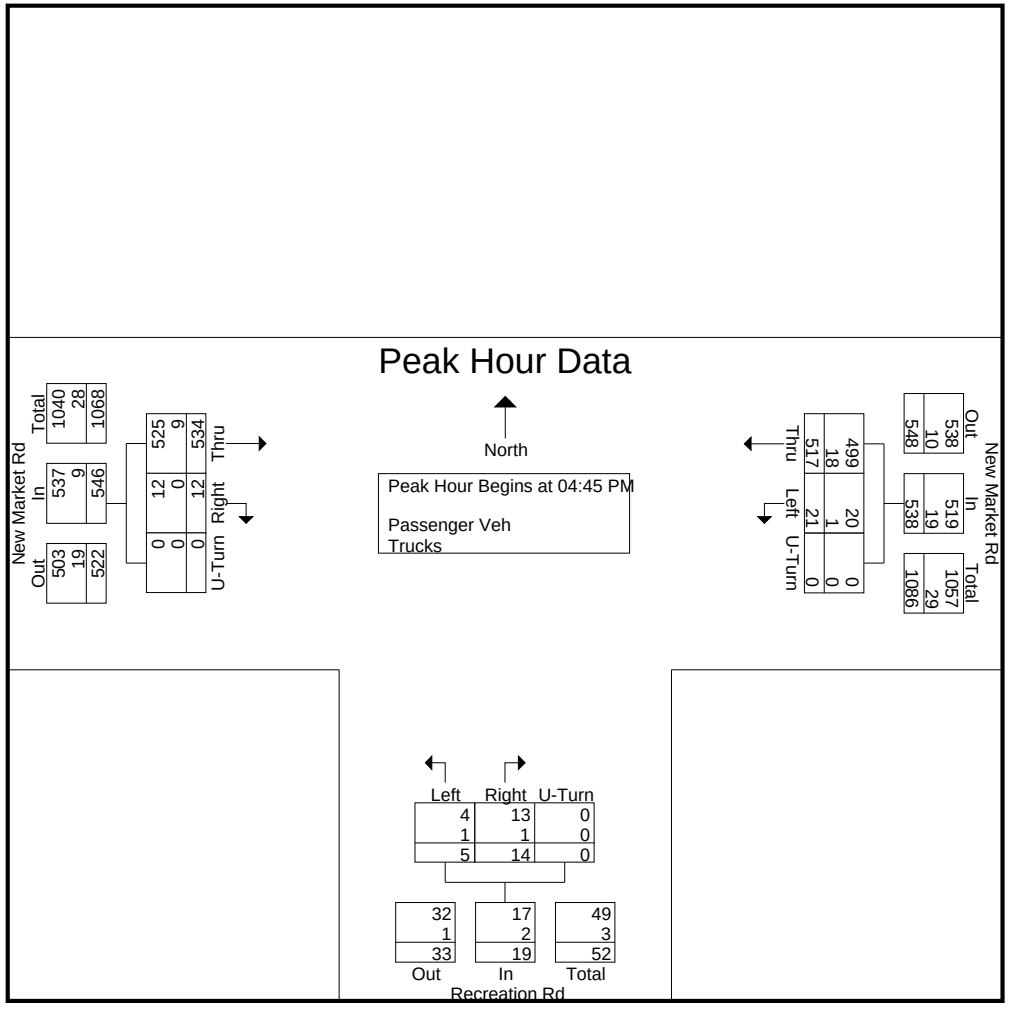
File Name : New Market and Recreation
Site Code :
Start Date : 12/5/2023
Page No : 5



Data Collection Group

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File Name : New Market and Varina ES In
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Peds

	New Market Rd From East				Varina ES In From South				New Market Rd From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
01:30 PM	0	0	3	3	0	0	0	0	0	0	0	0	3
Total	0	0	3	3	0	0	0	0	0	0	0	0	3
Grand Total	0	0	3	3	0	0	0	0	0	0	0	0	3
Apprch %	0	0	100		0	0	0		0	0	0		
Total %	0	0	100	100	0	0	0	0	0	0	0	0	

Data Collection Group

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File Name : New Market and Varina ES In
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Passenger Veh - Trucks

	New Market Rd From East				Varina ES In From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	104	6	0	110	0	0	0	0	4	96	0	100	210
07:15 AM	121	19	0	140	1	0	0	1	15	108	0	123	264
07:30 AM	145	19	0	164	0	1	0	1	16	116	0	132	297
07:45 AM	134	6	0	140	1	0	0	1	4	106	0	110	251
Total	504	50	0	554	2	1	0	3	39	426	0	465	1022
08:00 AM	94	6	0	100	0	0	0	0	6	78	0	84	184
08:15 AM	104	5	0	109	0	0	0	0	2	79	0	81	190
08:30 AM	105	3	0	108	1	0	0	1	4	60	0	64	173
08:45 AM	86	3	0	89	1	0	0	1	2	64	0	66	156
Total	389	17	0	406	2	0	0	2	14	281	0	295	703
01:30 PM	69	3	0	72	0	1	0	1	1	70	0	71	144
01:45 PM	52	3	0	55	0	0	0	0	4	58	0	62	117
Total	121	6	0	127	0	1	0	1	5	128	0	133	261
02:00 PM	76	4	0	80	0	0	0	0	7	77	0	84	164
02:15 PM	105	7	0	112	1	1	0	2	3	63	0	66	180
02:30 PM	73	1	0	74	1	1	0	2	0	79	0	79	155
02:45 PM	80	1	0	81	0	1	0	1	0	76	0	76	158
Total	334	13	0	347	2	3	0	5	10	295	0	305	657
03:00 PM	61	0	0	61	0	1	0	1	1	76	0	77	139
03:15 PM	80	0	0	80	12	3	0	15	2	94	0	96	191
Grand Total	1489	86	0	1575	18	9	0	27	71	1300	0	1371	2973
Apprch %	94.5	5.5	0		66.7	33.3	0		5.2	94.8	0		
Total %	50.1	2.9	0	53	0.6	0.3	0	0.9	2.4	43.7	0	46.1	
Passenger Veh	1380	83	0	1463	18	8	0	26	64	1191	0	1255	2744
% Passenger Veh	92.7	96.5	0	92.9	100	88.9	0	96.3	90.1	91.6	0	91.5	92.3
Trucks	109	3	0	112	0	1	0	1	7	109	0	116	229
% Trucks	7.3	3.5	0	7.1	0	11.1	0	3.7	9.9	8.4	0	8.5	7.7

Data Collection Group

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File Name : New Market and Varina ES In
Site Code :
Start Date : 12/5/2023

	New Market Rd From East				Varina ES In From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	104	6	0	110	0	0	0	0	4	96	0	100	210
07:15 AM	121	**19**	0	140	**1**	0	0	**1**	15	108	0	123	264
07:30 AM	**145**	19	0	**164**	0	**1**	0	1	**16**	**116**	0	**132**	**297**
07:45 AM	134	6	0	140	1	0	0	1	4	106	0	110	251
Total Volume	504	50	0	554	2	1	0	3	39	426	0	465	1022
% App. Total	91	9	0		66.7	33.3	0		8.4	91.6	0		
PHF	.869	.658	.000	.845	.500	.250	.000	.750	.609	.918	.000	.881	.860
Passenger Veh	479	48	0	527	2	1	0	3	39	401	0	440	970
% Passenger Veh	95.0	96.0	0	95.1	100	100	0	100	100	94.1	0	94.6	94.9
Trucks	25	2	0	27	0	0	0	0	0	25	0	25	52
% Trucks	5.0	4.0	0	4.9	0	0	0	0	0	5.9	0	5.4	5.1

Data Collection Group

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File Name : New Market and Varina ES In
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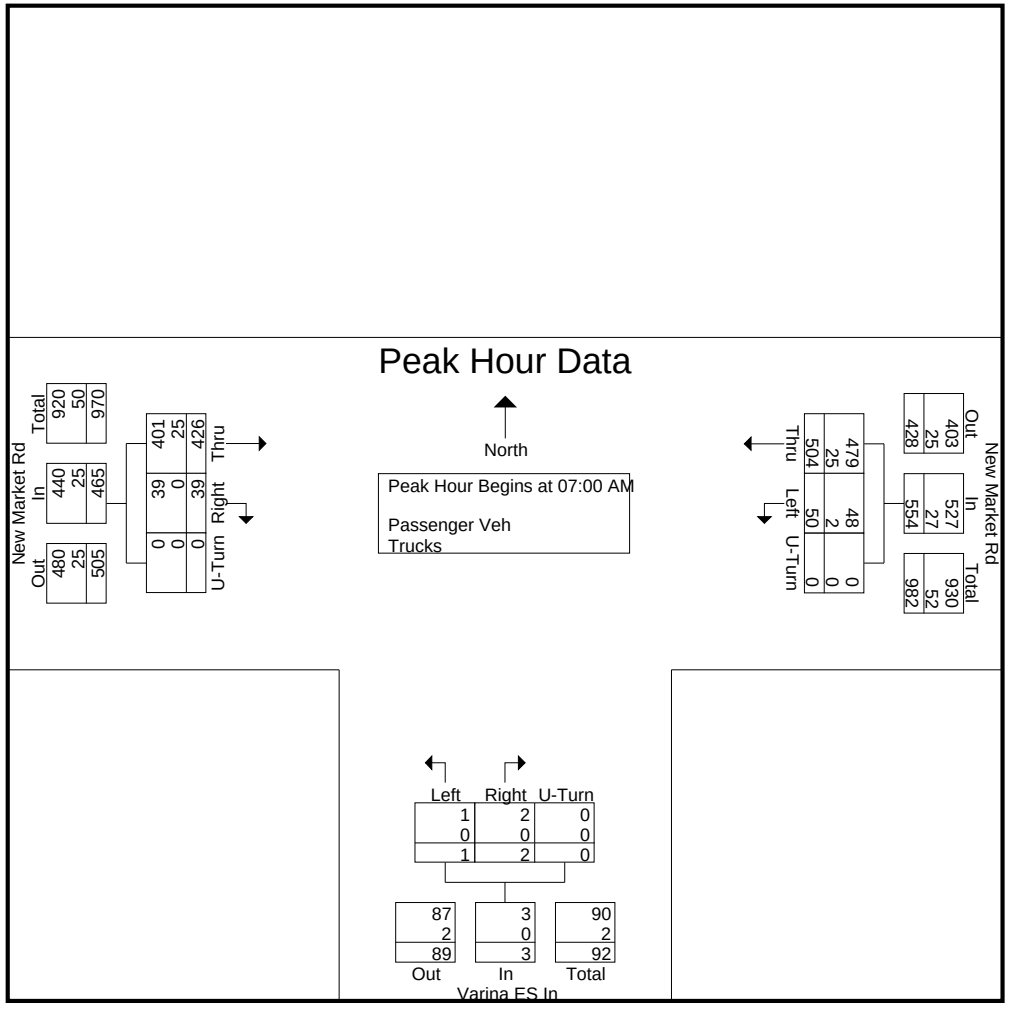

Data Collection Group

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File Name : New Market and Varina ES In
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Start Date : 12/5/2023
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	New Market Rd From East				Varina ES In From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 03:15 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:00 PM													
02:00 PM	76	4	0	80	0	0	0	0	**7**	77	0	**84**	164
02:15 PM	**105**	**7**	0	**112**	**1**	**1**	0	**2**	3	63	0	66	**180**
02:30 PM	73	1	0	74	1	1	0	2	0	**79**	0	79	155
02:45 PM	80	1	0	81	0	1	0	1	0	76	0	76	158
Total Volume	334	13	0	347	2	3	0	5	10	295	0	305	657
% App. Total	96.3	3.7	0		40	60	0		3.3	96.7	0		
PHF	.795	.464	.000	.775	.500	.750	.000	.625	.357	.934	.000	.908	.913
Passenger Veh	300	12	0	312	2	2	0	4	9	272	0	281	597
% Passenger Veh	89.8	92.3	0	89.9	100	66.7	0	80.0	90.0	92.2	0	92.1	90.9
Trucks	34	1	0	35	0	1	0	1	1	23	0	24	60
% Trucks	10.2	7.7	0	10.1	0	33.3	0	20.0	10.0	7.8	0	7.9	9.1

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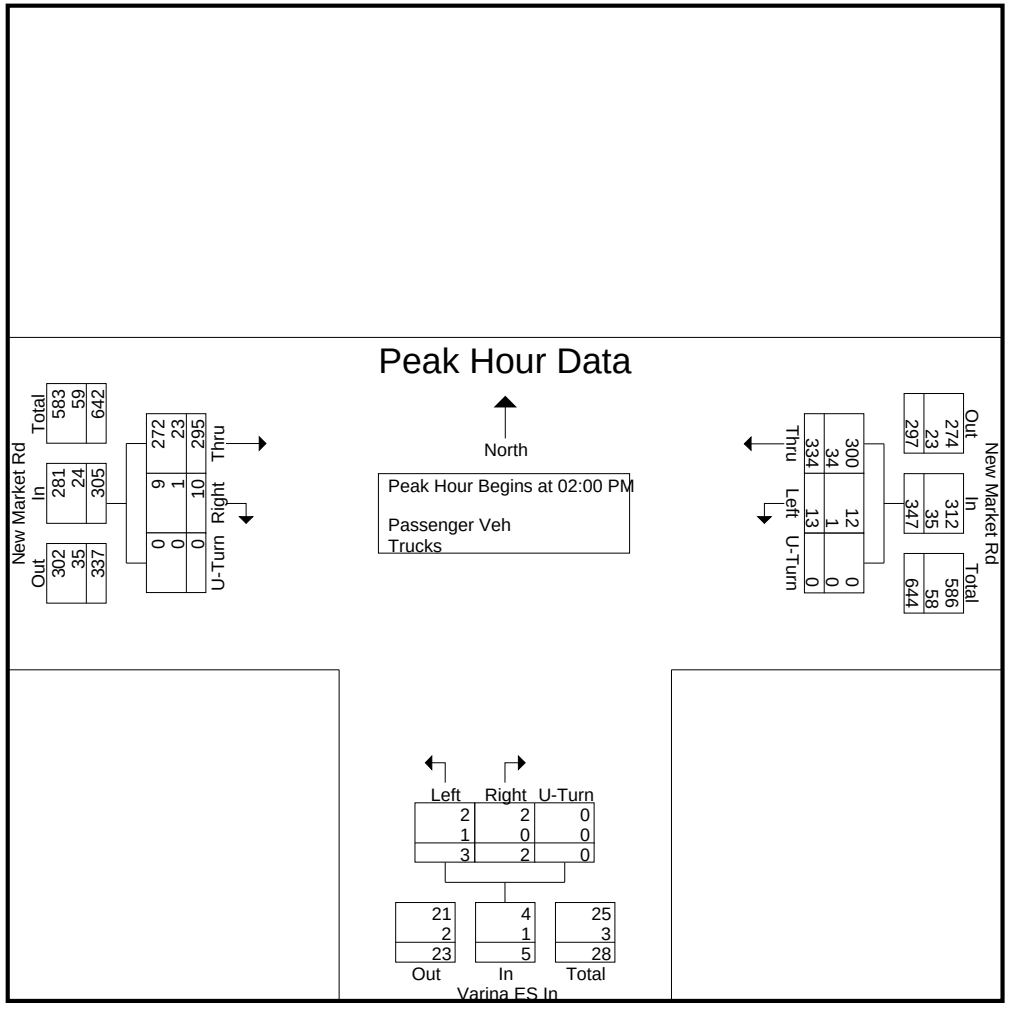
File Name : New Market and Varina ES In
Site Code :
Start Date : 12/5/2023
Page No : 5



Data Collection Group

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File Name : New Market and Gregg
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Peds

	Gregg Rd From North						New Market Rd From East						From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
08:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
01:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
02:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
02:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
03:00 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Grand Total	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9
Apprch %	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0					
Total %																									100	0	

Data Collection Group

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File Name : New Market and Gregg
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Passenger Veh - Trucks

	Gregg Rd From North					New Market Rd From East					From South					New Market Rd From West							
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	5	0	0	0	5	0	100	0	0	100	0	0	0	0	0	0	94	1	0	95	0	200	200
07:15 AM	4	0	0	0	4	0	136	0	0	136	0	0	0	0	0	0	108	0	0	108	0	248	248
07:30 AM	5	0	0	0	5	1	154	0	0	155	0	0	0	0	0	0	114	2	0	116	0	276	276
07:45 AM	3	0	1	0	4	2	135	0	0	137	0	0	0	0	0	0	108	2	0	110	0	251	251
Total	17	0	1	0	18	3	525	0	0	528	0	0	0	0	0	0	424	5	0	429	0	975	975
08:00 AM	2	0	1	0	3	0	100	0	1	101	0	0	0	0	0	0	89	0	0	89	0	193	193
08:15 AM	4	0	0	0	4	1	107	0	0	108	0	0	0	0	0	0	78	3	0	81	0	193	193
08:30 AM	2	0	0	0	2	1	103	0	0	104	0	0	0	0	0	0	55	1	0	56	0	162	162
08:45 AM	4	0	1	0	5	1	91	0	0	92	0	0	0	0	0	0	77	2	0	79	0	176	176
Total	12	0	2	0	14	3	401	0	1	405	0	0	0	0	0	0	299	6	0	305	0	724	724
01:30 PM	2	0	2	0	4	5	77	0	0	82	0	0	0	0	0	0	72	2	0	74	0	160	160
01:45 PM	2	0	4	0	6	5	54	0	0	59	0	0	0	0	0	0	52	5	0	57	0	122	122
Total	4	0	6	0	10	10	131	0	0	141	0	0	0	0	0	0	124	7	0	131	0	282	282
02:00 PM	3	0	4	0	7	2	77	0	0	79	0	0	0	0	0	0	71	7	0	78	0	164	164
02:15 PM	3	0	6	0	9	3	112	0	0	115	0	0	0	0	0	0	59	9	0	68	0	192	192
02:30 PM	5	0	3	0	8	4	68	0	0	72	0	0	0	0	0	0	74	3	0	77	0	157	157
02:45 PM	4	0	5	0	9	3	70	0	0	73	0	0	0	0	0	0	71	5	0	76	0	158	158
Total	15	0	18	0	33	12	327	0	0	339	0	0	0	0	0	0	275	24	0	299	0	671	671
03:00 PM	2	0	1	0	3	3	56	0	0	59	0	0	0	0	0	0	75	4	0	79	0	141	141
03:15 PM	4	0	1	0	5	1	89	0	0	90	0	0	0	0	0	0	102	2	0	104	0	199	199
Grand Total	54	0	29	0	83	32	1529	0	1	1562	0	0	0	0	0	0	1299	48	0	1347	0	2992	2992
Apprch %	65.1	0	34.9	0		2	97.9	0	0.1		0	0	0	0		0	96.4	3.6					
Total %	1.8	0	1	0	2.8	1.1	51.1	0	0	52.2	0	0	0	0	0	0	43.4	1.6		45	0	100	
Passenger Veh	53	0	29	0	82	30	1424	0	1	1455	0	0	0	0	0	0	1199	46		1245	0	0	2782
% Passenger Veh	98.1	0	100	0	98.8	93.8	93.1	0	100	93.1	0	0	0	0	0	0	92.3	95.8	0	92.4	0	0	93
Trucks	1	0	0	0	1	2	105	0	0	107	0	0	0	0	0	0	100	2		102	0	0	210
% Trucks	1.9	0	0	0	1.2	6.2	6.9	0	0	6.9	0	0	0	0	0	0	7.7	4.2	0	7.6	0	0	7

Data Collection Group

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File Name : New Market and Gregg
Site Code :
Start Date : 12/5/2023

	Gregg Rd From North					New Market Rd From East					From South					New Market Rd From West				
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 07:00 AM																				
07:00 AM	**5**	0	0	0	**5**	0	100	0	0	100	0	0	0	0	0	0	94	1	95	200
07:15 AM	4	0	0	0	4	0	136	0	0	136	0	0	0	0	0	0	108	0	108	248
07:30 AM	5	0	0	0	5	1	**154**	0	0	**155**	0	0	0	0	0	0	**114**	**2**	**116**	**276**
07:45 AM	3	0	**1**	0	4	**2**	135	0	0	137	0	0	0	0	0	0	108	2	110	251
Total Volume	17	0	1	0	18	3	525	0	0	528	0	0	0	0	0	0	424	5	429	975
% App. Total	94.4	0	5.6	0		0.6	99.4	0	0		0	0	0	0		0	98.8	1.2		
PHF	.850	.000	.250	.000	.900	.375	.852	.000	.000	.852	.000	.000	.000	.000	.000	.000	.930	.625	.925	.883
Passenger Veh	17	0	1	0	18	2	501	0	0	503	0	0	0	0	0	0	399	4	403	924
% Passenger Veh	100	0	100	0	100	66.7	95.4	0	0	95.3	0	0	0	0	0	0	94.1	80.0	93.9	94.8
Trucks	0	0	0	0	0	1	24	0	0	25	0	0	0	0	0	0	25	1	26	51
% Trucks	0	0	0	0	0	33.3	4.6	0	0	4.7	0	0	0	0	0	0	5.9	20.0	6.1	5.2

Data Collection Group

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File Name : New Market and Gregg
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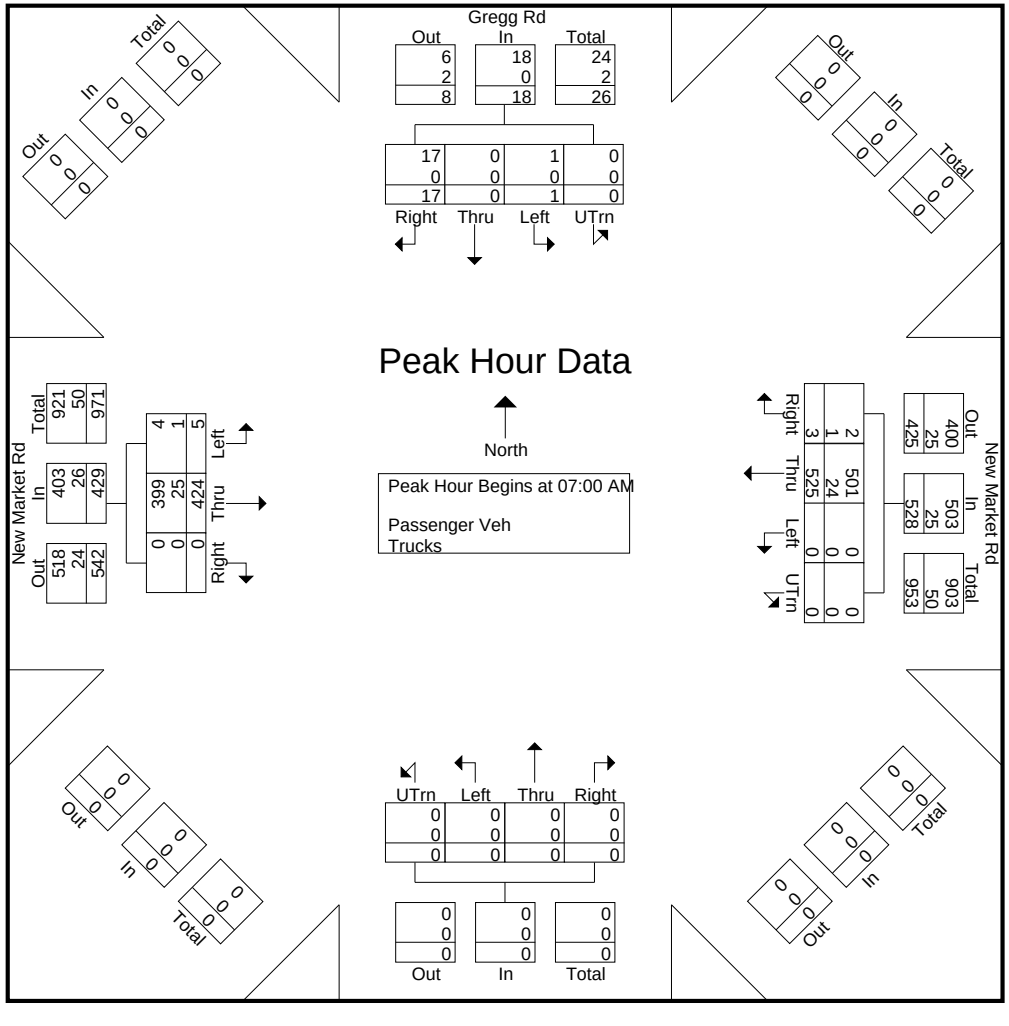

Data Collection Group

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File Name : New Market and Gregg
Site Code :
Start Date : 12/5/2023

	Gregg Rd From North					New Market Rd From East					From South					New Market Rd From West				
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 03:15 PM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 02:00 PM																				
02:00 PM	3	0	4	0	7	2	77	0	0	79	0	0	0	0	0	0	71	7	**78**	164
02:15 PM	3	0	**6**	0	**9**	3	**112**	0	0	**115**	0	0	0	0	0	0	59	**9**	68	**192**
02:30 PM	**5**	0	3	0	8	**4**	68	0	0	72	0	0	0	0	0	0	**74**	3	77	157
02:45 PM	4	0	5	0	9	3	70	0	0	73	0	0	0	0	0	0	71	5	76	158
Total Volume	15	0	18	0	33	12	327	0	0	339	0	0	0	0	0	0	275	24	299	671
% App. Total	45.5	0	54.5	0		3.5	96.5	0	0		0	0	0	0		0	92	8		
PHF	.750	.000	.750	.000	.917	.750	.730	.000	.000	.737	.000	.000	.000	.000	.000	.000	.929	.667	.958	.874
Passenger Veh	15	0	18	0	33	12	295	0	0	307	0	0	0	0	0	0	254	23	277	617
% Passenger Veh	100	0	100	0	100	100	90.2	0	0	90.6	0	0	0	0	0	0	92.4	95.8	92.6	92.0
Trucks	0	0	0	0	0	0	32	0	0	32	0	0	0	0	0	0	21	1	22	54
% Trucks	0	0	0	0	0	0	9.8	0	0	9.4	0	0	0	0	0	0	7.6	4.2	7.4	8.0

Data Collection Group

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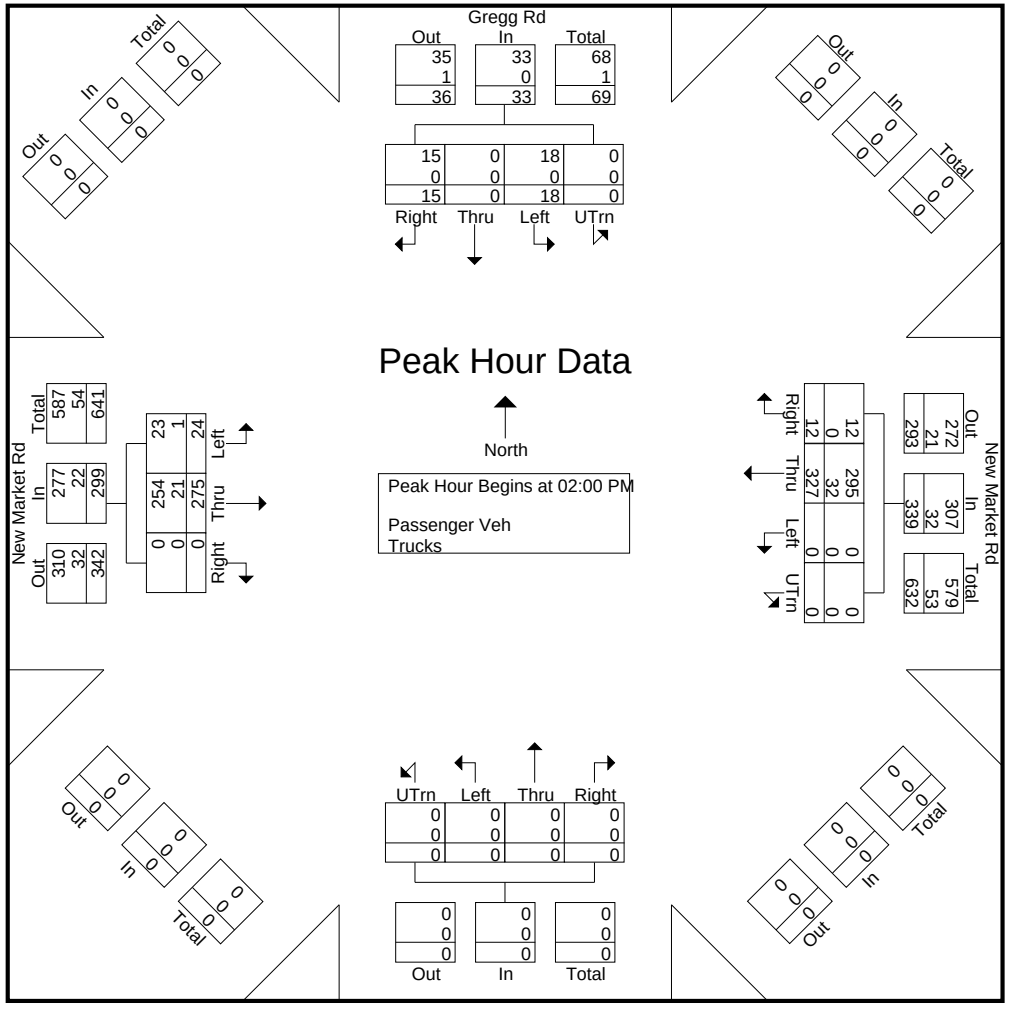

Data Collection Group

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File Name : New Market and Varina ES Out
Site Code :
Start Date : 12/5/2023
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Groups Printed- Peds

	New Market Rd From East				Varina ES Out From South				New Market Rd From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		
Total %													

Data Collection Group

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File Name : New Market and Varina ES Out
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Passenger Veh - Trucks

	New Market Rd From East				Varina ES Out From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	98	0	0	98	0	0	0	0	0	96	0	96	194
07:15 AM	126	0	0	126	11	10	0	21	0	109	0	109	256
07:30 AM	145	0	0	145	22	14	0	36	0	113	0	113	294
07:45 AM	136	0	0	136	4	5	0	9	0	106	0	106	251
Total	505	0	0	505	37	29	0	66	0	424	0	424	995
08:00 AM	100	0	0	100	3	1	0	4	0	88	0	88	192
08:15 AM	107	0	0	107	2	1	0	3	0	79	0	79	189
08:30 AM	99	0	0	99	2	4	0	6	0	56	0	56	161
08:45 AM	91	0	0	91	1	2	0	3	0	73	0	73	167
Total	397	0	0	397	8	8	0	16	0	296	0	296	709
01:30 PM	80	0	0	80	0	1	0	1	0	72	0	72	153
01:45 PM	56	0	0	56	0	2	0	2	0	55	0	55	113
Total	136	0	0	136	0	3	0	3	0	127	0	127	266
02:00 PM	64	0	0	64	4	8	0	12	0	72	0	72	148
02:15 PM	108	0	0	108	7	8	0	15	0	68	0	68	191
02:30 PM	72	0	0	72	1	2	0	3	0	77	0	77	152
02:45 PM	82	0	0	82	0	0	0	0	0	78	0	78	160
Total	326	0	0	326	12	18	0	30	0	295	0	295	651
03:00 PM	59	0	0	59	2	0	0	2	0	77	0	77	138
03:15 PM	85	0	0	85	0	3	0	3	0	100	0	100	188
Grand Total	1508	0	0	1508	59	61	0	120	0	1319	0	1319	2947
Apprch %	100	0	0		49.2	50.8	0		0	100	0		
Total %	51.2	0	0	51.2	2	2.1	0	4.1	0	44.8	0	44.8	
Passenger Veh	1402	0	0	1402	55	52	0	107	0	1217	0	1217	2726
% Passenger Veh	93	0	0	93	93.2	85.2	0	89.2	0	92.3	0	92.3	92.5
Trucks	106	0	0	106	4	9	0	13	0	102	0	102	221
% Trucks	7	0	0	7	6.8	14.8	0	10.8	0	7.7	0	7.7	7.5

Data Collection Group

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File Name : New Market and Varina ES Out
Site Code :
Start Date : 12/5/2023

	New Market Rd From East				Varina ES Out From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	98	0	0	98	0	0	0	0	0	96	0	96	194
07:15 AM	126	0	0	126	11	10	0	21	0	109	0	109	256
07:30 AM	**145**	0	0	**145**	**22**	**14**	0	**36**	0	**113**	0	**113**	**294**
07:45 AM	136	0	0	136	4	5	0	9	0	106	0	106	251
Total Volume	505	0	0	505	37	29	0	66	0	424	0	424	995
% App. Total	100	0	0		56.1	43.9	0		0	100	0		
PHF	.871	.000	.000	.871	.420	.518	.000	.458	.000	.938	.000	.938	.846
Passenger Veh	482	0	0	482	36	28	0	64	0	399	0	399	945
% Passenger Veh	95.4	0	0	95.4	97.3	96.6	0	97.0	0	94.1	0	94.1	95.0
Trucks	23	0	0	23	1	1	0	2	0	25	0	25	50
% Trucks	4.6	0	0	4.6	2.7	3.4	0	3.0	0	5.9	0	5.9	5.0

Data Collection Group

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File Name : New Market and Varina ES Out
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Start Date : 12/5/2023
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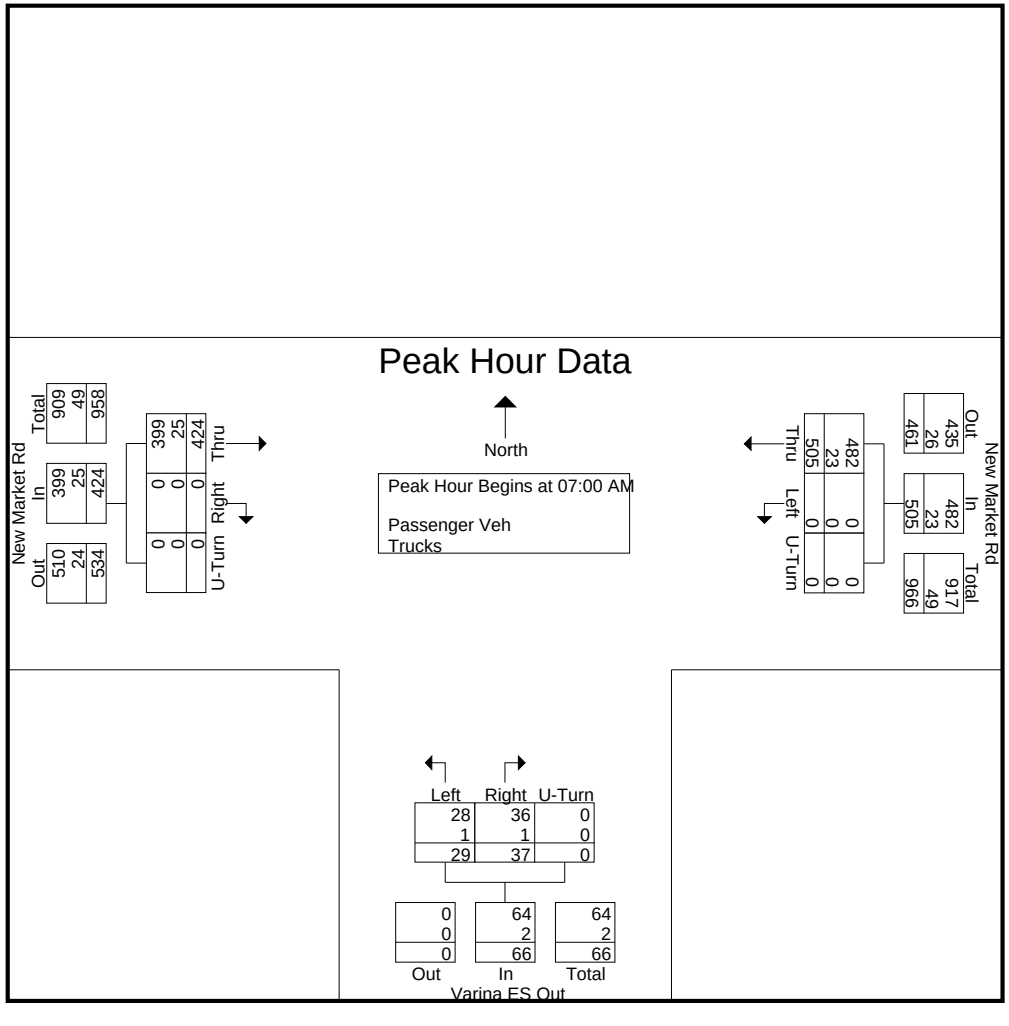

Data Collection Group

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File Name : New Market and Varina ES Out
Site Code :
Start Date : 12/5/2023

	New Market Rd From East				Varina ES Out From South				New Market Rd From West				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 03:15 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:00 PM													
02:00 PM	64	0	0	64	4	**8**	0	12	0	72	0	72	148
02:15 PM	**108**	0	0	**108**	**7**	8	0	**15**	0	68	0	68	**191**
02:30 PM	72	0	0	72	1	2	0	3	0	77	0	77	152
02:45 PM	82	0	0	82	0	0	0	0	0	**78**	0	**78**	160
Total Volume	326	0	0	326	12	18	0	30	0	295	0	295	651
% App. Total	100	0	0		40	60	0		0	100	0		
PHF	.755	.000	.000	.755	.429	.563	.000	.500	.000	.946	.000	.946	.852
Passenger Veh	290	0	0	290	10	16	0	26	0	274	0	274	590
% Passenger Veh	89.0	0	0	89.0	83.3	88.9	0	86.7	0	92.9	0	92.9	90.6
Trucks	36	0	0	36	2	2	0	4	0	21	0	21	61
% Trucks	11.0	0	0	11.0	16.7	11.1	0	13.3	0	7.1	0	7.1	9.4

Data Collection Group

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File Name : New Market and Varina ES Out
Site Code :
Start Date : 12/5/2023
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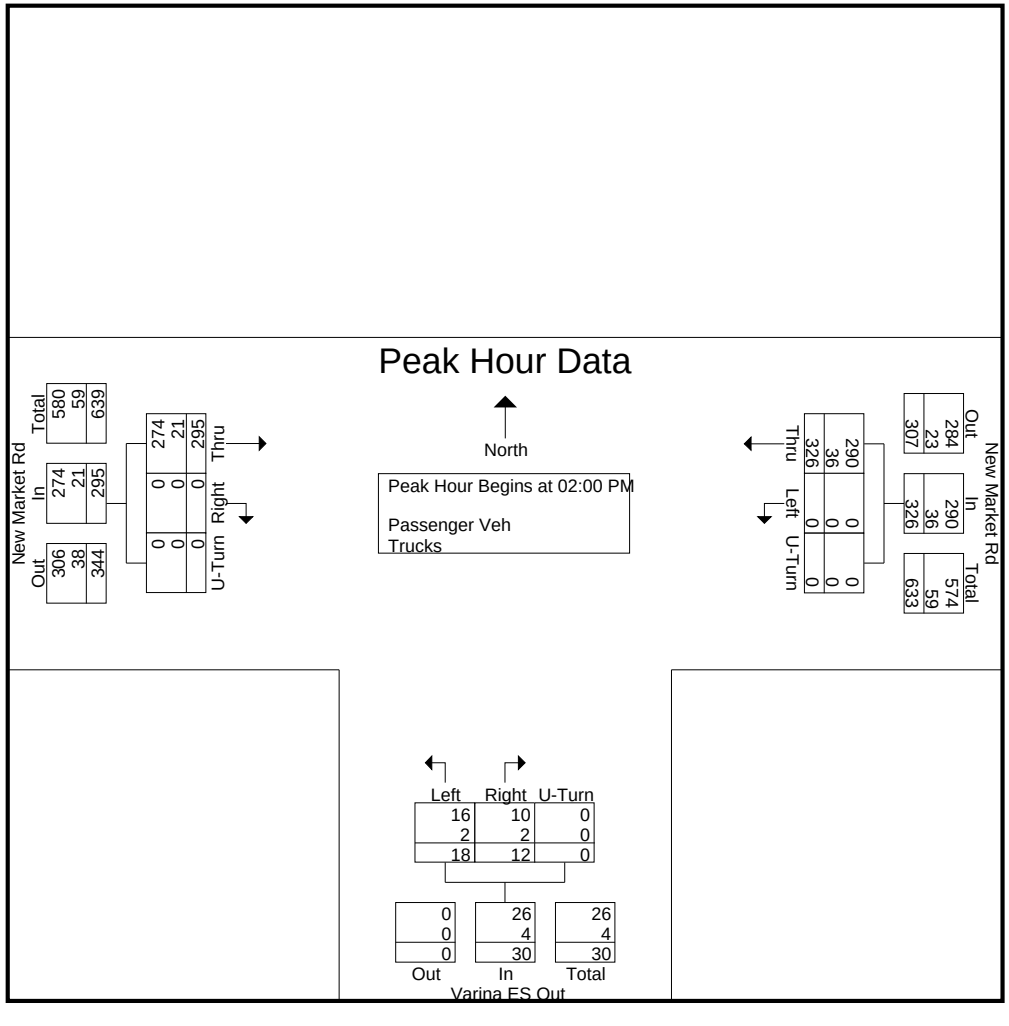

Data Collection Group

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File Name : New Market and Produce
Site Code :
Start Date : 12/5/2023
Page No : 1

Groups Printed- Peds

	Access From North					New Market Rd From East					Produce Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:15 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Data Collection Group

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Groups Printed- Passenger Veh - Trucks

	Access From North					New Market Rd From East					Produce Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	1	0	3	0	4	2	99	8	0	109	1	0	1	0	2	8	85	3	0	96	211
07:15 AM	3	0	3	0	6	6	121	13	0	140	10	0	2	0	12	11	107	2	0	120	278
07:30 AM	4	0	3	0	7	0	138	6	0	144	7	0	3	0	10	11	121	3	0	135	296
07:45 AM	4	0	0	0	4	1	126	15	0	142	3	0	3	0	6	7	99	4	0	110	262
Total	12	0	9	0	21	9	484	42	0	535	21	0	9	0	30	37	412	12	0	461	1047
08:00 AM	2	0	1	0	3	4	95	3	0	102	3	0	3	0	6	3	84	3	0	90	201
08:15 AM	4	1	1	0	6	2	97	2	0	101	0	0	6	0	6	4	74	4	0	82	195
08:30 AM	4	0	3	0	7	4	91	2	0	97	0	0	5	0	5	10	45	2	0	57	166
08:45 AM	0	0	3	0	3	6	87	3	0	96	2	0	3	0	5	8	64	1	0	73	177
Total	10	1	8	0	19	16	370	10	0	396	5	0	17	0	22	25	267	10	0	302	739
01:30 PM	3	1	0	0	4	1	63	7	0	71	3	0	14	0	17	16	51	1	0	68	160
01:45 PM	0	0	1	0	1	1	46	18	0	65	3	0	10	0	13	14	39	1	0	54	133
Total	3	1	1	0	5	2	109	25	0	136	6	0	24	0	30	30	90	2	0	122	293
02:00 PM	1	0	1	0	2	1	57	7	0	65	14	0	7	0	21	17	59	0	0	76	164
02:15 PM	0	0	2	0	2	1	97	13	0	111	15	0	10	0	25	21	52	2	0	75	213
02:30 PM	1	0	0	0	1	0	56	10	0	66	7	0	14	0	21	11	66	1	0	78	166
02:45 PM	1	0	0	0	1	4	67	6	0	77	9	0	11	0	20	13	62	2	0	77	175
Total	3	0	3	0	6	6	277	36	0	319	45	0	42	0	87	62	239	5	0	306	718
03:00 PM	0	0	2	0	2	0	48	10	0	58	2	0	13	0	15	16	63	0	0	79	154
03:15 PM	2	0	2	0	4	3	73	14	0	90	7	0	10	0	17	13	88	0	0	101	212
Grand Total	30	2	25	0	57	36	1361	137	0	1534	86	0	115	0	201	183	1159	29	0	1371	3163
Apprch %	52.6	3.5	43.9	0		2.3	88.7	8.9	0		42.8	0	57.2	0		13.3	84.5	2.1	0		
Total %	0.9	0.1	0.8	0	1.8	1.1	43	4.3	0	48.5	2.7	0	3.6	0	6.4	5.8	36.6	0.9	0	43.3	
Passenger Veh	30	2	23	0	55	36	1261	112	0	1409	53	0	110	0	163	162	1069	27	0	1258	2885
% Passenger Veh	100	100	92	0	96.5	100	92.7	81.8	0	91.9	61.6	0	95.7	0	81.1	88.5	92.2	93.1	0	91.8	91.2
Trucks	0	0	2	0	2	0	100	25	0	125	33	0	5	0	38	21	90	2	0	113	278
% Trucks	0	0	8	0	3.5	0	7.3	18.2	0	8.1	38.4	0	4.3	0	18.9	11.5	7.8	6.9	0	8.2	8.8

Data Collection Group

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	Access From North					New Market Rd From East					Produce Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	1	0	**3**	0	4	2	99	8	0	109	1	0	1	0	2	8	85	3	0	96	211
07:15 AM	3	0	3	0	6	**6**	121	13	0	140	**10**	0	2	0	**12**	**11**	107	2	0	120	278
07:30 AM	**4**	0	3	0	**7**	0	**138**	6	0	**144**	7	0	**3**	0	10	11	**121**	3	0	**135**	**296**
07:45 AM	4	0	0	0	4	1	126	**15**	0	142	3	0	3	0	6	7	99	**4**	0	110	262
Total Volume	12	0	9	0	21	9	484	42	0	535	21	0	9	0	30	37	412	12	0	461	1047
% App. Total	57.1	0	42.9	0		1.7	90.5	7.9	0		70	0	30	0		8	89.4	2.6	0		
PHF	.750	.000	.750	.000	.750	.375	.877	.700	.000	.929	.525	.000	.750	.000	.625	.841	.851	.750	.000	.854	.884
Passenger Veh	12	0	9	0	21	9	466	31	0	506	7	0	7	0	14	27	396	12	0	435	976
% Passenger Veh	100	0	100	0	100	100	96.3	73.8	0	94.6	33.3	0	77.8	0	46.7	73.0	96.1	100	0	94.4	93.2
Trucks	0	0	0	0	0	0	18	11	0	29	14	0	2	0	16	10	16	0	0	26	71
% Trucks	0	0	0	0	0	0	3.7	26.2	0	5.4	66.7	0	22.2	0	53.3	27.0	3.9	0	0	5.6	6.8

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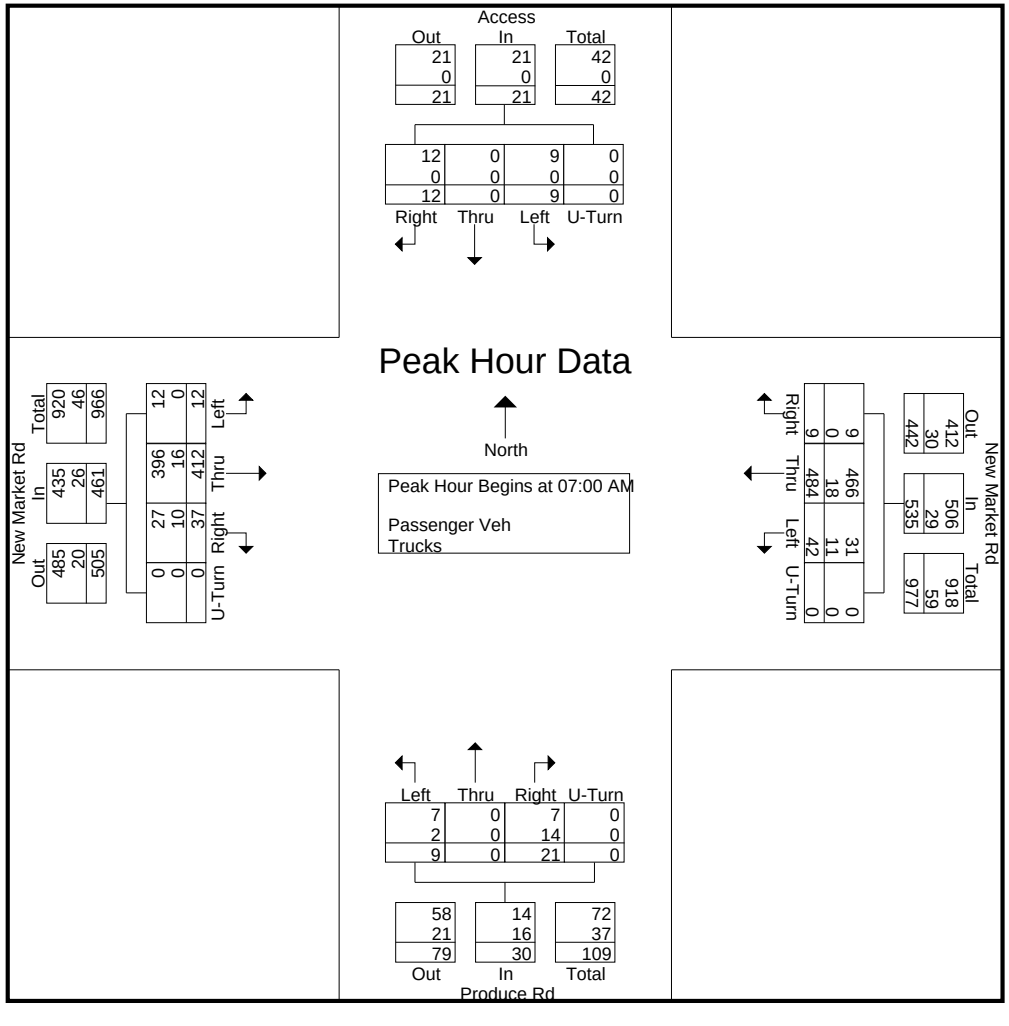

Data Collection Group

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File Name : New Market and Produce
Site Code :
Start Date : 12/5/2023

	Access From North					New Market Rd From East					Produce Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 03:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	**1**	0	1	0	**2**	1	57	7	0	65	14	0	7	0	21	17	59	0	0	76	164
02:15 PM	0	0	**2**	0	2	1	**97**	**13**	0	**111**	**15**	0	10	0	**25**	**21**	52	**2**	0	75	**213**
02:30 PM	1	0	0	0	1	0	56	10	0	66	7	0	**14**	0	21	11	**66**	1	0	**78**	166
02:45 PM	1	0	0	0	1	**4**	67	6	0	77	9	0	11	0	20	13	62	2	0	77	175
Total Volume	3	0	3	0	6	6	277	36	0	319	45	0	42	0	87	62	239	5	0	306	718
% App. Total	50	0	50	0		1.9	86.8	11.3	0		51.7	0	48.3	0		20.3	78.1	1.6	0		
PHF	.750	.000	.375	.000	.750	.375	.714	.692	.000	.718	.750	.000	.750	.000	.870	.738	.905	.625	.000	.981	.843
Passenger Veh	3	0	1	0	4	6	245	28	0	279	26	0	39	0	65	60	218	3	0	281	629
% Passenger Veh	100	0	33.3	0	66.7	100	88.4	77.8	0	87.5	57.8	0	92.9	0	74.7	96.8	91.2	60.0	0	91.8	87.6
Trucks	0	0	2	0	2	0	32	8	0	40	19	0	3	0	22	2	21	2	0	25	89
% Trucks	0	0	66.7	0	33.3	0	11.6	22.2	0	12.5	42.2	0	7.1	0	25.3	3.2	8.8	40.0	0	8.2	12.4

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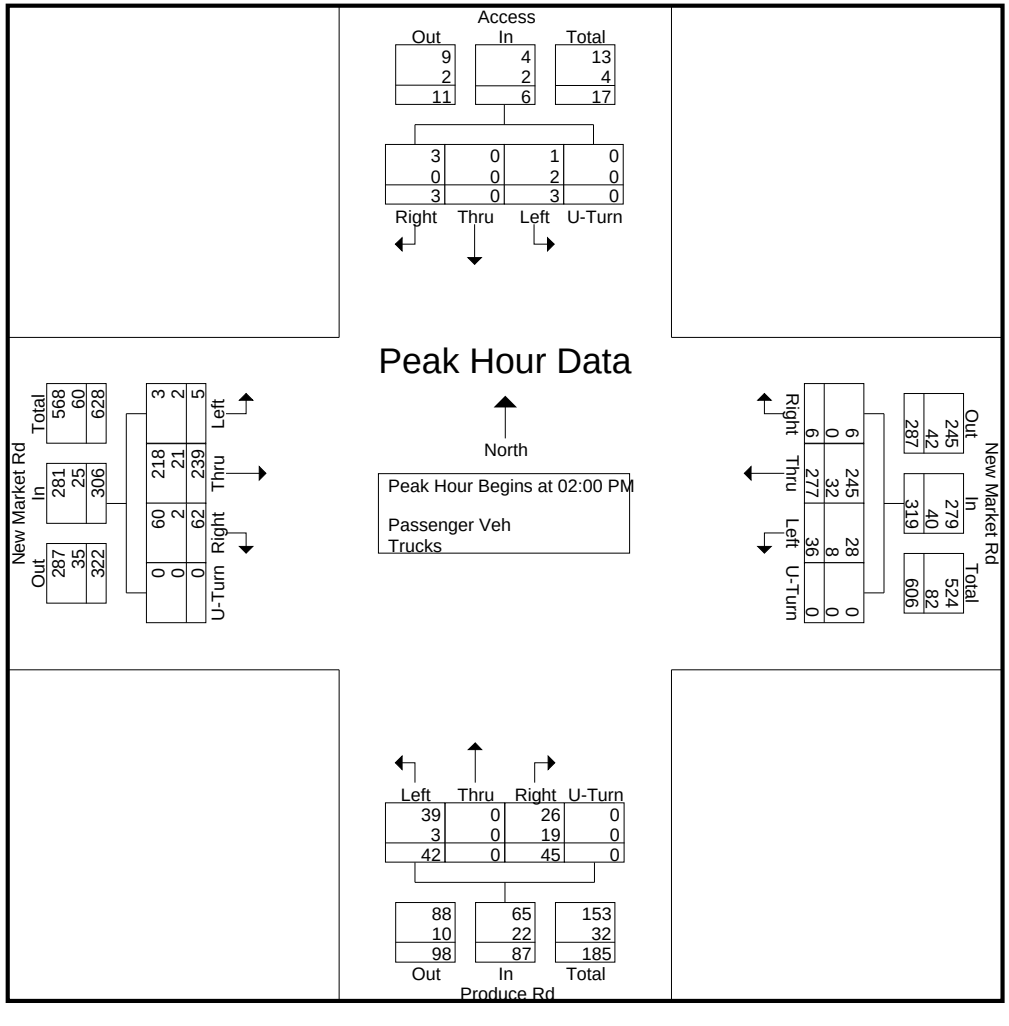

Data Collection Group

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File Name : New Market and Strath
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Groups Printed- Peds

	Strath Rd From North						New Market Rd From East						Strath Rd From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
08:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
09:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	2
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	2
10:15 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	5	0	5
10:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
10:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	6	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	2	0	12	0	12
11:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
12:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	2
12:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
12:30 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0	5
12:45 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Total	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	11	0	11
01:00 PM	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8
01:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
01:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10
02:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
02:30 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
02:45 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Total	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8
03:00 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3

Data Collection Group

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File Name : New Market and Strath
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Groups Printed- Peds

	Strath Rd From North						New Market Rd From East						Strath Rd From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
03:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
03:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
03:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	3
Total	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	9	0	9
04:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
04:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
Grand Total	0	0	0	0	51	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	7	0	62	0	62
Apprch %	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0					
Total %																									100	0	

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Groups Printed- Passenger Veh - Trucks

	Strath Rd From North					New Market Rd From East					Strath Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
07:00 AM	7	1	15	0	23	34	107	1	0	142	8	2	5	0	15	4	78	4	0	86	266
07:15 AM	13	3	41	0	57	45	115	3	0	163	9	5	3	0	17	1	111	2	0	114	351
07:30 AM	3	2	39	0	44	37	135	4	0	176	14	4	13	0	31	3	122	6	0	131	382
07:45 AM	7	3	23	0	33	35	123	3	0	161	12	4	5	0	21	2	95	1	0	98	313
Total	30	9	118	0	157	151	480	11	0	642	43	15	26	0	84	10	406	13	0	429	1312
08:00 AM	6	2	12	0	20	26	92	5	0	123	10	0	7	0	17	4	82	1	0	87	247
08:15 AM	2	3	13	0	18	14	85	8	0	107	8	3	9	0	20	3	67	4	0	74	219
08:30 AM	4	0	19	0	23	22	91	5	0	118	12	2	3	0	17	1	44	0	0	45	203
08:45 AM	4	4	7	0	15	14	80	6	0	100	13	3	6	0	22	1	58	4	0	63	200
Total	16	9	51	0	76	76	348	24	0	448	43	8	25	0	76	9	251	9	0	269	869
09:00 AM	8	5	13	0	26	10	59	4	0	73	3	1	3	0	7	1	40	3	0	44	150
09:15 AM	3	3	15	0	21	13	59	4	0	76	15	5	5	0	25	4	49	2	0	55	177
09:30 AM	2	2	15	0	19	19	39	6	0	64	10	3	5	0	18	0	48	3	0	51	152
09:45 AM	2	1	13	0	16	12	51	8	0	71	11	2	5	0	18	4	42	3	0	49	154
Total	15	11	56	0	82	54	208	22	0	284	39	11	18	0	68	9	179	11	0	199	633
10:00 AM	5	4	18	0	27	12	45	6	0	63	15	4	4	0	23	4	41	1	0	46	159
10:15 AM	4	5	9	0	18	10	60	3	0	73	11	5	5	0	21	1	40	1	0	42	154
10:30 AM	2	3	19	0	24	18	36	4	0	58	8	3	1	0	12	2	34	1	0	37	131
10:45 AM	5	6	6	0	17	8	45	3	0	56	11	8	3	0	22	2	33	4	0	39	134
Total	16	18	52	0	86	48	186	16	0	250	45	20	13	0	78	9	148	7	0	164	578
11:00 AM	5	4	10	0	19	8	41	6	0	55	7	4	4	0	15	2	40	4	0	46	135
11:15 AM	1	3	15	0	19	19	46	10	0	75	6	2	4	0	12	1	44	1	0	46	152
11:30 AM	2	7	13	0	22	8	36	6	0	50	13	4	5	0	22	2	44	1	0	47	141
11:45 AM	14	2	7	0	23	12	52	7	0	71	7	3	5	0	15	4	41	6	0	51	160
Total	22	16	45	0	83	47	175	29	0	251	33	13	18	0	64	9	169	12	0	190	588
12:00 PM	6	6	14	0	26	9	52	5	0	66	13	7	5	0	25	2	39	6	0	47	164
12:15 PM	7	7	14	0	28	12	52	6	0	70	13	6	5	0	24	1	52	8	0	61	183
12:30 PM	3	6	11	0	20	10	37	13	0	60	18	1	5	0	24	1	45	1	0	47	151
12:45 PM	3	1	6	0	10	6	40	13	0	59	14	6	5	0	25	8	58	4	0	70	164
Total	19	20	45	0	84	37	181	37	0	255	58	20	20	0	98	12	194	19	0	225	662
01:00 PM	6	5	10	0	21	8	50	9	0	67	19	5	5	0	29	4	33	3	0	40	157
01:15 PM	1	6	15	0	22	13	59	7	0	79	12	9	5	0	26	2	58	3	0	63	190
01:30 PM	6	5	12	0	23	12	60	9	0	81	10	3	3	0	16	3	46	3	0	52	172
01:45 PM	6	2	11	0	19	7	54	10	0	71	11	5	3	0	19	0	41	2	0	43	152
Total	19	18	48	0	85	40	223	35	0	298	52	22	16	0	90	9	178	11	0	198	671
02:00 PM	3	4	20	0	27	17	56	6	0	79	19	2	10	0	31	2	62	7	0	71	208
02:15 PM	2	3	27	0	32	21	99	9	0	129	15	5	8	0	28	5	53	6	0	64	253

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File Name : New Market and Strath
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Groups Printed- Passenger Veh - Trucks

	Strath Rd From North					New Market Rd From East					Strath Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
02:30 PM	4	5	24	0	33	13	58	6	0	77	15	6	3	0	24	1	59	4	0	64	198
02:45 PM	5	5	19	0	29	15	64	7	0	86	17	5	4	0	26	2	63	3	0	68	209
Total	14	17	90	0	121	66	277	28	0	371	66	18	25	0	109	10	237	20	0	267	868
03:00 PM	1	13	22	0	36	14	57	13	0	84	17	3	3	0	23	4	58	3	0	65	208
03:15 PM	7	8	37	0	52	18	74	8	0	100	19	6	7	0	32	5	84	2	0	91	275
03:30 PM	5	9	40	0	54	20	85	19	0	124	20	7	7	0	34	2	66	4	0	72	284
03:45 PM	2	5	55	0	62	12	78	18	0	108	19	3	7	0	29	8	96	3	0	107	306
Total	15	35	154	0	204	64	294	58	0	416	75	19	24	0	118	19	304	12	0	335	1073
04:00 PM	4	7	39	0	50	18	84	12	0	114	15	8	6	0	29	3	95	6	0	104	297
04:15 PM	3	10	54	0	67	21	99	16	0	136	17	14	9	0	40	2	96	2	0	100	343
04:30 PM	4	13	41	0	58	22	119	21	0	162	25	4	7	0	36	6	96	4	0	106	362
04:45 PM	4	4	42	0	50	30	110	14	0	154	19	4	16	0	39	2	100	3	0	105	348
Total	15	34	176	0	225	91	412	63	0	566	76	30	38	0	144	13	387	15	0	415	1350
05:00 PM	1	12	40	0	53	18	94	11	0	123	24	5	12	0	41	4	108	3	0	115	332
05:15 PM	8	6	57	0	71	20	117	20	0	157	18	12	7	0	37	5	98	5	0	108	373
05:30 PM	9	7	42	0	58	17	112	17	0	146	23	9	6	0	38	7	101	7	0	115	357
05:45 PM	4	7	31	0	42	26	108	15	0	149	20	4	10	0	34	5	94	9	0	108	333
Total	22	32	170	0	224	81	431	63	0	575	85	30	35	0	150	21	401	24	0	446	1395
06:00 PM	6	6	27	0	39	23	91	13	0	127	20	2	7	0	29	2	77	3	0	82	277
06:15 PM	5	7	11	0	23	16	78	14	0	108	21	6	4	0	31	2	65	4	0	71	233
06:30 PM	3	9	12	0	24	13	59	10	0	82	23	6	4	0	33	3	54	3	0	60	199
06:45 PM	1	2	21	0	24	7	58	8	0	73	7	5	2	0	14	3	43	0	0	46	157
Total	15	24	71	0	110	59	286	45	0	390	71	19	17	0	107	10	239	10	0	259	866
Grand Total	218	243	1076	0	1537	814	3501	431	0	4746	686	225	275	0	1186	140	3093	163	0	3396	10865
Apprch %	14.2	15.8	70	0		17.2	73.8	9.1	0		57.8	19	23.2	0		4.1	91.1	4.8	0		
Total %	2	2.2	9.9	0	14.1	7.5	32.2	4	0	43.7	6.3	2.1	2.5	0	10.9	1.3	28.5	1.5	0	31.3	
Passenger Veh	211	238	1046	0	1495	781	3263	395	0	4439	644	221	259	0	1124	130	2860	152	0	3142	10200
% Passenger Veh	96.8	97.9	97.2	0	97.3	95.9	93.2	91.6	0	93.5	93.9	98.2	94.2	0	94.8	92.9	92.5	93.3	0	92.5	93.9
Trucks	7	5	30	0	42	33	238	36	0	307	42	4	16	0	62	10	233	11	0	254	665
% Trucks	3.2	2.1	2.8	0	2.7	4.1	6.8	8.4	0	6.5	6.1	1.8	5.8	0	5.2	7.1	7.5	6.7	0	7.5	6.1

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	Strath Rd From North					New Market Rd From East					Strath Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	7	1	15	0	23	34	107	1	0	142	8	2	5	0	15	**4**	78	4	0	86	266
07:15 AM	**13**	**3**	**41**	0	**57**	**45**	115	3	0	163	9	**5**	3	0	17	1	111	2	0	114	351
07:30 AM	3	2	39	0	44	37	**135**	**4**	0	**176**	**14**	4	**13**	0	**31**	3	**122**	**6**	0	**131**	**382**
07:45 AM	7	3	23	0	33	35	123	3	0	161	12	4	5	0	21	2	95	1	0	98	313
Total Volume	30	9	118	0	157	151	480	11	0	642	43	15	26	0	84	10	406	13	0	429	1312
% App. Total	19.1	5.7	75.2	0		23.5	74.8	1.7	0		51.2	17.9	31	0		2.3	94.6	3	0		
PHF	.577	.750	.720	.000	.689	.839	.889	.688	.000	.912	.768	.750	.500	.000	.677	.625	.832	.542	.000	.819	.859
Passenger Veh	29	9	114	0	152	148	450	11	0	609	41	14	23	0	78	10	380	10	0	400	1239
% Passenger Veh	96.7	100	96.6	0	96.8	98.0	93.8	100	0	94.9	95.3	93.3	88.5	0	92.9	100	93.6	76.9	0	93.2	94.4
Trucks	1	0	4	0	5	3	30	0	0	33	2	1	3	0	6	0	26	3	0	29	73
% Trucks	3.3	0	3.4	0	3.2	2.0	6.3	0	0	5.1	4.7	6.7	11.5	0	7.1	0	6.4	23.1	0	6.8	5.6

Data Collection Group

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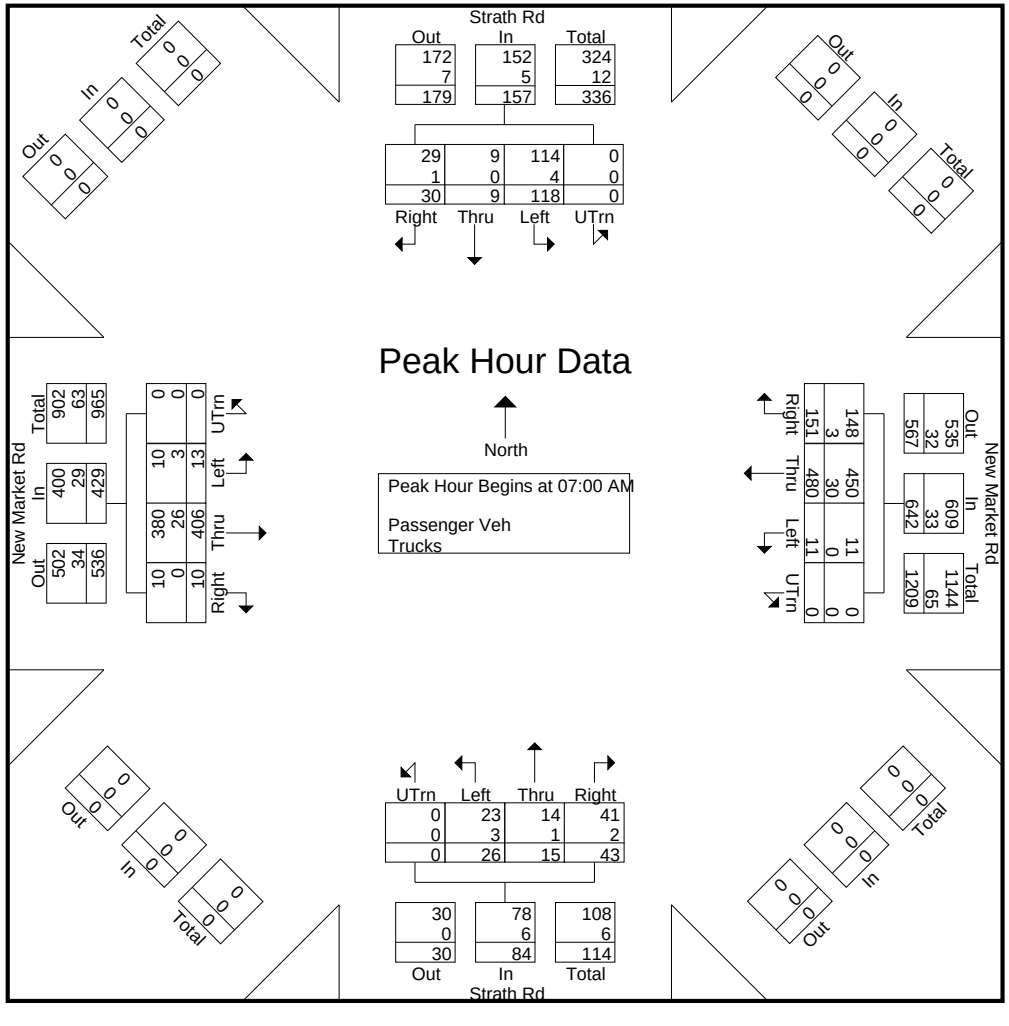

Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Strath
Site Code :
Start Date : 12/5/2023

	Strath Rd From North					New Market Rd From East					Strath Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:45 PM																					
12:45 PM	3	1	6	0	10	6	40	**13**	0	59	14	6	**5**	0	25	**8**	**58**	**4**	0	**70**	164
01:00 PM	**6**	5	10	0	21	8	50	9	0	67	**19**	5	5	0	**29**	4	33	3	0	40	157
01:15 PM	1	**6**	**15**	0	22	**13**	59	7	0	79	12	**9**	5	0	26	2	58	3	0	63	**190**
01:30 PM	6	5	12	0	**23**	12	**60**	9	0	**81**	10	3	3	0	16	3	46	3	0	52	172
Total Volume	16	17	43	0	76	39	209	38	0	286	55	23	18	0	96	17	195	13	0	225	683
% App. Total	21.1	22.4	56.6	0		13.6	73.1	13.3	0		57.3	24	18.8	0		7.6	86.7	5.8	0		
PHF	.667	.708	.717	.000	.826	.750	.871	.731	.000	.883	.724	.639	.900	.000	.828	.531	.841	.813	.000	.804	.899
Passenger Veh	15	15	43	0	73	34	194	34	0	262	52	22	17	0	91	17	167	12	0	196	622
% Passenger Veh	93.8	88.2	100	0	96.1	87.2	92.8	89.5	0	91.6	94.5	95.7	94.4	0	94.8	100	85.6	92.3	0	87.1	91.1
Trucks	1	2	0	0	3	5	15	4	0	24	3	1	1	0	5	0	28	1	0	29	61
% Trucks	6.3	11.8	0	0	3.9	12.8	7.2	10.5	0	8.4	5.5	4.3	5.6	0	5.2	0	14.4	7.7	0	12.9	8.9

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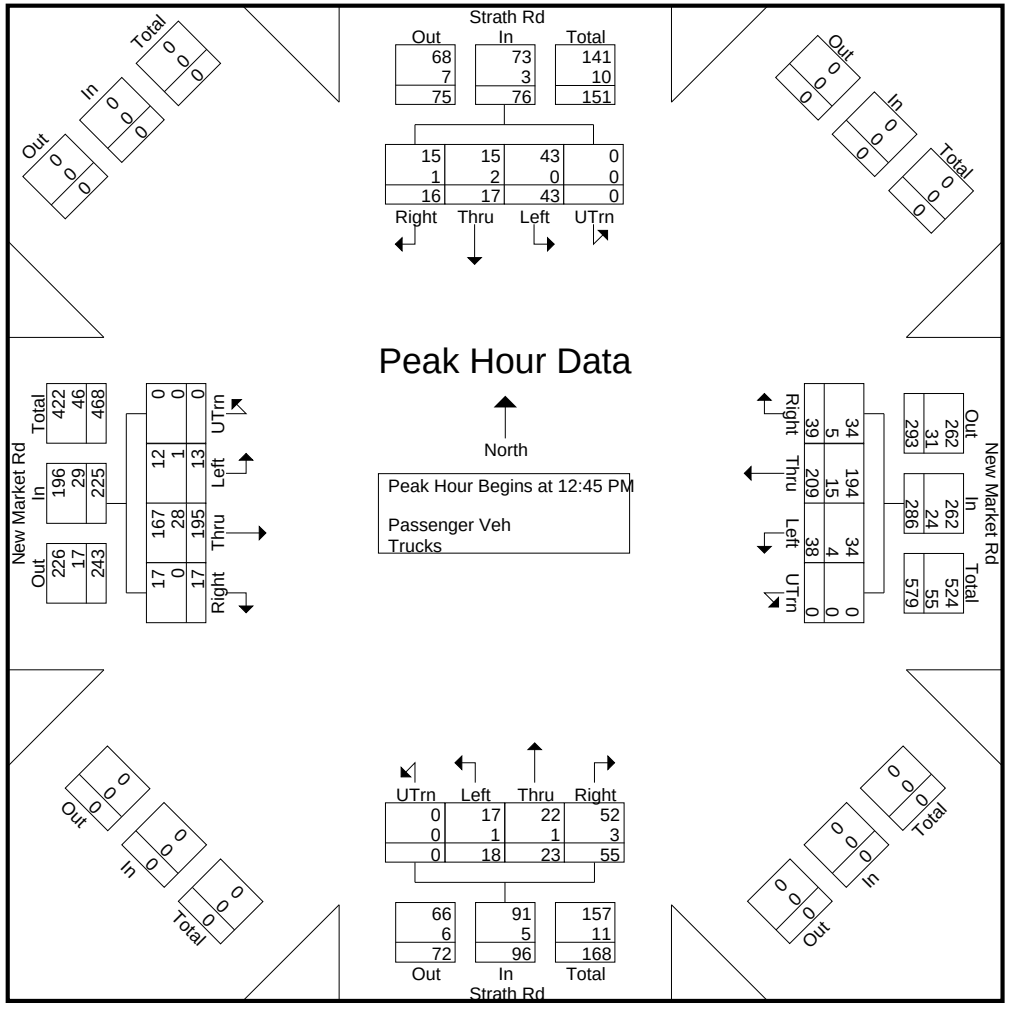

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File Name : New Market and Strath
Site Code :
Start Date : 12/5/2023

	Strath Rd From North					New Market Rd From East					Strath Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	4	**13**	41	0	58	22	**119**	**21**	0	**162**	**25**	4	7	0	36	**6**	96	4	0	106	362
04:45 PM	4	4	42	0	50	**30**	110	14	0	154	19	4	**16**	0	39	2	100	3	0	105	348
05:00 PM	1	12	40	0	53	18	94	11	0	123	24	5	12	0	**41**	4	**108**	3	0	**115**	332
05:15 PM	**8**	6	**57**	0	**71**	20	117	20	0	157	18	**12**	7	0	37	5	98	**5**	0	108	**373**
Total Volume	17	35	180	0	232	90	440	66	0	596	86	25	42	0	153	17	402	15	0	434	1415
% App. Total	7.3	15.1	77.6	0		15.1	73.8	11.1	0		56.2	16.3	27.5	0		3.9	92.6	3.5	0		
PHF	.531	.673	.789	.000	.817	.750	.924	.786	.000	.920	.860	.521	.656	.000	.933	.708	.931	.750	.000	.943	.948
Passenger Veh	16	35	177	0	228	87	416	64	0	567	81	25	42	0	148	16	392	13	0	421	1364
% Passenger Veh	94.1	100	98.3	0	98.3	96.7	94.5	97.0	0	95.1	94.2	100	100	0	96.7	94.1	97.5	86.7	0	97.0	96.4
Trucks	1	0	3	0	4	3	24	2	0	29	5	0	0	0	5	1	10	2	0	13	51
% Trucks	5.9	0	1.7	0	1.7	3.3	5.5	3.0	0	4.9	5.8	0	0	0	3.3	5.9	2.5	13.3	0	3.0	3.6

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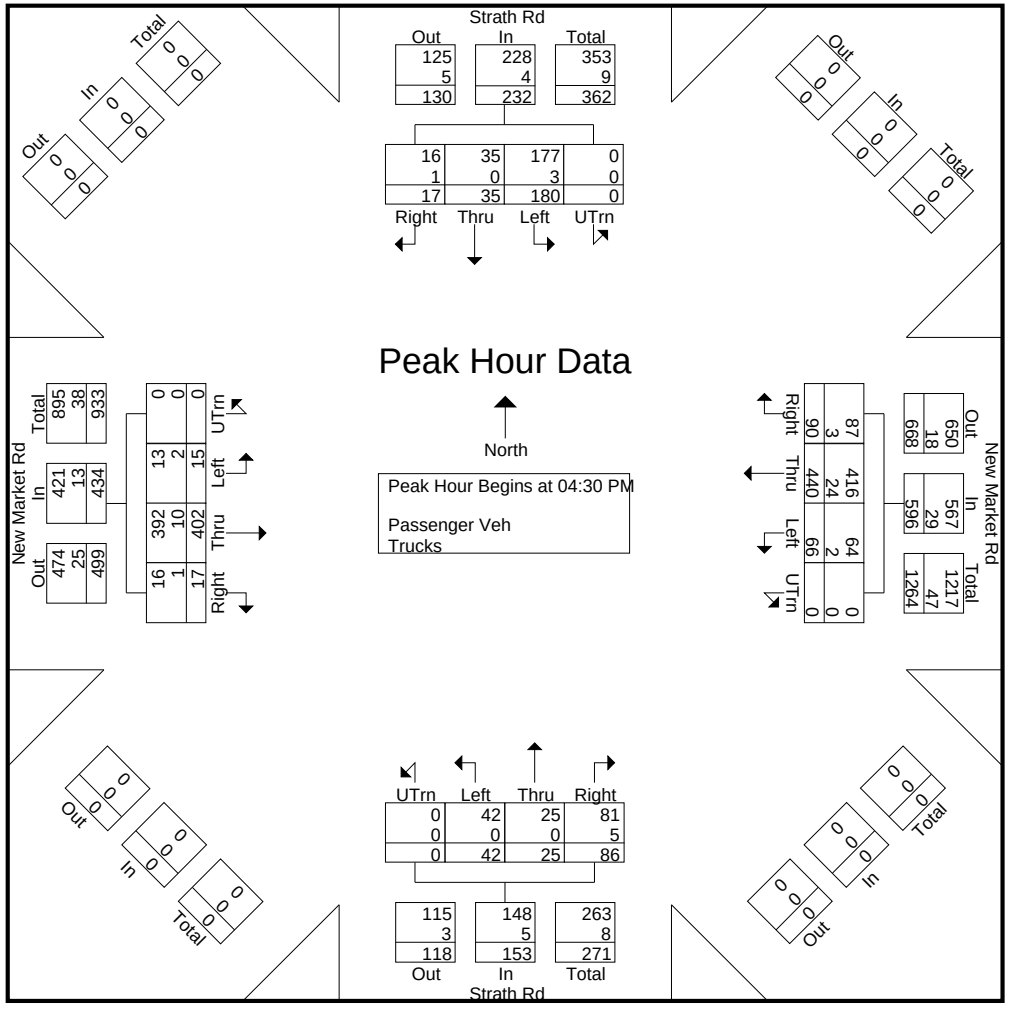

Data Collection Group

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File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023
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Groups Printed- Peds

	Wood Mill Dr From North						New Market Rd From East						Buffin Rd From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
08:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
10:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
10:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
10:45 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6
11:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
12:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
12:30 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
01:00 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
01:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
01:45 PM	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6
Total	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10
02:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
02:15 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
02:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
02:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6
03:00 PM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
03:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
03:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
03:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8

Data Collection Group

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File Name : New Market and Buffin
Site Code :
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Groups Printed- Peds

	Wood Mill Dr From North						New Market Rd From East						Buffin Rd From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Grand Total	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	41
Apprch %	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0					
Total %																									100	0	

Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023

Groups Printed- Passenger Veh - Trucks

	Wood Mill Dr From North					New Market Rd From East					Buffin Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
07:00 AM	2	1	1	0	4	0	134	14	0	148	4	0	3	0	7	12	88	0	0	100	259
07:15 AM	2	0	4	0	6	0	156	21	0	177	15	1	10	0	26	43	123	0	0	166	375
07:30 AM	1	1	3	0	5	2	128	26	0	156	35	0	37	0	72	48	130	0	0	178	411
07:45 AM	1	0	0	0	1	3	142	4	0	149	9	3	20	0	32	8	122	1	0	131	313
Total	6	2	8	0	16	5	560	65	0	630	63	4	70	0	137	111	463	1	0	575	1358
08:00 AM	1	0	4	0	5	1	115	5	0	121	4	0	1	0	5	7	96	0	0	103	234
08:15 AM	2	0	3	0	5	3	106	3	0	112	3	0	3	0	6	4	90	0	0	94	217
08:30 AM	3	0	1	0	4	0	111	2	0	113	2	0	4	0	6	1	73	0	0	74	197
08:45 AM	1	0	0	0	1	0	97	2	0	99	5	0	4	0	9	1	76	1	0	78	187
Total	7	0	8	0	15	4	429	12	0	445	14	0	12	0	26	13	335	1	0	349	835
09:00 AM	0	0	1	0	1	0	71	6	0	77	2	0	2	0	4	4	58	0	0	62	144
09:15 AM	0	0	0	0	0	2	64	3	0	69	2	0	8	0	10	5	70	0	0	75	154
09:30 AM	1	0	3	0	4	1	66	4	0	71	5	0	4	0	9	1	70	0	0	71	155
09:45 AM	1	0	0	0	1	1	60	3	0	64	3	0	3	0	6	2	61	1	0	64	135
Total	2	0	4	0	6	4	261	16	0	281	12	0	17	0	29	12	259	1	0	272	588
10:00 AM	1	0	1	0	2	1	62	1	0	64	2	0	4	0	6	5	72	0	0	77	149
10:15 AM	1	0	2	0	3	0	73	2	0	75	1	0	2	0	3	4	59	1	0	64	145
10:30 AM	0	0	1	0	1	0	50	5	0	55	2	0	4	0	6	4	60	0	0	64	126
10:45 AM	0	0	2	0	2	0	50	3	0	53	3	0	6	0	9	4	39	1	0	44	108
Total	2	0	6	0	8	1	235	11	0	247	8	0	16	0	24	17	230	2	0	249	528
11:00 AM	3	0	2	0	5	2	48	2	0	52	0	0	6	0	6	6	54	1	0	61	124
11:15 AM	0	0	2	0	2	0	63	4	0	67	3	0	7	0	10	7	58	3	0	68	147
11:30 AM	0	0	1	0	1	3	46	3	0	52	4	0	6	0	10	2	65	3	0	70	133
11:45 AM	0	0	1	0	1	1	64	1	0	66	1	0	6	0	7	2	50	2	0	54	128
Total	3	0	6	0	9	6	221	10	0	237	8	0	25	0	33	17	227	9	0	253	532
12:00 PM	1	0	0	0	1	2	58	2	0	62	2	0	4	0	6	4	62	1	0	67	136
12:15 PM	1	0	0	0	1	1	62	5	0	68	8	0	5	0	13	2	70	0	0	72	154
12:30 PM	1	0	2	0	3	2	61	3	0	66	1	0	3	0	4	7	69	2	0	78	151
12:45 PM	2	0	2	0	4	4	56	0	0	60	2	0	1	0	3	4	72	1	0	77	144
Total	5	0	4	0	9	9	237	10	0	256	13	0	13	0	26	17	273	4	0	294	585
01:00 PM	4	0	3	0	7	2	60	2	0	64	8	0	4	0	12	6	58	0	0	64	147
01:15 PM	0	0	0	0	0	1	71	3	0	75	5	0	3	0	8	6	58	2	0	66	149
01:30 PM	2	1	4	0	7	5	75	3	0	83	2	0	7	0	9	13	52	2	0	67	166
01:45 PM	3	0	3	0	6	2	61	3	0	66	3	0	1	0	4	6	47	1	0	54	130
Total	9	1	10	0	20	10	267	11	0	288	18	0	15	0	33	31	215	5	0	251	592
02:00 PM	3	1	0	0	4	1	75	5	0	81	3	0	11	0	14	22	67	2	0	91	190
02:15 PM	1	1	0	0	2	8	71	6	0	85	14	6	47	0	67	14	81	0	0	95	249

Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023
Page No : 2

Groups Printed- Passenger Veh - Trucks

	Wood Mill Dr From North					New Market Rd From East					Buffin Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
02:30 PM	0	1	2	0	3	0	69	3	0	72	3	0	5	0	8	7	89	4	0	100	183
02:45 PM	1	0	0	0	1	2	85	2	0	89	1	1	8	0	10	5	94	2	0	101	201
Total	5	3	2	0	10	11	300	16	0	327	21	7	71	0	99	48	331	8	0	387	823
03:00 PM	1	0	0	0	1	3	82	2	0	87	3	10	4	0	17	2	92	2	0	96	201
03:15 PM	3	1	0	0	4	5	96	2	0	103	3	1	3	0	7	4	134	2	0	140	254
03:30 PM	3	0	3	0	6	3	98	1	0	102	12	0	11	0	23	1	120	2	0	123	254
03:45 PM	3	0	2	0	5	4	94	4	0	102	4	0	9	0	13	4	164	0	0	168	288
Total	10	1	5	0	16	15	370	9	0	394	22	11	27	0	60	11	510	6	0	527	997
04:00 PM	1	0	1	0	2	5	109	1	0	115	3	0	8	0	11	2	145	1	0	148	276
04:15 PM	1	0	0	0	1	5	145	4	0	154	4	0	1	0	5	2	173	0	0	175	335
04:30 PM	3	0	3	0	6	4	148	2	0	154	7	0	2	0	9	4	148	5	0	157	326
04:45 PM	1	0	2	0	3	3	140	3	0	146	3	0	7	0	10	8	156	0	0	164	323
Total	6	0	6	0	12	17	542	10	0	569	17	0	18	0	35	16	622	6	0	644	1260
05:00 PM	2	1	1	0	4	1	121	2	0	124	4	0	2	0	6	4	161	1	0	166	300
05:15 PM	4	0	2	0	6	4	151	2	0	157	2	0	2	0	4	4	170	2	0	176	343
05:30 PM	1	1	2	0	4	6	140	3	0	149	1	0	4	0	5	3	156	3	0	162	320
05:45 PM	1	0	1	0	2	9	147	6	1	163	0	0	2	0	2	5	130	4	0	139	306
Total	8	2	6	0	16	20	559	13	1	593	7	0	10	0	17	16	617	10	0	643	1269
06:00 PM	1	0	3	0	4	2	124	5	0	131	3	0	2	0	5	5	114	3	0	122	262
06:15 PM	0	0	1	0	1	2	104	2	0	108	1	0	4	0	5	4	94	2	0	100	214
06:30 PM	2	0	3	0	5	2	78	4	0	84	0	0	1	0	1	2	83	0	0	85	175
06:45 PM	0	0	1	0	1	3	74	3	0	80	2	0	1	0	3	6	66	0	0	72	156
Total	3	0	8	0	11	9	380	14	0	403	6	0	8	0	14	17	357	5	0	379	807
Grand Total	66	9	73	0	148	111	4361	197	1	4670	209	22	302	0	533	326	4439	58	0	4823	10174
Apprch %	44.6	6.1	49.3	0		2.4	93.4	4.2	0		39.2	4.1	56.7	0		6.8	92	1.2	0		
Total %	0.6	0.1	0.7	0	1.5	1.1	42.9	1.9	0	45.9	2.1	0.2	3	0	5.2	3.2	43.6	0.6	0	47.4	
Passenger Veh	61	9	68	0	138	109	4103	175	1	4388	177	21	262	0	460	276	4196	57	0	4529	9515
% Passenger Veh	92.4	100	93.2	0	93.2	98.2	94.1	88.8	100	94	84.7	95.5	86.8	0	86.3	84.7	94.5	98.3	0	93.9	93.5
Trucks	5	0	5	0	10	2	258	22	0	282	32	1	40	0	73	50	243	1	0	294	659
% Trucks	7.6	0	6.8	0	6.8	1.8	5.9	11.2	0	6	15.3	4.5	13.2	0	13.7	15.3	5.5	1.7	0	6.1	6.5

Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023

	Wood Mill Dr From North					New Market Rd From East					Buffin Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	**2**	**1**	1	0	4	0	134	14	0	148	4	0	3	0	7	12	88	0	0	100	259
07:15 AM	2	0	**4**	0	**6**	0	**156**	21	0	**177**	15	1	10	0	26	43	123	0	0	166	375
07:30 AM	1	1	3	0	5	2	128	**26**	0	156	**35**	0	**37**	0	**72**	**48**	**130**	0	0	**178**	**411**
07:45 AM	1	0	0	0	1	**3**	142	4	0	149	9	**3**	20	0	32	8	122	**1**	0	131	313
Total Volume	6	2	8	0	16	5	560	65	0	630	63	4	70	0	137	111	463	1	0	575	1358
% App. Total	37.5	12.5	50	0		0.8	88.9	10.3	0		46	2.9	51.1	0		19.3	80.5	0.2	0		
PHF	.750	.500	.500	.000	.667	.417	.897	.625	.000	.890	.450	.333	.473	.000	.476	.578	.890	.250	.000	.808	.826
Passenger Veh	5	2	7	0	14	5	539	62	0	606	57	4	60	0	121	95	447	1	0	543	1284
% Passenger Veh	83.3	100	87.5	0	87.5	100	96.3	95.4	0	96.2	90.5	100	85.7	0	88.3	85.6	96.5	100	0	94.4	94.6
Trucks	1	0	1	0	2	0	21	3	0	24	6	0	10	0	16	16	16	0	0	32	74
% Trucks	16.7	0	12.5	0	12.5	0	3.8	4.6	0	3.8	9.5	0	14.3	0	11.7	14.4	3.5	0	0	5.6	5.4

Data Collection Group

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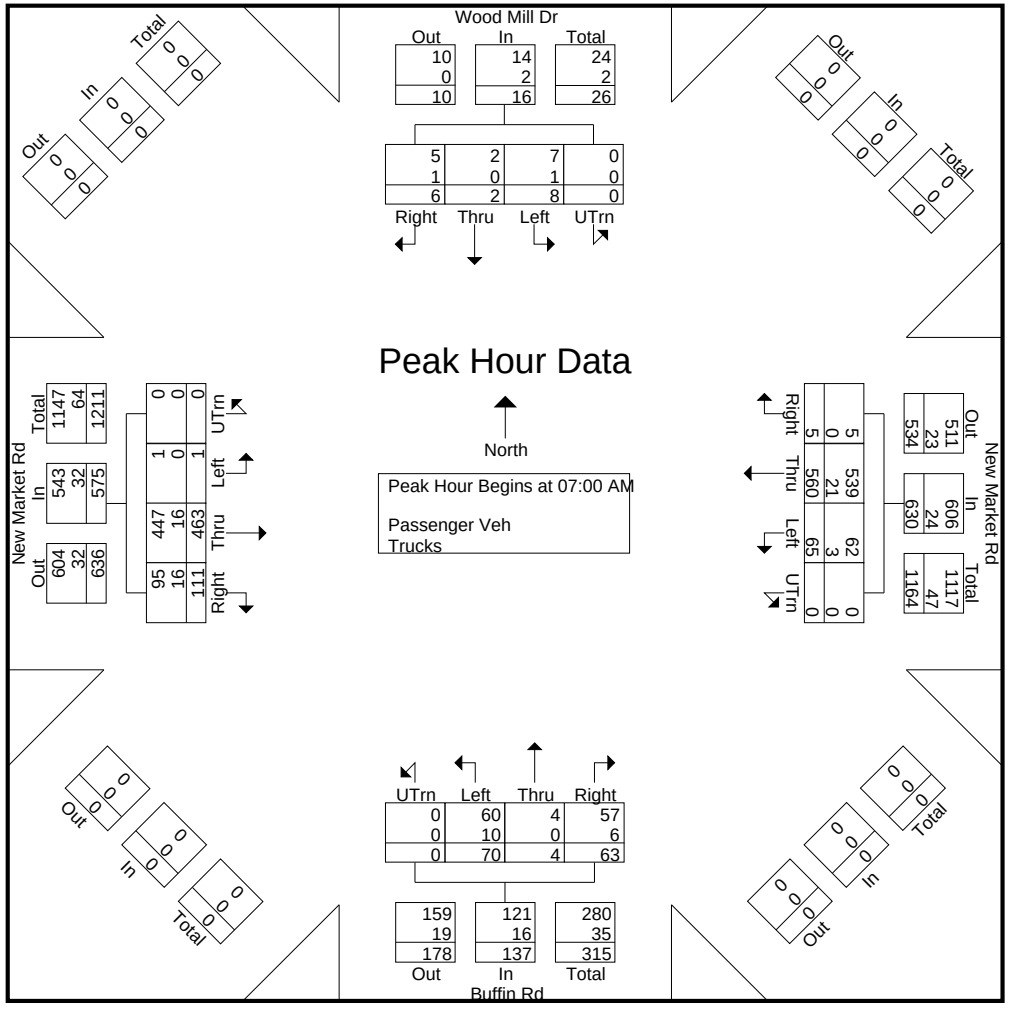
File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023
Page No : 4



Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023

	Wood Mill Dr From North					New Market Rd From East					Buffin Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:45 PM																					
12:45 PM	2	0	2	0	4	4	56	0	0	60	2	0	1	0	3	4	**72**	1	0	**77**	144
01:00 PM	**4**	0	3	0	**7**	2	60	2	0	64	**8**	0	4	0	**12**	6	58	0	0	64	147
01:15 PM	0	0	0	0	0	1	71	**3**	0	75	5	0	3	0	8	6	58	**2**	0	66	149
01:30 PM	2	**1**	**4**	0	7	**5**	**75**	3	0	**83**	2	0	**7**	0	9	**13**	52	2	0	67	**166**
Total Volume	8	1	9	0	18	12	262	8	0	282	17	0	15	0	32	29	240	5	0	274	606
% App. Total	44.4	5.6	50	0		4.3	92.9	2.8	0		53.1	0	46.9	0		10.6	87.6	1.8	0		
PHF	.500	.250	.563	.000	.643	.600	.873	.667	.000	.849	.531	.000	.536	.000	.667	.558	.833	.625	.000	.890	.913
Passenger Veh	8	1	9	0	18	11	238	6	0	255	14	0	14	0	28	24	217	5	0	246	547
% Passenger Veh	100	100	100	0	100	91.7	90.8	75.0	0	90.4	82.4	0	93.3	0	87.5	82.8	90.4	100	0	89.8	90.3
Trucks	0	0	0	0	0	1	24	2	0	27	3	0	1	0	4	5	23	0	0	28	59
% Trucks	0	0	0	0	0	8.3	9.2	25.0	0	9.6	17.6	0	6.7	0	12.5	17.2	9.6	0	0	10.2	9.7

Data Collection Group

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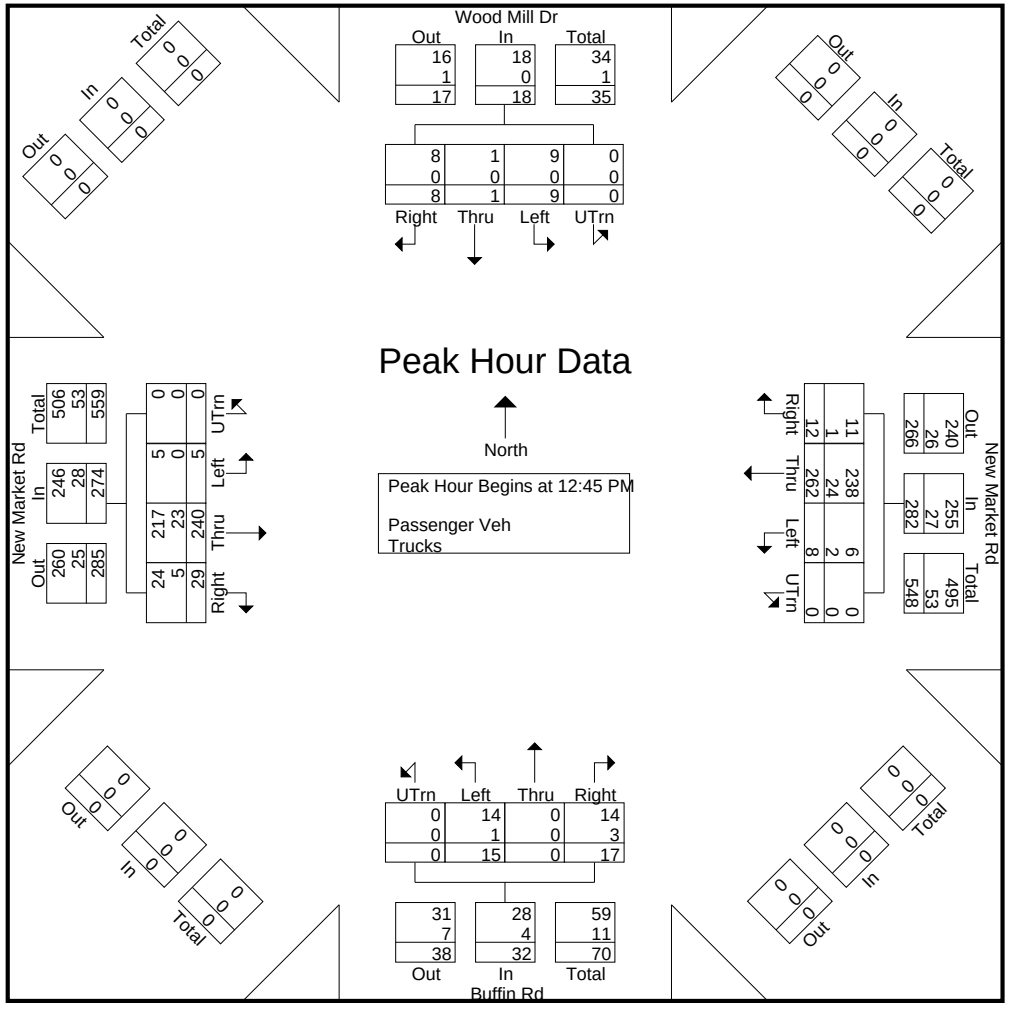
File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023
Page No : 6



Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Buffin
Site Code :
Start Date : 12/5/2023

	Wood Mill Dr From North					New Market Rd From East					Buffin Rd From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	3	0	**3**	0	**6**	**4**	148	2	0	154	**7**	0	2	0	9	4	148	**5**	0	157	326
04:45 PM	1	0	2	0	3	3	140	**3**	0	146	3	0	**7**	0	**10**	**8**	156	0	0	164	323
05:00 PM	2	**1**	1	0	4	1	121	2	0	124	4	0	2	0	6	4	161	1	0	166	300
05:15 PM	**4**	0	2	0	6	4	**151**	2	0	**157**	2	0	2	0	4	4	**170**	2	0	**176**	**343**
Total Volume	10	1	8	0	19	12	560	9	0	581	16	0	13	0	29	20	635	8	0	663	1292
% App. Total	52.6	5.3	42.1	0		2.1	96.4	1.5	0		55.2	0	44.8	0		3	95.8	1.2	0		
PHF	.625	.250	.667	.000	.792	.750	.927	.750	.000	.925	.571	.000	.464	.000	.725	.625	.934	.400	.000	.942	.942
Passenger Veh	10	1	7	0	18	12	535	9	0	556	16	0	11	0	27	18	621	8	0	647	1248
% Passenger Veh	100	100	87.5	0	94.7	100	95.5	100	0	95.7	100	0	84.6	0	93.1	90.0	97.8	100	0	97.6	96.6
Trucks	0	0	1	0	1	0	25	0	0	25	0	0	2	0	2	2	14	0	0	16	44
% Trucks	0	0	12.5	0	5.3	0	4.5	0	0	4.3	0	0	15.4	0	6.9	10.0	2.2	0	0	2.4	3.4

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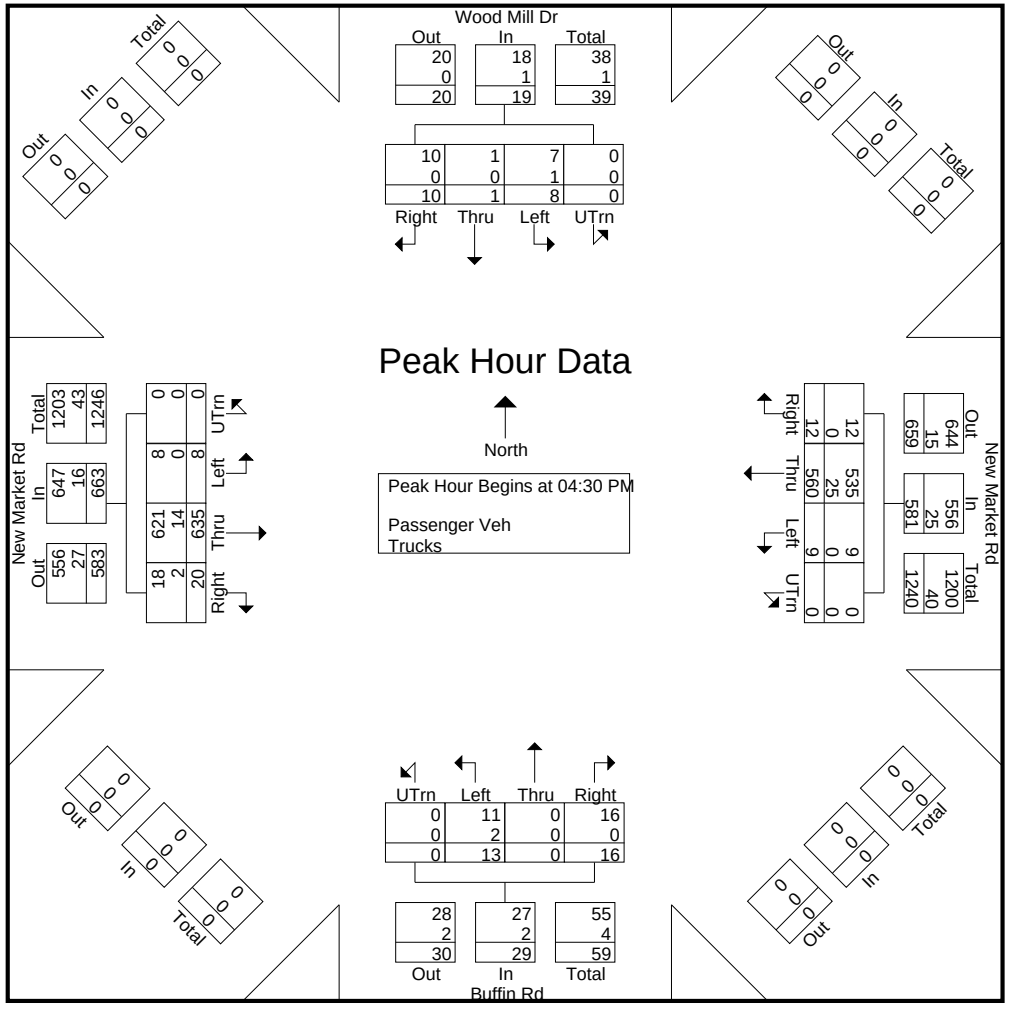

Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Doran
Site Code :
Start Date : 11/28/2023
Page No : 1

Groups Printed- Peds

	Doran Rd From North						New Market Rd From East						From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
05:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Grand Total	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Apprch %	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0					
Total %																									100	0	

Data Collection Group

LSmith@DataCollectionGroup.net

File Name : New Market and Doran
Site Code :
Start Date : 11/28/2023
Page No : 1

Groups Printed- Passenger Veh - Trucks

	Doran Rd From North					New Market Rd From East					From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
07:00 AM	6	0	25	0	31	24	129	0	0	153	0	0	0	0	0	0	99	3	0	102	286
07:15 AM	9	0	24	0	33	20	148	0	0	168	0	0	0	0	0	0	129	3	0	132	333
07:30 AM	11	0	21	0	32	28	152	0	0	180	0	0	0	0	0	0	159	13	0	172	384
07:45 AM	8	0	19	0	27	22	132	0	0	154	0	0	0	0	0	0	126	2	0	128	309
Total	34	0	89	0	123	94	561	0	0	655	0	0	0	0	0	0	513	21	0	534	1312
08:00 AM	7	0	21	0	28	17	139	0	0	156	0	0	0	0	0	0	79	4	0	83	267
08:15 AM	4	0	18	0	22	13	117	0	0	130	0	0	0	0	0	0	92	6	0	98	250
08:30 AM	4	0	13	0	17	21	107	0	0	128	0	0	0	0	0	0	93	4	0	97	242
08:45 AM	6	0	11	0	17	17	87	0	0	104	0	0	0	0	0	0	89	5	0	94	215
Total	21	0	63	0	84	68	450	0	0	518	0	0	0	0	0	0	353	19	0	372	974
09:00 AM	6	0	13	0	19	8	84	0	0	92	0	0	0	0	0	0	82	2	0	84	195
09:15 AM	5	0	13	0	18	12	64	0	0	76	0	0	0	0	0	0	75	1	0	76	170
09:30 AM	4	0	21	0	25	13	83	0	0	96	0	0	0	0	0	0	59	2	0	61	182
09:45 AM	2	0	11	0	13	16	51	0	0	67	0	0	0	0	0	0	64	5	0	69	149
Total	17	0	58	0	75	49	282	0	0	331	0	0	0	0	0	0	280	10	0	290	696
10:00 AM	6	0	9	0	15	13	44	0	0	57	0	0	0	0	0	0	61	1	0	62	134
10:15 AM	8	0	10	0	18	8	70	0	0	78	0	0	0	0	0	0	60	2	0	62	158
10:30 AM	5	0	8	0	13	16	53	0	0	69	0	0	0	0	0	0	61	4	0	65	147
10:45 AM	2	0	10	0	12	10	44	0	0	54	0	0	0	0	0	0	62	3	0	65	131
Total	21	0	37	0	58	47	211	0	0	258	0	0	0	0	0	0	244	10	0	254	570
11:00 AM	5	0	11	0	16	9	39	0	0	48	0	0	0	0	0	0	58	1	0	59	123
11:15 AM	8	0	8	0	16	14	58	0	0	72	0	0	0	0	0	0	54	6	0	60	148
11:30 AM	4	0	15	0	19	18	62	0	0	80	0	0	0	0	0	0	62	5	0	67	166
11:45 AM	4	0	13	0	17	7	52	0	0	59	0	0	0	0	0	0	51	11	0	62	138
Total	21	0	47	0	68	48	211	0	0	259	0	0	0	0	0	0	225	23	0	248	575
12:00 PM	5	0	16	0	21	14	53	0	0	67	0	0	0	0	0	0	70	7	0	77	165
12:15 PM	3	0	12	0	15	9	65	0	0	74	0	0	0	0	0	0	50	2	0	52	141
12:30 PM	1	0	14	0	15	12	62	0	0	74	0	0	0	0	0	0	66	5	0	71	160
12:45 PM	10	0	7	0	17	9	53	0	0	62	0	0	0	0	0	0	60	5	0	65	144
Total	19	0	49	0	68	44	233	0	0	277	0	0	0	0	0	0	246	19	0	265	610
01:00 PM	9	0	8	0	17	13	61	0	0	74	0	0	0	0	0	0	55	6	0	61	152
01:15 PM	5	0	10	0	15	23	62	0	0	85	0	0	0	0	0	0	71	6	0	77	177
01:30 PM	4	0	16	0	20	14	68	0	0	82	0	0	0	0	0	0	74	7	0	81	183
01:45 PM	5	0	6	0	11	14	59	0	0	73	0	0	0	0	0	0	60	4	0	64	148
Total	23	0	40	0	63	64	250	0	0	314	0	0	0	0	0	0	260	23	0	283	660
02:00 PM	1	0	12	0	13	6	68	0	0	74	0	0	0	0	0	0	66	4	0	70	157
02:15 PM	7	0	22	0	29	14	70	0	0	84	0	0	0	0	0	0	97	7	0	104	217

Data Collection Group

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File Name : New Market and Doran
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Groups Printed- Passenger Veh - Trucks

	Doran Rd From North					New Market Rd From East					From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
02:30 PM	6	0	13	0	19	16	75	0	0	91	0	0	0	0	0	0	98	5	0	103	213
02:45 PM	3	0	19	0	22	23	73	0	0	96	0	0	0	0	0	0	99	3	0	102	220
Total	17	0	66	0	83	59	286	0	0	345	0	0	0	0	0	0	360	19	0	379	807
03:00 PM	11	0	16	0	27	22	69	0	0	91	0	0	0	0	0	0	119	7	0	126	244
03:15 PM	6	0	31	0	37	20	96	0	0	116	0	0	0	0	0	0	125	11	0	136	289
03:30 PM	4	0	18	0	22	18	104	0	0	122	0	0	0	0	0	0	124	11	0	135	279
03:45 PM	9	0	19	0	28	13	93	0	0	106	0	0	0	0	0	0	130	13	0	143	277
Total	30	0	84	0	114	73	362	0	0	435	0	0	0	0	0	0	498	42	0	540	1089
04:00 PM	8	0	14	0	22	18	103	0	0	121	0	0	0	0	0	0	151	6	0	157	300
04:15 PM	9	0	23	0	32	22	123	0	0	145	0	0	0	0	0	0	160	10	0	170	347
04:30 PM	3	0	8	0	11	20	128	0	0	148	0	0	0	0	0	0	153	8	0	161	320
04:45 PM	10	0	22	0	32	17	153	0	0	170	0	0	0	0	0	0	146	9	0	155	357
Total	30	0	67	0	97	77	507	0	0	584	0	0	0	0	0	0	610	33	0	643	1324
05:00 PM	6	0	14	0	20	23	143	0	0	166	0	0	0	0	0	0	150	13	0	163	349
05:15 PM	10	0	16	0	26	18	145	0	0	163	0	0	0	0	0	0	178	5	0	183	372
05:30 PM	7	0	13	0	20	21	159	0	0	180	0	0	0	0	0	0	155	12	0	167	367
05:45 PM	9	0	11	0	20	30	133	0	0	163	0	0	0	0	0	0	131	13	0	144	327
Total	32	0	54	0	86	92	580	0	0	672	0	0	0	0	0	0	614	43	0	657	1415
06:00 PM	1	0	15	0	16	23	118	0	0	141	0	0	0	0	0	0	122	8	0	130	287
06:15 PM	11	0	11	0	22	24	94	0	0	118	0	0	0	0	0	0	90	14	0	104	244
06:30 PM	8	0	9	0	17	21	66	0	0	87	0	0	0	0	0	0	70	5	0	75	179
06:45 PM	5	0	9	0	14	13	69	0	0	82	0	0	0	0	0	0	60	3	0	63	159
Total	25	0	44	0	69	81	347	0	0	428	0	0	0	0	0	0	342	30	0	372	869
Grand Total	290	0	698	0	988	796	4280	0	0	5076	0	0	0	0	0	0	4545	292	0	4837	10901
Apprch %	29.4	0	70.6	0		15.7	84.3	0	0		0	0	0	0		0	94	6	0		
Total %	2.7	0	6.4	0	9.1	7.3	39.3	0	0	46.6	0	0	0	0	0	0	41.7	2.7	0	44.4	
Passenger Veh	283	0	667	0	950	776	4018	0	0	4794	0	0	0	0	0	0	4283	277	0	4560	10304
% Passenger Veh	97.6	0	95.6	0	96.2	97.5	93.9	0	0	94.4	0	0	0	0	0	0	94.2	94.9	0	94.3	94.5
Trucks	7	0	31	0	38	20	262	0	0	282	0	0	0	0	0	0	262	15	0	277	597
% Trucks	2.4	0	4.4	0	3.8	2.5	6.1	0	0	5.6	0	0	0	0	0	0	5.8	5.1	0	5.7	5.5

Data Collection Group

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File Name : New Market and Doran
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	Doran Rd From North					New Market Rd From East					From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	6	0	**25**	0	31	24	129	0	0	153	0	0	0	0	0	0	99	3	0	102	286
07:15 AM	9	0	24	0	**33**	20	148	0	0	168	0	0	0	0	0	0	129	3	0	132	333
07:30 AM	**11**	0	21	0	32	**28**	**152**	0	0	**180**	0	0	0	0	0	0	**159**	**13**	0	**172**	**384**
07:45 AM	8	0	19	0	27	22	132	0	0	154	0	0	0	0	0	0	126	2	0	128	309
Total Volume	34	0	89	0	123	94	561	0	0	655	0	0	0	0	0	0	513	21	0	534	1312
% App. Total	27.6	0	72.4	0		14.4	85.6	0	0		0	0	0	0		0	96.1	3.9	0		
PHF	.773	.000	.890	.000	.932	.839	.923	.000	.000	.910	.000	.000	.000	.000	.000	.000	.807	.404	.000	.776	.854
Passenger Veh	34	0	88	0	122	92	527	0	0	619	0	0	0	0	0	0	489	19	0	508	1249
% Passenger Veh	100	0	98.9	0	99.2	97.9	93.9	0	0	94.5	0	0	0	0	0	0	95.3	90.5	0	95.1	95.2
Trucks	0	0	1	0	1	2	34	0	0	36	0	0	0	0	0	0	24	2	0	26	63
% Trucks	0	0	1.1	0	0.8	2.1	6.1	0	0	5.5	0	0	0	0	0	0	4.7	9.5	0	4.9	4.8

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File Name : New Market and Doran
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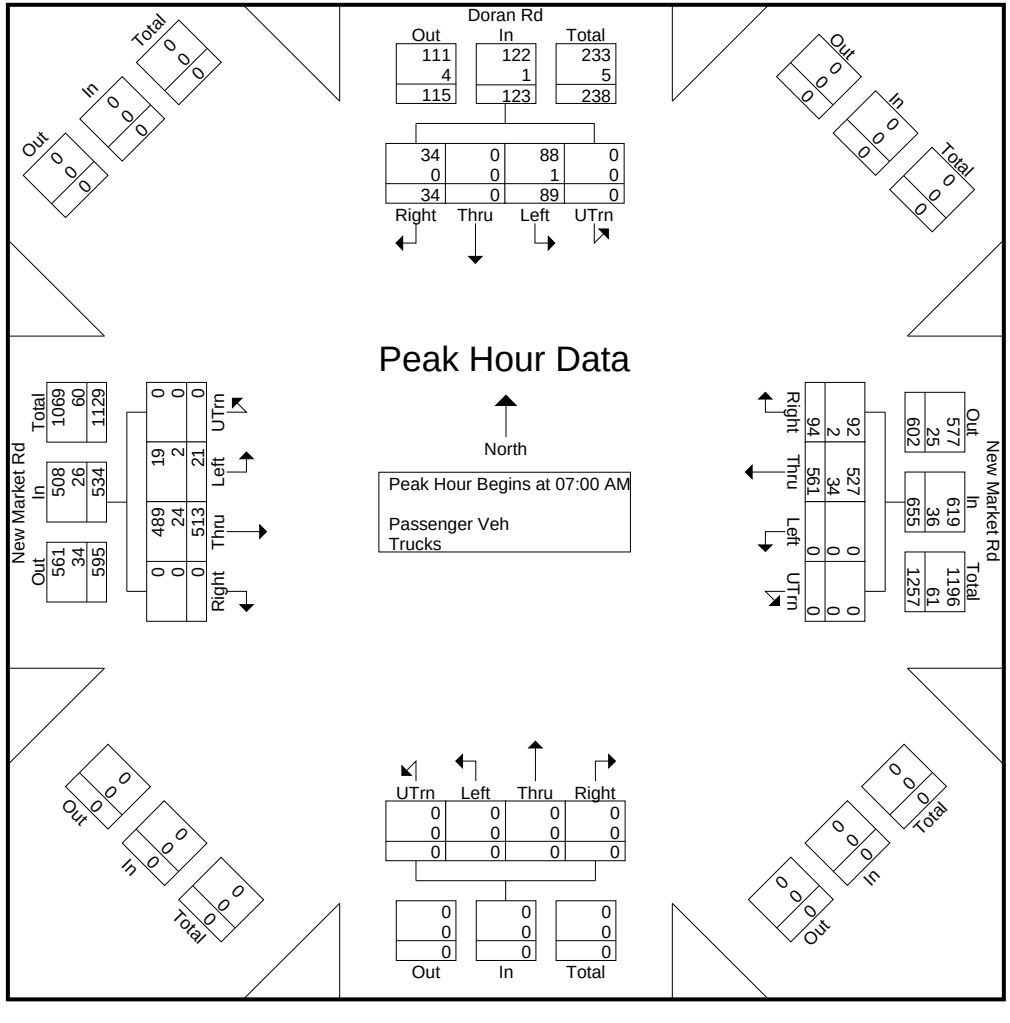

Data Collection Group

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File Name : New Market and Doran
Site Code :
Start Date : 11/28/2023

	Doran Rd From North					New Market Rd From East					From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	**9**	0	8	0	17	13	61	0	0	74	0	0	0	0	0	0	55	6	0	61	152
01:15 PM	5	0	10	0	15	**23**	62	0	0	**85**	0	0	0	0	0	0	71	6	0	77	177
01:30 PM	4	0	**16**	0	**20**	14	**68**	0	0	82	0	0	0	0	0	0	**74**	**7**	0	**81**	**183**
01:45 PM	5	0	6	0	11	14	59	0	0	73	0	0	0	0	0	0	60	4	0	64	148
Total Volume	23	0	40	0	63	64	250	0	0	314	0	0	0	0	0	0	260	23	0	283	660
% App. Total	36.5	0	63.5	0		20.4	79.6	0	0		0	0	0	0		0	91.9	8.1	0		
PHF	.639	.000	.625	.000	.788	.696	.919	.000	.000	.924	.000	.000	.000	.000	.000	.000	.878	.821	.000	.873	.902
Passenger Veh	22	0	36	0	58	62	214	0	0	276	0	0	0	0	0	0	238	23	0	261	595
% Passenger Veh	95.7	0	90.0	0	92.1	96.9	85.6	0	0	87.9	0	0	0	0	0	0	91.5	100	0	92.2	90.2
Trucks	1	0	4	0	5	2	36	0	0	38	0	0	0	0	0	0	22	0	0	22	65
% Trucks	4.3	0	10.0	0	7.9	3.1	14.4	0	0	12.1	0	0	0	0	0	0	8.5	0	0	7.8	9.8

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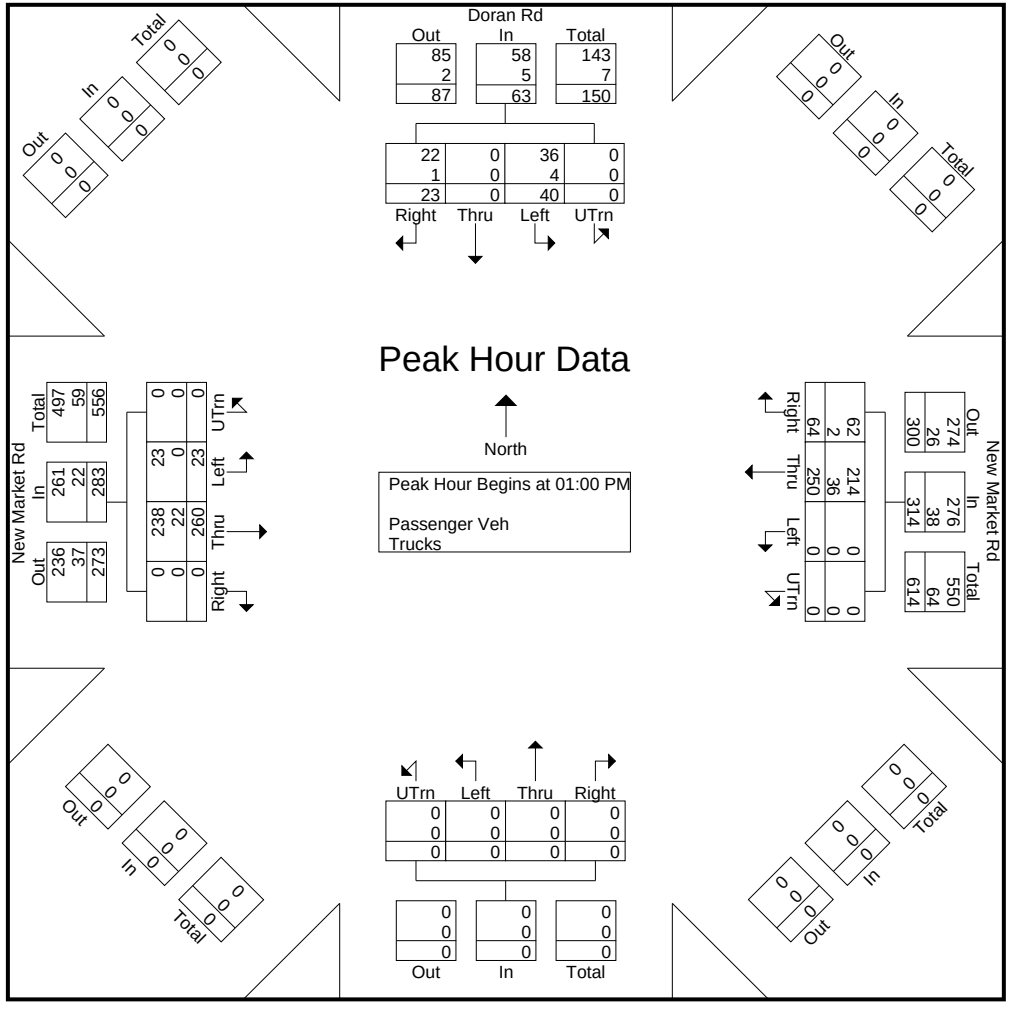

Data Collection Group

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File Name : New Market and Doran
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	Doran Rd From North					New Market Rd From East					From South					New Market Rd From West					
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**10**	0	**22**	0	**32**	17	153	0	0	170	0	0	0	0	0	0	146	9	0	155	357
05:00 PM	6	0	14	0	20	**23**	143	0	0	166	0	0	0	0	0	0	150	**13**	0	163	349
05:15 PM	10	0	16	0	26	18	145	0	0	163	0	0	0	0	0	0	**178**	5	0	**183**	**372**
05:30 PM	7	0	13	0	20	21	**159**	0	0	**180**	0	0	0	0	0	0	155	12	0	167	367
Total Volume	33	0	65	0	98	79	600	0	0	679	0	0	0	0	0	0	629	39	0	668	1445
% App. Total	33.7	0	66.3	0		11.6	88.4	0	0		0	0	0	0		0	94.2	5.8	0		
PHF	.825	.000	.739	.000	.766	.859	.943	.000	.000	.943	.000	.000	.000	.000	.000	.000	.883	.750	.000	.913	.971
Passenger Veh	33	0	63	0	96	79	586	0	0	665	0	0	0	0	0	0	617	39	0	656	1417
% Passenger Veh	100	0	96.9	0	98.0	100	97.7	0	0	97.9	0	0	0	0	0	0	98.1	100	0	98.2	98.1
Trucks	0	0	2	0	2	0	14	0	0	14	0	0	0	0	0	0	12	0	0	12	28
% Trucks	0	0	3.1	0	2.0	0	2.3	0	0	2.1	0	0	0	0	0	0	1.9	0	0	1.8	1.9

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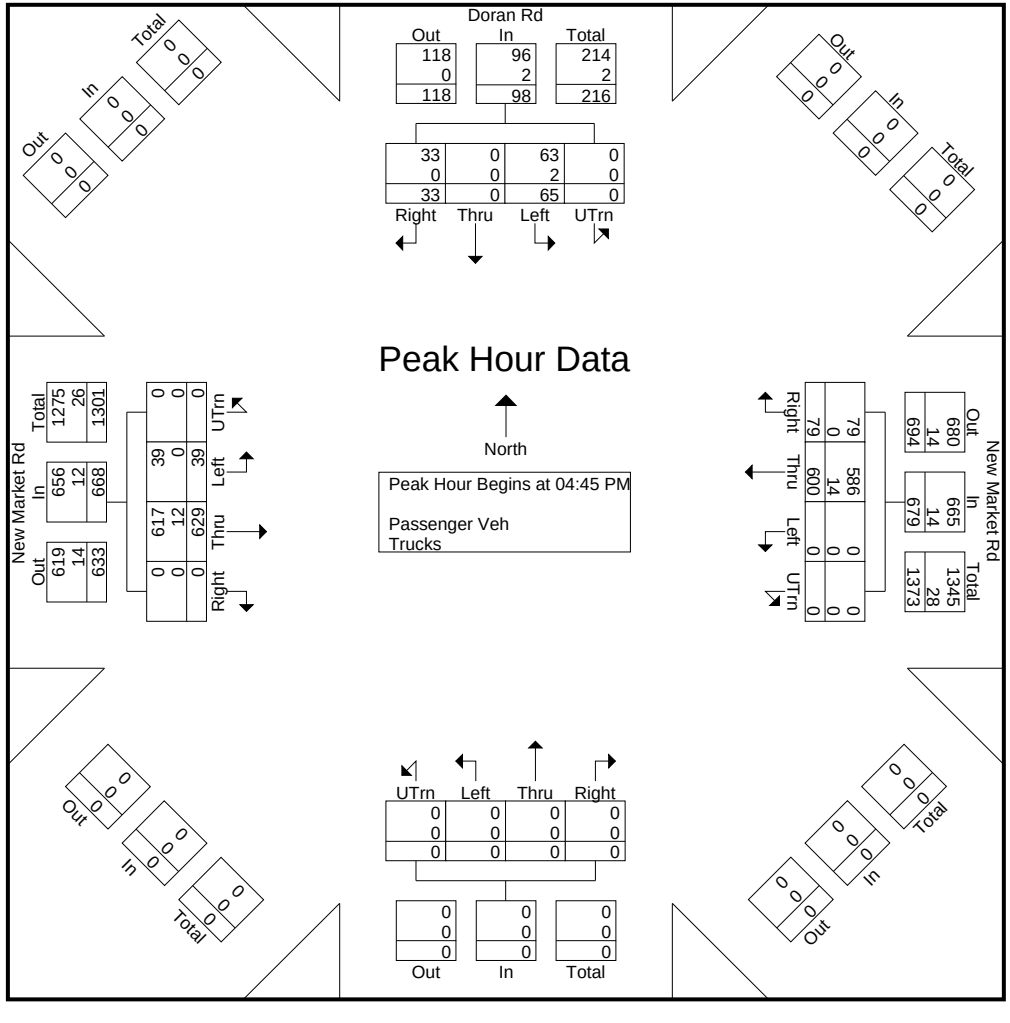

Data Collection Group

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File Name : New Market and Four Mile
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Start Date : 12/5/2023
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Groups Printed- Peds

	Four Mile Run Pkwy From North						New Market Rd From East						From South						New Market Rd From West								
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
Apprch %	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0						
Total %																									100	0	

Data Collection Group

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File Name : New Market and Four Mile
Site Code :
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Groups Printed- Passenger Veh - Trucks

	Four Mile Run Pkwy From North					New Market Rd From East					From South					New Market Rd From West							
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	15	0	18	0	33	6	161	0	0	167	0	0	0	0	0	0	126	2	0	128	0	328	328
07:15 AM	23	0	23	0	46	6	167	0	0	173	0	0	0	0	0	0	151	6	0	157	0	376	376
07:30 AM	25	0	18	0	43	4	154	0	0	158	0	0	0	0	0	0	175	8	0	183	0	384	384
07:45 AM	12	0	22	0	34	3	144	0	0	147	0	0	0	0	0	0	147	8	0	155	0	336	336
Total	75	0	81	0	156	19	626	0	0	645	0	0	0	0	0	0	599	24	0	623	0	1424	1424
08:00 AM	15	0	20	0	35	3	112	0	0	115	0	0	0	0	0	0	113	6	0	119	0	269	269
08:15 AM	10	0	8	0	18	3	119	0	0	122	0	0	0	0	0	0	101	7	0	108	0	248	248
08:30 AM	17	0	15	1	33	5	111	0	0	116	0	0	0	0	0	0	88	2	0	90	0	239	239
08:45 AM	13	0	11	0	24	7	91	0	0	98	0	0	0	0	0	0	82	5	0	87	0	209	209
Total	55	0	54	1	110	18	433	0	0	451	0	0	0	0	0	0	384	20	0	404	0	965	965
09:00 AM	7	0	12	0	19	6	77	0	0	83	0	0	0	0	0	0	74	0	0	74	0	176	176
09:15 AM	12	0	6	0	18	6	62	0	0	68	0	0	0	0	0	0	74	8	0	82	0	168	168
09:30 AM	5	0	4	0	9	5	82	0	0	87	0	0	0	0	0	0	84	2	0	86	0	182	182
09:45 AM	5	0	6	0	11	8	63	0	0	71	0	0	0	0	0	0	64	5	0	69	0	151	151
Total	29	0	28	0	57	25	284	0	0	309	0	0	0	0	0	0	296	15	0	311	0	677	677
10:00 AM	1	0	3	0	4	5	67	0	0	72	0	0	0	0	0	0	85	5	0	90	0	166	166
10:15 AM	5	0	2	0	7	4	77	0	0	81	0	0	0	0	0	0	57	7	0	64	0	152	152
10:30 AM	5	0	7	0	12	3	58	0	0	61	0	0	0	0	0	0	63	0	0	63	0	136	136
10:45 AM	7	0	6	0	13	3	57	0	0	60	0	0	0	0	0	0	59	2	0	61	0	134	134
Total	18	0	18	0	36	15	259	0	0	274	0	0	0	0	0	0	264	14	0	278	0	588	588
11:00 AM	2	0	4	0	6	2	58	0	0	60	0	0	0	0	0	0	50	5	0	55	0	121	121
11:15 AM	11	0	8	0	19	1	62	0	0	63	0	0	0	0	0	0	70	3	0	73	0	155	155
11:30 AM	1	0	3	0	4	6	57	0	0	63	0	0	0	0	0	0	78	1	0	79	0	146	146
11:45 AM	7	0	9	0	16	1	67	0	0	68	0	0	0	0	0	0	51	4	0	55	0	139	139
Total	21	0	24	0	45	10	244	0	0	254	0	0	0	0	0	0	249	13	0	262	0	561	561
12:00 PM	4	0	4	0	8	4	53	0	0	57	0	0	0	0	0	0	60	6	1	66	1	131	132
12:15 PM	5	0	7	0	12	10	73	0	0	83	0	0	0	0	0	0	74	5	0	79	0	174	174
12:30 PM	6	0	10	0	16	5	69	0	0	74	0	0	0	0	0	0	71	12	0	83	0	173	173
12:45 PM	2	0	2	0	4	3	63	0	0	66	0	0	0	0	0	0	80	8	0	88	0	158	158
Total	17	0	23	0	40	22	258	0	0	280	0	0	0	0	0	0	285	31	1	316	1	636	637
01:00 PM	11	0	7	0	18	8	58	0	0	66	0	0	0	0	0	0	69	6	0	75	0	159	159
01:15 PM	7	0	3	0	10	5	81	0	0	86	0	0	0	0	0	0	84	5	0	89	0	185	185
01:30 PM	7	0	5	0	12	5	82	0	0	87	0	0	0	0	0	0	51	6	1	57	1	156	157
01:45 PM	5	0	1	0	6	6	60	0	0	66	0	0	0	0	0	0	62	5	0	67	0	139	139
Total	30	0	16	0	46	24	281	0	0	305	0	0	0	0	0	0	266	22	1	288	1	639	640
02:00 PM	8	0	6	0	14	4	85	0	0	89	0	0	0	0	0	0	71	3	0	74	0	177	177

Data Collection Group

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Groups Printed- Passenger Veh - Trucks

	Four Mile Run Pkwy From North					New Market Rd From East					From South					New Market Rd From West							
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Exclu. Total	Inclu. Total	Int. Total
02:15 PM	7	0	4	0	11	6	93	0	0	99	0	0	0	0	0	0	97	10	0	107	0	217	217
02:30 PM	4	0	9	0	13	9	103	0	0	112	0	0	0	0	0	0	89	2	0	91	0	216	216
02:45 PM	4	0	5	0	9	8	95	0	0	103	0	0	0	0	0	0	104	13	0	117	0	229	229
Total	23	0	24	0	47	27	376	0	0	403	0	0	0	0	0	0	361	28	0	389	0	839	839
03:00 PM	5	0	6	0	11	4	84	0	0	88	0	0	0	0	0	0	86	7	0	93	0	192	192
03:15 PM	8	0	3	0	11	12	100	0	0	112	0	0	0	0	0	0	132	15	0	147	0	270	270
03:30 PM	5	0	9	1	15	8	106	0	0	114	0	0	0	0	0	0	152	5	0	157	0	286	286
03:45 PM	12	0	6	0	18	14	100	0	0	114	0	0	0	0	0	0	161	12	0	173	0	305	305
Total	30	0	24	1	55	38	390	0	0	428	0	0	0	0	0	0	531	39	0	570	0	1053	1053
04:00 PM	5	0	3	0	8	10	120	0	0	130	0	0	0	0	0	0	143	14	0	157	0	295	295
04:15 PM	7	0	6	0	13	16	163	0	0	179	0	0	0	0	0	0	163	18	0	181	0	373	373
04:30 PM	14	0	9	0	23	13	153	0	0	166	0	0	0	0	0	0	175	16	0	191	0	380	380
04:45 PM	9	0	7	0	16	15	159	0	0	174	0	0	0	0	0	0	157	15	0	172	0	362	362
Total	35	0	25	0	60	54	595	0	0	649	0	0	0	0	0	0	638	63	0	701	0	1410	1410
05:00 PM	12	0	8	0	20	19	126	0	0	145	0	0	0	0	0	0	155	19	0	174	0	339	339
05:15 PM	8	0	11	0	19	22	162	0	0	184	0	0	0	0	0	0	185	11	0	196	0	399	399
05:30 PM	7	0	9	0	16	13	168	0	0	181	0	0	0	0	0	0	150	13	0	163	0	360	360
05:45 PM	9	0	2	0	11	4	168	0	0	172	0	0	0	0	0	0	143	12	0	155	0	338	338
Total	36	0	30	0	66	58	624	0	0	682	0	0	0	0	0	0	633	55	0	688	0	1436	1436
06:00 PM	3	0	6	0	9	8	140	0	0	148	0	0	0	0	0	0	114	11	0	125	0	282	282
06:15 PM	9	0	6	0	15	9	111	0	0	120	0	0	0	0	0	0	80	12	0	92	0	227	227
06:30 PM	3	0	7	0	10	8	94	0	0	102	0	0	0	0	0	0	68	17	0	85	0	197	197
06:45 PM	6	0	5	0	11	16	87	0	0	103	0	0	0	0	0	0	65	12	0	77	0	191	191
Total	21	0	24	0	45	41	432	0	0	473	0	0	0	0	0	0	327	52	0	379	0	897	897
Grand Total	390	0	371	2	763	351	4802	0	0	5153	0	0	0	0	0	0	4833	376	2	5209	2	11125	11127
Apprch %	51.1	0	48.6	0.3		6.8	93.2	0	0		0	0	0	0		0	92.8	7.2					
Total %	3.5	0	3.3	0	6.9	3.2	43.2	0	0	46.3	0	0	0	0	0	0	43.4	3.4		46.8	0	100	
Passenger Veh	373	0	367	2	742	346	4519	0	0	4865	0	0	0	0	0	0	4549	363		4914	0	0	10521
% Passenger Veh	95.6	0	98.9	100	97.2	98.6	94.1	0	0	94.4	0	0	0	0	0	0	94.1	96.5	100	94.3	0	0	94.6
Trucks	17	0	4	0	21	5	283	0	0	288	0	0	0	0	0	0	284	13		297	0	0	606
% Trucks	4.4	0	1.1	0	2.8	1.4	5.9	0	0	5.6	0	0	0	0	0	0	5.9	3.5	0	5.7	0	0	5.4

Data Collection Group

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File Name : New Market and Four Mile
Site Code :
Start Date : 12/5/2023
Page No : 3

	Four Mile Run Pkwy From North					New Market Rd From East					From South					New Market Rd From West				
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 07:00 AM																				
07:00 AM	15	0	18	0	33	**6**	161	0	0	167	0	0	0	0	0	0	126	2	128	328
07:15 AM	23	0	**23**	0	**46**	6	**167**	0	0	**173**	0	0	0	0	0	0	151	6	157	376
07:30 AM	**25**	0	18	0	43	4	154	0	0	158	0	0	0	0	0	0	**175**	**8**	**183**	**384**
07:45 AM	12	0	22	0	34	3	144	0	0	147	0	0	0	0	0	0	147	8	155	336
Total Volume	75	0	81	0	156	19	626	0	0	645	0	0	0	0	0	0	599	24	623	1424
% App. Total	48.1	0	51.9	0		2.9	97.1	0	0		0	0	0	0		0	96.1	3.9		
PHF	.750	.000	.880	.000	.848	.792	.937	.000	.000	.932	.000	.000	.000	.000	.000	.000	.856	.750	.851	.927
Passenger Veh	69	0	81	0	150	18	607	0	0	625	0	0	0	0	0	0	573	23	596	1371
% Passenger Veh	92.0	0	100	0	96.2	94.7	97.0	0	0	96.9	0	0	0	0	0	0	95.7	95.8	95.7	96.3
Trucks	6	0	0	0	6	1	19	0	0	20	0	0	0	0	0	0	26	1	27	53
% Trucks	8.0	0	0	0	3.8	5.3	3.0	0	0	3.1	0	0	0	0	0	0	4.3	4.2	4.3	3.7

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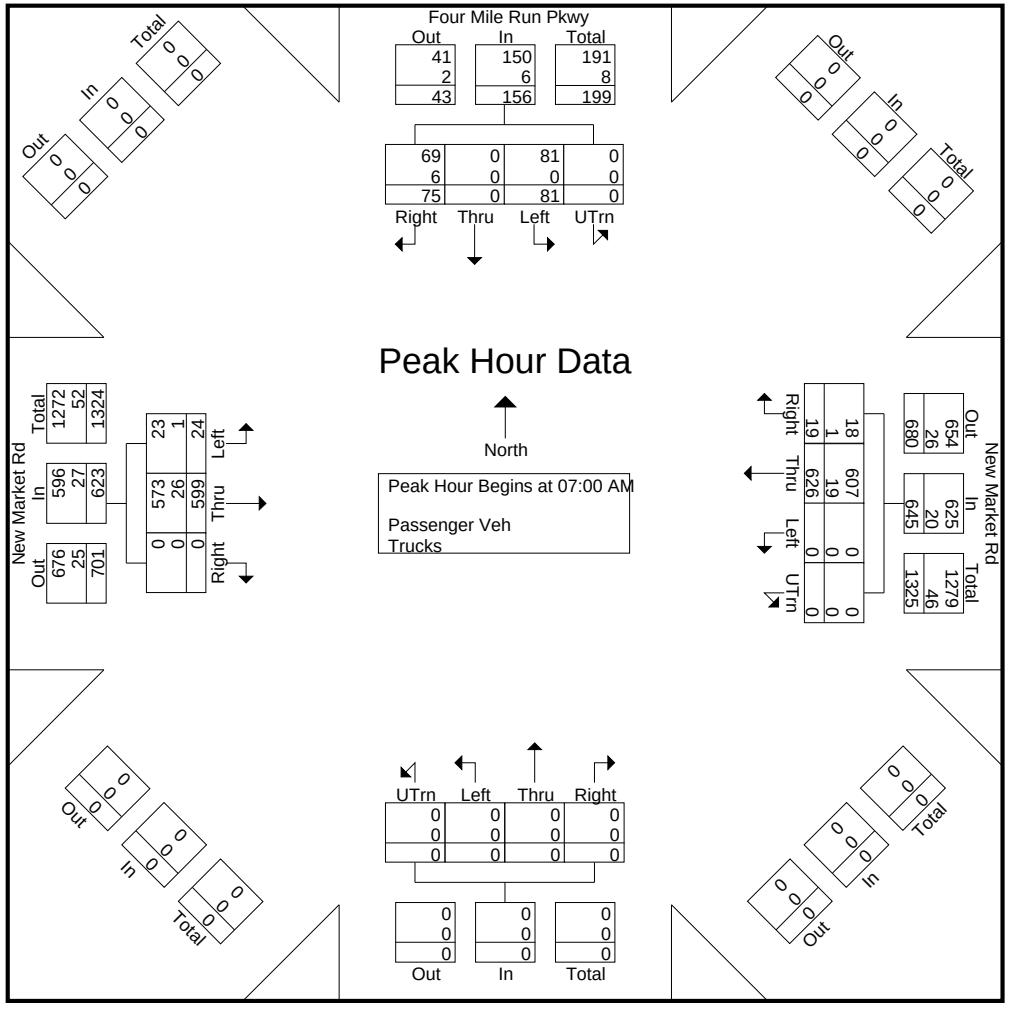
File Name : New Market and Four Mile
Site Code :
Start Date : 12/5/2023
Page No : 4



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File Name : New Market and Four Mile
Site Code :
Start Date : 12/5/2023
Page No : 5

	Four Mile Run Pkwy From North					New Market Rd From East					From South					New Market Rd From West				
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 12:30 PM																				
12:30 PM	6	0	**10**	0	16	5	69	0	0	74	0	0	0	0	0	0	71	**12**	83	173
12:45 PM	2	0	2	0	4	3	63	0	0	66	0	0	0	0	0	0	80	8	88	158
01:00 PM	**11**	0	7	0	**18**	**8**	58	0	0	66	0	0	0	0	0	0	69	6	75	159
01:15 PM	7	0	3	0	10	5	**81**	0	0	**86**	0	0	0	0	0	0	**84**	5	**89**	**185**
Total Volume	26	0	22	0	48	21	271	0	0	292	0	0	0	0	0	0	304	31	335	675
% App. Total	54.2	0	45.8	0		7.2	92.8	0	0		0	0	0	0		0	90.7	9.3		
PHF	.591	.000	.550	.000	.667	.656	.836	.000	.000	.849	.000	.000	.000	.000	.000	.000	.905	.646	.941	.912
Passenger Veh	25	0	21	0	46	20	245	0	0	265	0	0	0	0	0	0	283	29	312	623
% Passenger Veh	96.2	0	95.5	0	95.8	95.2	90.4	0	0	90.8	0	0	0	0	0	0	93.1	93.5	93.1	92.3
Trucks	1	0	1	0	2	1	26	0	0	27	0	0	0	0	0	0	21	2	23	52
% Trucks	3.8	0	4.5	0	4.2	4.8	9.6	0	0	9.2	0	0	0	0	0	0	6.9	6.5	6.9	7.7

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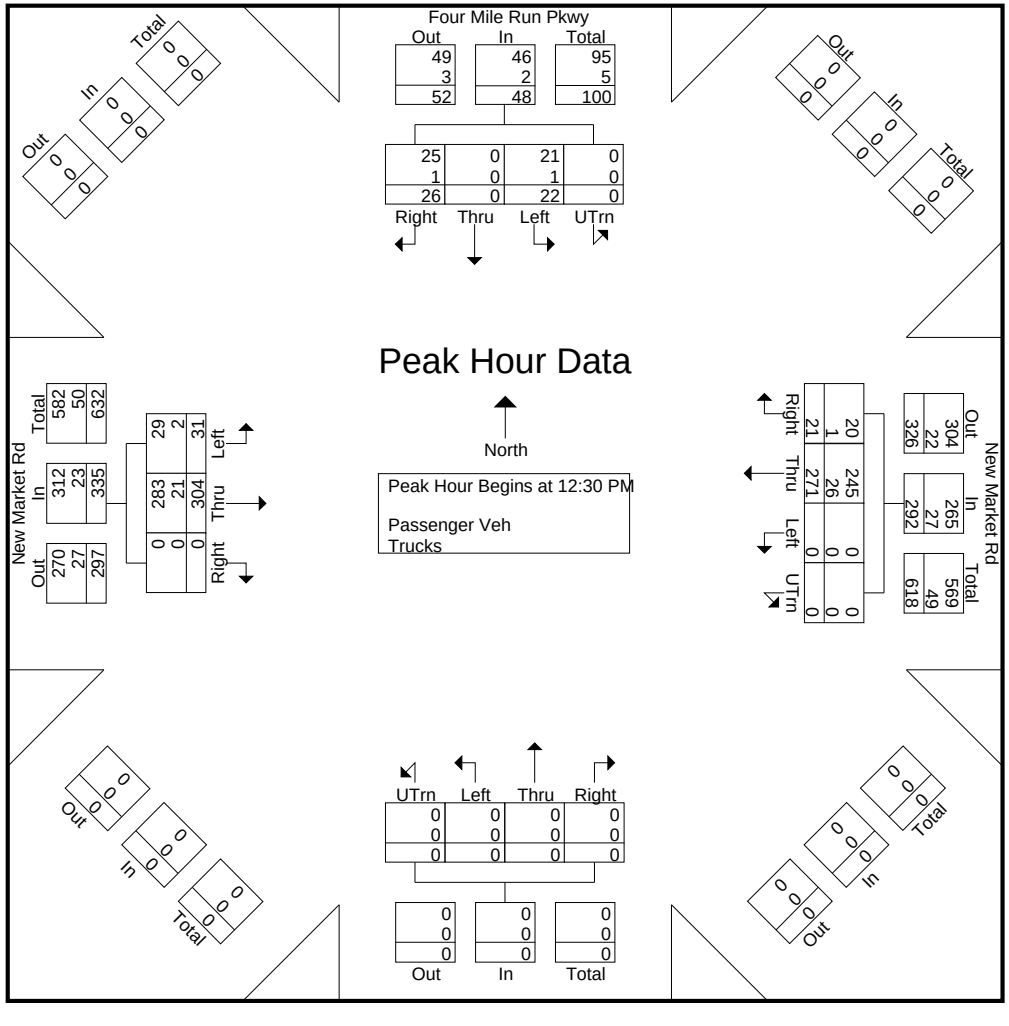
File Name : New Market and Four Mile
Site Code :
Start Date : 12/5/2023
Page No : 6



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File Name : New Market and Four Mile
Site Code :
Start Date : 12/5/2023
Page No : 7

	Four Mile Run Pkwy From North					New Market Rd From East					From South					New Market Rd From West				
Start Time	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 04:30 PM																				
04:30 PM	**14**	0	9	0	**23**	13	153	0	0	166	0	0	0	0	0	0	175	16	191	380
04:45 PM	9	0	7	0	16	15	159	0	0	174	0	0	0	0	0	0	157	15	172	362
05:00 PM	12	0	8	0	20	19	126	0	0	145	0	0	0	0	0	0	155	**19**	174	339
05:15 PM	8	0	**11**	0	19	**22**	**162**	0	0	**184**	0	0	0	0	0	0	**185**	11	**196**	**399**
Total Volume	43	0	35	0	78	69	600	0	0	669	0	0	0	0	0	0	672	61	733	1480
% App. Total	55.1	0	44.9	0		10.3	89.7	0	0		0	0	0	0		0	91.7	8.3		
PHF	.768	.000	.795	.000	.848	.784	.926	.000	.000	.909	.000	.000	.000	.000	.000	.000	.908	.803	.935	.927
Passenger Veh	42	0	35	0	77	68	573	0	0	641	0	0	0	0	0	0	655	60	715	1433
% Passenger Veh	97.7	0	100	0	98.7	98.6	95.5	0	0	95.8	0	0	0	0	0	0	97.5	98.4	97.5	96.8
Trucks	1	0	0	0	1	1	27	0	0	28	0	0	0	0	0	0	17	1	18	47
% Trucks	2.3	0	0	0	1.3	1.4	4.5	0	0	4.2	0	0	0	0	0	0	2.5	1.6	2.5	3.2

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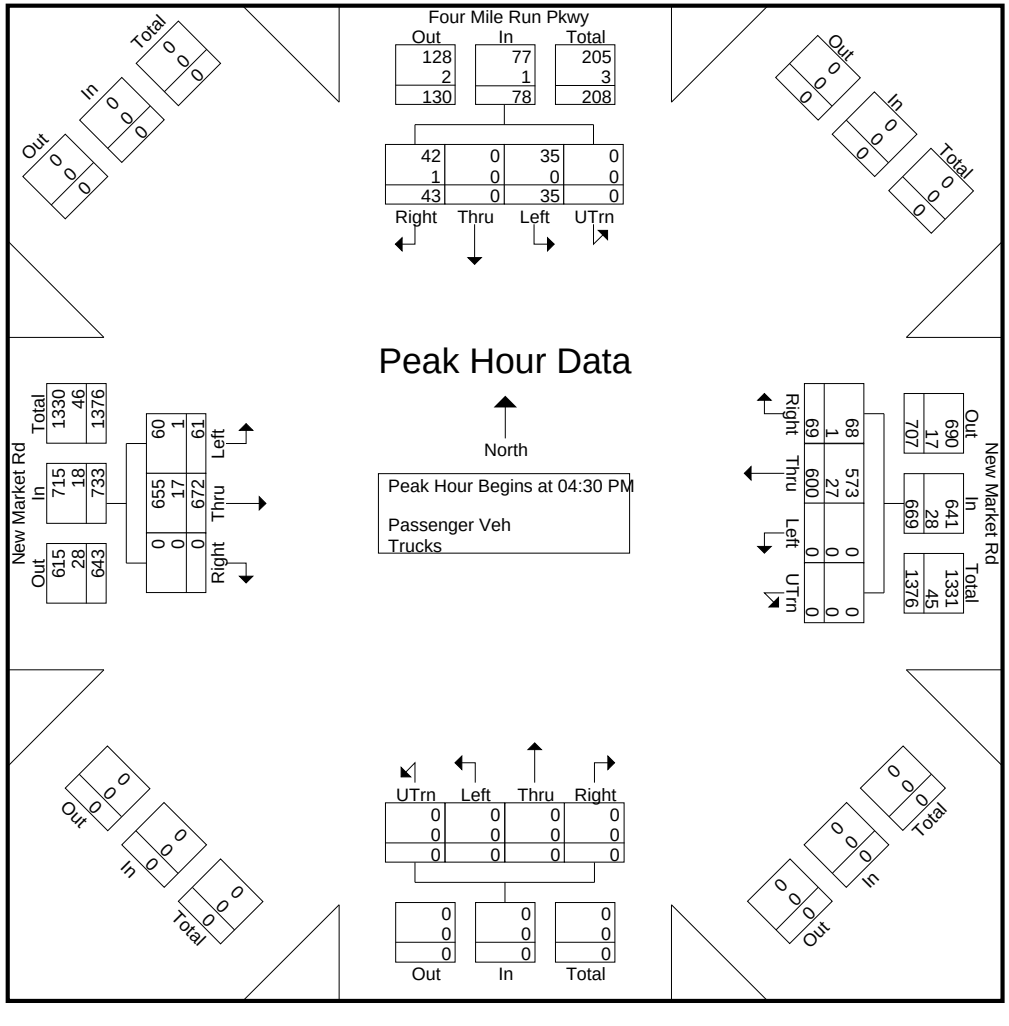
Site Code :
Start Date : 12/5/2023
Page No : 8



Appendix B:
Signal Warrant Evaluations

Supplemental Traffic Signal Evaluation Form

RK&K

Location	Route 5 / Buffin Rd. & Wood Mill Rd.	Date	April 19, 2024
County	Henrico	Analyst	**MB**

Summary Sheet

The following Signal Warrant Evaluation is based on the criteria presented in the **2009 Edition** of the Manual on Uniform Traffic Control Devices, Part 4 (Highway Traffic Signals), Chapter C

NOTE: the 70% criteria do not apply for these analyses
NOTE: the 56% criteria do not apply for these analyses
NOTE: Right turns from the Minor street ARE included in these analyses

	MUTCD Min. Requirement	Current Conditions	Criteria Met?	Warrant Met?
Warrant 1 - 8 Hour Volumes				
A. Minimum Volume	8 hours	0 hour(s)	**No**	**NO**
B. Continuous Traffic	8 hours	1 hour(s)	**No**	
C. 80% of A and B	8 hours	0 hour(s)	**No**	
NOTE: Warrant 1 is met if any of criteria A, B or C are met				
Warrant 2 - Four Hour Vehicular Volume				
A. Four Hour Volume	4 hours	1 hour(s)	**No**	**NO**
Warrant 3 - Peak Hour				
"Unusual" Case Clause	"Unusual" Case?		**No**	**NO**
A. Peak Hour Delay	14,400 seconds	N/A seconds	**No**	
	100 vehicles	N/A vehicles		
	800 vehicles	0 vehicles		
B. Peak Hour Volume	1 hour	0 hour(s)	**No**	
NOTE: Warrant 3 is met if either criteria A or B is met AND it is an "Unusual" Case				
Warrant 4 - Pedestrian Volume				
Is there a signalized or stop-controlled intersection which controls the street that pedestrians desire cross within 300 feet?			**No**	**Warrant Applies**
Would the traffic signal restrict progressive movement of traffic?			**No**	
A. Four Hour Volume	8 hours	0 hour(s)	**No**	**NO**
B. Peak Hour Volume	1 hour	0 hour(s)	**No**	
NOTE: Warrant 4 is met if either criteria A and B is met AND there are no signals or stop-controlled intersections controlling the major pedestrian movements, unless the proposed signal does not restrict progressive movement of traffic				
Warrant 5 - School Crossing				
A. Student Crossing Volume	20 peds./hr.	0 peds./hr.	**No**	**NO**
B. Acceptable gaps (calculated based on pedestrian volume)			**N/A**	
Tried other remedial measures			**No**	
Nearby signal < 300 feet away?			**No**	
Would the traffic signal restrict progressive movement of traffic?			**No**	
NOTE: Warrant 5 is met if both criteria A or B are met AND no signals are within 300' and progressive flow is not restricted or other remedial measures have been tried				
Warrant 6 - Coordinated Signal System				
A. One-Way Street: existing signals widely spaced (inadequate platooning)?			**No**	**NO**
B. Two-Way Street: existing signals widely spaced (inadequate platooning)?			**No**	
If a signal were installed, would resulting signal spacing > 1,000 feet?			**Yes**	
NOTE: Warrant 6 is met if either criteria A or B is met AND the resulting signal spacing > 1000 feet				
Warrant 7 - Crash Experience				
A. Have other remedial measures been tried?			**Yes**	**NO**
B. Accident Experience	5 acc./yr.	4 acc./yr.	**No**	
C. 8 hour volume @ 80%	8 hours	2 hours	**No**	
NOTE: Warrant 7 is met if ALL three of these criteria are satisfied				
Warrant 8 - Roadway Network				
A. Total Entering Volume	1 Hour	3 hour(s)	**Yes**	**NO**
B. Projected Volumes	1 Hour	N/A hour(s)	**No**	
Is this the junction of two or more MAJOR routes?			**No**	
NOTE: Warrant 8 is met if either criteria A or B is met AND the intersection is the junction of major roads				
Warrant 9 - Intersection Near a Grade Crossing				
A. Grade crossing exists within 140 ft of stop line on minor approach			**No**	**N/A**
B. Adjusted highest minor street approach volume exceeds threshold			**No**	
NOTE: Warrant 9 is met if both criteria A and B are met				

Supplemental Traffic Signal Evaluation Form

RK&K

Location	Route 5 / Buffin Rd. & Wood Mill Rd.	Date	April 19, 2024
County	Henrico	Analyst	**MB**

Warrant 1 - 8 Hour Volumes

MUTCD Requirements:

Number of Lanes for moving traffic on each approach		Condition A - Minimum Vehicular Volume							
		Vehicles per hour on major street				Vehicles per hour on higher-volume minor street (one direction)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Number of Lanes for moving traffic on each approach		Condition B - Interruption of Continuous Traffic							
		Vehicles per hour on major street				Vehicles per hour on higher-volume minor street (one direction)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

Field Data

Hour Ending	Combined Major Approach	Highest Minor Approach	Condition A met?	Condition B met?	A & B Condition met?
7 AM	1,205	96	No	Yes	No
8 AM	794	16	No	No	No
9 AM	553	20	No	No	No
10 AM	496	18	No	No	No
11 AM	490	27	No	No	No
12 PM	550	16	No	No	No
1 PM	539	20	No	No	No
2 PM	714	83	No	No	No
3 PM	921	46	No	No	No
4 PM	1,213	25	No	No	No
5 PM	1,236	14	No	No	No
6 PM	782	10	No	No	No

Warrant 1 Summary	Hours Met	Warrant Met?	
Condition A:	**0**	**No**	(70 percent criteria does not apply)
Condition B:	**1**	**No**	(70 percent criteria does not apply)
A & B Combination:	**0**	**No**	(56 percent criteria does not apply)

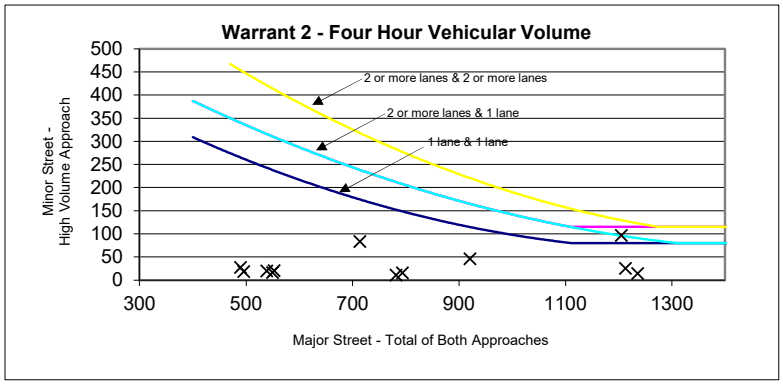
Is Warrant 1 Satisfied?	**NO**

Supplemental Traffic Signal Evaluation Form

RK&K

Location Route 5 / Buffin Rd. & Wood Mill Rd. Date April 19, 2024

Warrant 2 - Four Hour Vehicular Volume



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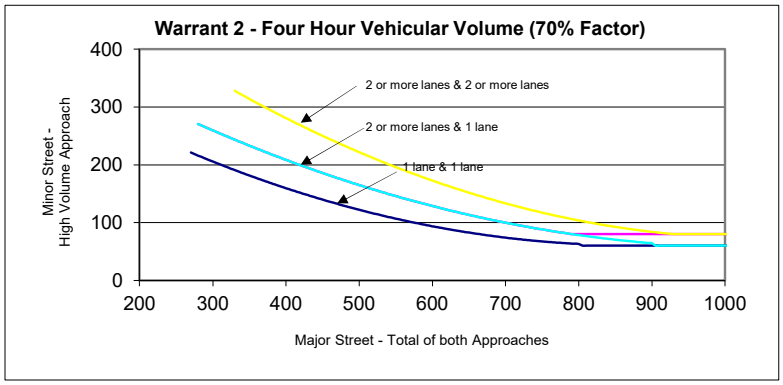


NOTE: This chart not used (70% Criteria does not apply)

Field Data

Hour Ending	Combined Major Approach	Highest Minor Approach	Minimum Required	Warrant met?
7 AM	1,205	96	80	Yes
8 AM	794	16	149	No
9 AM	553	20	237	No
10 AM	496	18	262	No
11 AM	490	27	265	No
12 PM	550	16	238	No
1 PM	539	20	243	No
2 PM	714	83	174	No
3 PM	921	46	115	No
4 PM	1,213	25	80	No
5 PM	1,236	14	80	No
6 PM	782	10	152	No

	Hours Met	Warrant Met?
Total Hours Met:	**1**	**No**

70 percent criteria does not apply

Is Warrant 2 Satisfied?	**NO**

Supplemental Traffic Signal Evaluation Form

RK&K

Location: Route 5 / Buffin Rd. & Wood Mill Rd. Date: April 19, 2024

Warrant 3 - Peak Hour

NOTE: Warrant 3 is not applicable because this area IS NOT considered an 'unusual' case

An "unusual" case refers to locations such as an office complex, a manufacturing plant, an industrial plant, or a facility that discharges/attracts a large volume of traffic over a short time

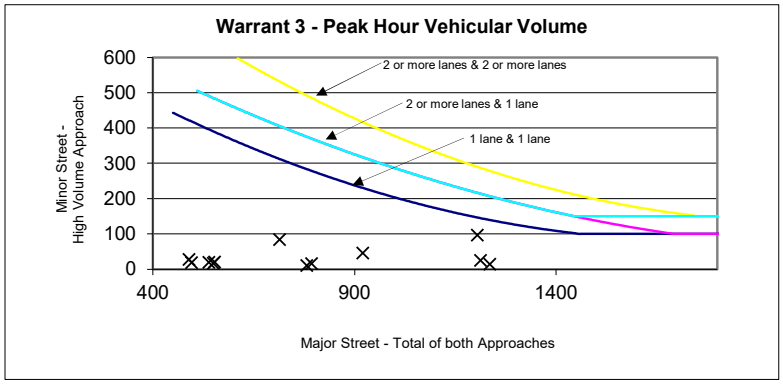
Criteria A: Peak Hour Delay

NOTE: A formal Delay Study was not conducted because a delay study was not included in the scope of this study

			Minimum Required
1. Total Stopped Delay	N/A	vehicle-seconds	14,400
2. Volume on Minor Street Approach during same hour	N/A	vehicles	100
3. Total entering traffic during hour more than 800 vehicles?	N/A		800

Is the Peak Hour Delay Criteria Met?	**No**

Criteria B: Peak Hour Volume



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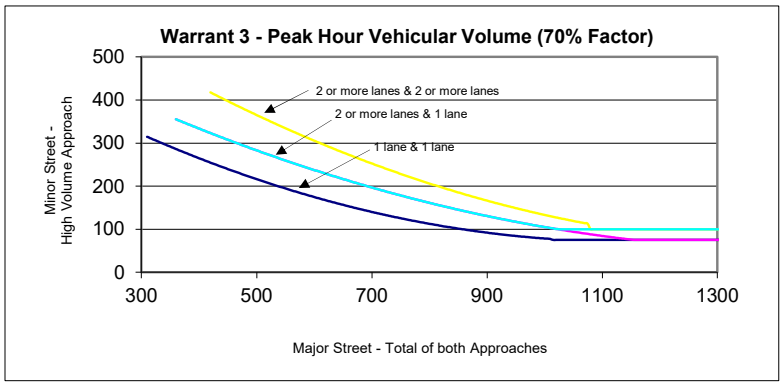


NOTE: This chart not used (70% Criteria does not apply)

- Warrant 3 Worksheet Continued on Next Page -

Warrant 3 - Peak Hour (Continued)

Field Data

Hour Ending	Combined Major Approach	Highest Minor Approach	Minimum Required	Warrant met?
7 AM	1,205	96	146	No
8 AM	794	16	278	No
9 AM	553	20	389	No
10 AM	496	18	418	No
11 AM	490	27	422	No
12 PM	550	16	390	No
1 PM	539	20	396	No
2 PM	714	83	312	No
3 PM	921	46	230	No
4 PM	1,213	25	145	No
5 PM	1,236	14	139	No
6 PM	782	10	283	No

	Hours Met	Warrant Met?	
Is the Peak Hour Volume Criteria Met?	**0**	**No**	70 percent criteria does not apply

Warrant 3 Summary:	Warrant Met?	
Warrant 3.A - Peak Hour Delay:	**No**	
Warrant 3.B - Peak Hour Volume:	**No**	70 percent criteria does not apply

Is Warrant 3 Satisfied? NO

(NOTE: Criteria B - Peak Hour Volume is not recognized by Maryland SHA)

Warrant 4 - Pedestrian Volume

The need for a traffic control signal at an intersection or midblock crossing shall be considered if either of the following criteria is met:

A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5.

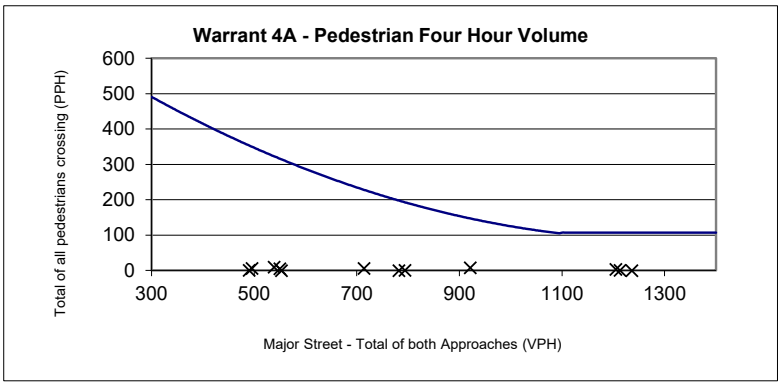
B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-7.

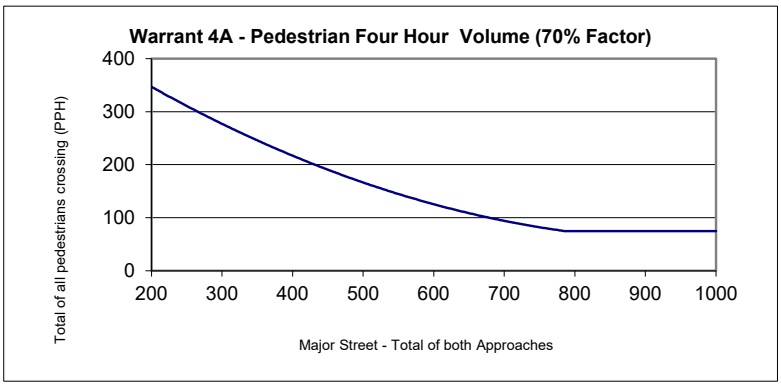
The pedestrian warrant shall not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling the street pedestrians desire to cross is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic

Distance to nearest signalized or stop-controlled intersection 1,570 feet
Would a new signal restrict progressive movement? No

Location Route 5 / Buffin Rd. & Wood Mill Rd. Date April 19, 2024

Warrant 4 - Pedestrian Volume (Continued)

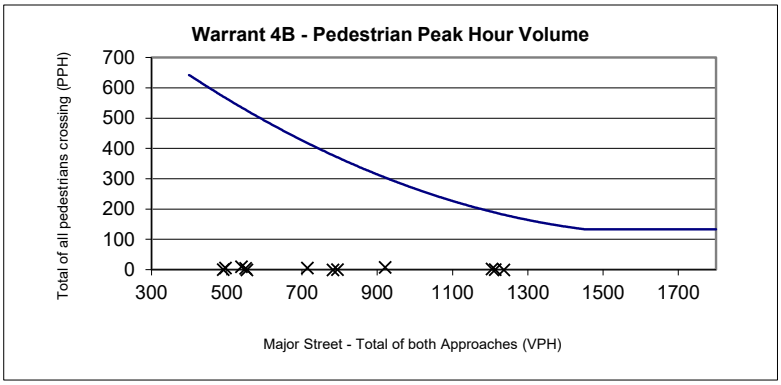


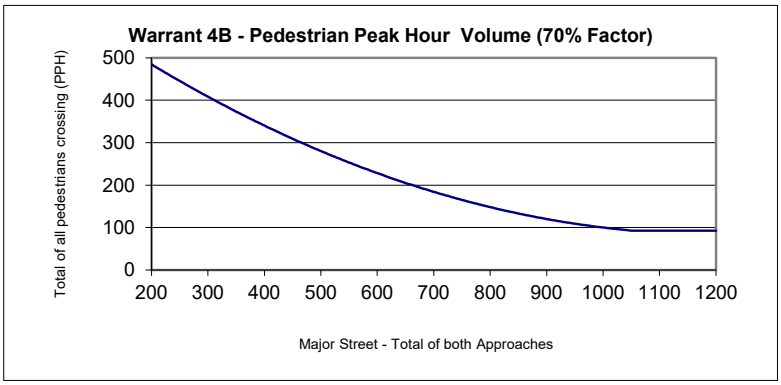


Hour Ending	Combined Major Approach	Pedestrian Total Crossing	Minimum Required	Warrant met?
7 AM	1,205	3	107	No
8 AM	794	1	193	No
9 AM	553	0	314	No
10 AM	496	6	350	No
11 AM	490	1	354	No
12 PM	550	5	316	No
1 PM	539	10	323	No
2 PM	714	6	228	No
3 PM	921	8	147	No
4 PM	1,213	1	107	No
5 PM	1,236	0	107	No
6 PM	782	0	198	No

Location Route 5 / Buffin Rd. & Wood Mill Rd. Date April 19, 2024

Warrant 4 - Pedestrian Volume (Continued)





Hour Ending	Combined Major Approach	Pedestrian Total Crossing	Minimum Required	Warrant met?
7 AM	1,205	3	133	No
8 AM	794	1	371	No
9 AM	553	0	525	No
10 AM	496	6	567	No
11 AM	490	1	572	No
12 PM	550	5	527	No
1 PM	539	10	535	No
2 PM	714	6	418	No
3 PM	921	8	304	No
4 PM	1,213	1	133	No
5 PM	1,236	0	133	No
6 PM	782	0	378	No

Warrant 4 Summary	**Hours Met**	**Warrant Met?**	
Condition A:	**0**	**No**	(70 percent criteria does not apply)
Condition B:	**0**	**No**	(70 percent criteria does not apply)

Is Warrant 4 Satisfied?	**NO**

Supplemental Traffic Signal Evaluation Form

RK&K

Location: Route 5 / Buffin Rd. & Wood Mill Rd. Date: April 19, 2024

Warrant 5 - School Crossing

1. Are there 20 or more students during the highest crossing hour?	No
2. Are there an adequate number of gaps?	N/A
NOTE: A formal Gap Study was not conducted because A gap study was not included in the scope of this study.	
3. Have other remedial measures been tried? (items can include warning signs, flashers, crossing guards, etc.)	No
4. Is there another nearby signal located < 300 feet from the intersection?	No
5. Would a new signal restrict progressive movement?	No

Is Warrant 5 Satisfied? NO

Warrant 6 - Coordinated Signal System

The need for a signal based on Warrant 6 shall be considered if either of the following criteria is met AND if the resultant spacing of traffic control signals would be > 1,000 feet:

A.	On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning	**Not Met**
B.	On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will provide collectively progressive operation	**Not Met**

If a signal were installed, would the resulting signal spacing be > 1,000 feet? **Yes**

Is Warrant 6 Satisfied? NO

Warrant 7 - Crash Experience

A.	Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.	**Met**
B.	Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage, apparently exceeding the applicable requirements for a reportable crash	**Not Met**
C.	For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1, or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major street and on the higher volume minor street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.	**Not Met**

Is Warrant 7 Satisfied? NO

Supplemental Traffic Signal Evaluation Form

RK&K

Location Route 5 / Buffin Rd. & Wood Mill Rd. Date April 19, 2024

Warrant 8 - Roadway Network

The need for a signal based on Warrant 8 shall be considered if either of the following criteria is met AND if the intersection is a junction of two or more MAJOR roads:

NOTE: Portions of the criteria for Warrant 8 are based on projected traffic volumes and weekend traffic volumes. However, projected and weekend volumes were not available during the preparation of this study, so Warrant 8 was only evaluated based on current weekday traffic conditions.

A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has a 5-year projected traffic volume, based on an engineering study, that meets one or more of Warrants 1,2 and 3 during an average weekday — **Met**

B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of and 5 hours of a non-normal business day (Saturday or Sunday). — **N/A**

Is this the junction of two or more MAJOR routes? — **No**

Is Warrant 8 Satisfied? NO

Warrant 9 - Intersection Near a Grade Crossing

The need for a signal based on Warrant 9 shall be considered if both of the following criteria are met:

A. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of th track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and — **N/A**

B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance as defined in Section 1A.13. — **N/A**

Distance to railroad 0 ft

	Number	Adj. Factor	
Daily frequency of rail traffic	4	1.00	Table 4C-2
Percentage of high-occupancy buses	1	1.00	Table 4C-3
Percentage of tractor-trailer trucks	8	1.00	Table 4C-4

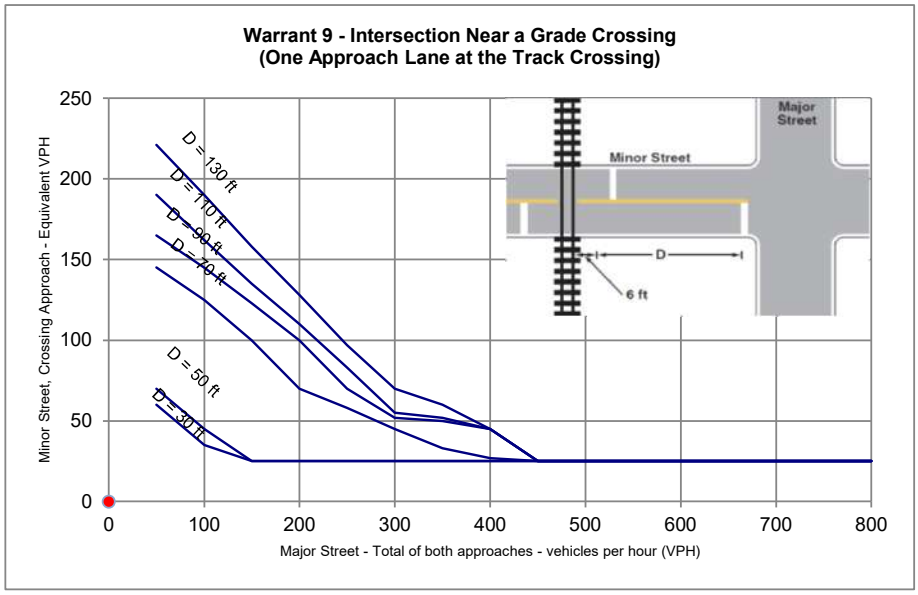
Total Adjustment 1.00

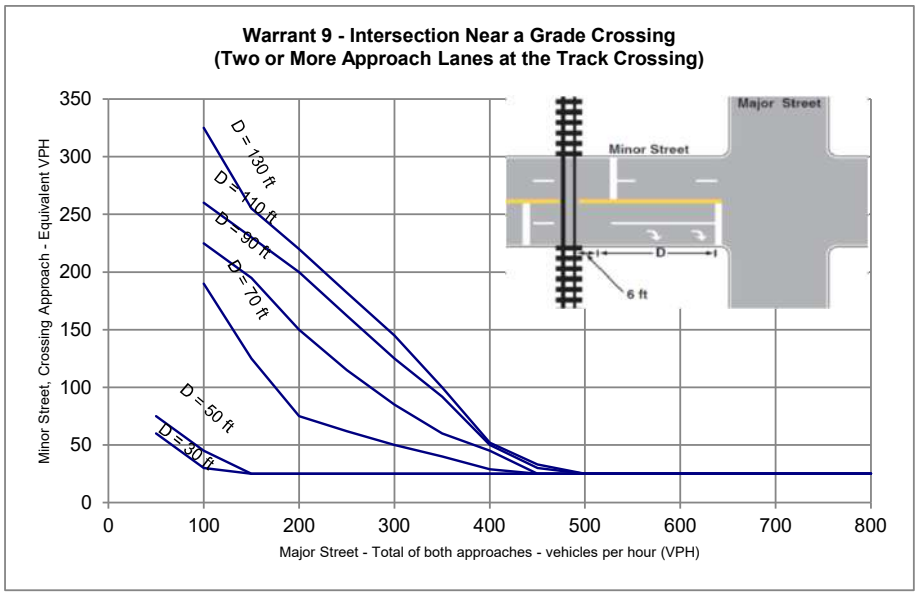
Highest Rail Traffic Hour	Combined Major Approach	Minor Approach	Combined Adjusted Approach	Minimum Required	Warrant met?
#VALUE!	#VALUE!	#VALUE!	#VALUE!	#N/A	#VALUE!

Is Warrant 9 Satisfied? N/A

Location Route 5 / Buffin Rd. & Wood Mill Rd. Date April 19, 2024

Warrant 9 - Intersection Near a Grade Crossing (Continued)





Supplemental Traffic Signal Evaluation Form

RK&K

Location	Route 5 / Four Mile Run Pkwy	Date	April 19, 2024
County	Henrico	Analyst	**MB**

Summary Sheet

The following Signal Warrant Evaluation is based on the criteria presented in the **2009 Edition** of the Manual on Uniform Traffic Control Devices, Part 4 (Highway Traffic Signals), Chapter C

NOTE: the 70% criteria do not apply for these analyses
NOTE: the 56% criteria do not apply for these analyses
NOTE: Right turns from the Minor street ARE included in these analyses

	MUTCD Min. Requirement	Current Conditions	Criteria Met?	Warrant Met?
Warrant 1 - 8 Hour Volumes				
A. Minimum Volume	8 hours	0 hour(s)	**No**	**NO**
B. Continuous Traffic	8 hours	1 hour(s)	**No**	
C. 80% of A and B	8 hours	1 hour(s)	**No**	
NOTE: Warrant 1 is met if any of criteria A, B or C are met				
Warrant 2 - Four Hour Vehicular Volume				
A. Four Hour Volume	4 hours	1 hour(s)	**No**	**NO**
Warrant 3 - Peak Hour				
"Unusual" Case Clause	"Unusual" Case?		**No**	**NO**
A. Peak Hour Delay	14,400 seconds	N/A seconds	**No**	
	100 vehicles	N/A vehicles		
	650 vehicles	0 vehicles		
B. Peak Hour Volume	1 hour	0 hour(s)	**No**	
NOTE: Warrant 3 is met if either criteria A or B is met AND it is an "Unusual" Case				
Warrant 4 - Pedestrian Volume				
Is there a signalized or stop-controlled intersection which controls the street that pedestrians desire cross within 300 feet?			**No**	**Warrant Applies**
Would the traffic signal restrict progressive movement of traffic?			**No**	
A. Four Hour Volume	8 hours	0 hour(s)	**No**	**NO**
B. Peak Hour Volume	1 hour	0 hour(s)	**No**	
NOTE: Warrant 4 is met if either criteria A and B is met AND there are no signals or stop-controlled intersections controlling the major pedestrian movements, unless the proposed signal does not restrict progressive movement of traffic				
Warrant 5 - School Crossing				
A. Student Crossing Volume	20 peds./hr.	0 peds./hr.	**No**	**NO**
B. Acceptable gaps (calculated based on pedestrian volume)			**N/A**	
Tried other remedial measures			**No**	
Nearby signal < 300 feet away?			**No**	
Would the traffic signal restrict progressive movement of traffic?			**No**	
NOTE: Warrant 5 is met if both criteria A or B are met AND no signals are within 300' and progressive flow is not restricted or other remedial measures have been tried				
Warrant 6 - Coordinated Signal System				
A. One-Way Street: existing signals widely spaced (inadequate platooning)?			**No**	**NO**
B. Two-Way Street: existing signals widely spaced (inadequate platooning)?			**No**	
If a signal were installed, would resulting signal spacing > 1,000 feet?			**Yes**	
NOTE: Warrant 6 is met if either criteria A or B is met AND the resulting signal spacing > 1000 feet				
Warrant 7 - Crash Experience				
A. Have other remedial measures been tried?			**Yes**	**NO**
B. Accident Experience	5 acc./yr.	4 acc./yr.	**No**	
C. 8 hour volume @ 80%	8 hours	2 hours	**No**	
NOTE: Warrant 7 is met if ALL three of these criteria are satisfied				
Warrant 8 - Roadway Network				
A. Total Entering Volume	1 Hour	4 hour(s)	**Yes**	**NO**
B. Projected Volumes	1 Hour	N/A hour(s)	**No**	
Is this the junction of two or more MAJOR routes?			**No**	
NOTE: Warrant 8 is met if either criteria A or B is met AND the intersection is the junction of major roads				
Warrant 9 - Intersection Near a Grade Crossing				
A. Grade crossing exists within 140 ft of stop line on minor approach			**No**	**N/A**
B. Adjusted highest minor street approach volume exceeds threshold			**No**	
NOTE: Warrant 9 is met if both criteria A and B are met				

Supplemental Traffic Signal Evaluation Form

RK&K

Location	Route 5 / Four Mile Run Pkwy	Date	April 19, 2024
County	Henrico	Analyst	**MB**

Warrant 1 - 8 Hour Volumes

MUTCD Requirements:

Number of Lanes for moving traffic on each approach		Condition A - Minimum Vehicular Volume							
		Vehicles per hour on major street				Vehicles per hour on higher-volume minor street (one direction)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Number of Lanes for moving traffic on each approach		Condition B - Interruption of Continuous Traffic							
		Vehicles per hour on major street				Vehicles per hour on higher-volume minor street (one direction)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

Field Data

Hour Ending	Combined Major Approach	Highest Minor Approach	Condition A met?	Condition B met?	A & B Condition met?
7 AM	1,268	137	No	Yes	Yes
8 AM	855	91	No	No	No
9 AM	620	45	No	No	No
10 AM	552	29	No	No	No
11 AM	516	37	No	No	No
12 PM	597	33	No	No	No
1 PM	594	34	No	No	No
2 PM	792	38	No	No	No
3 PM	998	43	No	No	No
4 PM	1,350	50	No	No	No
5 PM	1,370	57	No	No	No
6 PM	852	38	No	No	No

Warrant 1 Summary	Hours Met	Warrant Met?	
Condition A:	**0**	**No**	(70 percent criteria does not apply)
Condition B:	**1**	**No**	(70 percent criteria does not apply)
A & B Combination:	**1**	**No**	(56 percent criteria does not apply)

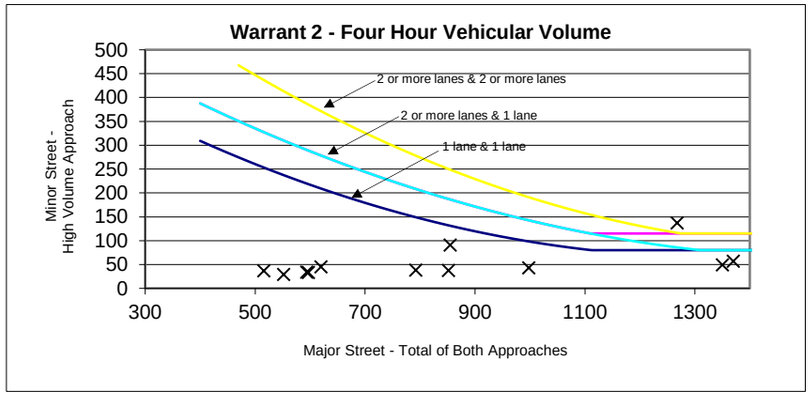
Is Warrant 1 Satisfied?	**NO**

Supplemental Traffic Signal Evaluation Form

RK&K

Location Route 5 / Four Mile Run Pkwy Date April 19, 2024

Warrant 2 - Four Hour Vehicular Volume



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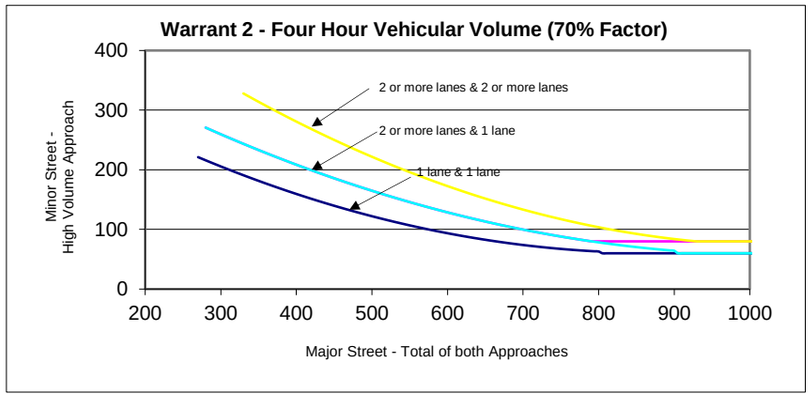


NOTE: This chart not used (70% Criteria does not apply)

Field Data

Hour Ending	Combined Major Approach	Highest Minor Approach	Minimum Required	Warrant met?
7 AM	1,268	137	86	Yes
8 AM	855	91	186	No
9 AM	620	45	278	No
10 AM	552	29	310	No
11 AM	516	37	327	No
12 PM	597	33	289	No
1 PM	594	34	290	No
2 PM	792	38	208	No
3 PM	998	43	143	No
4 PM	1,350	50	80	No
5 PM	1,370	57	80	No
6 PM	852	38	187	No

	Hours Met	**Warrant Met?**
Total Hours Met:	**1**	**No**

70 percent criteria does not apply

Is Warrant 2 Satisfied?	**NO**

Supplemental Traffic Signal Evaluation Form

RK&K

Location: Route 5 / Four Mile Run Pkwy Date: April 19, 2024

Warrant 3 - Peak Hour

NOTE: Warrant 3 is not applicable because this area IS NOT considered an 'unusual' case

An "unusual" case refers to locations such as an office complex, a manufacturing plant, an industrial plant, or a facility that discharges/attracts a large volume of traffic over a short time

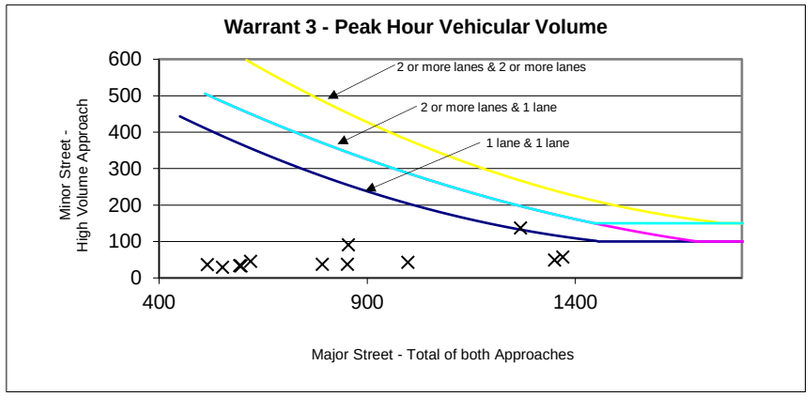
Criteria A: Peak Hour Delay

NOTE: A formal Delay Study was not conducted because a delay study was not included in the scope of this study

			Minimum Required
1. Total Stopped Delay	N/A	vehicle-seconds	14,400
2. Volume on Minor Street Approach during same hour	N/A	vehicles	100
3. Total entering traffic during hour more than 650 vehicles?	N/A		650

Is the Peak Hour Delay Criteria Met?	**No**

Criteria B: Peak Hour Volume



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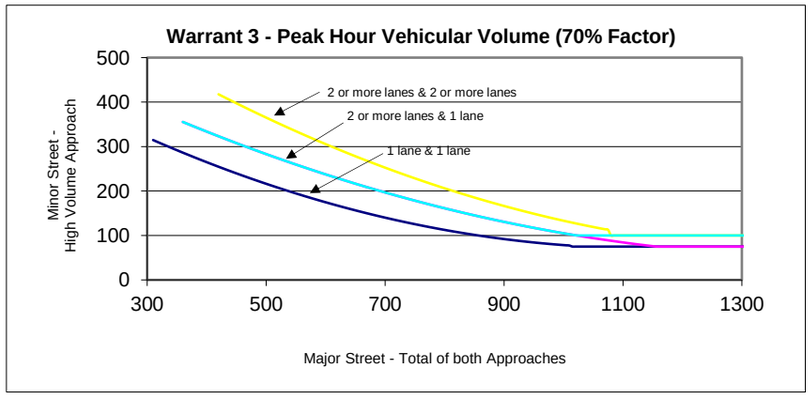


NOTE: This chart not used (70% Criteria does not apply)

- Warrant 3 Worksheet Continued on Next Page -

Warrant 3 - Peak Hour (Continued)

Field Data

Hour Ending	Combined Major Approach	Highest Minor Approach	Minimum Required	Warrant met?
7 AM	1,268	137	197	No
8 AM	855	91	344	No
9 AM	620	45	450	No
10 AM	552	29	484	No
11 AM	516	37	502	No
12 PM	597	33	461	No
1 PM	594	34	463	No
2 PM	792	38	371	No
3 PM	998	43	287	No
4 PM	1,350	50	174	No
5 PM	1,370	57	169	No
6 PM	852	38	345	No

	Hours Met	Warrant Met?	
Is the Peak Hour Volume Criteria Met?	**0**	**No**	70 percent criteria does not apply

Warrant 3 Summary:	Warrant Met?	
Warrant 3.A - Peak Hour Delay:	**No**	
Warrant 3.B - Peak Hour Volume:	**No**	70 percent criteria does not apply

Is Warrant 3 Satisfied?	**NO**

(NOTE: Criteria B - Peak Hour Volume is not recognized by Maryland SHA)

Warrant 4 - Pedestrian Volume

The need for a traffic control signal at an intersection or midblock crossing shall be considered if either of the following criteria is met:

A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5.

B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-7.

The pedestrian warrant shall not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling the street pedestrians desire to cross is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic

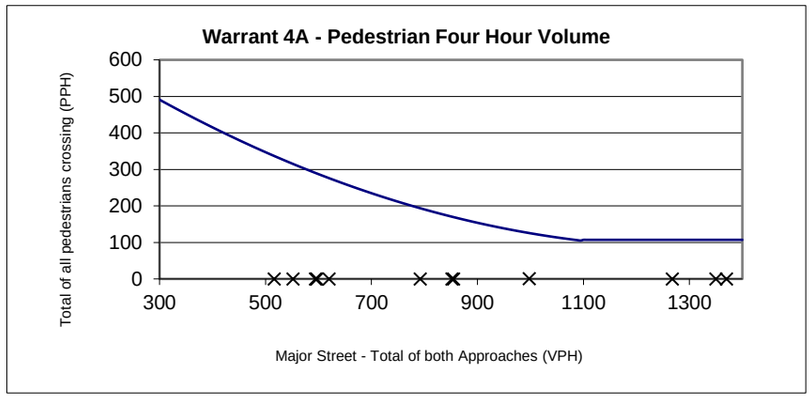
Distance to nearest signalized or stop-controlled intersection	3,385 feet
Would a new signal restrict progressive movement?	No

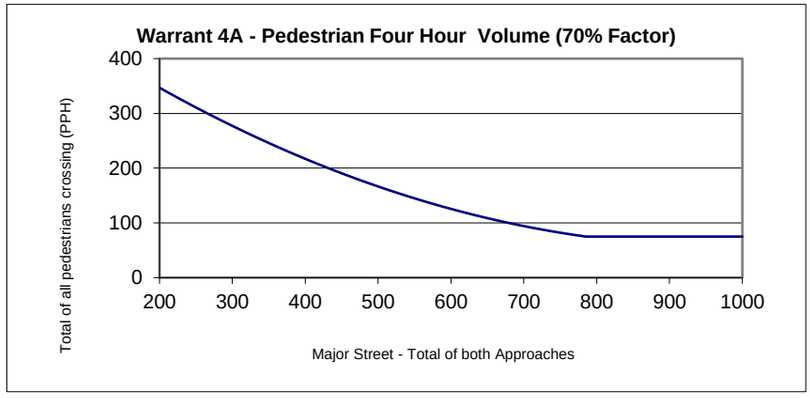
Supplemental Traffic Signal Evaluation Form

RK&K

Location Route 5 / Four Mile Run Pkwy Date April 19, 2024

Warrant 4 - Pedestrian Volume (Continued)

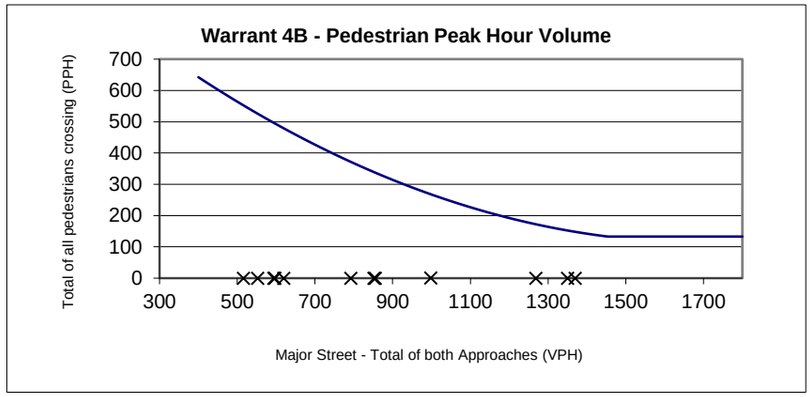


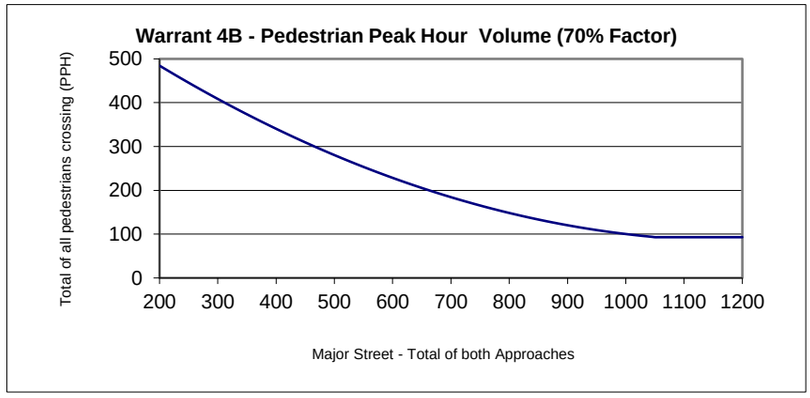


Hour Ending	Combined Major Approach	Pedestrian Total Crossing	Minimum Required	Warrant met?
7 AM	1,268	0	107	No
8 AM	855	0	169	No
9 AM	620	0	276	No
10 AM	552	0	315	No
11 AM	516	0	337	No
12 PM	597	0	289	No
1 PM	594	0	290	No
2 PM	792	0	194	No
3 PM	998	1	126	No
4 PM	1,350	0	107	No
5 PM	1,370	0	107	No
6 PM	852	0	170	No

Location Route 5 / Four Mile Run Pkwy Date April 19, 2024

Warrant 4 - Pedestrian Volume (Continued)





Hour Ending	Combined Major Approach	Pedestrian Total Crossing	Minimum Required	Warrant met?
7 AM	1,268	0	133	No
8 AM	855	0	337	No
9 AM	620	0	479	No
10 AM	552	0	526	No
11 AM	516	0	552	No
12 PM	597	0	494	No
1 PM	594	0	496	No
2 PM	792	0	372	No
3 PM	998	1	268	No
4 PM	1,350	0	133	No
5 PM	1,370	0	133	No
6 PM	852	0	339	No

Warrant 4 Summary	**Hours Met**	**Warrant Met?**	
Condition A:	**0**	**No**	(70 percent criteria does not apply)
Condition B:	**0**	**No**	(70 percent criteria does not apply)

Is Warrant 4 Satisfied?	**NO**

Supplemental Traffic Signal Evaluation Form

RK&K

Location: Route 5 / Four Mile Run Pkwy Date: April 19, 2024

Warrant 5 - School Crossing

1. Are there 20 or more students during the highest crossing hour?	No
2. Are there an adequate number of gaps?	N/A
NOTE: A formal Gap Study was not conducted because A gap study was not included in the scope of this study.	
3. Have other remedial measures been tried? (items can include warning signs, flashers, crossing guards, etc.)	No
4. Is there another nearby signal located < 300 feet from the intersection?	No
5. Would a new signal restrict progressive movement?	No

Is Warrant 5 Satisfied? NO

Warrant 6 - Coordinated Signal System

The need for a signal based on Warrant 6 shall be considered if either of the following criteria is met AND if the resultant spacing of traffic control signals would be > 1,000 feet:

A.	On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning	**Not Met**
B.	On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will provide collectively progressive operation	**Not Met**

If a signal were installed, would the resulting signal spacing be > 1,000 feet? **Yes**

Is Warrant 6 Satisfied? NO

Warrant 7 - Crash Experience

A.	Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.	**Met**
B.	Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage, apparently exceeding the applicable requirements for a reportable crash	**Not Met**
C.	For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1, or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major street and on the higher volume minor street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.	**Not Met**

Is Warrant 7 Satisfied? NO

Supplemental Traffic Signal Evaluation Form

RK&K

Location: Route 5 / Four Mile Run Pkwy Date: April 19, 2024

Warrant 8 - Roadway Network

The need for a signal based on Warrant 8 shall be considered if either of the following criteria is met AND if the intersection is a junction of two or more MAJOR roads:

NOTE: Portions of the criteria for Warrant 8 are based on projected traffic volumes and weekend traffic volumes. However, projected and weekend volumes were not available during the preparation of this study, so Warrant 8 was only evaluated based on current weekday traffic conditions.

A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has a 5-year projected traffic volume, based on an engineering study, that meets one or more of Warrants 1,2 and 3 during an average weekday — **Met**

B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of and 5 hours of a non-normal business day (Saturday or Sunday). — **N/A**

Is this the junction of two or more MAJOR routes? — **No**

Is Warrant 8 Satisfied? NO

Warrant 9 - Intersection Near a Grade Crossing

The need for a signal based on Warrant 9 shall be considered if both of the following criteria are met:

A. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of th track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and — **N/A**

B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance as defined in Section 1A.13. — **N/A**

Distance to railroad 0 ft

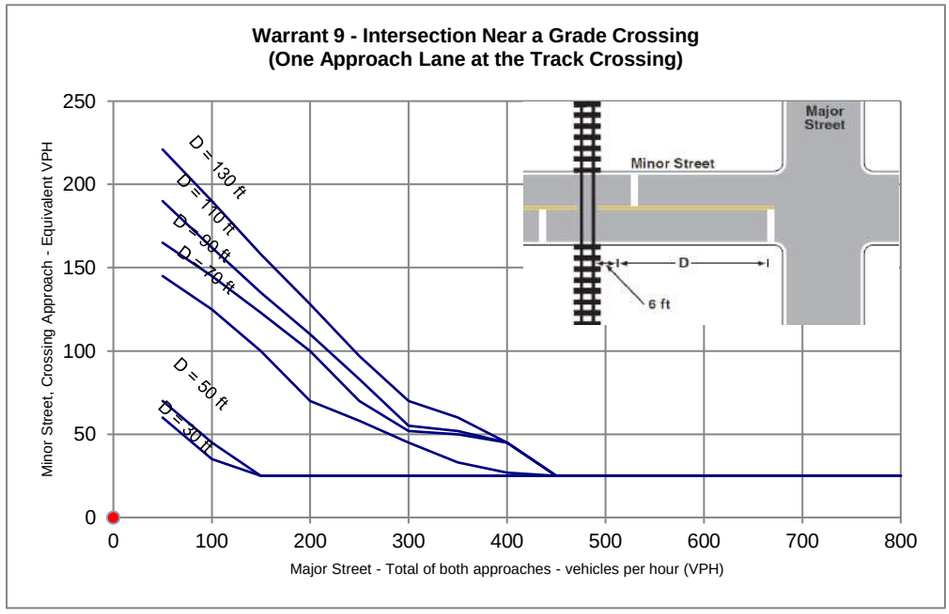
	Number	Adj. Factor	
Daily frequency of rail traffic	4	1.00	Table 4C-2
Percentage of high-occupancy buses	1	1.00	Table 4C-3
Percentage of tractor-trailer trucks	8	1.00	Table 4C-4

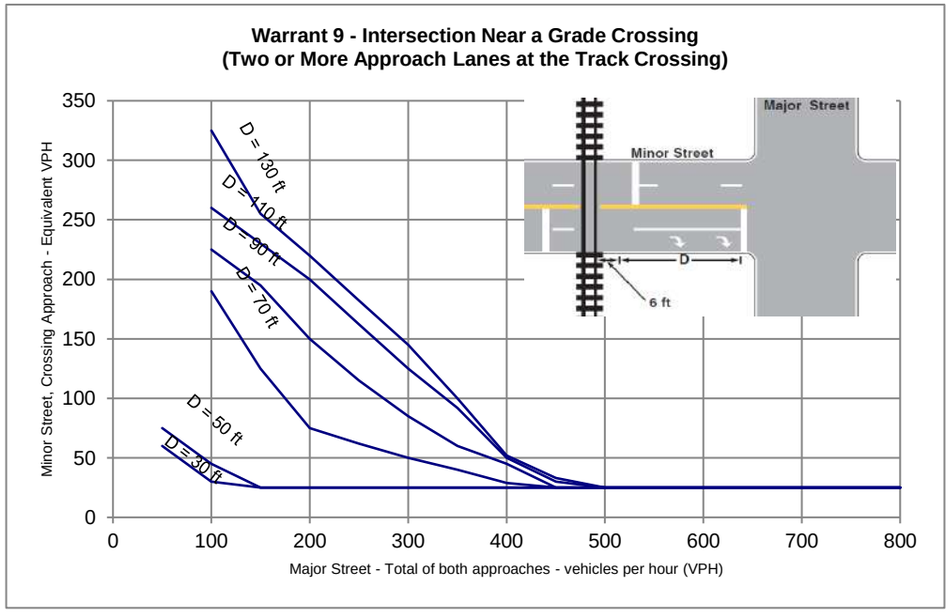
Total Adjustment 1.00

Highest Rail Traffic Hour	Combined Major Approach	Minor Approach	Combined Adjusted Approach	Minimum Required	Warrant met?
#VALUE!	#VALUE!	#VALUE!	#VALUE!	#N/A	#VALUE!

Is Warrant 9 Satisfied? N/A

Warrant 9 - Intersection Near a Grade Crossing (Continued)





Appendix C:
Existing Conditions (2023) Operational Analysis Reports

Appendix C1. Unsignalized Intersections
Appendix C2. Signalized Intersections
Appendix C3. Queueing Results

Appendix C1:
Unsignalized Intersections

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	400	5	25	490	5	55
Future Vol, veh/h	400	5	25	490	5	55
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	92	92	92	92	92	92
Heavy Vehicles, %	6	100	9	4	0	2
Mvmt Flow	435	5	27	533	5	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	440	0	1025	438
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	587	-
Critical Hdwy	-	-	4.19	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	1084	-	263	619
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	560	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1084	-	254	619
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	553	-	-	1084	-
HCM Lane V/C Ratio	0.118	-	-	0.025	-
HCM Control Delay (s)	12.4	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	450	5	10	500	15	25
Future Vol, veh/h	450	5	10	500	15	25
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	6	0	5
Mvmt Flow	489	5	11	543	16	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	494	0	1057	492
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	565	-
Critical Hdwy	-	-	4.1	-	6.4	6.25
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.345
Pot Cap-1 Maneuver	-	-	1080	-	251	571
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	573	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1080	-	247	571
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	564	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	-	-	1080	-
HCM Lane V/C Ratio	0.114	-	-	0.01	-
HCM Control Delay (s)	15.6	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	435	40	50	505	5	5
Future Vol, veh/h	435	40	50	505	5	5
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	4	5	0	0
Mvmt Flow	473	43	54	549	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	516	0	1152	495
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	657	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1040	-	221	579
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	519	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1040	-	204	579
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	480	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	-	-	1040	-
HCM Lane V/C Ratio	0.036	-	-	0.052	-
HCM Control Delay (s)	17.4	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	435	535	5	5	20
Future Vol, veh/h	5	435	535	5	5	20
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	92	92	92	92	92	92
Heavy Vehicles, %	20	6	5	33	0	0
Mvmt Flow	5	473	582	5	5	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	587	0	-	0	1068	585
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	483	-
Critical Hdwy	4.3	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.38	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	905	-	-	-	248	515
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	625	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	246	515
Mov Cap-2 Maneuver	-	-	-	-	246	-
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	625	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	423
HCM Lane V/C Ratio	0.006	-	-	-	0.064
HCM Control Delay (s)	9	0	-	-	14.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	0	0	510	30	40
Future Vol, veh/h	440	0	0	510	30	40
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	5	3	3
Mvmt Flow	478	0	0	554	33	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	478	0	1032	478
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	-	-	4.1	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.2	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1095	-	257	585
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	574	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1095	-	257	585
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	378	-	-	1095	-
HCM Lane V/C Ratio	0.201	-	-	-	-
HCM Control Delay (s)	16.9	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	415	50	45	485	10	10	0	25	10	0	15
Future Vol, veh/h	15	415	50	45	485	10	10	0	25	10	0	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	-	-	0	150	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	27	26	4	0	22	0	67	0	0	0
Mvmt Flow	16	451	54	49	527	11	11	0	27	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	538	0	0	505	0	0	1122	1119	451	1149	1162	527
Stage 1	-	-	-	-	-	-	483	483	-	625	625	-
Stage 2	-	-	-	-	-	-	639	636	-	524	537	-
Critical Hdwy	4.1	-	-	4.36	-	-	7.32	6.5	6.87	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.32	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.32	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.434	-	-	3.698	4	3.903	3.5	4	3.3
Pot Cap-1 Maneuver	1040	-	-	947	-	-	168	209	493	177	197	555
Stage 1	-	-	-	-	-	-	529	556	-	476	480	-
Stage 2	-	-	-	-	-	-	432	475	-	540	526	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1040	-	-	947	-	-	154	194	493	158	183	555
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	194	-	158	183	-
Stage 1	-	-	-	-	-	-	517	544	-	466	455	-
Stage 2	-	-	-	-	-	-	398	450	-	499	514	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	18.6	19.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	303	1040	-	-	947	-	-	277
HCM Lane V/C Ratio	0.126	0.016	-	-	0.052	-	-	0.098
HCM Control Delay (s)	18.6	8.5	-	-	9	-	-	19.4
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.3

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	465	115	65	575	5	70	5	85	10	5	10
Future Vol, veh/h	5	465	115	65	575	5	70	5	85	10	5	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	125	-	-	150	-	-	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	3	14	5	4	0	14	0	10	13	0	17
Mvmt Flow	5	505	125	71	625	5	76	5	92	11	5	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	630	0	0	630	0	0	1356	1350	568	1396	1410	628
Stage 1	-	-	-	-	-	-	578	578	-	770	770	-
Stage 2	-	-	-	-	-	-	778	772	-	626	640	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.24	6.5	6.3	7.23	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.24	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.24	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.626	4	3.39	3.617	4	3.453
Pot Cap-1 Maneuver	962	-	-	938	-	-	119	152	507	112	140	457
Stage 1	-	-	-	-	-	-	481	504	-	377	413	-
Stage 2	-	-	-	-	-	-	372	412	-	454	473	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	962	-	-	938	-	-	106	140	507	83	129	457
Mov Cap-2 Maneuver	-	-	-	-	-	-	106	140	-	83	129	-
Stage 1	-	-	-	-	-	-	479	501	-	375	382	-
Stage 2	-	-	-	-	-	-	331	381	-	365	471	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.9	55.6	37.4
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	108	507	962	-	-	938	-	-	138
HCM Lane V/C Ratio	0.755	0.182	0.006	-	-	0.075	-	-	0.197
HCM Control Delay (s)	103	13.7	8.8	-	-	9.2	-	-	37.4
HCM Lane LOS	F	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	4.1	0.7	0	-	-	0.2	-	-	0.7

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	535	610	95	90	35
Future Vol, veh/h	25	535	610	95	90	35
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	92	92	92	92	92	92
Heavy Vehicles, %	10	5	6	2	1	0
Mvmt Flow	27	582	663	103	98	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	766	0	-	0	1351	715
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	636	-
Critical Hdwy	4.2	-	-	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.29	-	-	-	3.509	3.3
Pot Cap-1 Maneuver	813	-	-	-	167	434
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	813	-	-	-	159	434
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	529	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	58.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	813	-	-	-	193
HCM Lane V/C Ratio	0.033	-	-	-	0.704
HCM Control Delay (s)	9.6	0	-	-	58.8
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	4.4

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	600	630	20	85	75
Future Vol, veh/h	25	600	630	20	85	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	3	5	0	8
Mvmt Flow	27	652	685	22	92	82

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	707	0	-	0	1391	685
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	4.14	-	-	-	6.4	6.28
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	-	3.5	3.372
Pot Cap-1 Maneuver	882	-	-	-	158	438
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	493	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	882	-	-	-	153	438
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	493	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	63.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	882	-	-	-	220
HCM Lane V/C Ratio	0.031	-	-	-	0.791
HCM Control Delay (s)	9.2	-	-	-	63.9
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	5.7

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	515	5	70	460	5	40
Future Vol, veh/h	515	5	70	460	5	40
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	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	560	5	76	500	5	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	565	0	1215	563
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	652	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1017	-	202	530
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	522	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1017	-	181	530
Mov Cap-2 Maneuver	-	-	-	-	181	-
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	436	-	-	1017	-
HCM Lane V/C Ratio	0.112	-	-	0.075	-
HCM Control Delay (s)	14.3	-	-	8.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	540	15	25	520	10	15
Future Vol, veh/h	540	15	25	520	10	15
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	92	92	92	92	92	92
Heavy Vehicles, %	2	0	5	3	20	7
Mvmt Flow	587	16	27	565	11	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	603	0	1214	595
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	619	-
Critical Hdwy	-	-	4.15	-	6.6	6.27
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.245	-	3.68	3.363
Pot Cap-1 Maneuver	-	-	960	-	184	495
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	504	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	960	-	176	495
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	483	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	18.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	287	-	-	960	-
HCM Lane V/C Ratio	0.095	-	-	0.028	-
HCM Control Delay (s)	18.9	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	545	10	5	535	10	15
Future Vol, veh/h	545	10	5	535	10	15
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	92	92	92	92	92	92
Heavy Vehicles, %	2	17	0	0	0	4
Mvmt Flow	592	11	5	582	11	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	603	0	1190	598
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	592	-
Critical Hdwy	-	-	4.1	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.336
Pot Cap-1 Maneuver	-	-	984	-	209	499
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	557	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	984	-	207	499
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	553	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	17.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	984	-
HCM Lane V/C Ratio	0.085	-	-	0.006	-
HCM Control Delay (s)	17.3	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	535	520	20	10	20
Future Vol, veh/h	25	535	520	20	10	20
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	92	92	92	92	92	92
Heavy Vehicles, %	0	2	4	0	0	0
Mvmt Flow	27	582	565	22	11	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	587	0	-	0	1212	576
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	636	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	998	-	-	-	203	521
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	531	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	998	-	-	-	195	521
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	531	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	998	-	-	-	335
HCM Lane V/C Ratio	0.027	-	-	-	0.097
HCM Control Delay (s)	8.7	0	-	-	16.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	545	0	0	535	5	5
Future Vol, veh/h	545	0	0	535	5	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	3	80	0
Mvmt Flow	592	0	0	582	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	592	0	1174	592
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	582	-
Critical Hdwy	-	-	4.1	-	7.2	6.2
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	-	-	2.2	-	4.22	3.3
Pot Cap-1 Maneuver	-	-	994	-	150	510
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	432	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	994	-	150	510
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	432	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	232	-	-	994	-
HCM Lane V/C Ratio	0.047	-	-	-	-
HCM Control Delay (s)	21.3	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

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	5	455	90	75	460	15	70	0	25	5	0	5
Future Vol, veh/h	5	455	90	75	460	15	70	0	25	5	0	5
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	-	-	0	150	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	6	2	0	3	3	3	0	0	4	0	0	0
Mvmt Flow	5	495	98	82	500	16	76	0	27	5	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	516	0	0	593	0	0	1180	1185	495	1232	1267	500
Stage 1	-	-	-	-	-	-	505	505	-	664	664	-
Stage 2	-	-	-	-	-	-	675	680	-	568	603	-
Critical Hdwy	4.16	-	-	4.13	-	-	7.1	6.5	6.24	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	2.254	-	-	2.227	-	-	3.5	4	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	1030	-	-	978	-	-	169	191	571	155	170	575
Stage 1	-	-	-	-	-	-	553	544	-	453	461	-
Stage 2	-	-	-	-	-	-	447	454	-	511	492	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1030	-	-	978	-	-	156	174	571	137	155	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	174	-	137	155	-
Stage 1	-	-	-	-	-	-	549	540	-	450	422	-
Stage 2	-	-	-	-	-	-	406	416	-	483	489	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.2	43.3	22.1
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	193	1030	-	-	978	-	-	221
HCM Lane V/C Ratio	0.535	0.005	-	-	0.083	-	-	0.049
HCM Control Delay (s)	43.3	8.5	-	-	9	-	-	22.1
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.8	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	685	20	15	600	20	15	0	10	10	5	10
Future Vol, veh/h	10	685	20	15	600	20	15	0	10	10	5	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	125	-	-	150	-	-	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	5	0	3	0	13	0	0	14	0	0
Mvmt Flow	11	745	22	16	652	22	16	0	11	11	5	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	674	0	0	767	0	0	1481	1484	756	1479	1484	663
Stage 1	-	-	-	-	-	-	778	778	-	695	695	-
Stage 2	-	-	-	-	-	-	703	706	-	784	789	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.23	6.5	6.2	7.24	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.5	-	6.24	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.5	-	6.24	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.617	4	3.3	3.626	4	3.3
Pot Cap-1 Maneuver	927	-	-	856	-	-	98	126	411	98	126	465
Stage 1	-	-	-	-	-	-	373	410	-	414	447	-
Stage 2	-	-	-	-	-	-	411	442	-	369	405	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	927	-	-	856	-	-	90	122	411	93	122	465
Mov Cap-2 Maneuver	-	-	-	-	-	-	90	122	-	93	122	-
Stage 1	-	-	-	-	-	-	369	405	-	409	439	-
Stage 2	-	-	-	-	-	-	389	434	-	355	400	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	37.8	35
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	90	411	927	-	-	856	-	-	147
HCM Lane V/C Ratio	0.181	0.026	0.012	-	-	0.019	-	-	0.185
HCM Control Delay (s)	53.6	14	8.9	-	-	9.3	-	-	35
HCM Lane LOS	F	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.6	0.1	0	-	-	0.1	-	-	0.7

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	665	600	80	65	35
Future Vol, veh/h	40	665	600	80	65	35
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	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	3	0
Mvmt Flow	43	723	652	87	71	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	739	0	-	0	1505	696
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	809	-
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	876	-	-	-	133	445
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	436	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	876	-	-	-	122	445
Mov Cap-2 Maneuver	-	-	-	-	122	-
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	436	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	62
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	876	-	-	-	164
HCM Lane V/C Ratio	0.05	-	-	-	0.663
HCM Control Delay (s)	9.3	0	-	-	62
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	3.8

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	670	640	70	35	40
Future Vol, veh/h	60	670	640	70	35	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	3	3	0	0
Mvmt Flow	65	728	696	76	38	43

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	772	0	-	0	1554	696
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	858	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	852	-	-	-	126	445
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	419	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	852	-	-	-	116	445
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	419	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	36.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	852	-	-	-	192
HCM Lane V/C Ratio	0.077	-	-	-	0.425
HCM Control Delay (s)	9.6	-	-	-	36.9
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	1.9

Appendix C2:
Signalized Intersections

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	350	10	0	420	75	25	30	5	50	10	5
Future Volume (veh/h)	5	350	10	0	420	75	25	30	5	50	10	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1900	1810	1462	1900	1810	1900	1900	1859	1520	1900	1764	1900
Adj Flow Rate, veh/h	5	380	11	0	457	82	27	33	5	54	11	5
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
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, %	0	5	30	0	5	0	0	4	25	10	0	0
Cap, veh/h	236	833	572	439	615	549	62	76	98	102	21	9
Arrive On Green	0.01	0.46	0.46	0.00	0.34	0.34	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1810	1810	1242	1810	1810	1615	818	1000	1292	1294	264	120
Grp Volume(v), veh/h	5	380	11	0	457	82	60	0	5	70	0	0
Grp Sat Flow(s),veh/h/ln	1810	1810	1242	1810	1810	1615	1818	0	1292	1678	0	0
Q Serve(g_s), s	0.1	8.9	0.3	0.0	13.8	2.2	2.0	0.0	0.2	2.5	0.0	0.0
Cycle Q Clear(g_c), s	0.1	8.9	0.3	0.0	13.8	2.2	2.0	0.0	0.2	2.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.45		1.00	0.77		0.07
Lane Grp Cap(c), veh/h	236	833	572	439	615	549	138	0	98	133	0	0
V/C Ratio(X)	0.02	0.46	0.02	0.00	0.74	0.15	0.43	0.00	0.05	0.53	0.00	0.00
Avail Cap(c_a), veh/h	424	1049	720	641	1069	954	528	0	375	488	0	0
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	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.9	11.4	9.1	0.0	18.1	14.2	27.3	0.0	26.5	27.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	3.8	0.3	2.1	0.0	0.2	3.2	0.0	0.0
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	0.1	4.6	0.1	0.0	7.5	1.0	1.1	0.0	0.1	1.3	0.0	0.0
LnGrp Delay(d),s/veh	13.9	12.2	9.1	0.0	21.8	14.5	29.5	0.0	26.8	30.6	0.0	0.0
LnGrp LOS	B	B	A		C	B	C		C	C		
Approach Vol, veh/h		396			539			65			70	
Approach Delay, s/veh		12.2			20.7			29.3			30.6	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	35.4		13.8	7.5	28.0		12.7
Change Period (Y+Rc), s	7.3	6.9		* 8.9	* 6.9	* 6.9		8.0
Max Green Setting (Gmax), s	7.0	35.9		* 18	* 7	* 37		18.0
Max Q Clear Time (g_c+I1), s	0.0	10.9		4.5	2.1	15.8		4.0
Green Ext Time (p_c), s	0.0	4.1		0.2	0.0	5.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	420	15	15	480	160	30	15	45	120	10	30
Future Volume (veh/h)	15	420	15	15	480	160	30	15	45	120	10	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1545	1792	1900	1900	1792	1863	1900	1722	1810	1900	1848	1900
Adj Flow Rate, veh/h	16	457	16	16	522	174	33	16	0	130	11	33
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
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, %	23	6	0	0	6	2	12	7	5	3	0	3
Cap, veh/h	198	652	587	281	652	576	67	33	92	164	14	42
Arrive On Green	0.03	0.36	0.36	0.03	0.36	0.36	0.06	0.06	0.00	0.13	0.13	0.13
Sat Flow, veh/h	1471	1792	1615	1810	1792	1583	1122	544	1538	1289	109	327
Grp Volume(v), veh/h	16	457	16	16	522	174	49	0	0	174	0	0
Grp Sat Flow(s),veh/h/ln	1471	1792	1615	1810	1792	1583	1665	0	1538	1726	0	0
Q Serve(g_s), s	0.5	16.3	0.5	0.4	19.5	5.9	2.1	0.0	0.0	7.3	0.0	0.0
Cycle Q Clear(g_c), s	0.5	16.3	0.5	0.4	19.5	5.9	2.1	0.0	0.0	7.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.67		1.00	0.75		0.19
Lane Grp Cap(c), veh/h	198	652	587	281	652	576	100	0	92	219	0	0
V/C Ratio(X)	0.08	0.70	0.03	0.06	0.80	0.30	0.49	0.00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	297	850	765	402	850	750	401	0	371	416	0	0
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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.7	20.3	15.3	15.8	21.3	17.0	34.0	0.0	0.0	31.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	3.2	0.0	0.1	6.1	0.6	2.8	0.0	0.0	4.8	0.0	0.0
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	0.2	8.6	0.2	0.2	10.7	2.7	1.1	0.0	0.0	3.8	0.0	0.0
LnGrp Delay(d),s/veh	16.8	23.5	15.3	15.9	27.4	17.6	36.8	0.0	0.0	36.5	0.0	0.0
LnGrp LOS	B	C	B	B	C	B	D			D		
Approach Vol, veh/h		489			712			49			174	
Approach Delay, s/veh		23.0			24.8			36.8			36.5	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.2	33.3		19.3	9.2	33.3		13.0
Change Period (Y+Rc), s	7.2	* 6.1		* 9.8	7.2	* 6.1		8.5
Max Green Setting (Gmax), s	7.0	* 35		* 18	7.0	* 35		18.0
Max Q Clear Time (g_c+I1), s	2.4	18.3		9.3	2.5	21.5		4.1
Green Ext Time (p_c), s	0.0	4.5		0.4	0.0	5.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	26.0
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	445	30	5	400	60	15	15	5	70	30	10
Future Volume (veh/h)	10	445	30	5	400	60	15	15	5	70	30	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1712	1863	1900	1900	1827	1845	1900	1900	1900	1900	1849	1900
Adj Flow Rate, veh/h	11	484	33	5	435	65	16	16	5	76	33	11
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
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, %	11	2	0	0	4	3	0	0	0	0	10	0
Cap, veh/h	256	639	554	233	620	532	49	49	86	109	48	16
Arrive On Green	0.02	0.34	0.34	0.01	0.34	0.34	0.05	0.05	0.05	0.10	0.10	0.10
Sat Flow, veh/h	1630	1863	1615	1810	1827	1568	927	927	1615	1118	485	162
Grp Volume(v), veh/h	11	484	33	5	435	65	32	0	5	120	0	0
Grp Sat Flow(s),veh/h/ln	1630	1863	1615	1810	1827	1568	1854	0	1615	1765	0	0
Q Serve(g_s), s	0.3	14.4	0.9	0.1	12.9	1.8	1.0	0.0	0.2	4.1	0.0	0.0
Cycle Q Clear(g_c), s	0.3	14.4	0.9	0.1	12.9	1.8	1.0	0.0	0.2	4.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.50		1.00	0.63		0.09
Lane Grp Cap(c), veh/h	256	639	554	233	620	532	98	0	86	173	0	0
V/C Ratio(X)	0.04	0.76	0.06	0.02	0.70	0.12	0.33	0.00	0.06	0.69	0.00	0.00
Avail Cap(c_a), veh/h	406	1068	926	418	1068	916	533	0	464	507	0	0
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	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.3	18.3	13.8	14.9	17.9	14.3	28.6	0.0	28.2	27.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	3.9	0.1	0.0	3.1	0.2	1.9	0.0	0.3	4.9	0.0	0.0
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	0.1	8.1	0.4	0.1	7.1	0.8	0.6	0.0	0.1	2.2	0.0	0.0
LnGrp Delay(d),s/veh	14.4	22.2	13.9	15.0	21.0	14.5	30.5	0.0	28.4	32.3	0.0	0.0
LnGrp LOS	B	C	B	B	C	B	C		C	C		
Approach Vol, veh/h		528			505			37			120	
Approach Delay, s/veh		21.5			20.1			30.2			32.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.9	28.4		15.0	8.1	28.1		11.3
Change Period (Y+Rc), s	7.3	6.9		* 8.9	* 6.9	* 6.9		8.0
Max Green Setting (Gmax), s	7.0	35.9		* 18	* 7	* 37		18.0
Max Q Clear Time (g_c+I1), s	2.1	16.4		6.1	2.3	14.9		3.0
Green Ext Time (p_c), s	0.0	5.0		0.4	0.0	4.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	445	20	70	460	95	60	30	85	185	30	30
Future Volume (veh/h)	20	445	20	70	460	95	60	30	85	185	30	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1712	1863	1792	1863	1845	1881	1900	1900	1827	1900	1874	1900
Adj Flow Rate, veh/h	22	484	22	76	500	103	65	33	0	201	33	33
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
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, %	11	2	6	2	3	1	0	0	4	1	0	5
Cap, veh/h	217	582	476	269	641	556	90	46	115	233	38	38
Arrive On Green	0.03	0.31	0.31	0.07	0.35	0.35	0.07	0.07	0.00	0.17	0.17	0.17
Sat Flow, veh/h	1630	1863	1524	1774	1845	1599	1220	619	1553	1332	219	219
Grp Volume(v), veh/h	22	484	22	76	500	103	98	0	0	267	0	0
Grp Sat Flow(s),veh/h/ln	1630	1863	1524	1774	1845	1599	1839	0	1553	1769	0	0
Q Serve(g_s), s	0.8	20.6	0.9	2.4	20.7	3.8	4.4	0.0	0.0	12.5	0.0	0.0
Cycle Q Clear(g_c), s	0.8	20.6	0.9	2.4	20.7	3.8	4.4	0.0	0.0	12.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.66		1.00	0.75		0.12
Lane Grp Cap(c), veh/h	217	582	476	269	641	556	136	0	115	309	0	0
V/C Ratio(X)	0.10	0.83	0.05	0.28	0.78	0.19	0.72	0.00	0.00	0.86	0.00	0.00
Avail Cap(c_a), veh/h	297	769	629	293	761	660	388	0	328	377	0	0
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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.4	27.2	20.5	19.8	24.9	19.4	38.6	0.0	0.0	34.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	8.3	0.1	0.4	5.9	0.3	5.2	0.0	0.0	15.1	0.0	0.0
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	0.4	11.8	0.4	1.2	11.6	1.7	2.5	0.0	0.0	7.4	0.0	0.0
LnGrp Delay(d),s/veh	20.5	35.5	20.5	20.2	30.8	19.7	43.9	0.0	0.0	49.3	0.0	0.0
LnGrp LOS	C	D	C	C	C	B	D			D		
Approach Vol, veh/h		528			679			98			267	
Approach Delay, s/veh		34.3			28.0			43.9			49.3	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	32.8		24.7	10.0	35.8		14.8
Change Period (Y+Rc), s	7.2	* 6.1		* 9.8	7.2	* 6.1		8.5
Max Green Setting (Gmax), s	7.0	* 35		* 18	7.0	* 35		18.0
Max Q Clear Time (g_c+I1), s	4.4	22.6		14.5	2.8	22.7		6.4
Green Ext Time (p_c), s	0.0	4.1		0.4	0.0	4.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.7
HCM 2010 LOS	C

Notes

Appendix C3: Queues

Intersection: 101: Varina Rd/Wilson Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	T	R	T	R	LT	R	LTR
Maximum Queue (ft)	24	163	38	174	10	65	38	96
Average Queue (ft)	3	60	3	55	1	21	5	32
95th Queue (ft)	14	124	18	132	5	49	23	71
Link Distance (ft)		1905		4371		1703		1427
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	275		425		325		250	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 200: Mill Rd & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	2	104	43
Average Queue (ft)	0	13	12
95th Queue (ft)	2	63	30
Link Distance (ft)	4371	290	2011
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 300: Recreation Rd & Rte 5 (New Market Rd)

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	57	55
Average Queue (ft)	4	24
95th Queue (ft)	28	49
Link Distance (ft)	768	1429
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 401: E.S. Entrance & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	30	117	36
Average Queue (ft)	1	27	10
95th Queue (ft)	20	84	33
Link Distance (ft)	768	106	767
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 402: Rte 5 (New Market Rd) & Gregg Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	53	58	43
Average Queue (ft)	3	3	17
95th Queue (ft)	31	30	41
Link Distance (ft)	106	258	881
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 501: E.S. Exit & Rte 5 (New Market Rd)

Movement	EB	NB
Directions Served	TR	LR
Maximum Queue (ft)	20	78
Average Queue (ft)	1	33
95th Queue (ft)	15	63
Link Distance (ft)	258	666
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 502: Produce Rd/Business Dvwys & Rte 5 (New Market Rd)

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	L	LTR	LTR
Maximum Queue (ft)	91	4	75	91	36
Average Queue (ft)	9	0	21	36	13
95th Queue (ft)	50	3	58	78	32
Link Distance (ft)	150	150		843	521
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			150		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 600: Strath Rd & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	L	T	R	LT	R	LTR
Maximum Queue (ft)	68	246	73	282	163	112	59	161
Average Queue (ft)	8	94	11	131	31	36	31	74
95th Queue (ft)	37	198	50	234	95	80	63	129
Link Distance (ft)		330		1479		1663		1222
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175		175		275		50	
Storage Blk Time (%)	0	2	0	3	0	10	1	
Queuing Penalty (veh)	0	0	0	6	0	4	0	

Intersection: 700: Buffin Rd/Wood Mill Dr & Rte 5 (New Market Rd)

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	TR	L	LT	R	LTR
Maximum Queue (ft)	20	22	57	243	162	79
Average Queue (ft)	2	1	9	60	41	24
95th Queue (ft)	11	11	34	170	110	61
Link Distance (ft)		1479		1209		972
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	125		150		200	
Storage Blk Time (%)				3	0	
Queuing Penalty (veh)				2	0	

Intersection: 800: Rte 5 (New Market Rd) & Doran Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	199	23	191
Average Queue (ft)	31	1	70
95th Queue (ft)	118	10	155
Link Distance (ft)	1117	541	894
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 900: Rte 5 (New Market Rd)

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	39	2	187
Average Queue (ft)	8	0	71
95th Queue (ft)	31	2	139
Link Distance (ft)		1540	872
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 17

Intersection: 101: Varina Rd/Wilson Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	33	186	18	13	187	12	56	23	114
Average Queue (ft)	5	76	5	1	56	1	13	3	42
95th Queue (ft)	22	149	17	7	138	8	37	15	86
Link Distance (ft)		1905			4371		1703		1427
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275		425	275		325		250	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 200: Mill Rd & Rte 5 (New Market Rd)

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	141	36
Average Queue (ft)	36	8
95th Queue (ft)	102	23
Link Distance (ft)	290	2011
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: Recreation Rd & Rte 5 (New Market Rd)

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	112	73
Average Queue (ft)	16	22
95th Queue (ft)	68	55
Link Distance (ft)	768	1429
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 401: E.S. Entrance & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	39	69	62
Average Queue (ft)	2	6	21
95th Queue (ft)	19	37	50
Link Distance (ft)	768	106	767
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 402: Rte 5 (New Market Rd) & Gregg Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	114	28	53
Average Queue (ft)	18	1	20
95th Queue (ft)	69	22	45
Link Distance (ft)	106	258	881
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	2		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 501: E.S. Exit & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	2	4	63
Average Queue (ft)	0	0	13
95th Queue (ft)	2	5	45
Link Distance (ft)	258	150	666
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 502: Produce Rd/Business Dvwys & Rte 5 (New Market Rd)

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	L	LTR	LTR
Maximum Queue (ft)	49	20	70	114	28
Average Queue (ft)	3	1	26	50	6
95th Queue (ft)	24	9	58	90	23
Link Distance (ft)	150	150		843	521
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			150		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 600: Strath Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	174	307	18	164	323	205	161	66	253
Average Queue (ft)	17	153	1	47	160	29	68	42	134
95th Queue (ft)	84	275	9	118	277	105	131	62	227
Link Distance (ft)		330	330		1479		1663		1222
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	175			175		275		50	
Storage Blk Time (%)	0	7		0	6	0	25	2	
Queuing Penalty (veh)	0	1		0	10	0	21	1	

Intersection: 700: Buffin Rd/Wood Mill Dr & Rte 5 (New Market Rd)

Movement	EB	WB	NB	NB	SB
Directions Served	L	L	LT	R	LTR
Maximum Queue (ft)	24	6	47	24	65
Average Queue (ft)	4	1	6	6	19
95th Queue (ft)	16	4	30	21	49
Link Distance (ft)			1209		972
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	125	150		200	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 800: Rte 5 (New Market Rd) & Doran Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	294	13	191
Average Queue (ft)	48	1	69
95th Queue (ft)	170	6	153
Link Distance (ft)	1117	541	894
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 900: Rte 5 (New Market Rd)

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	59	9	95
Average Queue (ft)	22	0	38
95th Queue (ft)	51	5	73
Link Distance (ft)		1540	872
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 37

Appendix D:
Design Year (2045) No-Build Condition Operational Analysis Reports

Appendix D1. Unsignalized Intersections
Appendix D2. Signalized Intersections
Appendix D3. Queueing Results

Appendix D1:
Unsignalized Intersections

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	660	10	35	675	10	95
Future Vol, veh/h	660	10	35	675	10	95
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	92	92	92	92	92	92
Heavy Vehicles, %	6	100	9	4	0	2
Mvmt Flow	717	11	38	734	11	103

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	728	0	1533	723
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	810	-
Critical Hdwy	-	-	4.19	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	844	-	130	426
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	844	-	120	426
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	407	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	20.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	343	-	-	844	-
HCM Lane V/C Ratio	0.333	-	-	0.045	-
HCM Control Delay (s)	20.6	-	-	9.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	745	10	15	690	20	35
Future Vol, veh/h	745	10	15	690	20	35
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	6	0	5
Mvmt Flow	810	11	16	750	22	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	821	0	1598	816
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	782	-
Critical Hdwy	-	-	4.1	-	6.4	6.25
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.345
Pot Cap-1 Maneuver	-	-	817	-	118	372
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	817	-	114	372
Mov Cap-2 Maneuver	-	-	-	-	114	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	29.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	204	-	-	817	-
HCM Lane V/C Ratio	0.293	-	-	0.02	-
HCM Control Delay (s)	29.8	-	-	9.5	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	730	50	65	695	10	10
Future Vol, veh/h	730	50	65	695	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	4	5	0	0
Mvmt Flow	793	54	71	755	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	847	0	1717	820
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	897	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	782	-	100	378
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	401	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	782	-	84	378
Mov Cap-2 Maneuver	-	-	-	-	84	-
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	36.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	137	-	-	782	-
HCM Lane V/C Ratio	0.159	-	-	0.09	-
HCM Control Delay (s)	36.2	-	-	10.1	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	730	735	10	10	25
Future Vol, veh/h	10	730	735	10	10	25
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	92	92	92	92	92	92
Heavy Vehicles, %	20	6	5	33	0	0
Mvmt Flow	11	793	799	11	11	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	810	0	-	0	1620	805
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	815	-
Critical Hdwy	4.3	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.38	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	742	-	-	-	115	386
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	439	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	742	-	-	-	112	386
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	24
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	742	-	-	-	227
HCM Lane V/C Ratio	0.015	-	-	-	0.168
HCM Control Delay (s)	9.9	0	-	-	24
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	740	0	0	705	40	50
Future Vol, veh/h	740	0	0	705	40	50
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	5	3	3
Mvmt Flow	804	0	0	766	43	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	804	0	1570	804
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	766	-
Critical Hdwy	-	-	4.1	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.2	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	829	-	121	381
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	457	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	829	-	121	381
Mov Cap-2 Maneuver	-	-	-	-	121	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	40.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	195	-	-	829	-
HCM Lane V/C Ratio	0.502	-	-	-	-
HCM Control Delay (s)	40.7	-	-	0	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	2.5	-	-	0	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑	↱		↔			↔	
Traffic Vol, veh/h	20	705	65	55	670	15	15	0	35	15	0	20
Future Vol, veh/h	20	705	65	55	670	15	15	0	35	15	0	20
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	-	-	0	150	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	27	26	4	0	22	0	67	0	0	0
Mvmt Flow	22	766	71	60	728	16	16	0	38	16	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	744	0	0	837	0	0	1677	1674	766	1713	1729	728
Stage 1	-	-	-	-	-	-	810	810	-	848	848	-
Stage 2	-	-	-	-	-	-	867	864	-	865	881	-
Critical Hdwy	4.1	-	-	4.36	-	-	7.32	6.5	6.87	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.32	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.32	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.434	-	-	3.698	4	3.903	3.5	4	3.3
Pot Cap-1 Maneuver	873	-	-	703	-	-	67	97	315	72	89	427
Stage 1	-	-	-	-	-	-	346	396	-	359	380	-
Stage 2	-	-	-	-	-	-	321	374	-	351	367	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	873	-	-	703	-	-	57	84	315	57	78	427
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	84	-	57	78	-
Stage 1	-	-	-	-	-	-	329	377	-	342	348	-
Stage 2	-	-	-	-	-	-	279	342	-	294	349	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.8	49.1	52.2
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	134	873	-	-	703	-	-	113
HCM Lane V/C Ratio	0.406	0.025	-	-	0.085	-	-	0.337
HCM Control Delay (s)	49.1	9.2	-	-	10.6	-	-	52.2
HCM Lane LOS	E	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.7	0.1	-	-	0.3	-	-	1.3

Intersection	
Int Delay, s/veh	76.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	785	145	80	765	10	90	10	105	15	10	15
Future Vol, veh/h	10	785	145	80	765	10	90	10	105	15	10	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	125	-	-	150	-	-	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	3	14	5	4	0	14	0	10	13	0	17
Mvmt Flow	11	853	158	87	832	11	98	11	114	16	11	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	843	0	0	1011	0	0	1979	1971	932	2029	2045	838
Stage 1	-	-	-	-	-	-	954	954	-	1012	1012	-
Stage 2	-	-	-	-	-	-	1025	1017	-	1017	1033	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.24	6.5	6.3	7.23	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.24	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.24	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.626	4	3.39	3.617	4	3.453
Pot Cap-1 Maneuver	802	-	-	674	-	-	~ 43	63	312	40	57	344
Stage 1	-	-	-	-	-	-	296	340	-	275	319	-
Stage 2	-	-	-	-	-	-	269	318	-	273	312	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	802	-	-	674	-	-	~ 30	54	312	19	49	344
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 30	54	-	19	49	-
Stage 1	-	-	-	-	-	-	292	335	-	271	278	-
Stage 2	-	-	-	-	-	-	214	277	-	165	308	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1	$ 691.3	$ 339.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	31	312	802	-	-	674	-	-	39
HCM Lane V/C Ratio	3.506	0.366	0.014	-	-	0.129	-	-	1.115
HCM Control Delay (s)	$ 1393	23	9.6	-	-	11.1	-	-	$ 339.9
HCM Lane LOS	F	C	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	12.9	1.6	0	-	-	0.4	-	-	4.3

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

Intersection	
Int Delay, s/veh	48.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	870	810	120	110	45
Future Vol, veh/h	35	870	810	120	110	45
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	92	92	92	92	92	92
Heavy Vehicles, %	10	5	6	2	1	0
Mvmt Flow	38	946	880	130	120	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1010	0	-	0	1967	945
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	1022	-
Critical Hdwy	4.2	-	-	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.29	-	-	-	3.509	3.3
Pot Cap-1 Maneuver	656	-	-	-	~ 69	320
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	349	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	656	-	-	-	~ 61	320
Mov Cap-2 Maneuver	-	-	-	-	~ 61	-
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	349	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	$ 622.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	656	-	-	-	80
HCM Lane V/C Ratio	0.058	-	-	-	2.106
HCM Control Delay (s)	10.8	0	-	-	$ 622.2
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	15.2

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

Intersection	
Int Delay, s/veh	57

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	945	835	25	105	95
Future Vol, veh/h	35	945	835	25	105	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	3	5	0	8
Mvmt Flow	38	1016	898	27	113	102

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	925	0	-	0	1990	898
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	1092	-
Critical Hdwy	4.14	-	-	-	6.4	6.28
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	-	3.5	3.372
Pot Cap-1 Maneuver	731	-	-	-	~ 68	330
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	324	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	731	-	-	-	~ 64	330
Mov Cap-2 Maneuver	-	-	-	-	~ 64	-
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	324	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	$ 579.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	731	-	-	-	104
HCM Lane V/C Ratio	0.051	-	-	-	2.068
HCM Control Delay (s)	10.2	-	-	-	$ 579.8
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	18.3

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

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	750	10	90	775	10	70
Future Vol, veh/h	750	10	90	775	10	70
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	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	789	11	95	816	11	74

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	800	0	1801	795
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	1006	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	832	-	89	391
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	357	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	832	-	70	391
Mov Cap-2 Maneuver	-	-	-	-	70	-
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	282	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	26.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	832	-
HCM Lane V/C Ratio	0.338	-	-	0.114	-
HCM Control Delay (s)	26.7	-	-	9.9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.4	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	800	20	35	850	15	20
Future Vol, veh/h	800	20	35	850	15	20
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	95	95	95	95	95	95
Heavy Vehicles, %	2	0	5	3	20	7
Mvmt Flow	842	21	37	895	16	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	863	0	1822	853
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	969	-
Critical Hdwy	-	-	4.15	-	6.6	6.27
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.245	-	3.68	3.363
Pot Cap-1 Maneuver	-	-	767	-	76	352
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	341	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	767	-	69	352
Mov Cap-2 Maneuver	-	-	-	-	69	-
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	308	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	42.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	138	-	-	767	-
HCM Lane V/C Ratio	0.304	-	-	0.048	-
HCM Control Delay (s)	42.1	-	-	9.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	805	15	10	870	15	20
Future Vol, veh/h	805	15	10	870	15	20
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	92	92	92	92	92	92
Heavy Vehicles, %	2	17	0	0	0	4
Mvmt Flow	875	16	11	946	16	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	891	0	1851	883
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	968	-
Critical Hdwy	-	-	4.1	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.336
Pot Cap-1 Maneuver	-	-	769	-	83	342
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	372	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	769	-	81	342
Mov Cap-2 Maneuver	-	-	-	-	81	-
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	361	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	38.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	144	-	-	769	-
HCM Lane V/C Ratio	0.264	-	-	0.014	-
HCM Control Delay (s)	38.7	-	-	9.7	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	790	855	25	15	25
Future Vol, veh/h	35	790	855	25	15	25
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	92	92	92	92	92	92
Heavy Vehicles, %	0	2	4	0	0	0
Mvmt Flow	38	859	929	27	16	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	956	0	-	0	1878	943
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	935	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	727	-	-	-	79	321
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	727	-	-	-	71	321
Mov Cap-2 Maneuver	-	-	-	-	71	-
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	42.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	727	-	-	-	138
HCM Lane V/C Ratio	0.052	-	-	-	0.315
HCM Control Delay (s)	10.2	0	-	-	42.7
HCM Lane LOS	B	A	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	805	0	0	870	10	10
Future Vol, veh/h	805	0	0	870	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	3	80	0
Mvmt Flow	875	0	0	946	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	875	0	1821	875
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	-	-	4.1	-	7.2	6.2
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	-	-	2.2	-	4.22	3.3
Pot Cap-1 Maneuver	-	-	780	-	54	351
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	277	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	780	-	54	351
Mov Cap-2 Maneuver	-	-	-	-	54	-
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	277	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	54.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	94	-	-	780	-
HCM Lane V/C Ratio	0.231	-	-	-	-
HCM Control Delay (s)	54.5	-	-	0	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Intersection	
Int Delay, s/veh	43.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑	↱		⇕			⇕	
Traffic Vol, veh/h	10	695	110	95	770	20	90	0	35	10	0	10
Future Vol, veh/h	10	695	110	95	770	20	90	0	35	10	0	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	-	-	0	150	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	6	2	0	3	3	3	0	0	4	0	0	0
Mvmt Flow	11	755	120	103	837	22	98	0	38	11	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	859	0	0	875	0	0	1837	1842	755	1899	1940	837
Stage 1	-	-	-	-	-	-	777	777	-	1043	1043	-
Stage 2	-	-	-	-	-	-	1060	1065	-	856	897	-
Critical Hdwy	4.16	-	-	4.13	-	-	7.1	6.5	6.24	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	2.254	-	-	2.227	-	-	3.5	4	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	765	-	-	767	-	-	~ 59	76	405	53	66	370
Stage 1	-	-	-	-	-	-	393	410	-	280	309	-
Stage 2	-	-	-	-	-	-	273	302	-	355	361	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	765	-	-	767	-	-	~ 50	64	405	42	56	370
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 50	64	-	42	56	-
Stage 1	-	-	-	-	-	-	382	398	-	272	268	-
Stage 2	-	-	-	-	-	-	229	262	-	312	351	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.1	$ 625.3	71.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	66	765	-	-	767	-	-	75
HCM Lane V/C Ratio	2.059	0.014	-	-	0.135	-	-	0.29
HCM Control Delay (s)	$ 625.3	9.8	-	-	10.4	-	-	71.5
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	12.7	0	-	-	0.5	-	-	1.1

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

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1025	25	20	920	25	20	0	15	15	10	15
Future Vol, veh/h	15	1025	25	20	920	25	20	0	15	15	10	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	125	-	-	150	-	-	-	-	200	-	-	-
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	5	0	3	0	13	0	0	14	0	0
Mvmt Flow	16	1090	27	21	979	27	21	0	16	16	11	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1006	0	0	1117	0	0	2184	2184	1104	2179	2184	993
Stage 1	-	-	-	-	-	-	1136	1136	-	1035	1035	-
Stage 2	-	-	-	-	-	-	1048	1048	-	1144	1149	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.23	6.5	6.2	7.24	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.5	-	6.24	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.5	-	6.24	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.617	4	3.3	3.626	4	3.3
Pot Cap-1 Maneuver	697	-	-	633	-	-	31	46	259	31	46	300
Stage 1	-	-	-	-	-	-	234	279	-	266	312	-
Stage 2	-	-	-	-	-	-	262	307	-	230	275	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	697	-	-	633	-	-	23	43	259	28	43	300
Mov Cap-2 Maneuver	-	-	-	-	-	-	23	43	-	28	43	-
Stage 1	-	-	-	-	-	-	229	273	-	260	302	-
Stage 2	-	-	-	-	-	-	231	297	-	211	269	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	237.3	220.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	23	259	697	-	-	633	-	-	49
HCM Lane V/C Ratio	0.925	0.062	0.023	-	-	0.034	-	-	0.868
HCM Control Delay (s)	$ 400.5	19.8	10.3	-	-	10.9	-	-	220.9
HCM Lane LOS	F	C	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.7	0.2	0.1	-	-	0.1	-	-	3.6

Intersection	
Int Delay, s/veh	36.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	1005	920	100	80	45
Future Vol, veh/h	50	1005	920	100	80	45
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	97	97	97	97	97	97
Heavy Vehicles, %	0	2	2	0	3	0
Mvmt Flow	52	1036	948	103	82	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1051	0	-	0	2140	1000
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	1140	-
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	670	-	-	-	~ 53	298
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	304	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	670	-	-	-	~ 43	298
Mov Cap-2 Maneuver	-	-	-	-	~ 43	-
Stage 1	-	-	-	-	289	-
Stage 2	-	-	-	-	304	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	$ 642.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	670	-	-	-	62
HCM Lane V/C Ratio	0.077	-	-	-	2.078
HCM Control Delay (s)	10.8	0	-	-	$ 642.2
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	12.3

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

Intersection	
Int Delay, s/veh	18.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	1010	970	90	45	50
Future Vol, veh/h	75	1010	970	90	45	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	3	3	0	0
Mvmt Flow	82	1098	1054	98	49	54

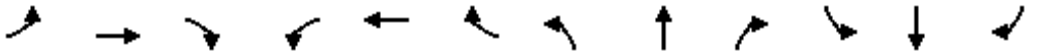
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1152	0	-	0	2316	1054
Stage 1	-	-	-	-	1054	-
Stage 2	-	-	-	-	1262	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	614	-	-	-	~ 42	277
Stage 1	-	-	-	-	338	-
Stage 2	-	-	-	-	269	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	614	-	-	-	~ 36	277
Mov Cap-2 Maneuver	-	-	-	-	~ 36	-
Stage 1	-	-	-	-	293	-
Stage 2	-	-	-	-	269	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	$ 420.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	614	-	-	-	66
HCM Lane V/C Ratio	0.133	-	-	-	1.565
HCM Control Delay (s)	11.8	-	-	-	-$ 420.1
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	9

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

Appendix D2:
Signalized Intersections

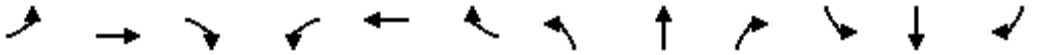


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	430	15	0	550	135	35	40	10	230	15	50
Future Volume (veh/h)	30	430	15	0	550	135	35	40	10	230	15	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Adj Sat Flow, veh/h/ln	1900	1810	1462	1900	1810	1900	1900	1860	1520	1900	1737	1900
Adj Flow Rate, veh/h	33	467	16	0	598	147	38	43	11	250	16	54
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
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, %	0	5	30	0	5	0	0	4	25	10	0	0
Cap, veh/h	200	884	607	369	669	597	59	67	90	283	18	293
Arrive On Green	0.04	0.49	0.49	0.00	0.37	0.37	0.07	0.07	0.07	0.18	0.18	0.18
Sat Flow, veh/h	1810	1810	1242	1810	1810	1615	853	965	1292	1559	100	1615
Grp Volume(v), veh/h	33	467	16	0	598	147	81	0	11	266	0	54
Grp Sat Flow(s),veh/h/ln	1810	1810	1242	1810	1810	1615	1818	0	1292	1659	0	1615
Q Serve(g_s), s	1.0	16.2	0.6	0.0	28.4	5.8	4.0	0.0	0.7	14.3	0.0	2.6
Cycle Q Clear(g_c), s	1.0	16.2	0.6	0.0	28.4	5.8	4.0	0.0	0.7	14.3	0.0	2.6
Prop In Lane	1.00		1.00	1.00		1.00	0.47		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	200	884	607	369	669	597	126	0	90	301	0	293
V/C Ratio(X)	0.17	0.53	0.03	0.00	0.89	0.25	0.64	0.00	0.12	0.88	0.00	0.18
Avail Cap(c_a), veh/h	260	884	607	506	726	648	359	0	255	327	0	319
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	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.1	16.1	12.1	0.0	27.1	20.0	41.4	0.0	39.9	36.4	0.0	31.6
Incr Delay (d2), s/veh	0.3	1.1	0.0	0.0	14.2	0.5	5.4	0.0	0.6	22.6	0.0	0.3
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	0.5	8.3	0.2	0.0	16.8	2.6	2.2	0.0	0.3	8.4	0.0	1.2
LnGrp Delay(d),s/veh	20.4	17.2	12.1	0.0	41.3	20.4	46.7	0.0	40.5	59.0	0.0	31.9
LnGrp LOS	C	B	B		D	C	D		D	E		C
Approach Vol, veh/h		516			745			92			320	
Approach Delay, s/veh		17.2			37.2			46.0			54.5	
Approach LOS		B			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	51.5		25.4	10.9	40.6		14.3
Change Period (Y+Rc), s	7.3	6.9		* 8.9	* 6.9	* 6.9		8.0
Max Green Setting (Gmax), s	7.0	35.9		* 18	* 7	* 37		18.0
Max Q Clear Time (g_c+I1), s	0.0	18.2		16.3	3.0	30.4		6.0
Green Ext Time (p_c), s	0.0	4.5		0.3	0.0	3.3		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	715	20	20	650	200	50	25	75	150	15	40
Future Volume (veh/h)	20	715	20	20	650	200	50	25	75	150	15	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1545	1792	1900	1900	1792	1863	1900	1722	1810	1900	1849	1900
Adj Flow Rate, veh/h	22	777	22	22	707	217	54	27	0	163	16	43
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
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, %	23	6	0	0	6	2	12	7	5	3	0	3
Cap, veh/h	153	788	710	128	778	687	70	35	97	191	19	50
Arrive On Green	0.03	0.44	0.44	0.03	0.43	0.43	0.06	0.06	0.00	0.15	0.15	0.15
Sat Flow, veh/h	1471	1792	1615	1810	1792	1583	1111	556	1538	1267	124	334
Grp Volume(v), veh/h	22	777	22	22	707	217	81	0	0	222	0	0
Grp Sat Flow(s),veh/h/ln	1471	1792	1615	1810	1792	1583	1667	0	1538	1726	0	0
Q Serve(g_s), s	0.8	42.3	0.8	0.7	36.4	8.9	4.7	0.0	0.0	12.4	0.0	0.0
Cycle Q Clear(g_c), s	0.8	42.3	0.8	0.7	36.4	8.9	4.7	0.0	0.0	12.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.67		1.00	0.73		0.19
Lane Grp Cap(c), veh/h	153	788	710	128	778	687	105	0	97	260	0	0
V/C Ratio(X)	0.14	0.99	0.03	0.17	0.91	0.32	0.77	0.00	0.00	0.85	0.00	0.00
Avail Cap(c_a), veh/h	210	788	710	187	778	687	304	0	280	371	0	0
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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.3	27.4	15.7	23.7	26.1	18.3	45.5	0.0	0.0	40.9	0.0	0.0
Incr Delay (d2), s/veh	0.3	28.6	0.0	0.5	15.2	0.6	8.4	0.0	0.0	11.3	0.0	0.0
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	0.3	27.2	0.3	0.3	21.1	4.0	2.4	0.0	0.0	6.7	0.0	0.0
LnGrp Delay(d),s/veh	21.6	56.0	15.8	24.1	41.3	18.9	54.0	0.0	0.0	52.2	0.0	0.0
LnGrp LOS	C	E	B	C	D	B	D			D		
Approach Vol, veh/h		821			946			81			222	
Approach Delay, s/veh		54.0			35.7			54.0			52.2	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.8	49.5		24.7	10.4	49.0		14.7
Change Period (Y+Rc), s	7.2	* 6.1		* 9.8	7.2	* 6.1		8.5
Max Green Setting (Gmax), s	5.8	* 43		* 21	7.0	* 42		18.0
Max Q Clear Time (g_c+I1), s	2.7	44.3		14.4	2.8	38.4		6.7
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	2.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	45.5
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	545	40	10	580	195	20	20	10	205	40	45
Future Volume (veh/h)	85	545	40	10	580	195	20	20	10	205	40	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1712	1863	1900	1900	1827	1845	1900	1900	1900	1900	1870	1900
Adj Flow Rate, veh/h	88	562	41	10	598	201	21	21	10	211	41	46
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	11	2	0	0	4	3	0	0	0	0	10	0
Cap, veh/h	232	778	675	249	677	581	52	52	91	246	48	265
Arrive On Green	0.07	0.42	0.42	0.02	0.37	0.37	0.06	0.06	0.06	0.16	0.16	0.16
Sat Flow, veh/h	1630	1863	1615	1810	1827	1568	927	927	1615	1503	292	1615
Grp Volume(v), veh/h	88	562	41	10	598	201	42	0	10	252	0	46
Grp Sat Flow(s),veh/h/ln	1630	1863	1615	1810	1827	1568	1854	0	1615	1794	0	1615
Q Serve(g_s), s	2.9	22.7	1.4	0.3	27.7	8.4	2.0	0.0	0.5	12.3	0.0	2.2
Cycle Q Clear(g_c), s	2.9	22.7	1.4	0.3	27.7	8.4	2.0	0.0	0.5	12.3	0.0	2.2
Prop In Lane	1.00		1.00	1.00		1.00	0.50		1.00	0.84		1.00
Lane Grp Cap(c), veh/h	232	778	675	249	677	581	105	0	91	294	0	265
V/C Ratio(X)	0.38	0.72	0.06	0.04	0.88	0.35	0.40	0.00	0.11	0.86	0.00	0.17
Avail Cap(c_a), veh/h	246	778	675	358	740	635	369	0	322	358	0	322
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.9	21.9	15.7	18.9	26.6	20.5	41.1	0.0	40.4	36.7	0.0	32.5
Incr Delay (d2), s/veh	0.8	4.1	0.1	0.0	12.8	0.8	2.5	0.0	0.5	15.7	0.0	0.3
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	1.3	12.4	0.6	0.2	16.4	3.8	1.1	0.0	0.2	7.4	0.0	1.0
LnGrp Delay(d),s/veh	20.7	26.0	15.8	19.0	39.4	21.3	43.6	0.0	41.0	52.4	0.0	32.8
LnGrp LOS	C	C	B	B	D	C	D		D	D		C
Approach Vol, veh/h		691			809			52			298	
Approach Delay, s/veh		24.7			34.7			43.1			49.4	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	44.6		23.7	13.1	40.4		13.1
Change Period (Y+Rc), s	7.3	6.9		* 8.9	* 6.9	* 6.9		8.0
Max Green Setting (Gmax), s	7.0	35.9		* 18	* 7	* 37		18.0
Max Q Clear Time (g_c+I1), s	2.3	24.7		14.3	4.9	29.7		4.0
Green Ext Time (p_c), s	0.0	4.4		0.5	0.0	3.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	690	25	90	745	120	100	50	145	230	40	40
Future Volume (veh/h)	25	690	25	90	745	120	100	50	145	230	40	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1712	1863	1792	1863	1845	1881	1900	1900	1827	1900	1874	1900
Adj Flow Rate, veh/h	26	726	26	95	784	126	105	53	0	242	42	42
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	2	6	2	3	1	0	0	4	1	0	5
Cap, veh/h	109	742	607	158	771	668	124	63	157	270	47	47
Arrive On Green	0.03	0.40	0.40	0.05	0.42	0.42	0.10	0.10	0.00	0.21	0.21	0.21
Sat Flow, veh/h	1630	1863	1524	1774	1845	1599	1222	617	1553	1313	228	228
Grp Volume(v), veh/h	26	726	26	95	784	126	158	0	0	326	0	0
Grp Sat Flow(s),veh/h/ln	1630	1863	1524	1774	1845	1599	1839	0	1553	1768	0	0
Q Serve(g_s), s	1.2	50.0	1.4	4.0	54.4	6.5	11.0	0.0	0.0	23.4	0.0	0.0
Cycle Q Clear(g_c), s	1.2	50.0	1.4	4.0	54.4	6.5	11.0	0.0	0.0	23.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.66		1.00	0.74		0.13
Lane Grp Cap(c), veh/h	109	742	607	158	771	668	186	0	157	363	0	0
V/C Ratio(X)	0.24	0.98	0.04	0.60	1.02	0.19	0.85	0.00	0.00	0.90	0.00	0.00
Avail Cap(c_a), veh/h	143	742	607	161	771	668	258	0	218	559	0	0
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	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.7	38.6	24.0	31.0	37.9	24.0	57.5	0.0	0.0	50.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	27.7	0.1	5.3	36.8	0.3	15.3	0.0	0.0	10.5	0.0	0.0
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	0.6	31.3	0.6	2.2	35.5	2.9	6.4	0.0	0.0	12.5	0.0	0.0
LnGrp Delay(d),s/veh	32.6	66.3	24.0	36.3	74.8	24.3	72.8	0.0	0.0	60.9	0.0	0.0
LnGrp LOS	C	E	C	D	F	C	E			E		
Approach Vol, veh/h		778			1005			158			326	
Approach Delay, s/veh		63.8			64.8			72.8			60.9	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	58.0		36.6	11.5	60.5		21.7
Change Period (Y+Rc), s	7.2	* 6.1		* 9.8	7.2	* 6.1		8.5
Max Green Setting (Gmax), s	7.0	* 52		* 41	7.0	* 52		18.3
Max Q Clear Time (g_c+I1), s	6.0	52.0		25.4	3.2	56.4		13.0
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	64.5
HCM 2010 LOS	E

Notes

Appendix D3: Queues

Intersection: 101: Varina Rd/Wilson Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	T	R	LT	R	LT	R
Maximum Queue (ft)	58	251	32	414	169	109	48	306	177
Average Queue (ft)	16	110	3	179	17	42	8	145	34
95th Queue (ft)	40	201	17	337	124	88	32	261	120
Link Distance (ft)		1892		4371		1703		1428	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275		425		325		250		200
Storage Blk Time (%)		0		3	0			5	0
Queuing Penalty (veh)		0		4	0			2	0

Intersection: 200: Mill Rd & Rte 5 (New Market Rd)

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	171	81
Average Queue (ft)	31	24
95th Queue (ft)	110	59
Link Distance (ft)	290	2011
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: Recreation Rd & Rte 5 (New Market Rd)

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	76	82
Average Queue (ft)	11	28
95th Queue (ft)	49	63
Link Distance (ft)	768	1429
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 401: E.S. Entrance & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	159	130	56
Average Queue (ft)	9	60	17
95th Queue (ft)	73	137	46
Link Distance (ft)	768	106	767
Upstream Blk Time (%)		3	
Queuing Penalty (veh)		25	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 402: Rte 5 (New Market Rd) & Gregg Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	115	244	70
Average Queue (ft)	13	38	25
95th Queue (ft)	66	149	56
Link Distance (ft)	106	258	881
Upstream Blk Time (%)	1	0	
Queuing Penalty (veh)	6	1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 501: E.S. Exit & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	146	36	143
Average Queue (ft)	13	2	55
95th Queue (ft)	84	22	108
Link Distance (ft)	258	150	666
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 502: Produce Rd/Business Dvwys & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	L	T	LTR	LTR
Maximum Queue (ft)	156	49	105	17	199	69
Average Queue (ft)	46	2	32	1	64	20
95th Queue (ft)	142	23	78	18	159	50
Link Distance (ft)	150	150		330	843	521
Upstream Blk Time (%)	2	0				
Queuing Penalty (veh)	6	0				
Storage Bay Dist (ft)			150			
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 600: Strath Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	136	348	36	124	462	274	202	64	226
Average Queue (ft)	17	256	1	19	222	65	79	42	113
95th Queue (ft)	78	388	34	78	391	207	156	62	193
Link Distance (ft)		330	330		1479		1663		1222
Upstream Blk Time (%)		4							
Queuing Penalty (veh)		17							
Storage Bay Dist (ft)	175			175		275		50	
Storage Blk Time (%)	0	21		0	14	0	28	2	
Queuing Penalty (veh)	0	4		0	31	1	21	1	

Intersection: 700: Buffin Rd/Wood Mill Dr & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	LT	R	LTR
Maximum Queue (ft)	26	21	88	18	1259	200	223
Average Queue (ft)	4	2	22	1	1072	101	93
95th Queue (ft)	19	12	62	18	1521	260	237
Link Distance (ft)		1479		1117	1209		972
Upstream Blk Time (%)					64		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)	125		150			200	
Storage Blk Time (%)			0		93	2	
Queuing Penalty (veh)			0		98	2	

Intersection: 800: Rte 5 (New Market Rd) & Doran Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	613	26	916
Average Queue (ft)	128	2	841
95th Queue (ft)	419	13	1071
Link Distance (ft)	1117	541	894
Upstream Blk Time (%)			74
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 900: Rte 5 (New Market Rd) & Four Mile Run Pkwy

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	47	479
Average Queue (ft)	14	242
95th Queue (ft)	40	521
Link Distance (ft)		872
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 222

Intersection: 101: Varina Rd/Wilson Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	166	306	14	124	429	270	65	34	245	167
Average Queue (ft)	45	136	3	8	195	34	21	6	130	26
95th Queue (ft)	106	248	9	68	373	179	50	25	211	89
Link Distance (ft)		1892			4371		1703		1428	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	275		425	275		325		250		200
Storage Blk Time (%)	0	0		0	3	0			1	0
Queuing Penalty (veh)	0	1		0	7	1			1	0

Intersection: 200: Mill Rd & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	15	284	120
Average Queue (ft)	1	110	27
95th Queue (ft)	18	258	101
Link Distance (ft)	4371	290	2011
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		7	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 300: Recreation Rd & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	47	249	127
Average Queue (ft)	8	55	37
95th Queue (ft)	76	182	103
Link Distance (ft)	290	768	1429
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 401: E.S. Entrance & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	545	107	162
Average Queue (ft)	168	12	54
95th Queue (ft)	549	63	170
Link Distance (ft)	768	106	767
Upstream Blk Time (%)	1	1	
Queuing Penalty (veh)	7	8	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 402: Rte 5 (New Market Rd) & Gregg Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	128	104	227
Average Queue (ft)	79	7	73
95th Queue (ft)	158	63	208
Link Distance (ft)	106	258	881
Upstream Blk Time (%)	15	0	
Queuing Penalty (veh)	125	2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 501: E.S. Exit & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	271	17	99
Average Queue (ft)	162	1	29
95th Queue (ft)	351	17	83
Link Distance (ft)	258	150	666
Upstream Blk Time (%)	13		
Queuing Penalty (veh)	104		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 502: Produce Rd/Business Dvwys & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	L	T	LTR	LTR
Maximum Queue (ft)	167	29	116	20	718	125
Average Queue (ft)	131	2	50	1	417	45
95th Queue (ft)	220	14	101	19	937	149
Link Distance (ft)	150	150		330	843	521
Upstream Blk Time (%)	24				23	
Queuing Penalty (veh)	96				0	
Storage Bay Dist (ft)			150			
Storage Blk Time (%)			0			
Queuing Penalty (veh)			1			

Intersection: 600: Strath Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	174	351	19	174	1272	275	580	66	357
Average Queue (ft)	27	328	1	78	829	124	295	46	205
95th Queue (ft)	110	380	11	167	1438	330	572	61	319
Link Distance (ft)		330	330		1479		1663		1222
Upstream Blk Time (%)		31			2				
Queuing Penalty (veh)		112			17				
Storage Bay Dist (ft)	175			175		275		50	
Storage Blk Time (%)	0	49		0	45	0	74	3	
Queuing Penalty (veh)	0	12		1	95	4	107	4	

Intersection: 700: Buffin Rd/Wood Mill Dr & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	LT	R	LTR
Maximum Queue (ft)	32	102	51	133	143	73	247
Average Queue (ft)	7	10	7	46	47	15	107
95th Queue (ft)	25	151	49	276	169	69	317
Link Distance (ft)		1479		1117	1209		972
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	125		150			200	
Storage Blk Time (%)		1	0	5	4	0	
Queuing Penalty (veh)		0	0	1	1	0	

Intersection: 800: Rte 5 (New Market Rd) & Doran Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	822	20	912
Average Queue (ft)	221	2	827
95th Queue (ft)	638	12	1079
Link Distance (ft)	1117	541	894
Upstream Blk Time (%)	0		73
Queuing Penalty (veh)	4		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 900: Rte 5 (New Market Rd) & Four Mile Run Pkwy

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	91	15	217
Average Queue (ft)	36	1	87
95th Queue (ft)	70	9	199
Link Distance (ft)		1540	872
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 720

Appendix E:
Design Year (2045) Build Condition Operational Analysis Reports

Appendix E1. Unsignalized Intersections
Appendix E2. Signalized Intersections
Appendix E3. Roundabouts
Appendix E4. Queueing Results

Appendix E1:
Unsignalized Intersections

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	660	10	35	675	10	95
Future Vol, veh/h	660	10	35	675	10	95
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	92	92	92	92	92	92
Heavy Vehicles, %	6	100	9	4	0	2
Mvmt Flow	717	11	38	734	11	103

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	728	0	1533	723
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	810	-
Critical Hdwy	-	-	4.19	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.281	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	844	-	130	426
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	844	-	124	426
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	20.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	-	-	844	-
HCM Lane V/C Ratio	0.33	-	-	0.045	-
HCM Control Delay (s)	20.4	-	-	9.5	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	745	10	15	690	20	35
Future Vol, veh/h	745	10	15	690	20	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	6	0	5
Mvmt Flow	810	11	16	750	22	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	821	0	1598	816
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	782	-
Critical Hdwy	-	-	4.1	-	6.4	6.25
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.345
Pot Cap-1 Maneuver	-	-	817	-	118	372
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	817	-	116	372
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	445	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	29.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	206	-	-	817	-
HCM Lane V/C Ratio	0.29	-	-	0.02	-
HCM Control Delay (s)	29.5	-	-	9.5	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	730	50	65	695	10	10
Future Vol, veh/h	730	50	65	695	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	4	5	0	0
Mvmt Flow	793	54	71	755	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	847	0	1717	820
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	897	-
Critical Hdwy	-	-	4.14	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.236	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	782	-	100	378
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	401	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	782	-	84	378
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	19.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	271	-	-	782	-
HCM Lane V/C Ratio	0.08	-	-	0.09	-
HCM Control Delay (s)	19.4	-	-	10.1	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	730	735	10	10	25
Future Vol, veh/h	10	730	735	10	10	25
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	92	92	92	92	92	92
Heavy Vehicles, %	20	6	5	33	0	0
Mvmt Flow	11	793	799	11	11	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	810	0	-	0	1620	805
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	815	-
Critical Hdwy	4.3	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.38	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	742	-	-	-	115	386
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	439	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	742	-	-	-	112	386
Mov Cap-2 Maneuver	-	-	-	-	250	-
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	742	-	-	-	334
HCM Lane V/C Ratio	0.015	-	-	-	0.114
HCM Control Delay (s)	9.9	0	-	-	17.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	740	0	0	705	40	50
Future Vol, veh/h	740	0	0	705	40	50
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	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	5	3	3
Mvmt Flow	804	0	0	766	43	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	804	0	1570	804
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	766	-
Critical Hdwy	-	-	4.1	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.2	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	829	-	121	381
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	457	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	829	-	121	381
Mov Cap-2 Maneuver	-	-	-	-	260	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	316	-	-	829	-
HCM Lane V/C Ratio	0.31	-	-	-	-
HCM Control Delay (s)	21.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.3	-	-	0	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑	↱		✣			✣	
Traffic Vol, veh/h	10	695	110	95	770	20	15	0	35	15	0	20
Future Vol, veh/h	10	695	110	95	770	20	15	0	35	15	0	20
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	150	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	27	26	4	0	22	0	67	0	0	0
Mvmt Flow	11	755	120	103	837	22	16	0	38	16	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	859	0	0	755	0	0	1842	1842	755	1839	1820	837
Stage 1	-	-	-	-	-	-	777	777	-	1043	1043	-
Stage 2	-	-	-	-	-	-	1065	1065	-	796	777	-
Critical Hdwy	4.1	-	-	4.36	-	-	7.32	6.5	6.87	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.32	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.32	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.434	-	-	3.698	4	3.903	3.5	4	3.3
Pot Cap-1 Maneuver	791	-	-	757	-	-	51	76	320	59	78	370
Stage 1	-	-	-	-	-	-	361	410	-	280	309	-
Stage 2	-	-	-	-	-	-	247	302	-	383	410	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	791	-	-	757	-	-	42	64	320	46	66	370
Mov Cap-2 Maneuver	-	-	-	-	-	-	42	64	-	46	66	-
Stage 1	-	-	-	-	-	-	351	399	-	272	267	-
Stage 2	-	-	-	-	-	-	201	261	-	328	399	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.1	69.2	69.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	107	791	-	-	757	-	-	92
HCM Lane V/C Ratio	0.508	0.014	-	-	0.136	-	-	0.414
HCM Control Delay (s)	69.2	9.6	-	-	10.5	-	-	69.3
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.3	0	-	-	0.5	-	-	1.7

Intersection	
Int Delay, s/veh	76.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	785	145	80	765	10	90	10	105	15	10	15
Future Vol, veh/h	10	785	145	80	765	10	90	10	105	15	10	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	125	-	-	150	-	-	-	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	3	14	5	4	0	14	0	10	13	0	17
Mvmt Flow	11	853	158	87	832	11	98	11	114	16	11	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	843	0	0	1011	0	0	1979	1971	932	2029	2045	838
Stage 1	-	-	-	-	-	-	954	954	-	1012	1012	-
Stage 2	-	-	-	-	-	-	1025	1017	-	1017	1033	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.24	6.5	6.3	7.23	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.24	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.24	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.626	4	3.39	3.617	4	3.453
Pot Cap-1 Maneuver	802	-	-	674	-	-	~ 43	63	312	40	57	344
Stage 1	-	-	-	-	-	-	296	340	-	275	319	-
Stage 2	-	-	-	-	-	-	269	318	-	273	312	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	802	-	-	674	-	-	~ 30	54	312	19	49	344
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 30	54	-	19	49	-
Stage 1	-	-	-	-	-	-	292	335	-	271	278	-
Stage 2	-	-	-	-	-	-	214	277	-	165	308	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1	$ 691.3	$ 339.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	31	312	802	-	-	674	-	-	39
HCM Lane V/C Ratio	3.506	0.366	0.014	-	-	0.129	-	-	1.115
HCM Control Delay (s)	$ 1393	23	9.6	-	-	11.1	-	-	$ 339.9
HCM Lane LOS	F	C	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	12.9	1.6	0	-	-	0.4	-	-	4.3

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

Intersection	
Int Delay, s/veh	57

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	945	835	25	105	95
Future Vol, veh/h	35	945	835	25	105	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	3	5	0	8
Mvmt Flow	38	1016	898	27	113	102

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	925	0	-	0	1990	898
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	1092	-
Critical Hdwy	4.14	-	-	-	6.4	6.28
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	-	3.5	3.372
Pot Cap-1 Maneuver	731	-	-	-	~ 68	330
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	324	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	731	-	-	-	~ 64	330
Mov Cap-2 Maneuver	-	-	-	-	~ 64	-
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	324	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	$ 579.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	731	-	-	-	104
HCM Lane V/C Ratio	0.051	-	-	-	2.068
HCM Control Delay (s)	10.2	-	-	-	$ 579.8
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	18.3

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

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	750	10	90	775	10	70
Future Vol, veh/h	750	10	90	775	10	70
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	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	789	11	95	816	11	74

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	800	0	1801	795
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	1006	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	832	-	89	391
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	357	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	832	-	79	391
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	316	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	25.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	262	-	-	832	-
HCM Lane V/C Ratio	0.321	-	-	0.114	-
HCM Control Delay (s)	25.1	-	-	9.9	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	1.3	-	-	0.4	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	800	20	35	850	15	20
Future Vol, veh/h	800	20	35	850	15	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	5	3	20	7
Mvmt Flow	842	21	37	895	16	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	863	0	1822	853
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	969	-
Critical Hdwy	-	-	4.15	-	6.6	6.27
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.245	-	3.68	3.363
Pot Cap-1 Maneuver	-	-	767	-	76	352
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	341	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	767	-	72	352
Mov Cap-2 Maneuver	-	-	-	-	72	-
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	325	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	40.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	143	-	-	767	-
HCM Lane V/C Ratio	0.293	-	-	0.048	-
HCM Control Delay (s)	40.3	-	-	9.9	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	1.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	805	15	10	870	15	20
Future Vol, veh/h	805	15	10	870	15	20
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	92	92	92	92	92	92
Heavy Vehicles, %	2	17	0	0	0	4
Mvmt Flow	875	16	11	946	16	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	891	0	1851	883
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	968	-
Critical Hdwy	-	-	4.1	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.336
Pot Cap-1 Maneuver	-	-	769	-	83	342
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	372	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	769	-	81	342
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	361	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	20.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	271	-	-	769	-
HCM Lane V/C Ratio	0.14	-	-	0.014	-
HCM Control Delay (s)	20.4	-	-	9.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	790	855	25	15	25
Future Vol, veh/h	35	790	855	25	15	25
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	92	92	92	92	92	92
Heavy Vehicles, %	0	2	4	0	0	0
Mvmt Flow	38	859	929	27	16	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	956	0	-	0	1878	943
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	935	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	727	-	-	-	79	321
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	727	-	-	-	71	321
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	727	-	-	-	260
HCM Lane V/C Ratio	0.052	-	-	-	0.167
HCM Control Delay (s)	10.2	0	-	-	21.6
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	805	0	0	870	10	10
Future Vol, veh/h	805	0	0	870	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	3	80	0
Mvmt Flow	875	0	0	946	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	875	0	1821	875
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	-	-	4.1	-	7.2	6.2
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	-	-	2.2	-	4.22	3.3
Pot Cap-1 Maneuver	-	-	780	-	54	351
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	277	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	780	-	54	351
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	277	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	23.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	216	-	-	780	-
HCM Lane V/C Ratio	0.101	-	-	-	-
HCM Control Delay (s)	23.5	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	41.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑	↱		✣			✣	
Traffic Vol, veh/h	10	695	110	95	770	20	90	0	35	10	0	10
Future Vol, veh/h	10	695	110	95	770	20	90	0	35	10	0	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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	150	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	6	2	0	3	3	3	0	0	4	0	0	0
Mvmt Flow	11	755	120	103	837	22	98	0	38	11	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	859	0	0	755	0	0	1837	1842	755	1839	1820	837
Stage 1	-	-	-	-	-	-	777	777	-	1043	1043	-
Stage 2	-	-	-	-	-	-	1060	1065	-	796	777	-
Critical Hdwy	4.16	-	-	4.13	-	-	7.1	6.5	6.24	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	2.254	-	-	2.227	-	-	3.5	4	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	765	-	-	851	-	-	~ 59	76	405	59	78	370
Stage 1	-	-	-	-	-	-	393	410	-	280	309	-
Stage 2	-	-	-	-	-	-	273	302	-	383	410	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	765	-	-	851	-	-	~ 51	65	405	47	67	370
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 51	65	-	47	67	-
Stage 1	-	-	-	-	-	-	382	398	-	272	272	-
Stage 2	-	-	-	-	-	-	233	265	-	337	398	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.1	$ 595.6	63.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	68	765	-	-	851	-	-	83
HCM Lane V/C Ratio	1.998	0.014	-	-	0.121	-	-	0.262
HCM Control Delay (s)	$ 595.6	9.8	-	-	9.8	-	-	63.1
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	12.5	0	-	-	0.4	-	-	0.9

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

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1025	25	20	920	25	20	0	15	15	10	15
Future Vol, veh/h	15	1025	25	20	920	25	20	0	15	15	10	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	125	-	-	150	-	-	-	-	200	-	-	-
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	5	0	3	0	13	0	0	14	0	0
Mvmt Flow	16	1090	27	21	979	27	21	0	16	16	11	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1006	0	0	1117	0	0	2184	2184	1104	2179	2184	993
Stage 1	-	-	-	-	-	-	1136	1136	-	1035	1035	-
Stage 2	-	-	-	-	-	-	1048	1048	-	1144	1149	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.23	6.5	6.2	7.24	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.5	-	6.24	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.5	-	6.24	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.617	4	3.3	3.626	4	3.3
Pot Cap-1 Maneuver	697	-	-	633	-	-	31	46	259	31	46	300
Stage 1	-	-	-	-	-	-	234	279	-	266	312	-
Stage 2	-	-	-	-	-	-	262	307	-	230	275	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	697	-	-	633	-	-	23	43	259	28	43	300
Mov Cap-2 Maneuver	-	-	-	-	-	-	23	43	-	28	43	-
Stage 1	-	-	-	-	-	-	229	273	-	260	302	-
Stage 2	-	-	-	-	-	-	231	297	-	211	269	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	237.3	220.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	23	259	697	-	-	633	-	-	49
HCM Lane V/C Ratio	0.925	0.062	0.023	-	-	0.034	-	-	0.868
HCM Control Delay (s)	$ 400.5	19.8	10.3	-	-	10.9	-	-	220.9
HCM Lane LOS	F	C	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.7	0.2	0.1	-	-	0.1	-	-	3.6

Intersection	
Int Delay, s/veh	18.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	1010	970	90	45	50
Future Vol, veh/h	75	1010	970	90	45	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	3	3	0	0
Mvmt Flow	82	1098	1054	98	49	54

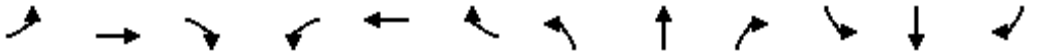
Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	1152	0	-	0	2316	1054			
Stage 1	-	-	-	-	1054	-			
Stage 2	-	-	-	-	1262	-			
Critical Hdwy	4.1	-	-	-	6.4	6.2			
Critical Hdwy Stg 1	-	-	-	-	5.4	-			
Critical Hdwy Stg 2	-	-	-	-	5.4	-			
Follow-up Hdwy	2.2	-	-	-	3.5	3.3			
Pot Cap-1 Maneuver	614	-	-	-	~ 42	277			
Stage 1	-	-	-	-	338	-			
Stage 2	-	-	-	-	269	-			
Platoon blocked, %		-	-	-					
Mov Cap-1 Maneuver	614	-	-	-	~ 36	277			
Mov Cap-2 Maneuver	-	-	-	-	~ 36	-			
Stage 1	-	-	-	-	293	-			
Stage 2	-	-	-	-	269	-			

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	$ 420.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	614	-	-	-	66
HCM Lane V/C Ratio	0.133	-	-	-	1.565
HCM Control Delay (s)	11.8	-	-	-	$ 420.1
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	9

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

Appendix E2:
Signalized Intersections

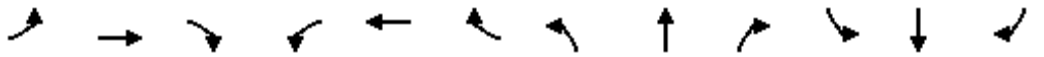


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	430	15	0	550	135	35	40	10	230	15	50
Future Volume (veh/h)	30	430	15	0	550	135	35	40	10	230	15	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Adj Sat Flow, veh/h/ln	1900	1810	1462	1900	1810	1900	1900	1860	1520	1900	1737	1900
Adj Flow Rate, veh/h	33	467	16	0	598	147	38	43	11	250	16	54
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
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, %	0	5	30	0	5	0	0	4	25	10	0	0
Cap, veh/h	200	884	607	369	668	596	59	67	90	283	18	293
Arrive On Green	0.04	0.49	0.49	0.00	0.37	0.37	0.07	0.07	0.07	0.18	0.18	0.18
Sat Flow, veh/h	1810	1810	1242	1810	1810	1615	853	965	1292	1559	100	1615
Grp Volume(v), veh/h	33	467	16	0	598	147	81	0	11	266	0	54
Grp Sat Flow(s),veh/h/ln	1810	1810	1242	1810	1810	1615	1818	0	1292	1659	0	1615
Q Serve(g_s), s	1.0	16.2	0.6	0.0	28.4	5.8	4.0	0.0	0.7	14.3	0.0	2.6
Cycle Q Clear(g_c), s	1.0	16.2	0.6	0.0	28.4	5.8	4.0	0.0	0.7	14.3	0.0	2.6
Prop In Lane	1.00		1.00	1.00		1.00	0.47		1.00	0.94		1.00
Lane Grp Cap(c), veh/h	200	884	607	369	668	596	126	0	90	301	0	293
V/C Ratio(X)	0.17	0.53	0.03	0.00	0.90	0.25	0.64	0.00	0.12	0.88	0.00	0.18
Avail Cap(c_a), veh/h	260	884	607	505	724	646	359	0	255	329	0	321
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	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.2	16.1	12.1	0.0	27.1	20.0	41.3	0.0	39.8	36.4	0.0	31.6
Incr Delay (d2), s/veh	0.3	1.1	0.0	0.0	14.3	0.5	5.4	0.0	0.6	22.3	0.0	0.3
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	0.5	8.3	0.2	0.0	16.8	2.6	2.2	0.0	0.3	8.4	0.0	1.2
LnGrp Delay(d),s/veh	20.4	17.2	12.1	0.0	41.4	20.4	46.7	0.0	40.4	58.7	0.0	31.9
LnGrp LOS	C	B	B		D	C	D		D	E		C
Approach Vol, veh/h		516			745			92			320	
Approach Delay, s/veh		17.3			37.3			46.0			54.2	
Approach LOS		B			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	51.4		25.4	10.9	40.6		14.3
Change Period (Y+Rc), s	7.3	6.9		* 8.9	* 6.9	* 6.9		8.0
Max Green Setting (Gmax), s	7.0	35.8		* 18	* 7	* 37		18.0
Max Q Clear Time (g_c+I1), s	0.0	18.2		16.3	3.0	30.4		6.0
Green Ext Time (p_c), s	0.0	4.5		0.3	0.0	3.3		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C

Notes

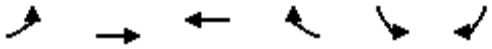


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	715	20	20	650	200	50	25	75	150	15	40
Future Volume (veh/h)	20	715	20	20	650	200	50	25	75	150	15	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike 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
Adj Sat Flow, veh/h/ln	1545	1792	1900	1900	1792	1863	1696	1776	1810	1845	1859	1900
Adj Flow Rate, veh/h	22	777	22	22	707	217	54	27	0	163	16	43
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
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, %	23	6	0	0	6	2	12	7	5	3	0	3
Cap, veh/h	224	874	788	219	864	763	258	285	247	302	72	193
Arrive On Green	0.03	0.49	0.49	0.03	0.48	0.48	0.16	0.16	0.00	0.16	0.16	0.16
Sat Flow, veh/h	1471	1792	1615	1810	1792	1583	1219	1776	1538	1364	447	1201
Grp Volume(v), veh/h	22	777	22	22	707	217	54	27	0	163	0	59
Grp Sat Flow(s),veh/h/ln	1471	1792	1615	1810	1792	1583	1219	1776	1538	1364	0	1647
Q Serve(g_s), s	0.5	28.0	0.5	0.4	24.1	5.9	2.9	0.9	0.0	8.3	0.0	2.2
Cycle Q Clear(g_c), s	0.5	28.0	0.5	0.4	24.1	5.9	5.1	0.9	0.0	9.2	0.0	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	224	874	788	219	864	763	258	285	247	302	0	265
V/C Ratio(X)	0.10	0.89	0.03	0.10	0.82	0.28	0.21	0.09	0.00	0.54	0.00	0.22
Avail Cap(c_a), veh/h	317	955	860	314	924	817	391	479	415	426	0	414
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	16.6	9.5	14.2	15.9	11.1	28.4	25.6	0.0	29.5	0.0	26.1
Incr Delay (d2), s/veh	0.1	10.8	0.0	0.1	6.5	0.4	0.3	0.1	0.0	1.1	0.0	0.3
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	0.2	16.4	0.2	0.2	13.3	2.6	1.0	0.5	0.0	3.2	0.0	1.0
LnGrp Delay(d),s/veh	12.9	27.4	9.5	14.3	22.4	11.6	28.7	25.7	0.0	30.6	0.0	26.5
LnGrp LOS	B	C	A	B	C	B	C	C		C		C
Approach Vol, veh/h		821			946			81			222	
Approach Delay, s/veh		26.5			19.7			27.7			29.5	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	41.0		21.3	9.7	40.6		21.3
Change Period (Y+Rc), s	7.2	* 6.1		* 9.8	7.2	* 6.1		* 9.8
Max Green Setting (Gmax), s	5.8	* 38		* 18	7.0	* 37		* 19
Max Q Clear Time (g_c+I1), s	2.4	30.0		11.2	2.5	26.1		7.1
Green Ext Time (p_c), s	0.0	4.9		0.3	0.0	6.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.8
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	870	810	120	110	45
Future Volume (veh/h)	35	870	810	120	110	45
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
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
Adj Sat Flow, veh/h/ln	1727	1810	1801	1900	1887	1900
Adj Flow Rate, veh/h	38	946	880	130	120	49
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	5	6	2	1	0
Cap, veh/h	241	1335	971	143	158	64
Arrive On Green	0.04	0.74	0.63	0.63	0.13	0.13
Sat Flow, veh/h	1645	1810	1535	227	1226	501
Grp Volume(v), veh/h	38	946	0	1010	170	0
Grp Sat Flow(s),veh/h/ln	1645	1810	0	1761	1737	0
Q Serve(g_s), s	0.5	19.4	0.0	33.2	6.4	0.0
Cycle Q Clear(g_c), s	0.5	19.4	0.0	33.2	6.4	0.0
Prop In Lane	1.00			0.13	0.71	0.29
Lane Grp Cap(c), veh/h	241	1335	0	1115	224	0
V/C Ratio(X)	0.16	0.71	0.00	0.91	0.76	0.00
Avail Cap(c_a), veh/h	301	1694	0	1400	464	0
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	0.00
Uniform Delay (d), s/veh	13.0	4.9	0.0	10.6	28.3	0.0
Incr Delay (d2), s/veh	0.3	1.0	0.0	7.5	5.3	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	0.4	9.6	0.0	18.0	3.3	0.0
LnGrp Delay(d),s/veh	13.3	5.9	0.0	18.1	33.6	0.0
LnGrp LOS	B	A		B	C	
Approach Vol, veh/h		984	1010		170	
Approach Delay, s/veh		6.1	18.1		33.6	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		54.1			7.0	47.1		13.2
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		63.0			5.0	53.5		18.0
Max Q Clear Time (g_c+I1), s		21.4			2.5	35.2		8.4
Green Ext Time (p_c), s		8.4			0.0	7.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	545	40	10	580	195	20	20	10	205	40	45
Future Volume (veh/h)	85	545	40	10	580	195	20	20	10	205	40	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1712	1863	1900	1900	1827	1845	1900	1900	1900	1900	1870	1900
Adj Flow Rate, veh/h	88	562	41	10	598	201	21	21	10	211	41	46
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	11	2	0	0	4	3	0	0	0	0	10	0
Cap, veh/h	232	778	674	249	676	580	52	52	91	247	48	265
Arrive On Green	0.07	0.42	0.42	0.02	0.37	0.37	0.06	0.06	0.06	0.16	0.16	0.16
Sat Flow, veh/h	1630	1863	1615	1810	1827	1568	927	927	1615	1503	292	1615
Grp Volume(v), veh/h	88	562	41	10	598	201	42	0	10	252	0	46
Grp Sat Flow(s),veh/h/ln	1630	1863	1615	1810	1827	1568	1854	0	1615	1794	0	1615
Q Serve(g_s), s	2.9	22.7	1.4	0.3	27.7	8.4	2.0	0.0	0.5	12.3	0.0	2.2
Cycle Q Clear(g_c), s	2.9	22.7	1.4	0.3	27.7	8.4	2.0	0.0	0.5	12.3	0.0	2.2
Prop In Lane	1.00		1.00	1.00		1.00	0.50		1.00	0.84		1.00
Lane Grp Cap(c), veh/h	232	778	674	249	676	580	105	0	91	295	0	265
V/C Ratio(X)	0.38	0.72	0.06	0.04	0.88	0.35	0.40	0.00	0.11	0.86	0.00	0.17
Avail Cap(c_a), veh/h	246	778	674	358	739	634	370	0	322	360	0	324
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.9	21.9	15.7	18.9	26.6	20.5	41.1	0.0	40.4	36.7	0.0	32.5
Incr Delay (d2), s/veh	0.8	4.1	0.1	0.0	12.9	0.8	2.5	0.0	0.5	15.5	0.0	0.3
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	1.3	12.4	0.6	0.2	16.4	3.8	1.1	0.0	0.2	7.4	0.0	1.0
LnGrp Delay(d),s/veh	20.7	26.0	15.8	19.0	39.5	21.3	43.6	0.0	41.0	52.2	0.0	32.8
LnGrp LOS	C	C	B	B	D	C	D		D	D		C
Approach Vol, veh/h		691			809			52			298	
Approach Delay, s/veh		24.7			34.8			43.1			49.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	44.6		23.7	13.1	40.3		13.1
Change Period (Y+Rc), s	7.3	6.9		* 8.9	* 6.9	* 6.9		8.0
Max Green Setting (Gmax), s	7.0	35.8		* 18	* 7	* 37		18.0
Max Q Clear Time (g_c+I1), s	2.3	24.7		14.3	4.9	29.7		4.0
Green Ext Time (p_c), s	0.0	4.4		0.5	0.0	3.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

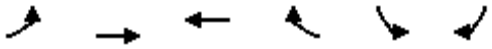
Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	690	25	90	745	120	100	50	145	230	40	40
Future Volume (veh/h)	25	690	25	90	745	120	100	50	145	230	40	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1712	1863	1792	1863	1845	1881	1900	1900	1827	1881	1854	1900
Adj Flow Rate, veh/h	26	726	26	95	784	126	105	53	0	242	42	42
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	2	6	2	3	1	0	0	4	1	0	5
Cap, veh/h	151	742	607	195	856	742	296	131	107	386	129	129
Arrive On Green	0.03	0.40	0.40	0.06	0.46	0.46	0.07	0.07	0.00	0.14	0.15	0.15
Sat Flow, veh/h	1630	1863	1524	1774	1845	1599	1810	1900	1553	1792	852	852
Grp Volume(v), veh/h	26	726	26	95	784	126	105	53	0	242	0	84
Grp Sat Flow(s),veh/h/ln	1630	1863	1524	1774	1845	1599	1810	1900	1553	1792	0	1703
Q Serve(g_s), s	0.9	38.9	1.1	3.0	40.2	4.6	5.4	2.7	0.0	12.4	0.0	4.5
Cycle Q Clear(g_c), s	0.9	38.9	1.1	3.0	40.2	4.6	5.4	2.7	0.0	12.4	0.0	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	151	742	607	195	856	742	296	131	107	386	0	258
V/C Ratio(X)	0.17	0.98	0.04	0.49	0.92	0.17	0.35	0.40	0.00	0.63	0.00	0.33
Avail Cap(c_a), veh/h	189	742	607	204	856	742	484	337	276	447	0	302
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	30.0	18.7	23.2	25.3	15.8	39.5	45.2	0.0	35.9	0.0	38.4
Incr Delay (d2), s/veh	0.5	27.7	0.1	1.4	15.0	0.2	0.5	1.5	0.0	1.8	0.0	0.5
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	0.4	25.7	0.5	1.5	23.8	2.1	2.7	1.5	0.0	6.3	0.0	2.1
LnGrp Delay(d),s/veh	23.4	57.7	18.7	24.6	40.3	16.0	40.1	46.7	0.0	37.7	0.0	38.9
LnGrp LOS	C	E	B	C	D	B	D	D		D		D
Approach Vol, veh/h		778			1005			158			326	
Approach Delay, s/veh		55.3			35.8			42.3			38.0	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	46.5	16.0	25.2	7.1	53.1	24.4	16.8
Change Period (Y+Rc), s	7.2	* 6.1	8.5	* 9.8	4.5	* 6.1	* 9.8	* 9.8
Max Green Setting (Gmax), s	7.0	* 40	18.0	* 18	5.0	* 45	* 18	* 18
Max Q Clear Time (g_c+I1), s	5.0	40.9	7.4	6.5	2.9	42.2	14.4	4.7
Green Ext Time (p_c), s	0.0	0.0	0.1	0.2	0.0	2.1	0.2	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	43.2
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1005	920	100	80	45
Future Volume (veh/h)	50	1005	920	100	80	45
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
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
Adj Sat Flow, veh/h/ln	1900	1863	1866	1900	1864	1900
Adj Flow Rate, veh/h	52	1036	948	103	82	46
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	3	0
Cap, veh/h	280	1406	1058	115	116	65
Arrive On Green	0.05	0.75	0.64	0.64	0.11	0.11
Sat Flow, veh/h	1810	1863	1655	180	1082	607
Grp Volume(v), veh/h	52	1036	0	1051	129	0
Grp Sat Flow(s),veh/h/ln	1810	1863	0	1835	1703	0
Q Serve(g_s), s	0.5	20.1	0.0	31.6	4.8	0.0
Cycle Q Clear(g_c), s	0.5	20.1	0.0	31.6	4.8	0.0
Prop In Lane	1.00			0.10	0.64	0.36
Lane Grp Cap(c), veh/h	280	1406	0	1173	183	0
V/C Ratio(X)	0.19	0.74	0.00	0.90	0.71	0.00
Avail Cap(c_a), veh/h	336	1797	0	1500	469	0
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	0.00
Uniform Delay (d), s/veh	12.3	4.4	0.0	10.0	28.1	0.0
Incr Delay (d2), s/veh	0.3	1.2	0.0	6.2	4.9	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	0.6	10.5	0.0	17.5	2.5	0.0
LnGrp Delay(d),s/veh	12.6	5.6	0.0	16.2	33.1	0.0
LnGrp LOS	B	A		B	C	
Approach Vol, veh/h		1088	1051		129	
Approach Delay, s/veh		5.9	16.2		33.1	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		53.8			7.6	46.2		11.5
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		63.0			5.1	53.4		18.0
Max Q Clear Time (g_c+I1), s		22.1			2.5	33.6		6.8
Green Ext Time (p_c), s		10.0			0.0	8.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Appendix E3: Roundabouts

MOVEMENT SUMMARY

Site: 101 [Route 5 Mill Rd AM Peak (Site Folder: General)]

2045 Proposed - Mill Road Intersection
Realigned Mill Road Roundabout 2 Way
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Realigned Mill Road														
3	L2	10	0.0	11	0.0	0.183	7.9	LOS A	1.1	28.9	0.78	0.70	0.78	35.7
18	R2	95	2.0	103	2.0	0.183	8.0	LOS A	1.1	28.9	0.78	0.70	0.78	34.5
Approach		105	1.8	114	1.8	0.183	8.0	LOS A	1.1	28.9	0.78	0.70	0.78	34.6
East: New Market Road														
1	L2	35	9.0	38	9.0	0.620	10.7	LOS B	8.4	215.9	0.20	0.05	0.20	33.3
6	T1	675	4.0	734	4.0	0.620	10.6	LOS B	8.4	215.9	0.20	0.05	0.20	34.1
Approach		710	4.2	772	4.2	0.620	10.6	LOS B	8.4	215.9	0.20	0.05	0.20	34.1
West: New Market Road														
2	T1	660	6.0	717	6.0	0.622	11.1	LOS B	6.8	180.5	0.36	0.15	0.36	33.7
12	R2	10	100.0	11	100.0	0.622	13.4	LOS B	6.8	180.5	0.36	0.15	0.36	29.9
Approach		670	7.4	728	7.4	0.622	11.1	LOS B	6.8	180.5	0.36	0.15	0.36	33.7
All Vehicles		1485	5.5	1614	5.5	0.622	10.6	LOS B	8.4	215.9	0.31	0.14	0.31	33.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101 [Route 5 Mill Rd AM Peak (Site Folder: General)]

2045 Proposed - Mill Road Intersection
Realigned Mill Road Roundabout 2 Way
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	33.9	mph	33.9	mph
Travel Distance (Total)	1017.1	veh-mi/h	1220.6	pers-mi/h
Travel Time (Total)	30.0	veh-h/h	36.0	pers-h/h
Desired Speed (Program)	45.0	mph		
Speed Efficiency	0.75			
Travel Time Index	7.27			
Congestion Coefficient	1.33			
Demand Flows (Total)	1614	veh/h	1937	pers/h
Percent Heavy Vehicles (Demand)	5.5	%		
Degree of Saturation	0.622			
Practical Spare Capacity	36.7	%		
Effective Intersection Capacity	2596	veh/h		
Control Delay (Total)	4.77	veh-h/h	5.72	pers-h/h
Control Delay (Average)	10.6	sec	10.6	sec
Control Delay (Worst Lane)	11.1	sec		
Control Delay (Worst Movement)	13.4	sec	13.4	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	10.6	sec		
Idling Time (Average)	8.8	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	8.4	veh		
95% Back of Queue - Distance (Worst Lane)	215.9	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.05			
Total Effective Stops	224	veh/h	269	pers/h
Effective Stop Rate	0.14		0.14	
Proportion Queued	0.31		0.31	
Performance Index	51.7		51.7	
Cost (Total)	840.93	$/h	840.93	$/h
Fuel Consumption (Total)	50.3	gal/h		
Carbon Dioxide (Total)	453.3	kg/h		
Hydrocarbons (Total)	0.041	kg/h		
Carbon Monoxide (Total)	0.607	kg/h		
NOx (Total)	1.115	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 2.2 %
Number of Iterations: 6 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.5% 1.3% 0.7%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	774,783	veh/y	929,739	pers/y
Delay	2,288	veh-h/y	2,745	pers-h/y
Effective Stops	107,439	veh/y	128,926	pers/y
Travel Distance	488,225	veh-mi/y	585,870	pers-mi/y
Travel Time	14,390	veh-h/y	17,268	pers-h/y
Cost	403,648	$/y	403,648	$/y
Fuel Consumption	24,157	gal/y		
Carbon Dioxide	217,591	kg/y		
Hydrocarbons	20	kg/y		

Carbon Monoxide	291 kg/y
NOx	535 kg/y

MOVEMENT SUMMARY

Site: 101 [Route 5 Mill Rd PM Peak (Site Folder: General)]

2045 Proposed - Mill Road Intersection
Realigned Mill Road Roundabout 2 Way
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Realigned Mill Road														
3	L2	10	0.0	11	0.0	0.161	8.8	LOS A	1.1	26.7	0.84	0.75	0.84	35.2
18	R2	70	0.0	76	0.0	0.161	8.8	LOS A	1.1	26.7	0.84	0.75	0.84	34.3
Approach		80	0.0	87	0.0	0.161	8.8	LOS A	1.1	26.7	0.84	0.75	0.84	34.4
East: New Market Road														
1	L2	90	0.0	98	0.0	0.750	14.6	LOS B	14.8	380.3	0.28	0.07	0.28	32.4
6	T1	775	4.0	842	4.0	0.750	14.7	LOS B	14.8	380.3	0.28	0.07	0.28	32.0
Approach		865	3.6	940	3.6	0.750	14.7	LOS B	14.8	380.3	0.28	0.07	0.28	32.0
West: New Market Road														
2	T1	750	2.0	815	2.0	0.712	13.9	LOS B	8.8	222.8	0.62	0.35	0.62	32.8
12	R2	10	0.0	11	0.0	0.712	13.9	LOS B	8.8	222.8	0.62	0.35	0.62	32.2
Approach		760	2.0	826	2.0	0.712	13.9	LOS B	8.8	222.8	0.62	0.35	0.62	32.8
All Vehicles		1705	2.7	1853	2.7	0.750	14.1	LOS B	14.8	380.3	0.46	0.23	0.46	32.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101 [Route 5 Mill Rd PM Peak (Site Folder: General)]

2045 Proposed - Mill Road Intersection
Realigned Mill Road Roundabout 2 Way
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	32.5	mph	32.5	mph
Travel Distance (Total)	1169.5	veh-mi/h	1403.4	pers-mi/h
Travel Time (Total)	36.0	veh-h/h	43.2	pers-h/h
Desired Speed (Program)	45.0	mph		
Speed Efficiency	0.72			
Travel Time Index	6.91			
Congestion Coefficient	1.39			
Demand Flows (Total)	1853	veh/h	2224	pers/h
Percent Heavy Vehicles (Demand)	2.7	%		
Degree of Saturation	0.750			
Practical Spare Capacity	13.3	%		
Effective Intersection Capacity	2470	veh/h		
Control Delay (Total)	7.25	veh-h/h	8.70	pers-h/h
Control Delay (Average)	14.1	sec	14.1	sec
Control Delay (Worst Lane)	14.7	sec		
Control Delay (Worst Movement)	14.7	sec	14.7	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	14.1	sec		
Idling Time (Average)	11.4	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	14.8	veh		
95% Back of Queue - Distance (Worst Lane)	380.3	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.10			
Total Effective Stops	423	veh/h	508	pers/h
Effective Stop Rate	0.23		0.23	
Proportion Queued	0.46		0.46	
Performance Index	64.9		64.9	
Cost (Total)	949.20	$/h	949.20	$/h
Fuel Consumption (Total)	52.4	gal/h		
Carbon Dioxide (Total)	469.2	kg/h		
Hydrocarbons (Total)	0.045	kg/h		
Carbon Monoxide (Total)	0.681	kg/h		
NOx (Total)	0.713	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 3.8 %
Number of Iterations: 7 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.9% 1.5% 0.8%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	889,565	veh/y	1,067,478	pers/y
Delay	3,478	veh-h/y	4,174	pers-h/y
Effective Stops	203,192	veh/y	243,830	pers/y
Travel Distance	561,359	veh-mi/y	673,630	pers-mi/y
Travel Time	17,284	veh-h/y	20,740	pers-h/y
Cost	455,615	$/y	455,615	$/y
Fuel Consumption	25,151	gal/y		
Carbon Dioxide	225,196	kg/y		
Hydrocarbons	22	kg/y		

Carbon Monoxide	327 kg/y
NOx	342 kg/y

MOVEMENT SUMMARY

Site: 1 [Route 5 - Strath Rd Proposed 2045 AM Peak (Site Folder: General)]

2045 Proposed - Strath Rd intersection
Roundabout with 2-lane approaches
AM Peak
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
SouthEast: Strath Rd														
3ax	L1	50	12.0	54	12.0	0.171	10.2	LOS B	1.3	34.0	0.94	0.84	0.94	31.6
8x	T1	25	7.0	27	7.0	0.171	9.7	LOS A	1.3	34.0	0.94	0.84	0.94	31.1
18bx	R3	75	5.0	82	5.0	0.056	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	39.0
Approach		150	7.7	163	7.7	0.171	7.9	LOS A	1.3	34.0	0.47	0.42	0.47	34.7
East: New Market Rd														
1b	L3	20	0.0	22	0.0	0.564	9.0	LOS A	5.8	150.9	0.53	0.30	0.53	35.7
6	T1	650	6.0	707	6.0	0.564	9.2	LOS A	5.8	150.9	0.53	0.30	0.53	34.6
16a	R1	200	2.0	217	2.0	0.233	6.2	LOS A	1.5	38.5	0.41	0.23	0.41	34.0
Approach		870	4.9	946	4.9	0.564	8.5	LOS A	5.8	150.9	0.50	0.28	0.50	34.5
NorthWest: Strath Rd														
7ax	L1	150	3.0	163	3.0	0.253	8.1	LOS A	1.8	47.2	0.86	0.76	0.86	30.6
4x	T1	15	0.0	16	0.0	0.253	7.9	LOS A	1.8	47.2	0.86	0.76	0.86	31.3
14bx	R3	40	3.0	43	3.0	0.029	4.2	LOS A	0.0	0.0	0.00	0.00	0.00	33.2
Approach		205	2.8	223	2.8	0.253	7.3	LOS A	1.8	47.2	0.69	0.61	0.69	31.1
West: New Market Rd.														
5b	L3	20	23.0	22	23.0	0.679	13.3	LOS B	8.2	216.2	0.76	0.55	0.80	31.4
2	T1	715	6.0	777	6.0	0.679	12.7	LOS B	8.2	216.2	0.76	0.55	0.80	32.9
12a	R1	20	0.0	22	0.0	0.027	4.7	LOS A	0.1	3.6	0.45	0.26	0.45	38.1
Approach		755	6.3	821	6.3	0.679	12.5	LOS B	8.2	216.2	0.76	0.54	0.79	33.0
All Vehicles		1980	5.4	2152	5.4	0.679	9.8	LOS A	8.2	216.2	0.62	0.43	0.63	33.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 1 [Route 5 - Strath Rd Proposed 2045 AM Peak (Site Folder: General)]

2045 Proposed - Strath Rd intersection
Roundabout with 2-lane approaches
AM Peak
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	33.6	mph	33.6	mph
Travel Distance (Total)	1356.6	veh-mi/h	1627.9	pers-mi/h
Travel Time (Total)	40.4	veh-h/h	48.5	pers-h/h
Desired Speed (Program)	43.6	mph		
Speed Efficiency	0.77			
Travel Time Index	7.44			
Congestion Coefficient	1.30			
Demand Flows (Total)	2152	veh/h	2583	pers/h
Percent Heavy Vehicles (Demand)	5.4	%		
Degree of Saturation	0.679			
Practical Spare Capacity	25.1	%		
Effective Intersection Capacity	3167	veh/h		
Control Delay (Total)	5.88	veh-h/h	7.06	pers-h/h
Control Delay (Average)	9.8	sec	9.8	sec
Control Delay (Worst Lane)	12.7	sec		
Control Delay (Worst Movement)	13.3	sec	13.3	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	9.8	sec		
Idling Time (Average)	5.9	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	8.2	veh		
95% Back of Queue - Distance (Worst Lane)	216.2	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.05			
Total Effective Stops	916	veh/h	1100	pers/h
Effective Stop Rate	0.43		0.43	
Proportion Queued	0.62		0.62	
Performance Index	67.7		67.7	
Cost (Total)	1133.52	$/h	1133.52	$/h
Fuel Consumption (Total)	67.8	gal/h		
Carbon Dioxide (Total)	610.7	kg/h		
Hydrocarbons (Total)	0.055	kg/h		
Carbon Monoxide (Total)	0.787	kg/h		
NOx (Total)	1.499	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 4.5 %
Number of Iterations: 8 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.4% 1.2% 0.6%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,033,044	veh/y	1,239,652	pers/y
Delay	2,823	veh-h/y	3,387	pers-h/y
Effective Stops	439,878	veh/y	527,854	pers/y
Travel Distance	651,164	veh-mi/y	781,397	pers-mi/y
Travel Time	19,404	veh-h/y	23,285	pers-h/y
Cost	544,088	$/y	544,088	$/y

Fuel Consumption	32,546	gal/y
Carbon Dioxide	293,134	kg/y
Hydrocarbons	26	kg/y
Carbon Monoxide	378	kg/y
NOx	720	kg/y

MOVEMENT SUMMARY

Site: 1 [Route 5 - Strath Rd Proposed 2045 PM Peak (Site Folder: General)]

2045 Proposed - Strath Rd intersection
Roundabout with 1- lane approaches
PM Peak
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
SouthEast: Strath Rd														
3ax	L1	100	0.0	109	0.0	0.322	12.1	LOS B	2.7	67.1	1.00	0.93	1.00	32.2
8x	T1	50	0.0	54	0.0	0.322	12.1	LOS B	2.7	67.1	1.00	0.93	1.00	30.2
18bx	R3	145	4.0	158	4.0	0.108	7.3	LOS A	0.0	0.0	0.00	0.00	0.00	39.2
Approach		295	2.0	321	2.0	0.322	9.8	LOS A	2.7	67.1	0.51	0.47	0.51	34.8
East: New Market Rd														
1b	L3	90	2.0	98	2.0	0.736	14.2	LOS B	11.5	294.0	0.82	0.60	0.91	32.6
6	T1	745	3.0	810	3.0	0.736	14.2	LOS B	11.5	294.0	0.82	0.60	0.91	32.2
16a	R1	120	1.0	130	1.0	0.163	6.2	LOS A	1.0	24.6	0.49	0.33	0.49	34.1
Approach		955	2.7	1038	2.7	0.736	13.2	LOS B	11.5	294.0	0.78	0.57	0.86	32.5
NorthWest: Strath Rd														
7ax	L1	230	1.0	250	1.0	0.587	20.0	LOS B	6.5	164.4	1.00	1.15	1.38	26.7
4x	T1	40	0.0	43	0.0	0.587	19.9	LOS B	6.5	164.4	1.00	1.15	1.38	27.0
14bx	R3	40	5.0	43	5.0	0.030	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	33.2
Approach		310	1.4	337	1.4	0.587	18.0	LOS B	6.5	164.4	0.87	1.00	1.21	27.4
West: New Market Rd.														
5b	L3	25	11.0	27	11.0	0.744	16.8	LOS B	14.2	360.9	0.94	1.02	1.48	30.0
2	T1	690	2.0	750	2.0	0.744	16.4	LOS B	14.2	360.9	0.94	1.02	1.48	31.6
12a	R1	25	6.0	27	6.0	0.045	6.4	LOS A	0.2	6.2	0.61	0.44	0.61	36.1
Approach		740	2.4	804	2.4	0.744	16.1	LOS B	14.2	360.9	0.93	1.00	1.45	31.7
All Vehicles		2300	2.3	2500	2.3	0.744	14.4	LOS B	14.2	360.9	0.81	0.75	1.05	31.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 1 [Route 5 - Strath Rd Proposed 2045 PM Peak (Site Folder: General)]

2045 Proposed - Strath Rd intersection
Roundabout with 1- lane approaches
PM Peak
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	31.7	mph	31.7	mph
Travel Distance (Total)	1578.5	veh-mi/h	1894.2	pers-mi/h
Travel Time (Total)	49.8	veh-h/h	59.8	pers-h/h
Desired Speed (Program)	43.6	mph		
Speed Efficiency	0.73			
Travel Time Index	6.96			
Congestion Coefficient	1.38			
Demand Flows (Total)	2500	veh/h	3000	pers/h
Percent Heavy Vehicles (Demand)	2.3	%		
Degree of Saturation	0.744			
Practical Spare Capacity	14.2	%		
Effective Intersection Capacity	3359	veh/h		
Control Delay (Total)	9.97	veh-h/h	11.96	pers-h/h
Control Delay (Average)	14.4	sec	14.4	sec
Control Delay (Worst Lane)	19.9	sec		
Control Delay (Worst Movement)	20.0	sec	20.0	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	14.4	sec		
Idling Time (Average)	7.4	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	14.2	veh		
95% Back of Queue - Distance (Worst Lane)	360.9	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.09			
Total Effective Stops	1884	veh/h	2261	pers/h
Effective Stop Rate	0.75		0.75	
Proportion Queued	0.81		0.81	
Performance Index	109.2		109.2	
Cost (Total)	1312.71	$/h	1312.71	$/h
Fuel Consumption (Total)	72.5	gal/h		
Carbon Dioxide (Total)	648.1	kg/h		
Hydrocarbons (Total)	0.063	kg/h		
Carbon Monoxide (Total)	0.903	kg/h		
NOx (Total)	0.891	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 5.4 %
Number of Iterations: 8 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 3.0% 1.5% 0.8%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,200,000	veh/y	1,440,000	pers/y
Delay	4,785	veh-h/y	5,742	pers-h/y
Effective Stops	904,328	veh/y	1,085,194	pers/y
Travel Distance	757,681	veh-mi/y	909,217	pers-mi/y
Travel Time	23,906	veh-h/y	28,687	pers-h/y
Cost	630,102	$/y	630,102	$/y

Fuel Consumption	34,777	gal/y
Carbon Dioxide	311,086	kg/y
Hydrocarbons	30	kg/y
Carbon Monoxide	434	kg/y
NOx	428	kg/y

MOVEMENT SUMMARY

Site: 101 [Route 5 Doran Rd AM Peak (Site Folder: Doran 3-Leg)]

2045 Proposed Doran Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: New Market Road														
6	T1	810	6.0	880	6.0	0.630	10.0	LOS B	7.4	193.8	0.34	0.13	0.34	34.3
16	R2	120	2.0	130	2.0	0.135	5.0	LOS A	0.8	19.6	0.21	0.08	0.21	33.5
Approach		930	5.5	1011	5.5	0.630	9.4	LOS A	7.4	193.8	0.33	0.13	0.33	34.2
North: Doran Road														
7	L2	110	1.0	120	1.0	0.320	11.7	LOS B	2.2	54.6	0.89	0.86	0.89	29.7
14	R2	45	0.0	49	0.0	0.320	11.6	LOS B	2.2	54.6	0.89	0.86	0.89	29.2
Approach		155	0.7	168	0.7	0.320	11.7	LOS B	2.2	54.6	0.89	0.86	0.89	29.6
West: New Market Road														
5	L2	35	10.0	38	10.0	0.048	5.0	LOS A	0.3	7.2	0.38	0.20	0.38	32.2
2	T1	870	5.0	946	5.0	0.733	13.7	LOS B	10.3	266.9	0.73	0.42	0.73	32.6
Approach		905	5.2	984	5.2	0.733	13.4	LOS B	10.3	266.9	0.72	0.41	0.72	32.6
All Vehicles		1990	5.0	2163	5.0	0.733	11.4	LOS B	10.3	266.9	0.55	0.32	0.55	33.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101 [Route 5 Doran Rd AM Peak (Site Folder: Doran 3-Leg)]

2045 Proposed Doran Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	33.0	mph	33.0	mph
Travel Distance (Total)	1364.3	veh-mi/h	1637.2	pers-mi/h
Travel Time (Total)	41.3	veh-h/h	49.5	pers-h/h
Desired Speed (Program)	44.0	mph		
Speed Efficiency	0.75			
Travel Time Index	7.23			
Congestion Coefficient	1.33			
Demand Flows (Total)	2163	veh/h	2596	pers/h
Percent Heavy Vehicles (Demand)	5.0	%		
Degree of Saturation	0.733			
Practical Spare Capacity	15.9	%		
Effective Intersection Capacity	2950	veh/h		
Control Delay (Total)	6.83	veh-h/h	8.19	pers-h/h
Control Delay (Average)	11.4	sec	11.4	sec
Control Delay (Worst Lane)	13.7	sec		
Control Delay (Worst Movement)	13.7	sec	13.7	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	11.4	sec		
Idling Time (Average)	8.2	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	10.3	veh		
95% Back of Queue - Distance (Worst Lane)	266.9	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.07			
Total Effective Stops	682	veh/h	819	pers/h
Effective Stop Rate	0.32		0.32	
Proportion Queued	0.55		0.55	
Performance Index	59.3		59.3	
Cost (Total)	927.96	$/h	927.96	$/h
Fuel Consumption (Total)	67.3	gal/h		
Carbon Dioxide (Total)	605.5	kg/h		
Hydrocarbons (Total)	0.055	kg/h		
Carbon Monoxide (Total)	0.800	kg/h		
NOx (Total)	1.396	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 2.9 %
Number of Iterations: 6 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 3.4% 1.9% 0.9%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,038,261	veh/y	1,245,913	pers/y
Delay	3,277	veh-h/y	3,933	pers-h/y
Effective Stops	327,485	veh/y	392,982	pers/y
Travel Distance	654,862	veh-mi/y	785,835	pers-mi/y
Travel Time	19,816	veh-h/y	23,779	pers-h/y
Cost	445,420	$/y	445,420	$/y
Fuel Consumption	32,303	gal/y		
Carbon Dioxide	290,631	kg/y		

Hydrocarbons	26	kg/y
Carbon Monoxide	384	kg/y
NOx	670	kg/y

MOVEMENT SUMMARY

Site: 101 [Route 5 Doran Rd PM Peak (Site Folder: Doran 3-Leg)]

2045 Proposed Doran Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: New Market Road														
6	T1	920	2.0	1000	2.0	0.695	11.5	LOS B	9.1	230.0	0.43	0.18	0.43	34.0
16	R2	100	0.0	109	0.0	0.112	4.7	LOS A	0.6	15.4	0.23	0.10	0.23	33.7
Approach		1020	1.8	1109	1.8	0.695	10.8	LOS B	9.1	230.0	0.41	0.18	0.41	34.0
North: Doran Road														
7	L2	80	3.0	87	3.0	0.305	13.3	LOS B	2.1	53.0	0.92	0.91	0.92	29.1
14	R2	45	0.0	49	0.0	0.305	12.9	LOS B	2.1	53.0	0.92	0.91	0.92	28.8
Approach		125	1.9	136	1.9	0.305	13.2	LOS B	2.1	53.0	0.92	0.91	0.92	29.0
West: New Market Road														
5	L2	50	0.0	54	0.0	0.059	4.5	LOS A	0.3	8.6	0.32	0.15	0.32	32.7
2	T1	1005	2.0	1092	2.0	0.797	15.9	LOS B	14.0	355.4	0.76	0.40	0.76	31.9
Approach		1055	1.9	1147	1.9	0.797	15.4	LOS B	14.0	355.4	0.74	0.38	0.74	31.9
All Vehicles		2200	1.9	2391	1.9	0.797	13.1	LOS B	14.0	355.4	0.60	0.32	0.60	32.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101 [Route 5 Doran Rd PM Peak (Site Folder: Doran 3-Leg)]

2045 Proposed Doran Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	32.7	mph	32.7	mph
Travel Distance (Total)	1508.3	veh-mi/h	1809.9	pers-mi/h
Travel Time (Total)	46.2	veh-h/h	55.4	pers-h/h
Desired Speed (Program)	44.2	mph		
Speed Efficiency	0.74			
Travel Time Index	7.10			
Congestion Coefficient	1.35			
Demand Flows (Total)	2391	veh/h	2870	pers/h
Percent Heavy Vehicles (Demand)	1.9	%		
Degree of Saturation	0.797			
Practical Spare Capacity	6.7	%		
Effective Intersection Capacity	3002	veh/h		
Control Delay (Total)	8.73	veh-h/h	10.48	pers-h/h
Control Delay (Average)	13.1	sec	13.1	sec
Control Delay (Worst Lane)	15.9	sec		
Control Delay (Worst Movement)	15.9	sec	15.9	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	13.1	sec		
Idling Time (Average)	9.6	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	14.0	veh		
95% Back of Queue - Distance (Worst Lane)	355.4	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.09			
Total Effective Stops	758	veh/h	910	pers/h
Effective Stop Rate	0.32		0.32	
Proportion Queued	0.60		0.60	
Performance Index	68.5		68.5	
Cost (Total)	985.09	$/h	985.09	$/h
Fuel Consumption (Total)	65.2	gal/h		
Carbon Dioxide (Total)	582.8	kg/h		
Hydrocarbons (Total)	0.057	kg/h		
Carbon Monoxide (Total)	0.852	kg/h		
NOx (Total)	0.712	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 3.4 %
Number of Iterations: 7 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.7% 1.4% 0.7%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,147,826	veh/y	1,377,391	pers/y
Delay	4,192	veh-h/y	5,031	pers-h/y
Effective Stops	364,010	veh/y	436,813	pers/y
Travel Distance	723,969	veh-mi/y	868,763	pers-mi/y
Travel Time	22,162	veh-h/y	26,595	pers-h/y
Cost	472,841	$/y	472,841	$/y
Fuel Consumption	31,304	gal/y		
Carbon Dioxide	279,755	kg/y		

Hydrocarbons	27	kg/y
Carbon Monoxide	409	kg/y
NOx	342	kg/y

MOVEMENT SUMMARY

Site: 101 [Route 5 Doran/Buffin Rd AM Peak (Site Folder: Doran/Realigned Buffin 4-Leg)]

2045 Proposed Doran/Realigned Buffin Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Realigned Buffin Rd														
3	L2	100	3.0	109	3.0	0.638	29.9	LOS C	5.9	149.8	0.98	1.18	1.57	24.6
8	T1	1	3.0	1	3.0	0.638	32.5	LOS C	5.9	149.8	0.98	1.18	1.57	24.6
18	R2	105	3.0	114	3.0	0.638	29.9	LOS C	5.9	149.8	0.98	1.18	1.57	24.1
Approach		206	3.0	224	3.0	0.638	29.9	LOS C	5.9	149.8	0.98	1.18	1.57	24.4
East: New Market Road														
1	L2	80	5.0	87	5.0	0.709	13.1	LOS B	8.7	226.9	0.73	0.46	0.73	31.9
6	T1	730	6.0	793	6.0	0.709	13.2	LOS B	8.7	226.9	0.73	0.46	0.73	32.4
16	R2	120	2.0	130	2.0	0.157	8.5	LOS A	0.9	23.5	0.44	0.27	0.44	33.1
Approach		930	5.4	1011	5.4	0.709	12.6	LOS B	8.7	226.9	0.69	0.44	0.69	32.4
North: Doran Road														
7	L2	110	1.0	120	1.0	0.432	18.3	LOS B	3.5	87.4	0.99	1.06	1.15	27.4
4	T1	1	0.0	1	0.0	0.432	18.1	LOS B	3.5	87.4	0.99	1.06	1.15	26.8
14	R2	45	0.0	49	0.0	0.432	18.1	LOS B	3.5	87.4	0.99	1.06	1.15	27.0
Approach		156	0.7	170	0.7	0.432	18.2	LOS B	3.5	87.4	0.99	1.06	1.15	27.3
West: New Market Road														
5	L2	35	10.0	38	10.0	0.727	14.3	LOS B	11.8	307.2	0.80	0.65	0.96	30.6
2	T1	765	5.0	832	5.0	0.727	14.2	LOS B	11.8	307.2	0.80	0.65	0.96	32.3
12	R2	75	14.0	82	14.0	0.120	6.6	LOS A	0.6	18.0	0.50	0.35	0.50	32.8
Approach		875	6.0	951	6.0	0.727	13.5	LOS B	11.8	307.2	0.77	0.62	0.92	32.2
All Vehicles		2167	5.1	2355	5.1	0.727	15.0	LOS B	11.8	307.2	0.77	0.63	0.90	31.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101 [Route 5 Doran/Buffin Rd AM Peak (Site Folder: Doran/Realigned Buffin 4-Leg)]

2045 Proposed Doran/Realigned Buffin Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	31.0	mph	31.0	mph
Travel Distance (Total)	1486.2	veh-mi/h	1783.4	pers-mi/h
Travel Time (Total)	48.0	veh-h/h	57.6	pers-h/h
Desired Speed (Program)	43.2	mph		
Speed Efficiency	0.72			
Travel Time Index	6.85			
Congestion Coefficient	1.40			
Demand Flows (Total)	2355	veh/h	2827	pers/h
Percent Heavy Vehicles (Demand)	5.1	%		
Degree of Saturation	0.727			
Practical Spare Capacity	17.0	%		
Effective Intersection Capacity	3242	veh/h		
Control Delay (Total)	9.82	veh-h/h	11.78	pers-h/h
Control Delay (Average)	15.0	sec	15.0	sec
Control Delay (Worst Lane)	29.9	sec		
Control Delay (Worst Movement)	32.5	sec	32.5	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	15.0	sec		
Idling Time (Average)	9.7	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	11.8	veh		
95% Back of Queue - Distance (Worst Lane)	307.2	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.08			
Total Effective Stops	1476	veh/h	1771	pers/h
Effective Stop Rate	0.63		0.63	
Proportion Queued	0.77		0.77	
Performance Index	106.3		106.3	
Cost (Total)	1065.37	$/h	1065.37	$/h
Fuel Consumption (Total)	75.6	gal/h		
Carbon Dioxide (Total)	680.6	kg/h		
Hydrocarbons (Total)	0.062	kg/h		
Carbon Monoxide (Total)	0.869	kg/h		
NOx (Total)	1.566	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 5.1 %
Number of Iterations: 8 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.6% 1.4% 0.7%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,130,609	veh/y	1,356,730	pers/y
Delay	4,712	veh-h/y	5,655	pers-h/y
Effective Stops	708,581	veh/y	850,297	pers/y
Travel Distance	713,358	veh-mi/y	856,030	pers-mi/y
Travel Time	23,044	veh-h/y	27,652	pers-h/y
Cost	511,376	$/y	511,376	$/y
Fuel Consumption	36,307	gal/y		
Carbon Dioxide	326,679	kg/y		

Hydrocarbons	30	kg/y
Carbon Monoxide	417	kg/y
NOx	752	kg/y

MOVEMENT SUMMARY

Site: 101 [Route 5 Doran/Buffin Rd PM Peak (Site Folder: Doran/Realigned Buffin 4-Leg)]

2045 Proposed Doran/Realigned Buffin Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Realigned Buffin Rd														
3	L2	20	3.0	22	3.0	0.170	19.8	LOS B	1.1	27.1	0.95	0.95	0.95	27.6
8	T1	1	3.0	1	3.0	0.170	22.3	LOS C	1.1	27.1	0.95	0.95	0.95	27.5
18	R2	15	3.0	16	3.0	0.170	19.8	LOS B	1.1	27.1	0.95	0.95	0.95	26.9
Approach		36	3.0	39	3.0	0.170	19.9	LOS B	1.1	27.1	0.95	0.95	0.95	27.3
East: New Market Road														
1	L2	20	3.0	22	3.0	0.716	12.4	LOS B	10.0	253.4	0.56	0.28	0.56	32.7
6	T1	900	2.0	978	2.0	0.716	12.3	LOS B	10.0	253.4	0.56	0.28	0.56	33.5
16	R2	100	0.0	109	0.0	0.116	7.4	LOS A	0.7	16.8	0.30	0.14	0.30	33.6
Approach		1020	1.8	1109	1.8	0.716	11.9	LOS B	10.0	253.4	0.54	0.26	0.54	33.5
North: Doran Road														
7	L2	80	3.0	87	3.0	0.338	15.2	LOS B	2.4	60.2	0.95	0.95	0.95	28.4
4	T1	1	3.0	1	3.0	0.338	15.2	LOS B	2.4	60.2	0.95	0.95	0.95	27.9
14	R2	45	0.0	49	0.0	0.338	14.8	LOS B	2.4	60.2	0.95	0.95	0.95	28.1
Approach		126	1.9	137	1.9	0.338	15.1	LOS B	2.4	60.2	0.95	0.95	0.95	28.3
West: New Market Road														
5	L2	50	0.0	54	0.0	0.839	18.8	LOS B	15.1	383.4	0.88	0.50	0.88	28.9
2	T1	990	2.0	1076	2.0	0.839	18.9	LOS B	15.1	383.4	0.88	0.50	0.88	30.5
12	R2	15	3.0	16	3.0	0.019	4.3	LOS A	0.1	2.6	0.35	0.16	0.35	34.2
Approach		1055	1.9	1147	1.9	0.839	18.7	LOS B	15.1	383.4	0.87	0.49	0.87	30.5
All Vehicles		2237	1.9	2432	1.9	0.839	15.4	LOS B	15.1	383.4	0.72	0.42	0.72	31.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101 [Route 5 Doran/Buffin Rd PM Peak (Site Folder: Doran/Realigned Buffin 4-Leg)]

2045 Proposed Doran/Realigned Buffin Rd Intersection
Roundabout 2 Way
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	31.6	mph	31.6	mph
Travel Distance (Total)	1533.9	veh-mi/h	1840.7	pers-mi/h
Travel Time (Total)	48.6	veh-h/h	58.3	pers-h/h
Desired Speed (Program)	44.1	mph		
Speed Efficiency	0.72			
Travel Time Index	6.86			
Congestion Coefficient	1.39			
Demand Flows (Total)	2432	veh/h	2918	pers/h
Percent Heavy Vehicles (Demand)	1.9	%		
Degree of Saturation	0.839			
Practical Spare Capacity	1.3	%		
Effective Intersection Capacity	2896	veh/h		
Control Delay (Total)	10.38	veh-h/h	12.46	pers-h/h
Control Delay (Average)	15.4	sec	15.4	sec
Control Delay (Worst Lane)	19.9	sec		
Control Delay (Worst Movement)	22.3	sec	22.3	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	15.4	sec		
Idling Time (Average)	11.1	sec		
Intersection Level of Service (LOS)	LOS B			
95% Back of Queue - Vehicles (Worst Lane)	15.1	veh		
95% Back of Queue - Distance (Worst Lane)	383.4	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.10			
Total Effective Stops	1025	veh/h	1230	pers/h
Effective Stop Rate	0.42		0.42	
Proportion Queued	0.72		0.72	
Performance Index	92.8		92.8	
Cost (Total)	1030.49	$/h	1030.49	$/h
Fuel Consumption (Total)	67.6	gal/h		
Carbon Dioxide (Total)	603.7	kg/h		
Hydrocarbons (Total)	0.059	kg/h		
Carbon Monoxide (Total)	0.873	kg/h		
NOx (Total)	0.744	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 6.4 %
Number of Iterations: 9 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 2.3% 1.2% 0.6%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,167,130	veh/y	1,400,557	pers/y
Delay	4,984	veh-h/y	5,981	pers-h/y
Effective Stops	491,869	veh/y	590,242	pers/y
Travel Distance	736,287	veh-mi/y	883,544	pers-mi/y
Travel Time	23,305	veh-h/y	27,966	pers-h/y
Cost	494,637	$/y	494,637	$/y
Fuel Consumption	32,426	gal/y		
Carbon Dioxide	289,790	kg/y		

Hydrocarbons	28	kg/y
Carbon Monoxide	419	kg/y
NOx	357	kg/y

Appendix E4: Queues

Intersection: 101: Varina Rd/Wilson Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	T	R	LT	R	LT	R
Maximum Queue (ft)	48	227	35	360	204	113	66	305	186
Average Queue (ft)	14	113	3	166	15	39	11	138	29
95th Queue (ft)	37	197	19	305	113	83	43	252	108
Link Distance (ft)		1892		4371		1703		1428	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275		425		325		250		200
Storage Blk Time (%)		0		2	0			4	0
Queuing Penalty (veh)		0		2	0			2	0

Intersection: 200: Mill Rd & Rte 5 (New Market Rd)

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	51	85
Average Queue (ft)	12	29
95th Queue (ft)	39	61
Link Distance (ft)		2014
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 300: Recreation Rd & Rte 5 (New Market Rd)

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	36	81
Average Queue (ft)	7	30
95th Queue (ft)	29	61
Link Distance (ft)		1423
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 401: E.S. Entrance & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	138	120	51
Average Queue (ft)	9	51	18
95th Queue (ft)	69	123	46
Link Distance (ft)	768	104	761
Upstream Blk Time (%)		2	
Queuing Penalty (veh)		16	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 402: Rte 5 (New Market Rd) & Gregg Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	103	157	66
Average Queue (ft)	12	16	24
95th Queue (ft)	65	82	53
Link Distance (ft)	104	259	875
Upstream Blk Time (%)	1	0	
Queuing Penalty (veh)	7	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 501: E.S. Exit & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	33	19	144
Average Queue (ft)	2	1	55
95th Queue (ft)	23	14	109
Link Distance (ft)	259	150	667
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 502: Produce Rd/Business Dvwys & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	L	T	LTR	LTR
Maximum Queue (ft)	136	64	110	17	162	64
Average Queue (ft)	18	5	43	1	55	20
95th Queue (ft)	80	36	89	18	124	51
Link Distance (ft)	150	150		323	842	521
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)			150			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 600: Strath Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	85	314	2	46	300	143	103	119	63	157	62
Average Queue (ft)	9	144	0	11	120	31	32	35	41	66	23
95th Queue (ft)	44	270	2	33	228	96	76	88	63	121	50
Link Distance (ft)		323	323		1472			1661			1220
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		1									
Storage Bay Dist (ft)	175			175		275	150		50	350	
Storage Blk Time (%)		4			2	0		5	2		
Queuing Penalty (veh)		1			5	0		6	1		

Intersection: 700: Buffin Rd/Wood Mill Dr & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	LT	R	LTR
Maximum Queue (ft)	24	32	102	18	1259	200	262
Average Queue (ft)	3	3	26	1	1108	83	117
95th Queue (ft)	15	16	72	18	1511	241	302
Link Distance (ft)		1472		1117	1209		972
Upstream Blk Time (%)					74		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)	125		150			200	
Storage Blk Time (%)			0		96	1	
Queuing Penalty (veh)			0		101	1	

Intersection: 800: Rte 5 (New Market Rd) & Doran Rd

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	69	219	389	141
Average Queue (ft)	24	90	161	69
95th Queue (ft)	57	176	296	124
Link Distance (ft)		1117	541	894
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	300			
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 900: Rte 5 (New Market Rd) & Four Mile Run Pkwy

Movement	EB	WB	SB
Directions Served	L	T	LR
Maximum Queue (ft)	57	2	635
Average Queue (ft)	18	0	350
95th Queue (ft)	47	2	737
Link Distance (ft)		1540	872
Upstream Blk Time (%)			5
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 146

Intersection: 101: Varina Rd/Wilson Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	130	281	14	120	384	242	65	30	260	142
Average Queue (ft)	43	128	3	7	186	22	19	7	127	23
95th Queue (ft)	90	231	9	61	327	133	49	25	216	83
Link Distance (ft)		1892			4371		1703		1428	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	275		425	275		325		250		200
Storage Blk Time (%)		0		0	2	0			2	0
Queuing Penalty (veh)		0		0	4	0			1	0

Intersection: 200: Mill Rd & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	4	69	73
Average Queue (ft)	0	29	24
95th Queue (ft)	3	60	54
Link Distance (ft)	4371		2014
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 300: Recreation Rd & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	2	53	84
Average Queue (ft)	0	16	28
95th Queue (ft)	2	44	65
Link Distance (ft)	289		1423
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 401: E.S. Entrance & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	332	111	91
Average Queue (ft)	55	13	29
95th Queue (ft)	220	66	68
Link Distance (ft)	768	104	761
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		6	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 402: Rte 5 (New Market Rd) & Gregg Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	128	130	127
Average Queue (ft)	62	9	41
95th Queue (ft)	145	69	100
Link Distance (ft)	104	259	875
Upstream Blk Time (%)	6	0	
Queuing Penalty (veh)	52	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 501: E.S. Exit & Rte 5 (New Market Rd)

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	208	8	110
Average Queue (ft)	51	0	29
95th Queue (ft)	200	6	80
Link Distance (ft)	259	150	667
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	11		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 502: Produce Rd/Business Dvwys & Rte 5 (New Market Rd)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	L	T	LTR	LTR
Maximum Queue (ft)	163	30	103	5	444	54
Average Queue (ft)	68	2	43	0	190	15
95th Queue (ft)	182	19	82	6	446	41
Link Distance (ft)	150	150		323	842	521
Upstream Blk Time (%)	6				1	
Queuing Penalty (veh)	24				0	
Storage Bay Dist (ft)			150			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 600: Strath Rd & Rte 5 (New Market Rd)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	163	338	48	174	726	275	147	254	63	211	110
Average Queue (ft)	27	269	2	77	340	80	64	86	46	110	44
95th Queue (ft)	114	396	36	172	611	256	125	186	59	184	87
Link Distance (ft)		323	323		1472			1661			1220
Upstream Blk Time (%)		10	0								
Queuing Penalty (veh)		37	0								
Storage Bay Dist (ft)	175			175		275	150		50	350	
Storage Blk Time (%)	0	29		0	24	0	0	26	3		
Queuing Penalty (veh)	0	7		1	50	2	0	64	5		

Intersection: 700: Buffin Rd/Wood Mill Dr & Rte 5 (New Market Rd)

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	TR	L	LT	R	LTR
Maximum Queue (ft)	26	1	19	116	58	284
Average Queue (ft)	6	0	2	39	11	129
95th Queue (ft)	22	1	11	122	40	311
Link Distance (ft)		1472		1209		972
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	125		150		200	
Storage Blk Time (%)				1	0	
Queuing Penalty (veh)				0	0	

Intersection: 800: Rte 5 (New Market Rd) & Doran Rd

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	80	225	425	148
Average Queue (ft)	33	99	180	66
95th Queue (ft)	66	190	343	124
Link Distance (ft)		1117	541	894
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	300			
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 900: Rte 5 (New Market Rd) & Four Mile Run Pkwy

Movement	EB	WB	WB	SB
Directions Served	L	T	R	LR
Maximum Queue (ft)	96	39	22	383
Average Queue (ft)	39	2	1	185
95th Queue (ft)	77	33	11	398
Link Distance (ft)		1540	1540	872
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 267

Appendix F:
Cost Estimates

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - Mill Rd Alt. 1 Realign & Add WB Left Turn Lane

Opinion of Probable Project Costs - 3/25/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development			Project Complexity		District	
I	Pre-Scoping			Non-Complex		Richmond	
Pay Item #	**Description**	**Unit**	**Quantity**	**Unit Cost**		**Extension**	
	Mobilization Items						
513SD20-0001	Mobilization	LS	1	$	132,000	$	132,000
517SD20-0001	CN Surveying	LS	1	$	21,000	$	21,000
	Construction Contingency (35%)	LS	1	$	53,550	$	53,550
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)					**$**	**153,000**
	Maintenance of Traffic (MOT) Items						
	Maintenance of Traffic Allowance (20%)	LS	1	$	281,370	$	281,370
	Construction Contingency (35%)	LS	1	$	98,479	$	98,479
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)					**$**	**-**
	Roadway Items						
	Pavement - Mill and Overlay	SY	4224.586	$	48.05	$	202,991
	Pavement - Wedging	SY	0	$	121.82	$	-
	Pavement - Full Depth Asphalt	SY	3126.552	$	200.92	$	628,175
412SD20-0044	Saw Cutting (Pavement)	LF	2786.6	$	106.00	$	295,380
508SD20-0004	Demolition of Pavement (Flexible)	SY	994.3741	$	20.91	$	20,788
514SD20-0002	Field Office Type II	MO	12	$	3,500	$	42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$	30,000	$	30,000
108SP20-0002	Progress Schedule Updates	EA	12	$	1,000	$	12,000
	Allowances for Items (10%)	LS	1	$	114,733	$	114,733
	Construction Contingency (35%)	LS	1	$	471,124	$	471,124
	ROADWAY SUB-TOTAL (DEFINED COSTS)					**$**	**1,147,334**
	Hydraulics Items						
	E&S Controls Allowance (2.5%)	LS	1	$	35,171	$	35,171
	Drainage Items Allowance (2.5%)	LS	1	$	35,171	$	35,171
	Storm Water Management Allowance (2.5%)	LS	1	$	35,171	$	35,171
	Construction Contingency (35%)	LS	1	$	36,930	$	36,930
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)					**$**	**-**
	In-Plan Utilities Items						
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$	35,171	$	35,171
	Construction Contingency (35%)	LS	1	$	12,310	$	12,310
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)					**$**	**-**
	Traffic Items						
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	8038	$	0.77	$	6,169
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	20	$	9.14	$	183
704SD20-0047	PVMT.SYMB MRKG SGL TURN ARR. TY B CL I	EA	2	$	112.18	$	224
	Ground Signing Allowance (1.0%)	LS	1	$	14,068	$	14,068
	Allowances for Items (10%)	LS	1	$	658	$	658
	Construction Contingency (35%)	LS	1	$	7,456	$	7,456
	TRAFFIC SUB-TOTAL (DEFINED COSTS)					**$**	**6,576**
	Structures/Bridges Items						
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)					**$**	**-**
	Earthwork/Materials Items						
303SD20-0001	Regular Excavation	CY	2238	$	76.35	$	170,889
303SD20-0007	Borrow Excavation	CY	1119	$	73.32	$	82,050
	Allowances for Items (10%)	LS	1	$	25,294	$	25,294
	Construction Contingency (35%)	LS	1	$	97,381	$	97,381
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)					**$**	**252,939**
	Environmental/Sound Wall Items						
	SOUND WALL SUB-TOTAL (DEFINED COSTS)					**$**	**-**

	Other Items				
	Roadside Development Allowance (5%)	LS	1	$ 70,342	$ 70,342
	Construction Contingency (35%)	LS	1	$ 24,620	$ 24,620
	OTHER SUB-TOTAL				**$ -**
	DEFINED COSTS SUBTOTAL				**$ 1,559,849**
	Construction Totals				
	Allowances on Base Estimate (45%)	LS	1	$ 633,082	$ 633,082
	Construction Contract Total				**$ 2,192,931**
	Construction Contingency	LS	1	$ 801,850	$ 801,850
	Construction Total (Before CEI and Require.)				**$ 2,994,781**
	Management Reserve/Construction Contract Contingency (5.0%)	LS	1	$ 149,739	$ 149,739
	Construction Total (Before CEI)				**$ 3,144,520**
	Construction Engineering & Inspection (20%)	LS	1	$ 598,956	$ 598,956
	CEI Construction Contingency (35%)	LS	1	$ 209,635	$ 209,635
	CEI & Work Order Total				**$ 808,591**
				Total Construction Phase (in FY2024 Dollars)	**$ 3,953,000**

	Preliminary Engineering				
	Preliminary Engineering				$ 948,000
	Preliminary Engineering Contingency				$ 331,800
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$ 1,280,000**

	Right of Way & Utility Relocation				
	Utility Relocation	LS	1	$ 109,647	$ 109,647
	Utility Relocation Contingency				$ 38,376
	Utility Administration RW Phase	LS	1	$ 59,896	$ 59,896
	Right of Way Acquisition	LS	1	$ 180,000	$ 180,000
	Right of Way Contingency				$ 90,000
				Total Right of Way Phase (in FY2024 Dollars)	**$ 478,000**

				Total Project Cost in FY2024 Dollars	**$ 5,711,000**

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - Mill Rd Alt. 2 Roundabout

Opinion of Probable Project Costs - 5/10/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development			Project Complexity		District
I	Pre-Scoping			Moderately Complex		Richmond
Pay Item #	**Description**	**Unit**	**Quantity**	**Unit Cost**		**Extension**
	Mobilization Items					
513SD20-0001	Mobilization	LS	1	$	141,000	$ 141,000
517SD20-0001	CN Surveying	LS	1	$	23,000	$ 23,000
	Construction Contingency (50%)	LS	1	$	82,000	$ 82,000
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)					**$ 164,000**
	Maintenance of Traffic (MOT) Items					
	Maintenance of Traffic Allowance (25%)	LS	1	$	367,815	$ 367,815
	Construction Contingency (50%)	LS	1	$	183,908	$ 183,908
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)					**$ -**
	Roadway Items					
	Pavement - Mill and Overlay	SY	1680	$	48.05	$ 80,743
	Pavement - Full Depth Asphalt	SY	3471	$	200.92	$ 697,445
412SD20-0044	Saw Cutting (Pavement)	LF	1255	$	106.00	$ 133,077
	Concrete Curb, Curb & Gutter	LF	921	$	65.99	$ 60,762
504SD20-0002	Detectabe Wearing Surface, Pedestrian Ramps CG-12)	SY	0	$	70.56	$ -
502SD20-0053	Concrete Median Strip/Island (MS-1)	SY	684	$	145.00	$ 99,173
508SD20-0004	Demolition of Pavement (Flexible)	SY	1678	$	20.91	$ 35,085
514SD20-0002	Field Office Type II	MO	12	$	3,500	$ 42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$	30,000	$ 30,000
108SP20-0002	Progress Schedule Updates	EA	12	$	1,000	$ 12,000
	Allowances for Items (10%)	LS	1	$	119,029	$ 119,029
	Construction Contingency (50%)	LS	1	$	654,657	$ 654,657
	ROADWAY SUB-TOTAL (DEFINED COSTS)					**$ 1,190,285**
	Hydraulics Items					
	E&S Controls Allowance (2.5%)	LS	1	$	36,782	$ 36,782
	Drainage Items Allowance (2.5%)	LS	1	$	36,782	$ 36,782
	Storm Water Management Allowance (2.5%)	LS	1	$	36,782	$ 36,782
	Construction Contingency (50%)	LS	1	$	55,172	$ 55,172
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)					**$ -**
	In-Plan Utilities Items					
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$	36,782	$ 36,782
	Construction Contingency (50%)	LS	1	$	18,391	$ 18,391
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)					**$ -**
	Traffic Items					
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	3481	$	0.77	$ 2,671
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	80	$	9.14	$ 731
704SD20-0044	PVMT SYMB MRKG THRU ARROW TY B, CL I	EA	3	$	115.20	$ 346
	Ground Signing Allowance (2.0%)	LS	1	$	29,425	$ 29,425
	Allowances for Pavement Markings Items (10%)	LS	1	$	375	$ 375
	Construction Contingency (50%)	LS	1	$	16,774	$ 16,774
	TRAFFIC SUB-TOTAL (DEFINED COSTS)					**$ 3,748**
	Structures/Bridges Items					
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)					**$ -**
	Earthwork/Materials Items					
303SD20-0001	Regular Excavation	CY	2453	$	76.35	$ 187,299
303SD20-0007	Borrow Excavation	CY	1227	$	73.32	$ 89,929
	Allowances for Items (10%)	LS	1	$	27,723	$ 27,723
	Construction Contingency (50%)	LS	1	$	152,475	$ 152,475
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)					**$ 277,228**

	Environmental/Sound Wall Items				
	SOUND WALL SUB-TOTAL (DEFINED COSTS)				**$ -**
	Other Items				
	Roadside Development Allowance (5%)	LS	1	$ 73,563	$ 73,563
	Construction Contingency (50%)	LS	1	$ 36,782	$ 36,782
	OTHER SUB-TOTAL				**$ -**
	DEFINED COSTS SUBTOTAL				**$ 1,635,261**
	Construction Totals				
	Allowances on Base Estimate (50%)	LS	1	$ 735,630	$ 735,630
	Construction Contract Total				**$ 2,370,891**
	Construction Contingency	LS	1	$ 1,200,158	$ 1,200,158
	Construction Total (Before CEI and Require.)				**$ 3,571,050**
	Management Reserve/Construction Contract Contingency (7.5%)	LS	1	$ 267,829	$ 267,829
	Construction Total (Before CEI)				**$ 3,838,878**
	Construction Engineering & Inspection (20%)	LS	1	$ 714,210	$ 714,210
	CEI Construction Contingency (50%)	LS	1	$ 357,105	$ 357,105
	CEI & Work Order Total				**$ 1,071,315**
				Total Construction Phase (in FY2024 Dollars)	**$ 4,910,000**

	Preliminary Engineering				
	Preliminary Engineering				$ 1,041,000
	Preliminary Engineering Contingency				$ 520,500
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$ 1,562,000**

	Right of Way & Utility Relocation				
	Utility Relocation	LS	1	$ 118,545	$ 118,545
	Utility Relocation Contingency				$ 59,272
	Utility Administration RW Phase	LS	1	$ 71,421	$ 71,421
	Right of Way Acquisition	LS	1	$ 320,000	$ 320,000
	Right of Way Contingency				$ 160,000
				Total Right of Way Phase (in FY2024 Dollars)	**$ 729,000**

				Total Project Cost in FY2024 Dollars	**$ 7,201,000**

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - School-to-Strath Rd Access Mgmt

Opinion of Probable Project Costs - 03/25/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development		Project Complexity		District
I	Pre-Scoping		Non-Complex		Richmond
Pay Item #	**Description**	**Unit**	**Quantity**	**Unit Cost**	**Extension**
	Mobilization Items				
513SD20-0001	Mobilization	LS	1	$ 69,000	$ 69,000
517SD20-0001	CN Surveying	LS	1	$ 9,000	$ 9,000
	Construction Contingency (35%)	LS	1	$ 27,300	$ 27,300
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)				**$ 78,000**
	Maintenance of Traffic (MOT) Items				
	Maintenance of Traffic Allowance (20%)	LS	1	$ 109,215	$ 109,215
	Construction Contingency (35%)	LS	1	$ 38,225	$ 38,225
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)				**$ -**
	Roadway Items				
	Pavement - Mill and Overlay	SY	5057	$ 48.05	$ 242,979
	Pavement - Full Depth Asphalt	SY	340	$ 200.92	$ 68,391
412SD20-0044	Saw Cutting (Pavement)	LF	497	$ 106	$ 52,732
	Concrete Curb, Curb & Gutter	LF	629	$ 65.11	$ 40,980
502SD20-0053	Concrete Median Strip/Island (MS-1)	SY	181	$ 145.00	$ 26,191
514SD20-0002	Field Office Type II	MO	12	$ 3,500	$ 42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$ 30,000	$ 30,000
108SP20-0002	Progress Schedule Updates	EA	12	$ 1,000	$ 12,000
	Allowances for Items (20%)	LS	1	$ 103,055	$ 103,055
	Construction Contingency (35%)	LS	1	$ 216,415	$ 216,415
	ROADWAY SUB-TOTAL (DEFINED COSTS)				**$ 515,274**
	Hydraulics Items				
	E&S Controls Allowance (2.5%)	LS	1	$ 13,652	$ 13,652
	Drainage Items Allowance (2.5%)	LS	1	$ 13,652	$ 13,652
	Storm Water Management Allowance (2.5%)	LS	1	$ 13,652	$ 13,652
	Construction Contingency (35%)	LS	1	$ 14,334	$ 14,334
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)				**$ -**
	In-Plan Utilities Items				
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$ 13,652	$ 13,652
	Construction Contingency (35%)	LS	1	$ 4,778	$ 4,778
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Traffic Items				
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	5709	$ 1	$ 4,381
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	12	$ 9	$ 110
704SD20-0047	PVMT.SYMB MRKG SGL TURN ARR. TY B CL I	EA	3	$ 112	$ 337
704SD20-0050	DBL TURN ARR.THRU/LT OR RT TY B, CL I	EA	3	$ 202	$ 605
	Ground Signing Allowance (1.0%)	LS	1	$ 5,461	$ 5,461
	Allowances for Items (10%)	LS	1	$ 543	$ 543
	Construction Contingency (35%)	LS	1	$ 4,003	$ 4,003
	TRAFFIC SUB-TOTAL (DEFINED COSTS)				**$ 5,432**
	Structures/Bridges Items				
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Earthwork/Materials Items				
303SD20-0001	Regular Excavation	CY	224	$ 76.35	$ 17,139
303SD20-0007	Borrow Excavation	CY	112	$ 73.32	$ 8,229
	Allowances for Items (10%)	LS	1	$ 2,537	$ 2,537
	Construction Contingency (35%)	LS	1	$ 9,766	$ 9,766
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)				**$ 25,367**

	Environmental/Sound Wall Items					
	SOUND WALL SUB-TOTAL (DEFINED COSTS)				**$**	**-**
	Other Items					
	Roadside Development Allowance (5%)	LS	1	$ 27,304	$	27,304
	Construction Contingency (35%)	LS	1	$ 9,556	$	9,556
	OTHER SUB-TOTAL				**$**	**-**
	DEFINED COSTS SUBTOTAL				**$**	**624,073**
	Construction Totals					
	Allowances on Base Estimate (54%)	LS	1	$ 297,260	$	297,260
	Construction Contract Total				**$**	**921,334**
	Construction Contingency	LS	1	$ 324,378	$	324,378
	Construction Total (Before CEI and Require.)				**$**	**1,245,712**
	Management Reserve/Construction Contract Contingency (5.0%)	LS	1	$ 62,286	$	62,286
	Construction Total (Before CEI)				**$**	**1,307,997**
	Construction Engineering & Inspection (20%)	LS	1	$ 249,142	$	249,142
	CEI Construction Contingency (35%)	LS	1	$ 87,200	$	87,200
	CEI & Work Order Total				**$**	**336,342**
				Total Construction Phase (in FY2024 Dollars)	**$**	**1,644,000**

	Preliminary Engineering					
	Preliminary Engineering				$	596,000
	Preliminary Engineering Contingency				$	208,600
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$**	**805,000**

	Right of Way & Utility Relocation					
	Utility Relocation	LS	1	$ 46,067	$	46,067
	Utility Relocation Contingency				$	16,123
	Utility Administration RW Phase	LS	1	$ 24,914	$	24,914
	Right of Way Acquisition	LS	1	$ 160,000	$	160,000
	Right of Way Contingency				$	80,000
				Total Right of Way Phase (in FY2024 Dollars)	**$**	**327,000**

				Total Project Cost in FY2024 Dollars	**$**	**2,776,000**

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - Strath Rd Alt. 1: Add NB & SB Left Turn Lanes

Opinion of Probable Project Costs - 5/25/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development	Project Complexity	District
I	Pre-Scoping	Non-Complex	Richmond

Pay Item #	Description	Unit	Quantity	Unit Cost	Extension
	Mobilization Items				
513SD20-0001	Mobilization	LS	1	$ 82,000	$ 82,000
517SD20-0001	CN Surveying	LS	1	$ 11,000	$ 11,000
	Construction Contingency (35%)	LS	1	$ 32,550	$ 32,550
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)				**$ 93,000**
	Maintenance of Traffic (MOT) Items				
	Maintenance of Traffic Allowance (20%)	LS	1	$ 142,010	$ 142,010
	Construction Contingency (35%)	LS	1	$ 49,704	$ 49,704
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)				**$ -**
	Roadway Items				
301SD20-0002	Clearing and Grubbing	ACRE	0.2	$ 14,500	$ 3,020
	Pavement - Mill and Overlay	SY	3699	$ 48.05	$ 177,733
	Pavement - Full Depth Asphalt	SY	520	$ 200.92	$ 104,526
	Concrete Curb, Curb & Gutter	LF	633	$ 39.57	$ 25,036
504SD20-0002	Detectabe Wearing Surface, Pedestrian Ramps CG-12)	SY	10	$ 70.56	$ 738
510SX20-0002	Removal & Disposal of Existing Curb & Gutter	LF	286	$ 29.26	$ 8,381
502SD20-0053	Concrete Median Strip/Island (MS-1)	SY	106	$ 145.00	$ 15,313
514SD20-0002	Field Office Type II	MO	12	$ 3,500	$ 42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$ 30,000	$ 30,000
108SP20-0002	Progress Schedule Updates	EA	12	$ 1,000	$ 12,000
	Allowances for Items (10%)	LS	1	$ 41,875	$ 41,875
	Construction Contingency (35%)	LS	1	$ 161,218	$ 161,218
	ROADWAY SUB-TOTAL (DEFINED COSTS)				**$ 418,748**
	Hydraulics Items				
	E&S Controls Allowance (2.5%)	LS	1	$ 17,751	$ 17,751
	Drainage Items Allowance (2.5%)	LS	1	$ 17,751	$ 17,751
	Storm Water Management Allowance (2.5%)	LS	1	$ 17,751	$ 17,751
	Construction Contingency (35%)	LS	1	$ 18,639	$ 18,639
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)				**$ -**
	In-Plan Utilities Items				
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$ 17,751	$ 17,751
	Construction Contingency (35%)	LS	1	$ 6,213	$ 6,213
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Traffic Items				
	Modify Traffic Signals and Control Box, Per Intersection	EA	0.5	$ 500,000	$ 250,000
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	2550	$ 0.77	$ 1,957
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	231	$ 9.14	$ 2,112
704SD20-0035	PVMT MSG. MARK. "ONLY" TY B, CL. I, 6'	EA	3	$ 546.48	$ 1,639
704SD20-0044	PVMT SYMB MRKG THRU ARROW TY B, CL I	EA	2	$ 115.20	$ 230
704SD20-0047	PVMT.SYMB MRKG SGL TURN ARR. TY B CL I	EA	6	$ 112.18	$ 673
704SD20-0050	DBL TURN ARR.THRU/LT OR RT TY B, CL I	EA	3	$ 201.80	$ 605
	Ground Signing Allowance (1.0%)	LS	1	$ 7,101	$ 7,101
	Allowances for Items (10%)	LS	1	$ 25,000	$ 25,000
	Construction Contingency (35%)	LS	1	$ 101,261	$ 101,261
	TRAFFIC SUB-TOTAL (DEFINED COSTS)				**$ 250,000**
	Structures/Bridges Items				
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)				**$ -**

	Earthwork/Materials Items				
303SD20-0001	Regular Excavation	CY	365	$ 76.35	$ 27,905
303SD20-0007	Borrow Excavation	CY	183	$ 73.32	$ 13,398
	Allowances for Items (10%)	LS	1	$ 4,130	$ 4,130
	Construction Contingency (35%)	LS	1	$ 15,902	$ 15,902
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)				**$ 41,303**
	Environmental/Sound Wall Items				
	SOUND WALL SUB-TOTAL (DEFINED COSTS)				**$ -**
	Other Items				
	Roadside Development Allowance (5%)	LS	1	$ 35,503	$ 35,503
	Construction Contingency (35%)	LS	1	$ 12,426	$ 12,426
	OTHER SUB-TOTAL				**$ -**
	DEFINED COSTS SUBTOTAL				**$ 803,050**
	Construction Totals				
	Allowances on Base Estimate (45%)	LS	1	$ 319,523	$ 319,523
	Construction Contract Total				**$ 1,122,573**
	Construction Contingency	LS	1	$ 397,912	$ 397,912
	Construction Total (Before CEI and Require.)				**$ 1,520,485**
	Management Reserve/Construction Contract Contingency (5.0%)	LS	1	$ 76,024	$ 76,024
	Construction Total (Before CEI)				**$ 1,596,509**
	Construction Engineering & Inspection (20%)	LS	1	$ 304,097	$ 304,097
	CEI Construction Contingency (35%)	LS	1	$ 106,434	$ 106,434
	CEI & Work Order Total				**$ 410,531**
				Total Construction Phase (in FY2024 Dollars)	**$ 2,007,000**

	Preliminary Engineering				
	Preliminary Engineering				$ 662,000
	Preliminary Engineering Contingency				$ 231,700
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$ 894,000**

	Right of Way & Utility Relocation				
	Utility Relocation	LS	1	$ 56,129	$ 56,129
	Utility Relocation Contingency				$ 19,645
	Utility Administration RW Phase	LS	1	$ 30,410	$ 30,410
	Right of Way Acquisition	LS	1	$ 220,000	$ 220,000
	Right of Way Contingency				$ 110,000
				Total Right of Way Phase (in FY2024 Dollars)	**$ 436,000**

Total Project Cost in FY2024 Dollars	**$ 3,337,000**

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - Strath Rd Alt.2 Roundabout

Opinion of Probable Project Costs - 03/25/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development		Project Complexity		District
I	Pre-Scoping		Moderately Complex		Richmond
Pay Item #	**Description**	**Unit**	**Quantity**	**Unit Cost**	**Extension**
	Mobilization Items				
513SD20-0001	Mobilization	LS	1	$ 117,000	$ 117,000
517SD20-0001	CN Surveying	LS	1	$ 18,000	$ 18,000
	Construction Contingency (50%)	LS	1	$ 67,500	$ 67,500
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)				**$ 135,000**
	Maintenance of Traffic (MOT) Items				
	Maintenance of Traffic Allowance (25%)	LS	1	$ 287,345	$ 287,345
	Construction Contingency (50%)	LS	1	$ 143,672	$ 143,672
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)				**$ -**
	Roadway Items				
301SD20-0002	Clearing and Grubbing	ACRE	0.2	$ 14,500	$ 2,740
	Pavement - Mill and Overlay	SY	7650	$ 48	$ 367,601
	Pavement - Full Depth Asphalt	SY	1823	$ 201	$ 366,283
	Concrete Curb, Curb & Gutter	LF	2913	$ 55	$ 159,250
504SD20-0002	Detectabe Wearing Surface, Pedestrian Ramps CG-12)	SY	13	$ 71	$ 920
508SD20-0004	Demolition of Pavement (Flexible)	SY	584	$ 21	$ 12,217
514SD20-0002	Field Office Type II	MO	12	$ 3,500	$ 42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$ 30,000	$ 30,000
108SP20-0002	Progress Schedule Updates	EA	12	$ 1,000	$ 12,000
	Allowances for Items (10%)	LS	1	$ 99,301	$ 99,301
	Construction Contingency (50%)	LS	1	$ 546,156	$ 546,156
	ROADWAY SUB-TOTAL (DEFINED COSTS)				**$ 993,011**
	Hydraulics Items				
	E&S Controls Allowance (2.5%)	LS	1	$ 28,734	$ 28,734
	Drainage Items Allowance (2.5%)	LS	1	$ 28,734	$ 28,734
	Storm Water Management Allowance (2.5%)	LS	1	$ 28,734	$ 28,734
	Construction Contingency (50%)	LS	1	$ 43,102	$ 43,102
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)				**$ -**
	In-Plan Utilities Items				
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$ 28,734	$ 28,734
	Construction Contingency (50%)	LS	1	$ 14,367	$ 14,367
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Traffic Items				
	Remove Existing Traffic Signals, Per Intersection	EA	1	$ 20,000	$ 20,000
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	3285	$ 1	$ 2,521
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	190	$ 9	$ 1,737
704SD20-0044	PVMT SYMB MRKG THRU ARROW TY B, CL I	EA	12	$ 115	$ 1,382
704SD20-0047	PVMT.SYMB MRKG SGL TURN ARR. TY B CL I	EA	12	$ 112	$ 1,346
	Ground Signing Allowance (1.0%)	LS	1	$ 11,494	$ 11,494
	Allowances for Items (10%)	LS	1	$ 2,699	$ 2,699
	Construction Contingency (50%)	LS	1	$ 20,589	$ 20,589
	TRAFFIC SUB-TOTAL (DEFINED COSTS)				**$ 26,986**
	Structures/Bridges Items				
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)				**$ -**

	Earthwork/Materials Items				
303SD20-0001	Regular Excavation	CY	1145	$ 76.35	$ 87,412
303SD20-0007	Borrow Excavation	CY	572	$ 73.32	$ 41,970
	Allowances for Items (10%)	LS	1	$ 12,938	$ 12,938
	Construction Contingency (50%)	LS	1	$ 71,160	$ 71,160
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)				**$ 129,382**
	Environmental/Sound Wall Items				
	SOUND WALL SUB-TOTAL (DEFINED COSTS)				**$ -**
	Other Items				
	Roadside Development Allowance (5%)	LS	1	$ 57,469	$ 57,469
	Construction Contingency (50%)	LS	1	$ 28,734	$ 28,734
	OTHER SUB-TOTAL				**$ -**
	DEFINED COSTS SUBTOTAL				**$ 1,284,379**
	Construction Totals				
	Allowances on Base Estimate (50%)	LS	1	$ 574,689	$ 574,689
	Construction Contract Total				**$ 1,859,068**
	Construction Contingency	LS	1	$ 935,281	$ 935,281
	Construction Total (Before CEI and Require.)				**$ 2,794,349**
	Management Reserve/Construction Contract Contingency (7.5%)	LS	1	$ 209,576	$ 209,576
	Construction Total (Before CEI)				**$ 3,003,925**
	Construction Engineering & Inspection (20%)	LS	1	$ 558,870	$ 558,870
	CEI Construction Contingency (50%)	LS	1	$ 279,435	$ 279,435
	CEI & Work Order Total				**$ 838,305**
				Total Construction Phase (in FY2024 Dollars)	**$ 3,842,000**

	Preliminary Engineering				
	Preliminary Engineering				$ 914,000
	Preliminary Engineering Contingency				$ 457,000
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$ 1,371,000**

	Right of Way & Utility Relocation				
	Utility Relocation	LS	1	$ 92,953	$ 92,953
	Utility Relocation Contingency				$ 46,477
	Utility Administration RW Phase	LS	1	$ 55,887	$ 55,887
	Right of Way Acquisition	LS	1	$ 240,000	$ 240,000
	Right of Way Contingency				$ 120,000
				Total Right of Way Phase (in FY2024 Dollars)	**$ 555,000**

				Total Project Cost in FY2024 Dollars	**$ 5,768,000**

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - Doran Rd Alt. 1: New Signal & EB Left Turn Lane

Opinion of Probable Project Costs - 3/25/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development			Project Complexity	District
I	Pre-Scoping			Non-Complex	Richmond
Pay Item #	**Description**	**Unit**	**Quantity**	**Unit Cost**	**Extension**
	Mobilization Items				
513SD20-0001	Mobilization	LS	1	$ 144,000	$ 144,000
517SD20-0001	CN Surveying	LS	1	$ 23,000	$ 23,000
	Construction Contingency (35%)	LS	1	$ 58,450	$ 58,450
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)				**$ 167,000**
	Maintenance of Traffic (MOT) Items				
	Maintenance of Traffic Allowance (20%)	LS	1	$ 311,814	$ 311,814
	Construction Contingency (35%)	LS	1	$ 109,135	$ 109,135
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)				**$ -**
	Roadway Items				
	Pavement - Mill and Overlay	SY	3562	$ 48.05	$ 171,156
	Pavement - Full Depth Asphalt	SY	1790	$ 200.92	$ 359,595
412SD20-0044	Saw Cutting (Concrete Pavement)	LF	1996	$ 106.00	$ 211,604
504SD20-0002	Detectabe Wearing Surface, Pedestrian Ramps CG-12)	SY	41	$ 70.56	$ 2,901
514SD20-0002	Field Office Type II	MO	12	$ 3,500	$ 42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$ 30,000	$ 30,000
108SP20-0002	Progress Schedule Updates	EA	12	$ 1,000	$ 12,000
	Allowances for Items (10%)	LS	1	$ 82,926	$ 82,926
	Construction Contingency (35%)	LS	1	$ 319,263	$ 319,263
	ROADWAY SUB-TOTAL (DEFINED COSTS)				**$ 829,256**
	Hydraulics Items				
	E&S Controls Allowance (2.5%)	LS	1	$ 38,977	$ 38,977
	Drainage Items Allowance (2.5%)	LS	1	$ 38,977	$ 38,977
	Storm Water Management Allowance (2.5%)	LS	1	$ 38,977	$ 38,977
	Construction Contingency (35%)	LS	1	$ 40,926	$ 40,926
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)				**$ -**
	In-Plan Utilities Items				
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$ 38,977	$ 38,977
	Construction Contingency (35%)	LS	1	$ 13,642	$ 13,642
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Traffic Items				
	New Traffic Signals and Control Box, Per Intersection	EA	1	$ 500,000	$ 500,000
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	5750	$ 0.77	$ 4,412
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	362	$ 9.14	$ 3,313
704SD20-0044	PVMT SYMB MRKG THRU ARROW TY B, CL I	EA	3	$ 115.20	$ 346
704SD20-0047	PVMT.SYMB MRKG SGL TURN ARR. TY B CL I	EA	3	$ 112.18	$ 337
704SD20-0050	DBL TURN ARR.THRU/LT OR RT TY B, CL I	EA	2	$ 201.80	$ 404
	Ground Signing Allowance (1.0%)	LS	1	$ 15,591	$ 15,591
	Allowances for Items (10%)	LS	1	$ 50,881	$ 50,881
	Construction Contingency (35%)	LS	1	$ 201,349	$ 201,349
	TRAFFIC SUB-TOTAL (DEFINED COSTS)				**$ 508,811**
	Structures/Bridges Items				
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Earthwork/Materials Items				
303SD20-0001	Regular Excavation	CY	1956	$ 76.35	$ 149,312
303SD20-0007	Borrow Excavation	CY	978	$ 73.32	$ 71,690
	Allowances for Items (10%)	LS	1	$ 22,100	$ 22,100
	Construction Contingency (35%)	LS	1	$ 85,086	$ 85,086
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)				**$ 221,002**

	Environmental/Sound Wall Items					
	Sound Walls	SF	0	$ -	$	-
	Allowances for Items (20%)	LS	0	$ -	$	-
	Construction Contingency (35%)	LS		$ -	$	-
	SOUND WALL SUB-TOTAL (DEFINED COSTS)				**$**	**-**
	Other Items					
	Landscaping Allowance (0%)	LS	0	$ -	$	-
	Roadside Development Allowance (5%)	LS	1	$ 77,953	$	77,953
	Construction Contingency (35%)	LS	1	$ 27,284	$	27,284
	OTHER SUB-TOTAL				**$**	**-**
	DEFINED COSTS SUBTOTAL				**$**	**1,726,069**
	Construction Totals					
	Allowances on Base Estimate (45%)	LS	1	$ 701,581	$	701,581
	Construction Contract Total				**$**	**2,427,650**
	Construction Contingency	LS	1	$ 855,134	$	855,134
	Construction Total (Before CEI and Require.)				**$**	**3,282,784**
	Management Reserve/Construction Contract Contingency (5.0%)	LS	1	$ 164,139	$	164,139
	Construction Total (Before CEI)				**$**	**3,446,923**
	Construction Engineering & Inspection (20%)	LS	1	$ 656,557	$	656,557
	CEI Construction Contingency (35%)	LS	1	$ 229,795	$	229,795
	CEI & Work Order Total				**$**	**886,352**
				Total Construction Phase (in FY2024 Dollars)	**$**	**4,333,000**

	Preliminary Engineering					
	Preliminary Engineering				$	995,000
	Preliminary Engineering Contingency				$	348,250
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$**	**1,343,000**

	Right of Way & Utility Relocation					
	Utility Relocation	LS	1	$ 121,382	$	121,382
	Utility Relocation Contingency				$	42,484
	Utility Administration RW Phase	LS	1	$ 65,656	$	65,656
	Right of Way Acquisition	LS	1	$ 200,000	$	200,000
	Right of Way Contingency				$	100,000
				Total Right of Way Phase (in FY2024 Dollars)	**$**	**530,000**

	Total Project Cost in FY2024 Dollars	**$**	**6,206,000**

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - Doran Rd Alt. 2 Roundabout

Opinion of Probable Project Costs - 5/10/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development		Project Complexity		District
I	Pre-Scoping		Moderately Complex		Richmond
Pay Item #	**Description**	**Unit**	**Quantity**	**Unit Cost**	**Extension**
	Mobilization Items				
513SD20-0001	Mobilization	LS	1	$ 141,000	$ 141,000
517SD20-0001	CN Surveying	LS	1	$ 23,000	$ 23,000
	Construction Contingency (50%)	LS	1	$ 82,000	$ 82,000
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)				**$ 164,000**
	Maintenance of Traffic (MOT) Items				
	Maintenance of Traffic Allowance (25%)	LS	1	$ 368,665	$ 368,665
	Construction Contingency (50%)	LS	1	$ 184,333	$ 184,333
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)				**$ -**
	Roadway Items				
301SD20-0002	Clearing and Grubbing	ACRE	0.14	$ 14,500	$ 2,013
	Pavement - Mill and Overlay	SY	2551	$ 48.05	$ 122,581
	Pavement - Full Depth Asphalt	SY	3827	$ 200.92	$ 768,840
	Concrete Curb, Curb & Gutter	LF	1246	$ 65.99	$ 82,199
504SD20-0002	Detectabe Wearing Surface, Pedestrian Ramps CG-12)	SY	41	$ 70.56	$ 2,861
504SD20-0003	Concrete Sidewalk 4" (Hydr. Cement)	SY	344	$ 59.78	$ 20,538
502SD20-0053	Concrete Median Strip/Island (MS-1)	SY	966	$ 145.00	$ 140,091
508SD20-0004	Demolition of Pavement (Flexible)	SY	765	$ 20.91	$ 16,001
514SD20-0002	Field Office Type II	MO	12	$ 3,500	$ 42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$ 30,000	$ 30,000
108SP20-0002	Progress Schedule Updates	EA	12	$ 1,000	$ 12,000
	Allowances for Items (10%)	LS	1	$ 123,912	$ 123,912
	Construction Contingency (50%)	LS	1	$ 681,518	$ 681,518
	ROADWAY SUB-TOTAL (DEFINED COSTS)				**$ 1,239,124**
	Hydraulics Items				
	E&S Controls Allowance (2.5%)	LS	1	$ 36,867	$ 36,867
	Drainage Items Allowance (2.5%)	LS	1	$ 36,867	$ 36,867
	Storm Water Management Allowance (2.5%)	LS	1	$ 36,867	$ 36,867
	Construction Contingency (50%)	LS	1	$ 55,300	$ 55,300
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)				**$ -**
	In-Plan Utilities Items				
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$ 36,867	$ 36,867
	Construction Contingency (50%)	LS	1	$ 18,433	$ 18,433
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Traffic Items				
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	6197	$ 0.77	$ 4,755
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	312.18	$ 9.14	$ 2,853
704SD20-0047	PVMT.SYMB MRKG SGL TURN ARR. TY B CL I	EA	11	$ 112.18	$ 1,234
	Ground Signing Allowance (2.0%)	LS	1	$ 29,493	$ 29,493
	Allowances for Items (10%)	LS	1	$ 884	$ 884
	Construction Contingency (50%)	LS	1	$ 19,610	$ 19,610
	TRAFFIC SUB-TOTAL (DEFINED COSTS)				**$ 8,843**
	Structures/Bridges Items				
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)				**$ -**

	Earthwork/Materials Items				
303SD20-0001	Regular Excavation	CY	2006	$ 76.35	$ 153,158
303SD20-0007	Borrow Excavation	CY	1003	$ 73.32	$ 73,537
	Allowances for Items (10%)	LS	1	$ 22,669	$ 22,669
	Construction Contingency (50%)	LS	1	$ 124,682	$ 124,682
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)				**$ 226,695**
	Environmental/Sound Wall Items				
	SOUND WALL SUB-TOTAL (DEFINED COSTS)				**$ -**
	Other Items				
	Roadside Development Allowance (5%)	LS	1	$ 73,733	$ 73,733
	Construction Contingency (50%)	LS	1	$ 36,867	$ 36,867
	OTHER SUB-TOTAL				**$ -**
	DEFINED COSTS SUBTOTAL				**$ 1,638,661**
	Construction Totals				
	Allowances on Base Estimate (50%)	LS	1	$ 737,331	$ 737,331
	Construction Contract Total				**$ 2,375,992**
	Construction Contingency	LS	1	$ 1,202,743	$ 1,202,743
	Construction Total (Before CEI and Require.)				**$ 3,578,735**
	Management Reserve/Construction Contract Contingency (7.5%)	LS	1	$ 268,405	$ 268,405
	Construction Total (Before CEI)				**$ 3,847,140**
	Construction Engineering & Inspection (20%)	LS	1	$ 715,747	$ 715,747
	CEI Construction Contingency (50%)	LS	1	$ 357,873	$ 357,873
	CEI & Work Order Total				**$ 1,073,620**
				Total Construction Phase (in FY2024 Dollars)	**$ 4,921,000**

	Preliminary Engineering				
	Preliminary Engineering				$ 1,042,000
	Preliminary Engineering Contingency				$ 521,000
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$ 1,563,000**

	Right of Way & Utility Relocation				
	Utility Relocation	LS	1	$ 118,800	$ 118,800
	Utility Relocation Contingency				$ 59,400
	Utility Administration RW Phase	LS	1	$ 71,575	$ 71,575
	Right of Way Acquisition	LS	1	$ 240,000	$ 240,000
	Right of Way Contingency				$ 120,000
				Total Right of Way Phase (in FY2024 Dollars)	**$ 610,000**

Total Project Cost in FY2024 Dollars	**$ 7,094,000**

UPC# 120008 - Route 5 Safety & Operations Study, Henrico County - Doran Rd Alt. 3 Roundabout (4-Leg)

Opinion of Probable Project Costs - 5/10/2024

Non-inflated Costs are in FY2024 Dollars

Project Tier	Phase of Project Development		Project Complexity		District
I	Pre-Scoping		Moderately Complex		Richmond
Pay Item #	**Description**	**Unit**	**Quantity**	**Unit Cost**	**Extension**
	Mobilization Items				
513SD20-0001	Mobilization	LS	1	$ 221,000	$ 221,000
517SD20-0001	CN Surveying	LS	1	$ 39,000	$ 39,000
	Construction Contingency (50%)	LS	1	$ 130,000	$ 130,000
	MOBILIZATION SUB-TOTAL (DEFINED COSTS)				**$ 260,000**
	Maintenance of Traffic (MOT) Items				
	Maintenance of Traffic Allowance (25%)	LS	1	$ 636,327	$ 636,327
	Construction Contingency (50%)	LS	1	$ 318,164	$ 318,164
	MAINTENANCE OF TRAFFIC (MOT) SUB-TOTAL (DEFINED COSTS)				**$ -**
	Roadway Items				
301SD20-0002	Clearing and Grubbing	ACRE	1.24	$ 14,500	$ 18,020
	Pavement - Mill and Overlay	SY	4260	$ 48.05	$ 204,677
	Pavement - Full Depth Asphalt	SY	6759	$ 200.92	$ 1,357,914
	Concrete Curb, Curb & Gutter	LF	1826	$ 65.99	$ 120,469
504SD20-0002	Detectabe Wearing Surface, Pedestrian Ramps CG-12)	SY	62	$ 70.56	$ 4,391
504SD20-0003	Concrete Sidewalk 4" (Hydr. Cement)	SY	333	$ 59.78	$ 19,926
502SD20-0053	Concrete Median Strip/Island (MS-1)	SY	1130	$ 145.00	$ 163,808
508SD20-0004	Demolition of Pavement (Flexible)	SY	1655	$ 20.91	$ 34,601
514SD20-0002	Field Office Type II	MO	12	$ 3,500	$ 42,000
108SP20-0001	Progress Schedule Baseline	LS	1	$ 30,000	$ 30,000
108SP20-0002	Progress Schedule Updates	EA	12	$ 1,000	$ 12,000
	Allowances for Items (10%)	LS	1	$ 200,781	$ 200,781
	Construction Contingency (50%)	LS	1	$ 1,104,294	$ 1,104,294
	ROADWAY SUB-TOTAL (DEFINED COSTS)				**$ 2,007,807**
	Hydraulics Items				
	E&S Controls Allowance (2.5%)	LS	1	$ 63,633	$ 63,633
	Drainage Items Allowance (2.5%)	LS	1	$ 63,633	$ 63,633
	Storm Water Management Allowance (2.5%)	LS	1	$ 63,633	$ 63,633
	Construction Contingency (50%)	LS	1	$ 95,449	$ 95,449
	HYDRAULICS SUB-TOTAL (DEFINED COSTS)				**$ -**
	In-Plan Utilities Items				
	In-Plan (Wet) Utilities Allowance (2.5%)	LS	1	$ 63,633	$ 63,633
	Construction Contingency (50%)	LS	1	$ 31,816	$ 31,816
	IN-PLAN UTILITIES SUB-TOTAL (DEFINED COSTS)				**$ -**
	Traffic Items				
704SD20-0006	TYPE B CLASS I PVMT LINE MRKG 4"	LF	10409	$ 0.77	$ 7,988
704SD20-0010	TY.B CL.I PAVE. LINE MARK. 24"	LF	312.18	$ 9.14	$ 2,853
704SD20-0047	PVMT.SYMB MRKG SGL TURN ARR. TY B CL I	EA	12	$ 112.18	$ 1,346
	Ground Signing Allowance (2.0%)	LS	1	$ 50,906	$ 50,906
	Allowances for Items (10%)	LS	1	$ 1,219	$ 1,219
	Construction Contingency (50%)	LS	1	$ 32,156	$ 32,156
	TRAFFIC SUB-TOTAL (DEFINED COSTS)				**$ 12,187**
	Structures/Bridges Items				
	STRUCTURES/BRIDGES SUB-TOTAL (DEFINED COSTS)				**$ -**

	Earthwork/Materials Items				
303SD20-0001	Regular Excavation	CY	4648	$ 76.35	$ 354,910
303SD20-0007	Borrow Excavation	CY	2324	$ 73.32	$ 170,405
	Allowances for Items (10%)	LS	1	$ 52,531	$ 52,531
	Construction Contingency (50%)	LS	1	$ 288,923	$ 288,923
	EARTHWORK/MATERIALS SUB-TOTAL (DEFINED COSTS)				**$ 525,315**
	Environmental/Sound Wall Items				
	SOUND WALL SUB-TOTAL (DEFINED COSTS)				**$ -**
	Other Items				
	Roadside Development Allowance (5%)	LS	1	$ 127,265	$ 127,265
	Construction Contingency (50%)	LS	1	$ 63,633	$ 63,633
	OTHER SUB-TOTAL				**$ -**
	DEFINED COSTS SUBTOTAL				**$ 2,805,309**
	Construction Totals				
	Allowances on Base Estimate (50%)	LS	1	$ 1,272,654	$ 1,272,654
	Construction Contract Total				**$ 4,077,963**
	Construction Contingency	LS	1	$ 2,064,434	$ 2,064,434
	Construction Total (Before CEI and Require.)				**$ 6,142,397**
	Management Reserve/Construction Contract Contingency (7.5%)	LS	1	$ 460,680	$ 460,680
	Construction Total (Before CEI)				**$ 6,603,077**
	Construction Engineering & Inspection (20%)	LS	1	$ 1,228,479	$ 1,228,479
	CEI Construction Contingency (50%)	LS	1	$ 614,240	$ 614,240
	CEI & Work Order Total				**$ 1,842,719**
				Total Construction Phase (in FY2024 Dollars)	**$ 8,446,000**

	Preliminary Engineering				
	Preliminary Engineering				$ 1,387,000
	Preliminary Engineering Contingency				$ 693,500
				Total Preliminary Engineering Phase (in FY2024 Dollars)	**$ 2,081,000**

	Right of Way & Utility Relocation				
	Utility Relocation	LS	1	$ 203,898	$ 203,898
	Utility Relocation Contingency				$ 101,949
	Utility Administration RW Phase	LS	1	$ 122,848	$ 122,848
	Right of Way Acquisition	LS	1	$ 340,000	$ 340,000
	Right of Way Contingency				$ 170,000
				Total Right of Way Phase (in FY2024 Dollars)	**$ 939,000**

				Total Project Cost in FY2024 Dollars	**$ 11,466,000**

Appendix G:
Nelson Farm Development TIA

5. BUILD CONDITIONS

The build conditions represent the future roadway network and background traffic growth with the addition of the proposed development. The build condition includes the addition of two project driveways along Willson Road to enter the west portion of the site and one project driveway on Willson Road to enter the east portion of the site. There is also one project driveway along New Market Road (Route 5) to enter the east portion of the site that operates as a right-in/right-out only driveway.

5.1. SITE TRIP GENERATION

Traffic projections were estimated for the proposed development based on the ITE *Trip Generation Manual, 11th Edition*. To estimate daily trips, AM peak hour trips, and PM peak hour trips the ITE equations and/or rates were used. **Table 3** summarizes the total number of trips that are anticipated to be generated by the proposed development during the AM and PM peak hours. The total trips represent the number of vehicles entering and exiting the proposed development to and from the adjacent street network.

Table 3: Proposed Land Uses

Site	Land Use	ITE Code	Intensity	Weekday Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Total	In	Out	Total	In	Out
West	Single-Family Detached Housing	210	210 dwelling units	1,997	146	38	108	200	126	74
	Multifamily Housing	220	170 dwelling units	1,165	76	18	58	94	59	35
	Single-Family Attached Housing	215	170 dwelling units	1,245	83	26	57	98	56	42
East	Single-Family Detached Housing	210	250 dwelling units	2,344	171	44	127	235	148	87
	Single-Family Attached Housing	215	200 dwelling units	1,474	98	30	68	116	66	50
Total				8,225	574	156	418	743	455	288

5.2. SITE TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of traffic at study area intersections (including proposed access locations) was established based on existing traffic patterns, anticipated future traffic patterns, and traffic patterns internal to each lot. The west and east site trip distribution is shown in **Figure 4** and **Figure 5.** The applied trip assignment, based on the trip distribution and site projected volumes, is shown in **Figure 6** and **Figure 7** for the west and east site.

The assignment of traffic generated by the site was calculated by applying the distribution percentage for a specific turning movement to the total number of inbound or outbound trips generated to establish the turning movement volume at that location. The resulting build volumes for the AM and PM peak hours is shown in **Figure 8**. The build condition (2036) traffic volumes were calculated by adding the site generated trips to the projected no-build traffic volumes.

5.3. 2036 BUILD CONDITIONS INTERSECTION CAPACITY ANALYSIS

During the AM peak hour, all signalized intersections operate at overall LOS D or better with the exception of the intersection of New Market Road (Route 5) and Willson/Varina Road which operates at LOS F. All approaches and movements at all intersections also operate at LOS D or better with the exception of the following which operate at LOS E or worse:

- Southbound approach on Willson Road at New Market Road (Route 5)
  - Southbound left/through/right-turn movements on Willson Road at New Market Road (Route 5)
- Eastbound and westbound approaches on Willson Road at South Laburnum Avenue
  - Eastbound and westbound left/through/right-turn movements on Willson Road at South Laburnum Avenue

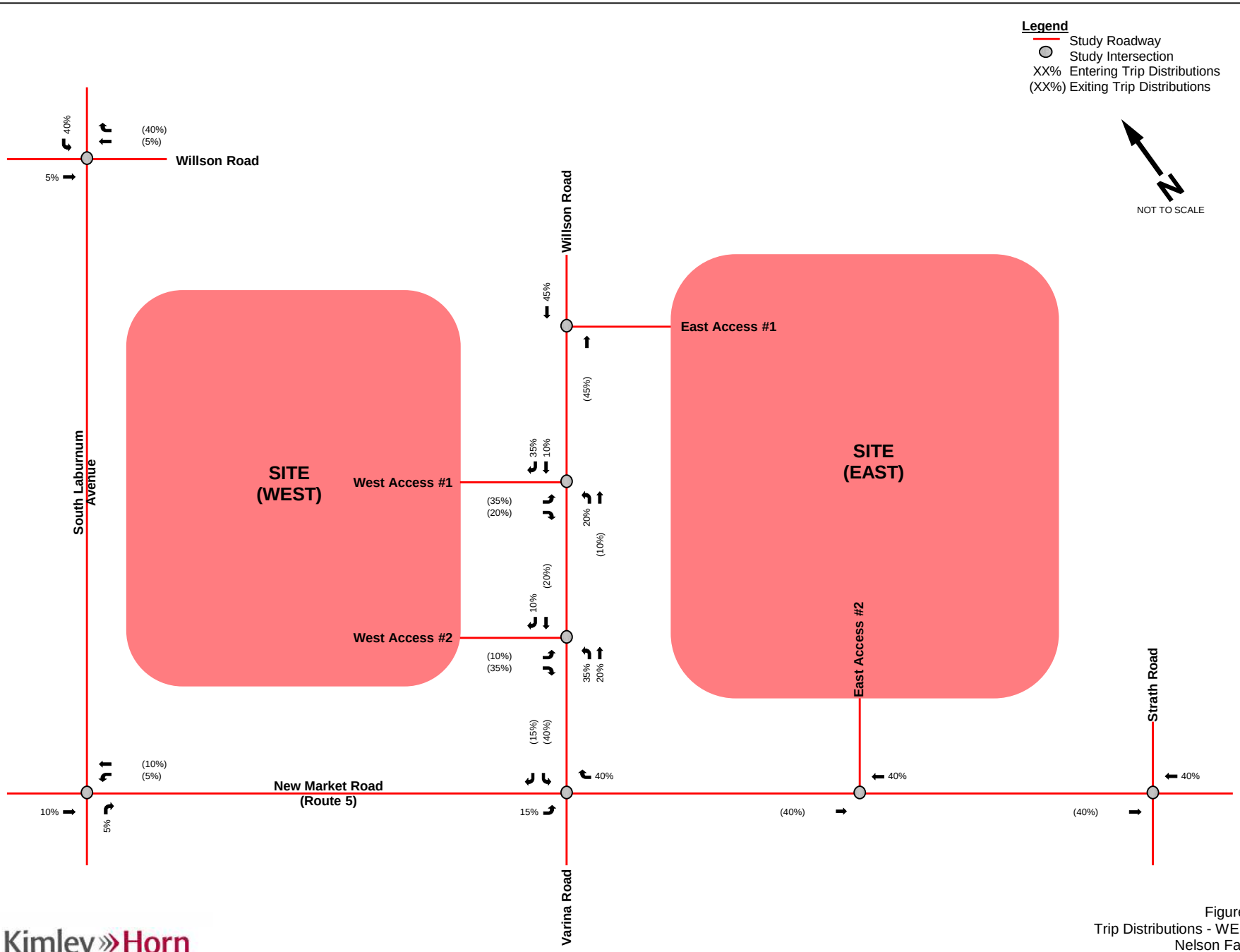
During the PM peak hour, all signalized intersections operate at overall LOS D or better. All approaches and movements at all intersections also operate at LOS D or better with the exception of the following approaches and movements which operate at LOS E or worse:

- Southbound approach on Willson Road at New Market Road (Route 5)
  - Southbound left/through/right-turn movements on Willson Road at New Market Road (Route 5)
- Eastbound and westbound approaches on Willson Road at South Laburnum Avenue
  - Eastbound and westbound left/through/right-turn movements on Willson Road at South Laburnum Avenue

All proposed stop-controlled project driveways contain movements that operate at LOS C or better during the AM and PM peak hours. Results are summarized in **Table 4** and complete results included in **Appendix C**.

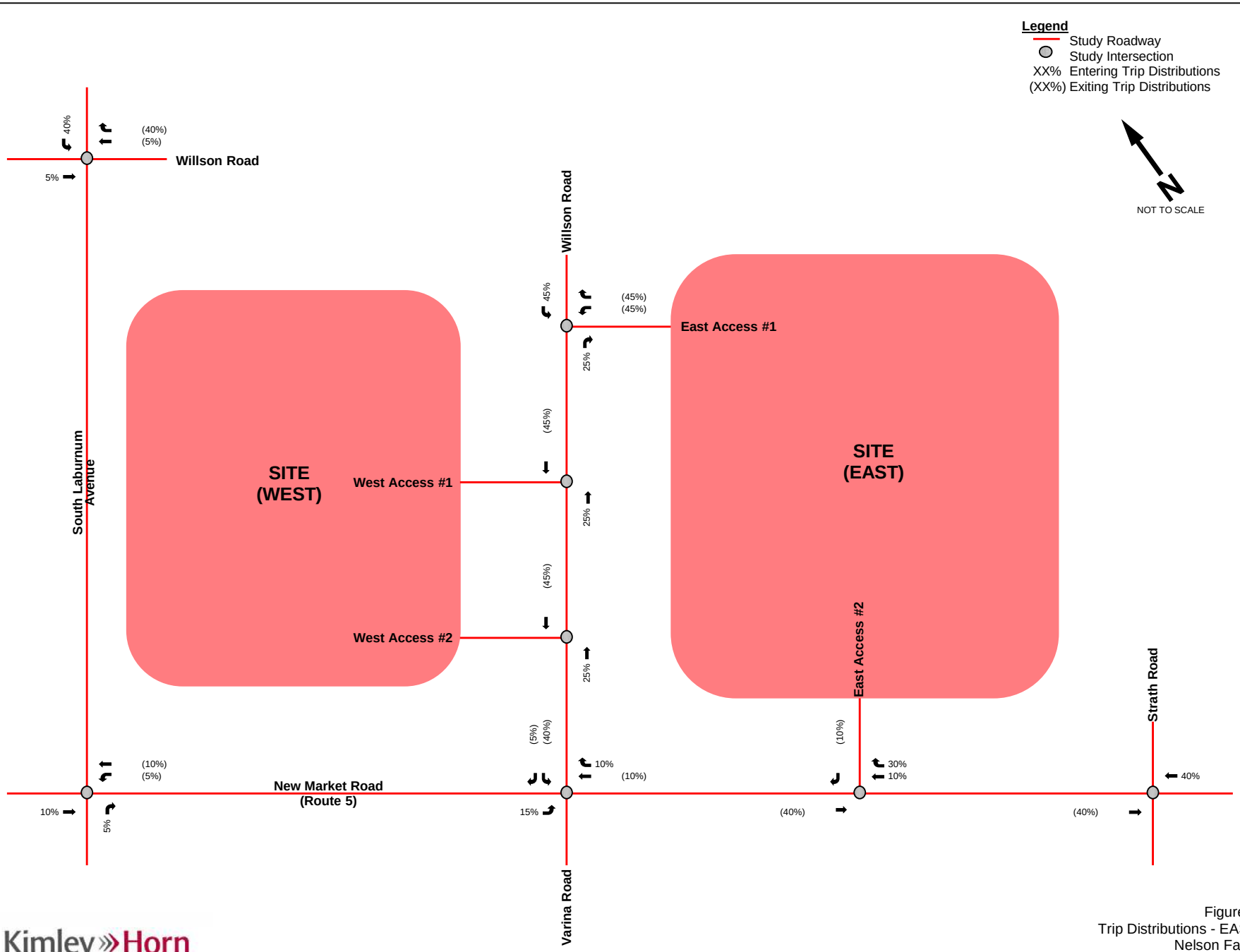
5.4. 2036 BUILD CONDITIONS 95TH PERCENTILE QUEUEING ANALYSIS

The 2036 build 95th percentile vehicle queue lengths were calculated by movement for each study intersection using *Synchro11™*. Queues did not exceed capacity for any of the intersections during both AM and PM peak hours. The results are summarized in **Table 5** following the analysis sections. The queueing analysis complete results are included in **Appendix C**.



Kimley»Horn

Figure 4
Trip Distributions - WEST
Nelson Farm
Henrico, Virginia



Kimley»Horn

Figure 5
Trip Distributions - EAST
Nelson Farm
Henrico, Virginia

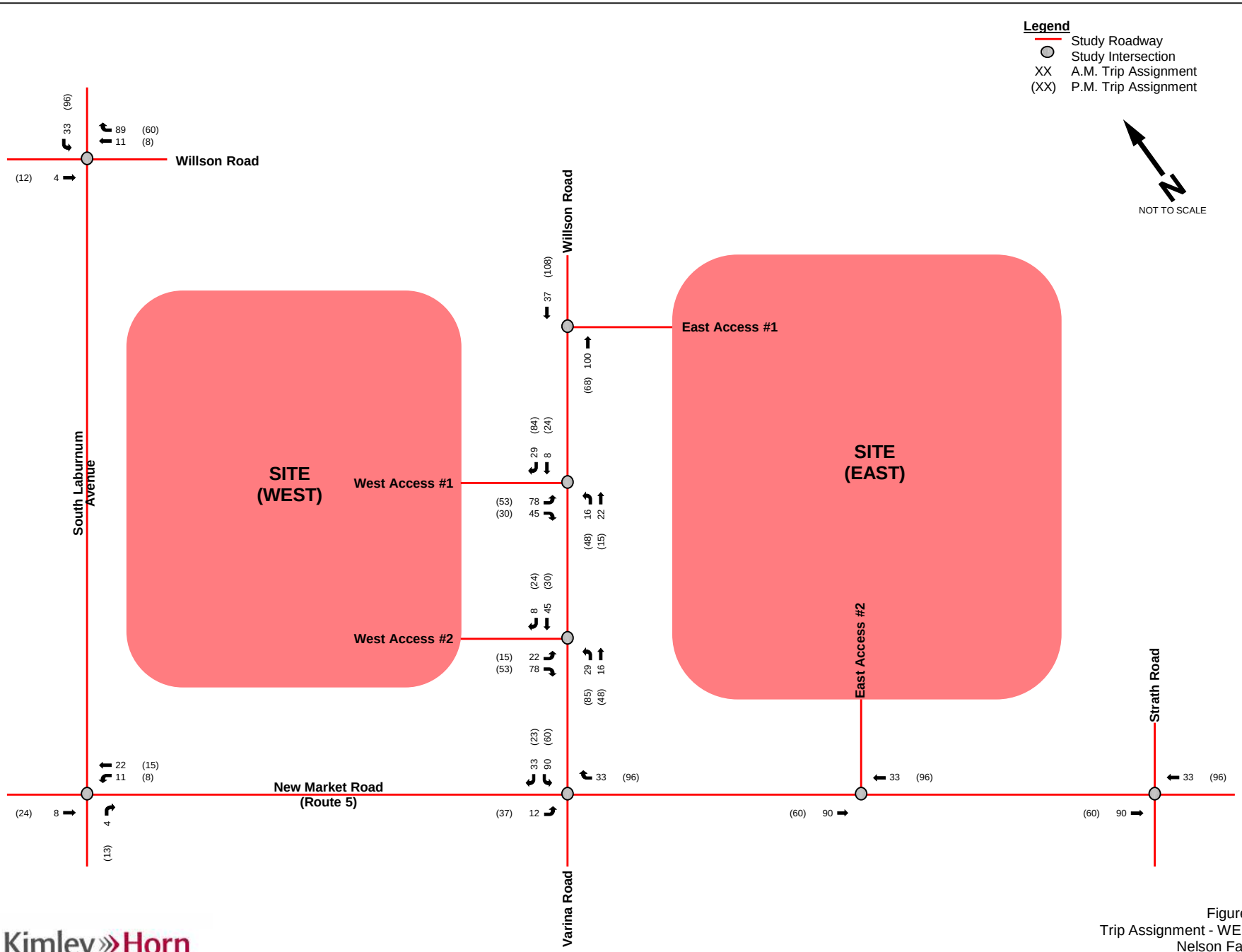


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Figure 6
Trip Assignment - WEST
Nelson Farm
Henrico, Virginia

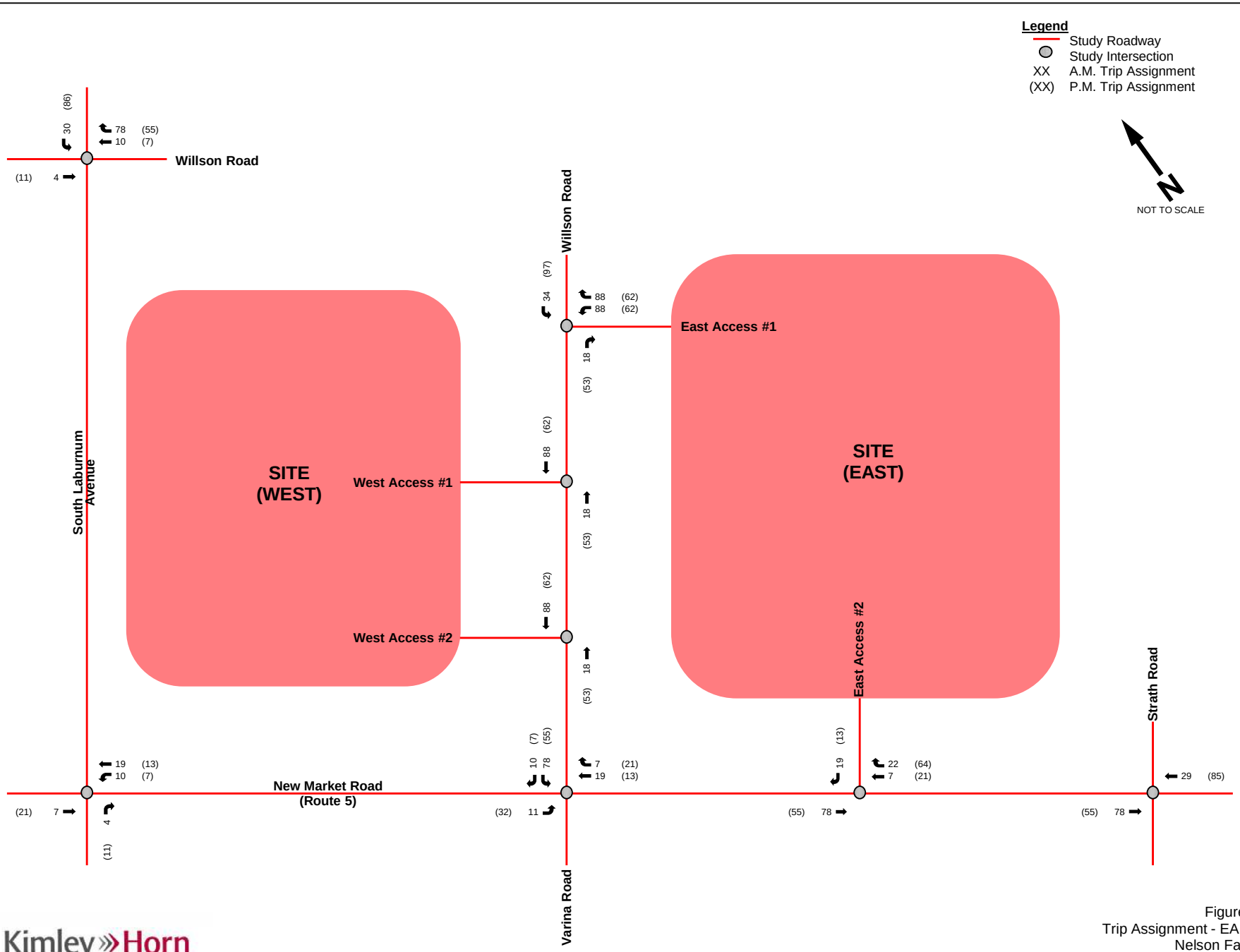

Figure 7
Trip Assignment - EAST
Nelson Farm
Henrico, Virginia