

10566, 10582 & 10620/10626 Scott Road, Surrey
Permitting and Environmental Review Application
Traffic Impact Study

December 1, 2021



This document "10566, 10582 & 10620/10626 Scott Road, Surrey Permitting and Environmental Review Application Traffic Impact Study", prepared for Brunswick Property Holdings Ltd. under the direction of a Professional Engineer registered in the Province of British Columbia. The document has also been prepared to meet Parsons' Quality Management requirements.

Prepared by



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APPENDIX A: SYNCHRO INTERSECTION ANALYSIS OUTPUTS

1. INTRODUCTION

Brunswick Property Holdings Ltd. (“Brunswick”) is proposing to construct two warehouses on the combined 10566, 10582 & 10620/10626 Scott Road properties (“the Project”) within the City of Surrey. The subject properties are managed by the Vancouver Fraser Port Authority (“port authority”), and therefore require a development application under the port authority’s Project & Environmental Review framework.

As part of the Project & Environmental Review application, a Traffic Impact Study is required for the proposed development. The purpose of this document is to provide such a study. The scope of this document follows the *Traffic Impact Study – Terms of Reference* document that was prepared for, as well as reviewed and approved by, the port authority. The methodology outlined in the Terms of Reference (and thus the scope of this document) is in turn based on the *Project & Environmental Review Guidelines – Transportation* document published by the port authority. Specifically, the assignment follows the guidelines in Section 6.1 (Road – Traffic Impact Study) of the referenced document.

1.1 Overview of Proposed Development

The proposed development is located on three properties (10566, 10582 & 10620/10626 Scott Road), which are located on the east side of Scott Road between the Tannery Road / 104 Street intersection to the south, and the Old Yale Road signalized intersection to the north.

The proposed development includes two warehouses, referred to as the North Building and the South Building. Specifically, the development includes the following elements:

- The North Building is proposed to include 150,690 ft² of warehousing space, and 29 truck loading dock bays running along the south side of the building and accessed via a truck loading dock aisle. 15 truck storage spaces are also provided, along with approximately 113 passenger vehicle parking spaces in the primary parking lot and 6 spaces in a secondary parking lot at the rear of the development site. Passenger vehicles travelling to the secondary parking lot will need to travel through the truck loading dock aisle.
- The South Building is proposed to include 236,545 ft² of warehousing space, and 46 truck loading dock bays running along the north side of the building and accessed via a truck loading dock aisle. 15 truck storage spaces are also provided, along with approximately 97 passenger vehicle parking spaces in the primary parking lot and 70 spaces in a secondary parking lot at the rear of the development site. Passenger vehicles travelling to the secondary parking lot will need to travel through the truck loading dock aisle.
- The development site will be accessed via three driveways fronting Scott Road. The provision of three driveways is consistent with the three driveways provided at the existing site, although the exact location and dimensions of the driveways will shift as part of the development. The anticipated uses of the driveways are as follows:
 - North Driveway: Used by passenger vehicles travelling to/from the North Building. It is anticipated that passenger vehicles accessing the secondary parking lot at the rear of the North Building will use the North Driveway and then make use of the internal roadway in order access the truck loading dock aisle and travel to the rear of the site.

- Central Driveway: Used exclusively by heavy vehicles travelling to/from either the North Building or the South Building via the truck loading dock aisle.
- South Driveway: Used by passenger vehicles travelling to/from the South Building. It is anticipated that passenger vehicles accessing the secondary parking lot at the rear of the North Building will use the North Driveway and then make use of the internal roadway in order access the truck loading dock aisle and travel to the rear of the site.

A plan view of the proposed development is provided in **Figure 1.1** below.

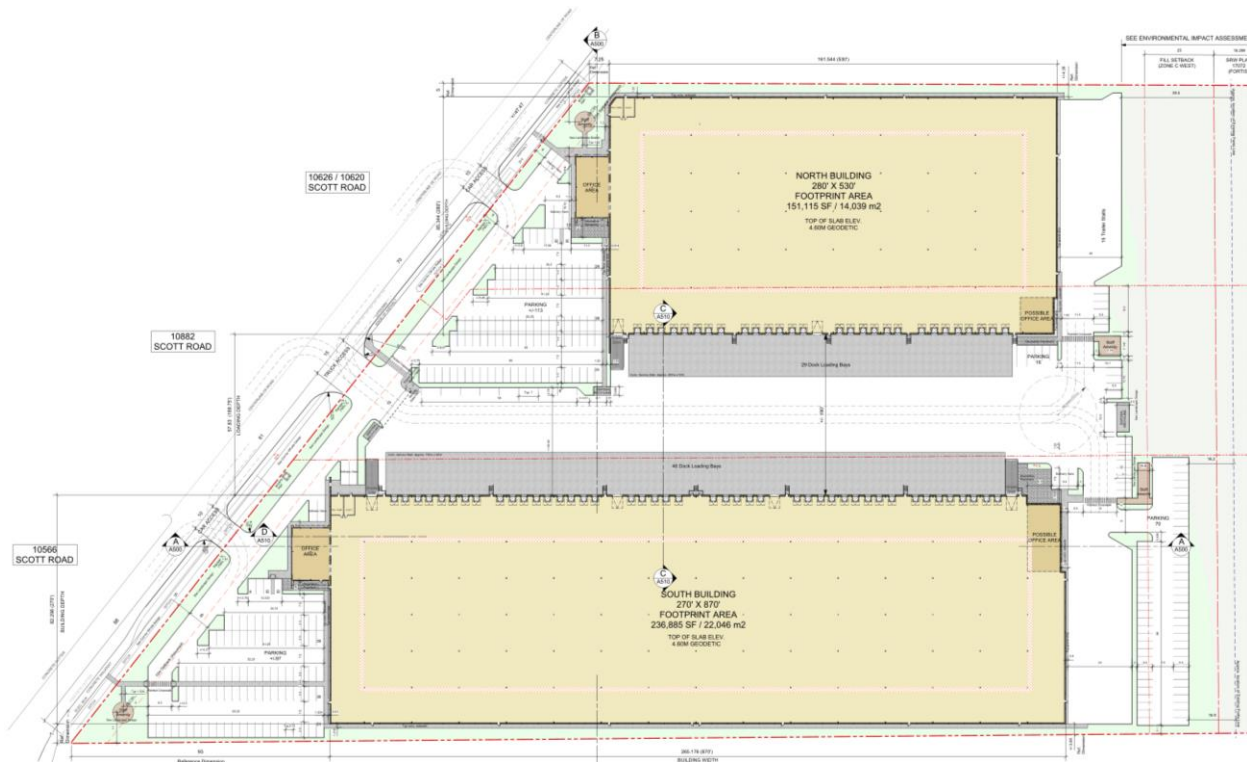


Figure 1.1: Proposed Development

1.2 Report Organization

The remainder of this report is organized as follows:

- **Section 2: Traffic Operational Analysis**, outlines the approach to assessing traffic operations in the study area, and assesses existing, future baseline, and future with project traffic operations conditions in order to identify the net traffic operations impacts of the Project.
- **Section 3: Site Layout and Geometric Review**, assesses the proposed layout of the Project with respect to the configuration of access to the adjacent road network, internal site circulation, and site parking provisions.
- **Section 4: Summary of Findings**, summarizes the key findings of the traffic impact study.

2. TRAFFIC OPERATIONAL ANALYSIS

This section documents the geographic extents of the traffic operational model, the temporal extents of the traffic operational analysis, traffic operational assessment criteria, data collection and the analysis of existing conditions, the analysis of future base conditions, and the analysis of future with project conditions.

2.1 Geographic Extents

As described in above in Section 1.1 the Project will be accessed via Scott Road, and therefore the three driveway accesses proposed as part of the Project were included in this traffic operational analysis.

The nearest signalized intersections to the Project side are the Tannery Road / 104 Street & Scott Road / 120 Street intersection to the southwest, and the Old Yale Road & Scott Road / 120 Street intersection to the northeast. Due to the close proximity and potential impacts to these intersections, they were also included in the analysis.

Finally, the Project is located within 800 metres of the Tannery Road Interchange, a BC Ministry of Transportation and Infrastructure managed facility that provides access to Highway 17. Therefore, the two Tannery Road Interchange ramp terminal intersections were also included in the scope of the analysis.

In summary, the analysis included the following extents:

- The three unsignalized Project driveway accesses located on Scott Road;
- Scott Road and Old Yale Road signalized intersection;
- Scott Road and Tannery Road signalized intersection;
- Highway 17 Tannery Road Interchange westbound ramp terminal signalized intersection; and,
- Highway 17 Tannery Road Interchange eastbound ramp terminal signalized intersection.

The geographic analysis extents are also shown visually in **Figure 2.1**:

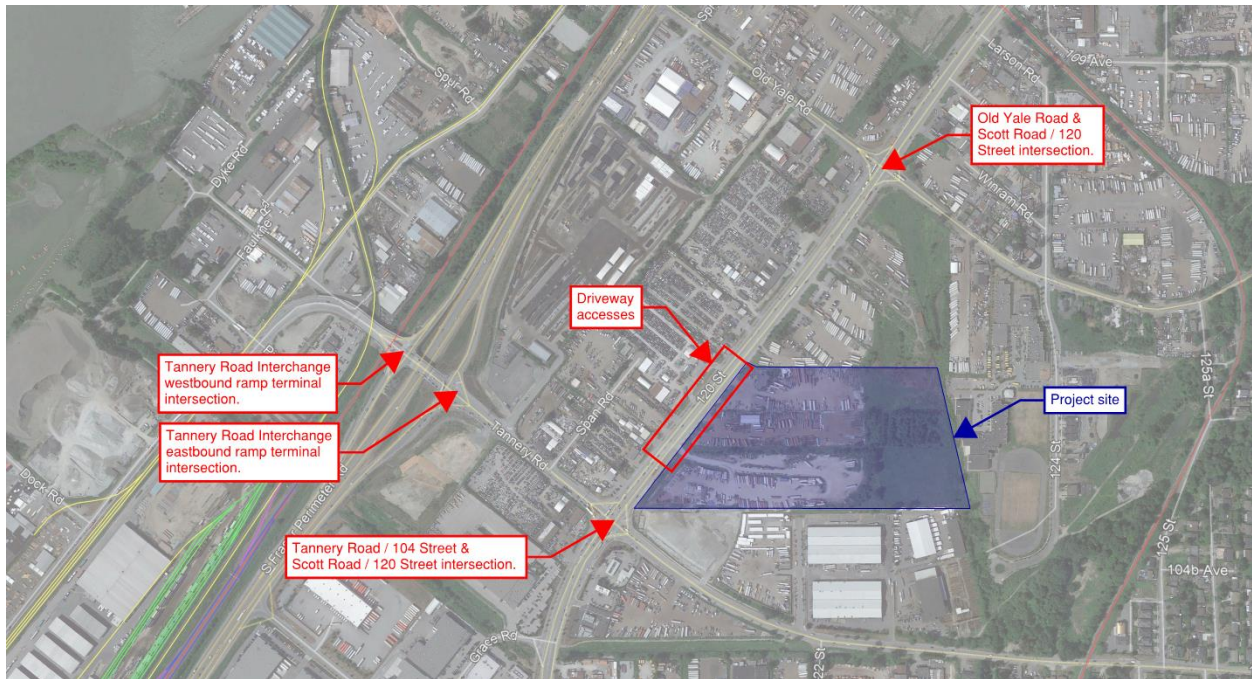


Figure 2.1: Proposed Geographic Extents of Traffic Impact Study Area

A brief description of the four major roadways within the study area is provided below.

Scott Road / 120 Street

Scott Road, also known as 120 Street through the study area, is an arterial roadway under the jurisdiction of the City of Surrey, and also part of TransLink's Major Road Network. In the vicinity of the project site, Scott Road currently features three general purpose traffic lanes in each direction, a median two-way left turn lane (TWLTL), a buffered bike lane, and sidewalks. To the north of the study area, Scott Road provides connectivity to the Pattullo Bridge, while to the south of the study area Scott Road acts as a major road connecting residents of North Delta, Whalley, and Newton.

Scott Road is also part of TransLink's Frequent Transit network, and features four bus routes (Routes 312, 319, 391, and 640) through the project area. TransLink is also currently exploring the introduction of the R6 RapidBus service along Scott Road.

Although Scott Road runs in a geographical northeast-southwest direction, for the purposes of this assignment Scott Road was treated as a north-south road.

Tannery Road / 104 Avenue

Tannery Road, also known as 104 Avenue through the study area, is an arterial roadway under the jurisdiction of the City of Surrey, except in the vicinity of Highway 17, where it is under the jurisdiction of the BC Ministry of Transportation and Infrastructure.

Tannery Road is the first signalized intersection with Scott Road to the south of the proposed development site. To the east of Scott Road, Tannery Road transitions to 104 Avenue, and provides an east-west route through the Surrey City Centre via a mixture of two-lane and four-lane cross-sections. Roughly 350 metres to the west of Scott Road, Tannery Road transitions to the Tannery Road Interchange on Highway 17; this diamond interchange provides full access on and off Highway 17. Further west beyond the Tannery Road Interchange, Tannery Road transitions to Timberland Road and provides access to and circulation within the Fraser Surrey Port Lands.

There are no transit services operating on Tannery Road within the study area.

Although Tannery Road runs in a geographical northwest-southeast direction, as Scott Road has been designated as a north-south road, for the purposes of this assignment Tannery Road was treated as an east-west road.

Old Yale Road

Old Yale Road is an arterial roadway under the jurisdiction of the City of Surrey. Old Yale Road is the first signalized intersection with Scott Road to the north of the proposed development site. To the east of Scott Road, Old Yale Road transitions to 108 Avenue, and provides an east-west route through the north end of Surrey City Centre. To the west, Old Yale Road features a signalized intersection with Highway 17; however, this intersection will be removed as part of the Pattullo Bridge Replacement Project and Highway 17 will instead pass over top of Old Yale Road without providing direct connectivity. Further west from Highway 17, Old Yale Road provides access to the Fraser Surrey Port Lands.

There are no transit services operating on Old Yale Road within the study area.

Although Old Yale Road runs in a geographical northwest-southeast direction, as Scott Road has been designated as a north-south road, for the purposes of this assignment Old Yale Road was treated as an east-west road.

Highway 17

Highway 17, also known as the South Fraser Perimeter Road, is under the jurisdiction of the BC Ministry of Transportation and Infrastructure and runs along the south side of the main arm of the Fraser River between the BC Ferries Tsawwassen Ferry Terminal in Delta to the 176 Street Interchange with Highway 1 in the Port Kells neighbourhood of Surrey. Highway 17 provides connectivity to several key goods movement hubs within Metro Vancouver, including Roberts Bank, the Tilbury industrial area, the Sunbury Industrial area, the Fraser Surrey Port Lands and Brownsville area (where the Project is located), and the CN Vancouver Intermodal Terminal.

There are no transit services operating on Highway 17 within the study area.

Highway 17 is signed as an east-west route within Metro Vancouver. However, within the immediate study area Highway 17 has a northeast-southwest orientation. Given that, for the purposes of this study, the intersecting roadways (Tannery Road / 104 Avenue and Old Yale Road) are designated as east-west routes, Highway 17 will be treated as a north-south route. Therefore, vehicles using the eastbound on- and off-ramps are considered to be travelling in a northbound direction, while vehicles using the westbound on- and off-ramps are considered to be travelling in a southbound direction.

2.2 Temporal Extents

The port authority *Project & Environmental Review Guidelines – Transportation* document suggests an opening day operational analysis, followed by a 5 to 20-year ultimate horizon. In this instance, the opening day road network is uncertain, as the configuration of the road network on opening day is contingent on the relative completion dates of the Project and the nearby Pattullo Bridge Replacement Project.

Given the major road network changes in the study area stemming from the Pattullo Bridge Replacement Project that have the potential to reorient traffic patterns in the area, rather than relying solely on an assumed background traffic volume growth factor, a travel demand model was applied to more comprehensively assess potential changes in traffic volumes. The Surrey Sub-Area Model, a travel demand model based on the TransLink Regional Transportation Model Phase 3.4, provides 2035 and 2050 forecasting horizon years. Therefore, a 2035 horizon year (which would provide a 14-year outlook) was applied for this analysis.

The resultant analysis scenarios are summarized in **Table 2.1**. The difference between the Future with Project Conditions and the Future Base Conditions represents the incremental impact of the Project.

Table 2.1: Summary of Total Intersection Entry Volumes by Mode

Analysis Scenario	Year	Background Traffic Volumes	Project Traffic Volumes	Road Network
Existing Conditions	2021	2021 traffic volumes as obtained through traffic volume data collection process.	Not Included.	Existing road network.
Future Base Conditions	2035	2021 traffic volumes scaled using outputs from Surrey Sub-Area Model.	Not Included.	Existing road network within geographic extents. However, changes in traffic volumes on the existing road network within study area will implicitly incorporate the changes to the road network associated with the Pattullo Bridge Replacement Project, including the planned overpass for Highway 17 over top of Old Yale Road, and the resultant severance of the connectivity between these two routes.
Future with Project Conditions	2035	2021 traffic volumes scaled using outputs from Surrey Sub-Area Model.	Included, per approach described below in Section 2.6. Existing traffic volumes travelling to/from Project site removed from the network.	Existing road network within geographic extents. However, changes in traffic volumes on the existing road network within study area will implicitly incorporate the changes to the road network associated with the Pattullo Bridge Replacement Project, including the planned overpass for Highway 17 over top of Old Yale Road, and the resultant severance of the connectivity between these two routes.

For each scenario, analysis was undertaken for the weekday AM and PM peak hours.

2.3 Assessment Criteria

The performance of arterial roadway segments is often controlled by the capacity of major junctions along the length of the segment rather than the number of lanes on the highway corridor. Intersection operational analysis for the study area was undertaken using the intersection capacity modelling software Synchro version 10.0. The software uses key inputs such as peak hour intersection turning movements, traffic composition, lane geometry, and traffic signal timing parameters to estimate key performance outputs such as the average delay per vehicle per movement, the associated Level of Service (LOS), volume-to-capacity ratios, and the 50th and 95th percentile queue lengths. Each of these metrics is described further below.

2.4.1 Level of Service

Control delay, measured in seconds per vehicle, is translated into Level of Service letter-grade scoring ranging from A to F, which represents the quality of service experienced by the driver. These ratings are described below in **Table 2.2** for signalized intersections and unsignalized intersections (which can also be applied to driveways).

Table 2.2: Intersection Level of Service

Level of Service	Control Delay (seconds/vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Control delays can be calculated at three levels of disaggregation: for each movement at an intersection, for each approach to the intersection, and for the overall intersection. For the purposes of this assessment, movements operating at a Level of Service of E or F were highlighted.

2.4.2 Volume to Capacity Ratio

Another quantitative measure of performance is the volume to capacity (v/c) ratio. Lower v/c ratios indicate low traffic density with extensive freedom to maneuver in the traffic stream. It also implies surplus green time is available on every signal cycle. Higher v/c ratios indicate high traffic density, restrictive movement, and limited or no surplus capacity. Some individual signal cycles may “fail” by not processing all of the waiting vehicles on the end of a red phase on the subsequent green phase. When v/c ratios fall between 0.90 and 1.00, there is minimal capacity available to accommodate day-to-day traffic fluctuations, and variations due to traffic composition, weather and construction, or unplanned incidents. Volumes in excess of capacity imply that queues will continue to build until the approach flow rate falls below the processing capacity. For the purposes of this assessment, movements operating at a v/c ratio greater than 0.90 were highlighted.

2.4.3 Queue Lengths

Queue lengths are calculated to represent the 50th and 95th percentile threshold (i.e. 50 or 95 out of 100 queue length observations would be at or below this length, respectively). Queues in auxiliary turn lanes are considered detrimental to the system when they spill into upstream intersections or block through-moving lanes, thereby limiting throughput for through movements. Note that Synchro reports queues in metres for signalized intersections and number of vehicles (measured in the form of passenger car equivalents) for unsignalized intersections, however queues for unsignalized intersections are only reported for the 95th percentile. For the purposes of this assessment, queues that are anticipated to extend beyond the available storage length were highlighted.

2.4 Existing Conditions Analysis

This section described the traffic volume data collection undertaken for this assignment, the resultant peak hour volumes at each intersection within the study area, and the resultant analysis of existing condition traffic operations.

2.4.1 Data Collection

Classified seven-hour weekday traffic volume data collection (encompassing 7:00 – 09:00, 11:00 – 13:00, and 15:00 – 18:00) was undertaken at each of the intersection locations shown above in **Figure 2.1**. Data was collected on Tuesday, August 17, 2021. The resultant peak hours for each of the four signalized intersections in the study area are summarized in **Table 2.3**.

Table 2.3: Summary of Signalized Intersection Weekday Peak Hours

Intersection	AM Peak Hour			MD Peak Hour			PM Peak Hour			Seven Hour Total	
	Time Period	Total Intersection Entries	Heavy Vehicle %	Time Period	Total Intersection Entries	Heavy Vehicle %	Time Period	Total Intersection Entries	Heavy Vehicle %	Total Intersection Entries	Heavy Vehicle %
Scott Road and Old Yale Road	07:15 – 08:15	2,711	11%	11:45 – 12:45	2,273	14%	15:45 – 16:45	3,676	6.6%	19,513	10%
Scott Road and Tannery Road	07:15 – 08:15	3,123	10%	11:30 – 12:30	2,610	12%	15:45 – 16:45	4,248	5%	22,507	8%
Highway 17 Tannery Road Interchange westbound ramp terminal	07:00 – 08:00	1,336	25%	11:30 – 12:30	816	45%	15:45 – 16:45	1,068	26%	6,554	30%
Highway 17 Tannery Road Interchange eastbound ramp terminal	07:00 – 08:00	1,597	21%	11:45 – 12:45	1,040	34%	15:45 – 16:45	1,843	14%	9,671	20%
Surrey Sub-Area Model (Regional Peak Hour)	07:30 – 08:30	n/a	n/a	12:00 – 13:00	n/a	n/a	16:30 – 17:30	n/a	n/a	n/a	n/a

As shown, volumes during the AM and PM peak hours significantly exceed those of the midday period, and therefore the weekday AM and PM peak hours are the focus of this analysis. As highlighted in **Table 2.3**, the exact time period of the AM and PM peak hours varies from intersection to intersection. Therefore for the purposes of this analysis, traffic operations were assessed for the localized peak hours at each individual intersection (rather than applying a study area wide peak hour) in order to reflect the most critical operating conditions at each intersection.

The Scott Road / Tannery Road and Scott Road / Old Yale Road signalized intersections are operated by the City of Surrey, while the Highway 17 Tannery Road interchange eastbound and westbound ramp terminal signalized intersections are operated by the BC Ministry of Transportation and Infrastructure. Traffic signal timings in the Synchro model were based on signal timing sheets available for all four signalized intersections. Note that while existing signal timings (as defined in the signal timing sheets) were applied to the existing conditions analysis, as described further below in Section 2.5, signal timings were adjusted for future year analysis (both the Future Base and Future with Project conditions) in order to ensure that the signal timings were optimized in a manner that reflects changing traffic volume patterns in the study area resulting from growth in demands as well as changes to traffic patterns associated with the Pattullo Bridge Replacement Project.

In addition to the four signalized intersections, traffic volumes were also collected for the same seven-hour period (7:00 – 09:00, 11:00 – 13:00, and 15:00 – 18:00) at eight driveways located on the Project site on the east side of Scott Road as well as on the opposite (i.e. west) side of Scott Road. These eight driveways are shown in **Figure 2.2**.



Figure 2.2: Existing Driveways Naming Conventions

Driveways 1, 2, and 3 are located on the Project site, while Driveways 4 through 8 provide access to a range of properties on the west side of Scott Road. Note that the terms Driveway 1, 2 and 3 are used to refer to the existing driveways, while the three driveways proposed as part of the Project (which are located very close to these existing driveways) are referred to as the North Driveway, Central Driveway and South Driveway.

The total seven-hour traffic volumes in each of the eight driveways are shown in **Table 2.4** below. As shown, the three existing driveways on the Project site on the east side of Scott Road (Driveways 1, 2 and 3) have higher volumes than driveways on the west side of Scott Road. Left-in volumes for driveways are also shown, as these are the movements where vehicles destined to properties on opposite sides of the road could potentially generate conflicting needs for space within the two-way left turn lane in the median of Scott Road. However, as shown, left-in volumes to driveways on the west side of Scott Road are relatively small, and over the course of the seven hours of data do not exceed 1 – 1.5 vehicles per hour, except at Driveway 4 which averages roughly 3 vehicles per hour.

Table 2.4: 7-Hour Driveway Vehicle Volumes (07:00 – 09:00; 11:00 – 13:00; 15:00 – 18:00)

Movement	Vehicle Class	East Side of Scott Road (Project Site)			West Side of Scott Road				
		Driveway 1 (10566 Scott Road)	Driveway 2 (10582 Scott Road)	Driveway 3 (10620/10626 Scott Road)	Driveway 4 (10645 Scott Road)	Driveway 5 (10645 Scott Road)	Driveway 6 (10593/10897 Scott Road)	Driveway 7 (10581 Scott Road)	Driveway 8 (10559 Scott Road)
Left-In from Scott Road	Passenger Vehicle	3	3	8	16	2	9	8	3
	Heavy Vehicle	5	19	19	5	1	0	1	0
	All Vehicles	8	22	27	22	3	9	9	3
Total In/Out	Passenger Vehicle	26	33	64	68	18	48	35	20
	Heavy Vehicle	17	92	47	10	13	2	11	0
	All Vehicles	43	125	111	80	31	50	46	20

Given the relatively low hourly volumes of vehicles turning in to and out of driveways on the west side of Scott Road, these driveways were not explicitly modelled in the operational analysis, but were considered with respect to geometrics and driveway placement in Section 3.

The resultant Synchro model that was developed for the traffic impact analysis study area is shown in **Figure 2.3**.



Figure 2.3: Synchro Model for Traffic Operations Analysis

2.4.2 Existing Conditions Peak Hour Volumes

The resultant existing conditions peak hour volumes for the 2021 analysis hours are provided in **Table 2.5**. As noted, the individual peak hours were assessed for each individual signalized intersections and therefore volumes may not necessarily perfectly balance between adjacent intersections. As driveway volumes were too low to establish a meaningful peak hour, the peak hours used in the Surrey Sub Area Model (07:30 – 08:30 and 16:30 – 17:30) were applied.

Table 2.5: Current (2021) AM and PM Peak Hour Intersection Turning Movement Count Volumes

Intersection	Control	Peak Hour	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	AM	47	1,063	69	1,179	34	798	159	991	90	48	82	220	105	110	106	321	2,711
		PM	53	1,236	255	1,544	133	1,225	147	1,505	130	127	128	385	108	65	69	242	3,676
Scott Road and Tannery Road	4 leg; signalized	AM	224	935	52	1,211	65	583	301	949	107	148	136	391	98	388	86	572	3,123
		PM	180	978	178	1,336	155	1,164	132	1,451	394	406	250	1,050	169	166	76	411	4,248
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	AM					165	0	109	274		120	1	121	699	242		941	1,336
		PM					239	0	81	320		255	48	303	243	202		445	1,068
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	AM	121	137	160	418					43	220		263		820	96	916	1,597
		PM	119	181	611	911					74	424		498		326	108	434	1,843
Driveway 1	3 leg; unsignalized	AM		1,125	3	1,128	0		0	946					3		1	4	2,078
		PM		1,446	2	1,448	2		0	1,451					2		1	3	2,902
Driveway 2	3 leg; unsignalized	AM		1,117	9	1,126	2		0	937					11		1	12	2,075
		PM		1,437	10	1,447	6		0	1,447					10		9	19	2,913
Driveway 3	3 leg; unsignalized	AM		1,116	2	1,118	1		0	935					3		2	5	2,058
		PM		1,439	7	1,446	7		0	1,448					6		3	9	2,903

2.4.3 Existing Conditions Traffic Operations Outputs

Analysis outputs of the following three intersection-level metrics are documented herein:

- Intersection Level of Service in **Table 2.6**.
- Volume-to-Capacity Ratio; in **Table 2.7**.
- 50th and 95th percentile queue lengths in **Table 2.8**. and in **Table 2.9.**, respectively.

Detailed intersection capacity analysis outputs are also provided in **Appendix A**.

As shown, the two signalized intersections on Scott Road each feature some movements that operate with a poorer Levels of Service, but, with the exception of Scott Road and Tannery Road in the PM, generally operate adequately overall. The two intersections on Scott Road each feature some movements that operate with v/c ratios above 0.90.

However, it is noted that the three driveways leading to the Project site can experience delays for left-turn outbound movements (i.e. a WBL). While there is adequate capacity available to make these movements, at times vehicles may experience an extended delay while waiting for a gap in the Scott Road traffic stream (e.g. needing to wait until the upstream signal at the Scott Road and Tannery Road intersection creates such a gap).

The 50th percentile queues for the WBL movement at the Scott Road / Old Yale Road exceeds its storage length in the PM peak hour, and the 95th percentile queues for the same movement exceed the storage length in both the AM and PM peak hour. In addition, the 95th percentile queues for the WBL movement at the Scott Road / Tannery Road exceeds its storage length in the AM and PM peak hour. However, no other movements experience queues regularly exceeding their storage lengths.

Table 2.6: Current (2021) AM and PM Peak Hour Intersection Level of Service

Intersection	Control	Peak Hour	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	AM	E	A		B	D	B		B	D	C		C	E	D	A	C	B
		PM	E	B		B	E	C		C	D	D		D	F	C	A	D	C
Scott Road and Tannery Road	4 leg; signalized	AM	D	C	A	C	E	D	B	C	E	C		D	D	D		D	D
		PM	F	C	A	D	F	C	B	D	F	F		F	F	D		E	E
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	AM					C		A	C		C		C	C	A		B	B
		PM					C		A	C		C		C	C	B		B	C
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	AM	C		B	C					D	B		B		C	A	B	B
		PM	C		C	C					C	B		B		C	A	C	C
Driveway 1	3 leg; unsignalized	AM		A	A	A	A	A		A					E		A	E	A
		PM		A	A	A	F	A		A					E		A	E	A
Driveway 2	3 leg; unsignalized	AM		A	A	A	C	A		A					F		A	F	A
		PM		A	A	A	F	A		A					F		A	F	A
Driveway 3	3 leg; unsignalized	AM		A	A	A	C	A		A					E		A	E	A
		PM		A	A	A	F	A		A					F		A	F	A

Table 2.7: Current (2021) AM and PM Peak Hour Intersection Volume to Capacity Ratio

Intersection	Control	Peak Hour	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	AM	0.40	0.46		0.23	0.40		0.61	0.42		0.72	0.33	0.34
		PM	0.42	0.72		0.77	0.65		0.56	0.71		0.92	0.21	0.16
Scott Road and Tannery Road	4 leg; signalized	AM	0.71	0.55	0.08	0.44	0.51	0.60	0.76	0.65		0.32	0.82	
		PM	0.92	0.63	0.30	0.80	0.73	0.33	1.21	1.14		0.90	0.58	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	AM				0.59		0.41		0.37		0.72	0.31	
		PM				0.66		0.26		0.53		0.46	0.37	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	AM	0.68		0.22				0.31	0.23			0.59	0.22
		PM	0.70		0.67				0.41	0.39			0.41	0.32
Driveway 1	3 leg; unsignalized	AM		0.00	0.00	0.00	0.00					0.12		0.00
		PM		0.00	0.00	0.06	0.00					0.09		0.00
Driveway 2	3 leg; unsignalized	AM		0.00	0.00	0.01	0.00					0.19		0.00
		PM		0.00	0.00	0.11	0.00					0.62		0.00
Driveway 3	3 leg; unsignalized	AM		0.00	0.00	0.01	0.00					0.06		0.00
		PM		0.00	0.00	0.15	0.00					0.18		0.00

Table 2.8: Current (2021) AM and PM Peak Hour Intersection 50th Percentile Queues

Intersection	Control	Peak Hour	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		AM	22	25		9	48		25	16		30	24	0
		PM	20	60		44	110		34	57		31	18	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		AM	51	74	0	13	29	0	30	23		23	65	
		PM	60	84	0	46	49	0	126	121		54	28	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		AM				19		0		9		37	15	
		PM				26		0		16		13	15	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		AM	38		10				6	10			35	0
		PM	35		37				11	20			16	0
Driveway 1	3 leg; unsignalized	Storage Length												
		AM												
		PM												
Driveway 2	3 leg; unsignalized	Storage Length												
		AM												
		PM												
Driveway 3	3 leg; unsignalized	Storage Length												
		AM												
		PM												

Note: At the Scott Road and Tannery Road intersection , there is both a dedicated EBL lane as well as a shared EBTL lane, and Synchro does not explicitly output a storage lane length for the dedicated lane. This consideration applies not only to the Existing Conditions scenario, but also the Future Base Conditions and Future with Project Condition scenarios.

Table 2.9: Current (2021) AM and PM Peak Hour Intersection 95th Percentile Queues

Intersection	Control	Peak Hour	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		AM	20	32		17	78		33	21		38	37	3
		PM	20	96		56	139		46	73		51	23	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-	-	65	-	
		AM	95	82	0	32	55	40	50	34		38	78	
		PM	93	98	15	72	102	20	195	149		79	41	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		AM				47		6		15		59	24	
		PM				58		8		34		29	32	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		AM	62		20				18	16			56	10
		PM	68		68				24	38			28	10
Driveway 1	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		AM		0	0	0 veh	0					0.4 veh		0
		PM		0	0	0.2 veh	0					0.3 veh		0
Driveway 2	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		AM		0	0	0 veh	0					0.6 veh		0
		PM		0	0	0.4 veh	0					2.4 veh		0
Driveway 3	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		AM		0	0	0 veh	0					0.2 veh		0
		PM		0	0	0.5 veh	0					0.6 veh		0

2.5 Future Base Conditions Analysis

This section describes anticipated road network changes in the study area, the approach to forecasting future traffic volumes, the resultant future base condition peak hour turning movement count volumes, and the resultant analysis of future base condition traffic operations.

2.5.1 Anticipated Road Network Changes

As alluded to previously, the BC Provincial Government is currently delivering the Pattullo Bridge Replacement Project. As part of this project, the existing Highway 17 and Old Yale Road signalized intersection will be removed, and Highway 17 will instead pass over top of Old Yale Road. With this upcoming change, traffic that currently accesses Highway 17 from Old Yale Road will instead need to reroute to use the Tannery Road Interchange, or find a different route in any out of the area altogether. Additionally, traffic travelling southbound on the new Pattullo Bridge will have a direct ramp access to Highway 17 westbound; this change will eliminate the need for trips travelling from the Pattullo Bridge to Highway 17 to travel southbound on Scott Road to access Highway 17 (via either the Old Yale Road signalized intersection or the Tannery Road Interchange). Therefore, the future conditions analysis must consider not only growth in background travel demands through the area (e.g. resulting from continued growth and development throughout Surrey and North Delta) but also re-routing of trips associated with the elimination of the Highway 17 and Old Yale Road intersection.

It is understood that TransLink is also leading planning activities for the introduction of the R6 RapidBus route along Scott Road; however, at the time this technical analysis was conducted, no details regarding network changes associated with this future bus route were available.

2.5.2 Future Base Traffic Volume Forecasts

As noted previously, the travel demand model used in this study was the latest Surrey Sub-Area Model (SSAM), which is a local recalibration of the TransLink Regional Travel Model (RTM) Phase 3.4. A due-diligence exercise was undertaken to validate the model on key corridors within and around the study area. The intention of this activity was to ensure that the model is fit-for-purpose with respect to being able to reasonably capture changing vehicle volumes resulting from overall growth in the study area and region as a whole, as well as changes to travel patterns through the area associated with new connections implemented as part of the Pattullo Bridge Replacement Project. The assessment of link volume goodness of fit (i.e. difference between modelled link volumes and observed volumes) were calculated based on two different percent root mean square error (% RMSE) guidelines: Ohio DOT Standard and Florida DOT Standard. Based on the validation exercise, several volume groupings within and surrounding the study area exceeded applicable RMSE thresholds. Therefore, for the purposes of this assignment, a limited calibration activity was undertaken, focusing specifically on vehicle volumes in and around the study area in order to improve model goodness-of-fit. Specifically, several network coding refinements were identified and implemented to improve model calibration, including modelled link capacity, volume delay functions, intersection nodes, and turning penalty functions.

Note that the Surrey Sub-Area Model uses 2017 as a base year, and as described previously provides 2035 and 2050 forecasting horizon years. The base year is the year for which the model is calibrated at a regional level using data from the TransLink Trip Diary and Regional Screenline Survey. Therefore, strictly for the purpose of ensuring the model was calibrated to be fit-for-purpose for this study, rather than using the traffic volume count data at the four intersections that was collected for this assignment (as described previously in Section 2.4.1.),

2017 traffic volume data from the City of Surrey and BC Ministry of Transportation and Infrastructure was collected from online sources and applied for validation and calibration. The use of 2017 traffic data also had the benefit of providing data not just for the four signalized intersections within the study area, but also for additional intersections surrounding the study area, thereby helping support improved model calibration outcomes.

Once the Surrey Sub-Area Model was determined to be fit for purpose, the model network coding was updated for the 2035 scenario to reflect the latest available design for road network connections associated with the Pattullo Bridge Replacement Project. 2035 AM and PM peak hour model volumes were then forecasted.

Volume differential plots showing the relative differences between Surrey Sub-Area Model assigned 2017 link volumes and 2035 link volumes are shown in in **Figure 2.4** and **Figure 2.5** for the AM and PM peak hours, respectively. Red links imply an increase in 2035 vehicle volume demand relative to 2017; green implies a decrease in 2035 volumes relatives to 2017 volumes.

While most of the road links in these areas are anticipated to see increases in volumes, southbound volumes on Scott Road adjacent to the Project site are anticipated to decrease over time as a result of the new Pattullo Bridge providing direct connectivity to Highway 17 rather than the current condition wherein vehicles travelling from the Pattullo Bridge to Highway 17 westbound are required to use Scott Road to connect to Highway 17 via either Old Yale Road or Tannery Road.

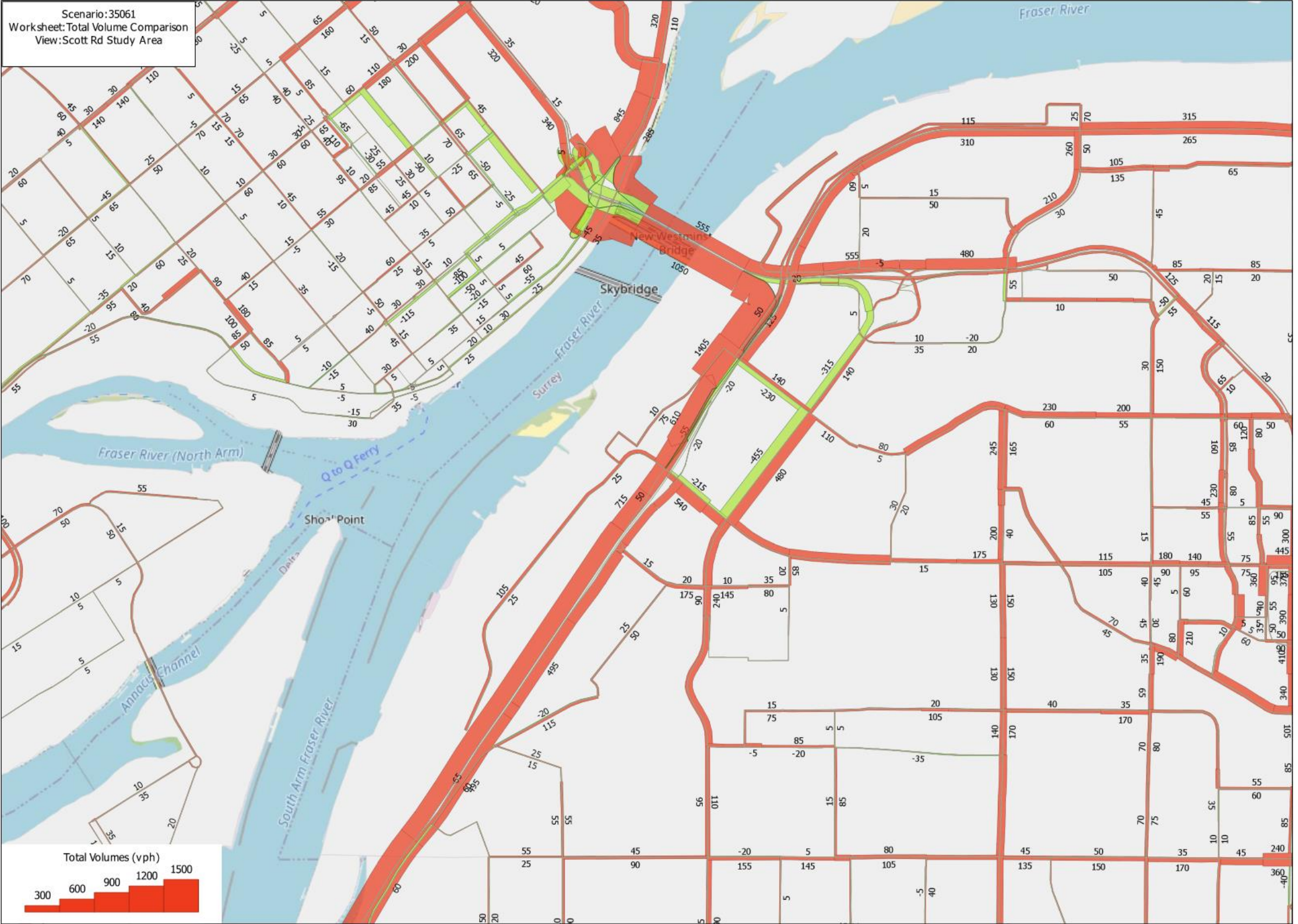


Figure 2.4: Surrey Sub-Area Model AM Peak Hour Volume Difference Plot - 2017 - 2035 Growth

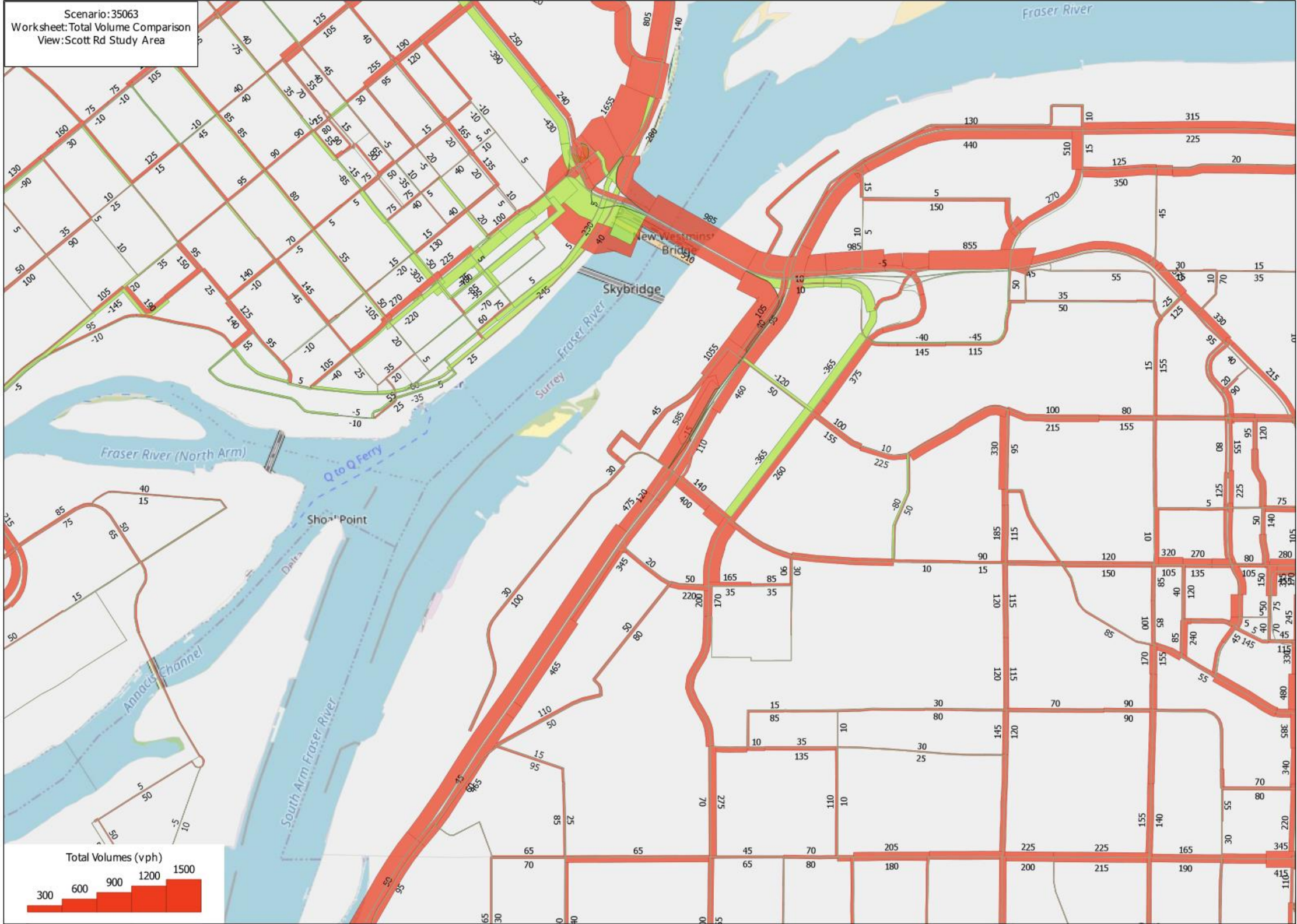


Figure 2.5: Surrey Sub-Area Model PM Peak Hour Volume Difference Plot - 2017 - 2035 Growth

2.5.3 Future Base Conditions Peak Hour Volumes

The 2035 Surrey Sub-Area Model (SSAM) link volume forecasts were then applied to the 2021 traffic count volumes in order to develop forecasts of 2035 turning movements at each of the four study area signalized intersections. The approach to applying the travel demand model outputs to update turning movement counts to 2035 conditions was as follows:

- The Furness Method was applied for Scott Road / Old Yale Road and Scott Road / Tannery Road intersections. This approach updates 2021 turning movements in proportion to both the growth in the arrival link and departure link volumes and ensures balanced movements in and out of the intersections.
- Due to major changes in travel patterns at the intersections on Highway 17, the Furness method required further refinements at the Highway 17 Tannery Road Interchange eastbound and westbound ramp terminal intersections. Therefore, a supplementary approach was applied wherein the eastbound ramp terminal intersections were adjusted based on balancing volumes with the Scott Road intersection, and the westbound ramp terminal volumes were adjusted based on balancing volumes with the eastbound ramp terminal intersection. Westbound ramp terminal movements that do not directly interact with the eastbound ramp terminal were scaled using a volume growth factor based on the 2017 to 2035 growth estimated in SSAM.
- In addition to overall vehicle volumes, a second key input with respect to traffic is the proportion of the traffic stream that consists of heavy vehicles. Given the changing travel patterns in the study area, the proportion of heavy vehicles on each roadway link may also change over time. Therefore, the differences in heavy vehicle percentages on each link in the Surrey Sub-Area model between the 2017 and 2035 model years were reviewed, and where the heavy vehicle percentages increased significantly, then this growth ratio was used as a guide to adjust the heavy vehicle percentages recorded in the four signalized intersections during the data collection process.

In the absence of the Project, it was assumed that volumes using the three driveways on the Project site (i.e. Driveways 1, 2 and 3) would remain unchanged from existing conditions.

Forecast future base conditions turning movement volumes for the AM and PM peak hours are shown in **Table 2.10** and **Table 2.11**, respectively. Note that the corresponding 2021 existing condition volumes are also provided for reference to highlight how volumes are anticipated to change over time.

Table 2.10: Current (2021) and Forecast Future Base (2035) AM Peak Hour Intersection Turning Movement Count Volumes

Intersection	Control	Peak Hour	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	2021	47	1,063	69	1,179	34	798	159	991	90	48	82	220	105	110	106	321	2,711
		2035	136	1,395	160	1,691	32	562	190	784	25	24	30	79	90	161	70	321	2,875
Scott Road and Tannery Road	4 leg; signalized	2021	224	935	52	1,211	65	583	301	949	107	148	136	391	98	388	86	572	3,123
		2035	220	1,246	43	1,509	30	416	164	610	348	302	426	1,076	173	525	158	856	4,051
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	2021					165	0	109	274		120	1	121	699	242		941	1,336
		2035					600	0	154	754		178	1	179	781	270		1,051	1,984
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	2021	121	137	160	418					43	220		263		820	96	916	1,597
		2035	352	171	402	925					104	674		778		699	35	734	2,437
Driveway 1 / South Driveway	3 leg; unsignalized	2021		1,125	3	1,128	0		0	946					3		1	4	2,078
		2035		1,748	3	1,751	0		0	608					3		1	4	2,363
Driveway 2 / Central Driveway	3 leg; unsignalized	2021		1,117	9	1,126	2		0	937					11		1	12	2,075
		2035		1,740	9	1,749	2		0	599					11		1	12	2,360
Driveway 3 / North Driveway	3 leg; unsignalized	2021		1,116	2	1,118	1		0	935					3		2	5	2,058
		2035		1,739	2	1,741	1		0	597					3		2	5	2,343

Table 2.11: Current (2021) and Forecast Future Base (2035) PM Peak Hour Intersection Turning Movement Count Volumes

Intersection	Control	Peak Hour	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	2021	53	1,236	255	1,544	133	1,225	147	1,505	130	127	128	385	108	65	69	242	3,676
		2035	23	1,525	329	1,877	199	947	74	1,220	166	169	88	423	138	54	163	355	3,875
Scott Road and Tannery Road	4 leg; signalized	2021	180	978	178	1,336	155	1164	132	1,451	394	406	250	1,050	169	166	76	411	4,248
		2035	413	1,330	310	2,053	76	978	86	1,140	466	615	646	1,727	289	219	60	568	5,488
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	2021					239	0	81	320		255	48	303	243	202		445	1,068
		2035					600	0	158	758		929	94	1,023	285	237		522	2,303
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	2021	119	181	611	911					74	424		498		326	108	434	1,843
		2035	107	279	504	890					307	1,223		1,530		416	236	652	3,072
Driveway 1 / South Driveway	3 leg; unsignalized	2021		1,446	2	1,448	2		0	1,451					2		1	3	2,902
		2035		1,853	2	1,855	2		0	1,140					2		1	3	2,998
Driveway 2 / Central Driveway	3 leg; unsignalized	2021		1,437	10	1,447	6		0	1,447					10		9	19	2,913
		2035		1,844	10	1,854	6		0	1,136					10		9	19	3,009
Driveway 3 / North Driveway	3 leg; unsignalized	2021		1,439	7	1,446	7		0	1,448					6		3	9	2,903
		2035		1,846	7	1,853	7		0	1,137					6		3	9	2,999

2.5.4 Future Base Conditions Traffic Operations Outputs

Given the significant change in traffic patterns and volumes in the area, all signal timings were re-optimized, while maintaining the same overall cycle length and phasing strategy. The optimization strategy focused on reducing overall intersection delays, and did not specifically prioritize any individual movement or intersection approach. Analysis outputs of the following intersection-level metrics are documented herein:

- Intersection Level of Service in **Table 2.12.** and **Table 2.13** for the AM and PM peak hours, respectively.
- Volume-to-Capacity Ratio; in **Table 2.14.** and **Table 2.15** for the AM and PM peak hours, respectively.
- 50th percentile queue lengths in **Table 2.16.** and **Table 2.17** for the AM and PM peak hours, respectively.
- 95th percentile queue lengths in **Table 2.18.** and **Table 2.19** for the AM and PM peak hours, respectively.

In all cases, the corresponding existing condition performance metrics are also provided for reference. Key findings with respect to traffic operations in the Future Base Condition are summarized below.

Detailed intersection capacity analysis outputs are also provided in **Appendix A.**

At the Scott Road / Old Yale Road Intersection:

- Relative to existing conditions, overall intersection operations remain generally similar in the AM and degrade slightly in the PM.
- In the AM the NBL movement improves from LOS E to LOS D; increased green time is available for this movement due to reduced conflicting southbound through volumes (as described previously, vehicles travelling from the Pattullo Bridge to Highway 17 westbound are able to avoid using Scott Road altogether). The WBL similarly sees a small improvement.
- In the PM, the SBL degrades from LOS E to LOS F; potentially a function of growth in this movement as well as significant growth in conflicting NBT movements. Operations for the NBL and especially WBL are a challenge in the PM and operate close to capacity.

At the Scott Road / Tannery Road Intersection:

- The overall intersection operations degrade from LOS D to LOS F in the AM, and LOS E to LOS F in the PM.
- In the AM, key movements that degrade include NBL, SBL, EBL, WBT and WBR; the latter two of which see a significant increase in demand and being to operate close to capacity. Although NBL volumes do not increase significantly, re-optimization of the signal reduces green time for this movement in favour of other movements experiencing greater increases in volumes.
- In the PM, the only key movements that see a previously-acceptable LOS degrade to LOS E/F range is the SBT. However, several movements that already operate at LOS E or F (e.g. NBL, SBL, SBT, EBL, EBT, EBR and WBL) may further degrade. Several movements, including the NBL, the SBT, EBT and WBL are anticipated to see volumes at or above capacity and are anticipated to experience extended queuing. Many of these movements experience large (e.g. 50% or more) increases in demand.

At the Highway 17 / Tannery Road westbound ramp terminal Intersection:

- The overall intersection operations degrade significantly in both the AM and the PM. Most notably, southbound left-turning volumes are expected to increase by 2.5 – 3 times; a function of both increased connectivity from the Pattullo Bridge and the elimination of a similar movement from the Old Yale Road intersection. While the SBL movements operate well (a key priority in order to avoid queue spillbacks onto the Highway 17 mainline), green time must be reallocated to process this increased demand, and therefore results in degradation of other movements (i.e. SBLT, EBTR, WBL).

At the Highway 17 / Tannery Road eastbound ramp terminal intersection:

- The overall intersection operations degrade significantly in both the AM and the PM. Most notably, volumes for EBL movements (for people turning onto Highway 17) and EBT movements (for people exiting Highway 17 via the westbound ramp terminal intersection and thus needing to pass through the eastbound ramp terminal intersection to reach Scott Road and beyond) are anticipated to increase by 3 – 4 times and operate poorly. These movements also operate relatively close to capacity, and thus further increases in demand could significantly exacerbate queuing.

At the driveways:

- Level of Service either remains the same or degrades for most movements. Most critically, while in 2021 all left turns out of the driveways operate at a mixture of LOS E and LOS F, in 2035 all outbound left-turns (i.e. WBL) are anticipated to degrade to LOS F. Similarly inbound left-turn lanes from the two-way left turn lane (i.e. SBL) are also anticipated to degrade; this is a result of increased northbound volumes on Scott Road reducing the availability of gaps in the traffic stream.
- Notwithstanding the above, the driveways, including the WBL and SBL movements, continue to have plenty of capacity. This suggests that while vehicles turning out will need to wait for a gap in the traffic stream, a continuous buildup in queues of outbound vehicles over the course of the peak hour is not anticipated.
- However, in the event that there is a sudden surge in outbound volumes (i.e. all vehicles departing the site within the peak hour wish to depart within the same 5 minute window) then queues may grow significantly. Currently, vehicles wishing to access Highway 17 who are unable to make a westbound left-turn movement out of the site have the option of instead making a westbound right turn onto Scott Road and then a northbound left-turn onto Old Yale Road in order to access Highway 17. In the future, the lack of connectivity between Old Yale Road and Highway 17 means that such a movement will no longer be possible; instead, the alternate route would require vehicles to make a loop back to the Tannery Road Interchange via Scott Road, Old Yale Road, Timberland Road, Faulkner Road and Pine Road. This alternate route consideration would also apply if there were other incidents (e.g. a collision) that blocked access to Highway 17 via Tannery Road.

Table 2.12: Current (2021) and Forecast Future Base (2035) AM Peak Hour Intersection Level of Service

Intersection	Control	Year	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	2021	E	A		B	D	B		B	D	C		C	E	D	A	C	B
		2035	D	A		B	D	B		C	D	C		C	D	D	A	D	B
Scott Road and Tannery Road	4 leg; signalized	2021	D	C	A	C	E	D	B	C	E	C		D	D	D		D	D
		2035	E	D	A	D	E	D	C	D	F	D		F	D	F		F	F
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	2021					C		A	C		C		C	C	A		B	B
		2035					E		A	E		E		E	F	C		E	E
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	2021	C		B	C					D	B		B		C	A	B	B
		2035	D		B	D					F	F		F		D	A	D	E
Driveway 1	3 leg; unsignalized	2021		A	A	A	A	A		A					E		A	E	A
		2035		A	A	A	A	A		A					F		A	F	A
Driveway 2	3 leg; unsignalized	2021		A	A	A	C	A		A					F		A	F	A
		2035		A	A	A	E	A		A					F		A	F	A
Driveway 3	3 leg; unsignalized	2021		A	A	A	C	A		A					E		A	E	A
		2035		A	A	A	E	A		A					F		A	F	A

Table 2.13: Current (2021) and Forecast Future Base (2035) PM Peak Hour Intersection Level of Service

Intersection	Control	Year	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	2021	E	B		B	E	C		C	D	D		D	F	C	A	D	C
		2035	E	D		D	F	B		C	D	D		D	F	D	A	D	D
Scott Road and Tannery Road	4 leg; signalized	2021	F	C	A	D	F	C	B	D	F	F		F	F	D		E	E
		2035	F	D	A	F	F	E	B	E	E	F		F	F	D		F	F
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	2021					C		A	C		C		C	C	B		B	C
		2035					F		B	F		F		F	F	C		E	F
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	2021	C		C	C					C	B		B		C	A	C	C
		2035	E		C	D					F	E		F		D	B	C	E
Driveway 1 / South Driveway	3 leg; unsignalized	2021		A	A	A	F	A		A					E		A	E	A
		2035		A	A	A	F	A		A					F		A	F	A
Driveway 2 / Central Driveway	3 leg; unsignalized	2021		A	A	A	F	A		A					F		A	F	A
		2035		A	A	A	F	A		A					F		A	F	A
Driveway 3 / North Driveway	3 leg; unsignalized	2021		A	A	A	F	A		A					F		A	F	A
		2035		A	A	A	F	A		A					F		A	F	A

Table 2.14: Current (2021) and Forecast Future Base (2035) AM Peak Hour Intersection Volume to Capacity Ratio

Intersection	Control	Year	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	2021	0.40	0.46		0.23	0.40		0.61	0.42		0.72	0.33	0.34
		2035	0.67	0.57		0.28	0.39		0.26	0.22		0.52	0.56	0.25
Scott Road and Tannery Road	4 leg; signalized	2021	0.71	0.55	0.08	0.44	0.51	0.60	0.76	0.65		0.32	0.82	
		2035	0.90	0.91	0.08	0.29	0.52	0.51	1.20	0.98		0.65	1.34	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	2021				0.59		0.41		0.37		0.72	0.31	
		2035				1.05		0.35		0.88		1.05	0.47	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	2021	0.68		0.22				0.31	0.23			0.59	0.22
		2035	0.96		0.42				0.85	0.84			0.86	0.12
Driveway 1 / South Driveway	3 leg; unsignalized	2021		0.00	0.00	0.00	0.00					0.12		0.00
		2035		0.00	0.00	0.00	0.00					0.40		0.00
Driveway 2 / Central Driveway	3 leg; unsignalized	2021		0.00	0.00	0.01	0.00					0.19		0.00
		2035		0.00	0.00	0.03	0.00					0.69		0.00
Driveway 3 / North Driveway	3 leg; unsignalized	2021		0.00	0.00	0.01	0.00					0.06		0.00
		2035		0.00	0.00	0.03	0.00					0.21		0.00

Table 2.15: Current (2021) and Forecast Future Base (2035) PM Peak Hour Intersection Volume to Capacity Ratio

Intersection	Control	Year	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	2021	0.42	0.72		0.77	0.65		0.56	0.71		0.92	0.21	0.16
		2035	0.37	0.98		0.97	0.43		0.64	0.68		1.02	0.17	0.35
Scott Road and Tannery Road	4 leg; signalized	2021	0.92	0.63	0.30	0.80	0.73	0.33	1.21	1.14		0.90	0.58	
		2035	1.82	0.94	0.49	0.93	1.00	0.31	0.97	1.43		1.45	0.66	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	2021				0.66		0.26		0.53		0.46	0.37	
		2035				1.25		0.39		1.18		1.07	0.45	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	2021	0.70		0.67				0.41	0.39			0.41	0.32
		2035	0.94		0.61				0.93	0.87			0.72	0.67
Driveway 1 / South Driveway	3 leg; unsignalized	2021		0.00	0.00	0.06	0.00					0.09		0.00
		2035		0.00	0.00	0.12	0.00					0.18		0.00
Driveway 2 / Central Driveway	3 leg; unsignalized	2021		0.00	0.00	0.11	0.00					0.62		0.00
		2035		0.00	0.00	0.24	0.00					1.46		0.00
Driveway 3 / North Driveway	3 leg; unsignalized	2021		0.00	0.00	0.15	0.00					0.18		0.00
		2035		0.00	0.00	0.31	0.00					0.35		0.00

Table 2.16: Current (2021) and Forecast Future Base (2035) AM Peak Hour Intersection 50th Percentile Queues

Intersection	Control	Year	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		2021	22	25		9	48		25	16		30	24	0
		2035	64	32		9	40		7	7		25	38	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		2021	51	74	0	13	29	0	30	23		23	65	
		2035	56	138	0	7	22	2	122	87		45	128	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		2021				19		0		9		37	15	
		2035				146		6		24		86	42	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		2021	38		10				6	10			35	0
		2035	116		29				23	81			50	0
Driveway 1 / South Driveway	3 leg; unsignalized	Storage Length												
		2021												
		2035												
Driveway 2 / Central Driveway	3 leg; unsignalized	Storage Length												
		2021												
		2035												
Driveway 3 / North Driveway	3 leg; unsignalized	Storage Length												
		2021												
		2035												

Table 2.17: Current (2021) and Forecast Future Base (2035) PM Peak Hour Intersection 50th Percentile Queues

Intersection	Control	Year	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		2021	20	60		44	110		34	57		31	18	0
		2035	7	211		67	64		44	62		42	14	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		2021	60	84	0	46	49	0	126	121		54	28	
		2035	193	131	6	24	97	6	121	262		125	38	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		2021				26		0		16		13	15	
		2035				171		8		141		34	35	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		2021	35		37				11	20			16	0
		2035	82		48				74	114			33	8
Driveway 1 / South Driveway	3 leg; unsignalized	Storage Length												
		2021												
		2035												
Driveway 2 / Central Driveway	3 leg; unsignalized	Storage Length												
		2021												
		2035												
Driveway 3 / North Driveway	3 leg; unsignalized	Storage Length												
		2021												
		2035												

Table 2.18: Current (2021) and Forecast Future Base (2035) AM Peak Hour Intersection 95th Percentile Queues

Intersection	Control	Year	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		2021	20	32		17	78		33	21		38	37	3
		2035	39	43		18	64		13	13		34	56	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-	-	65	-	
		2021	95	82	0	32	55	40	50	34	-	38	78	
		2035	118	152	0	19	52	40	156	110	-	65	149	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-	-	-	-	
		2021				47		6		15	-	59	24	
		2035				215		10		31	-	123	58	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-	-		-	60
		2021	62		20				18	16	-		56	10
		2035	157		42				49	80	-		70	0
Driveway 1 / South Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		2021		0	0	0 veh	0					0.4 veh		0
		2035		0	0	0 veh	0					1.3 veh		0
Driveway 2 / Central Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		2021		0	0	0 veh	0					0.6 veh		0
		2035		0	0	0.1 veh	0					2.0 veh		0
Driveway 3 / North Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		2021		0	0	0 veh	0					0.2 veh		0
		2035		0	0	0.1 veh	0					0.7 veh		0

Table 2.19: Current (2021) and Forecast Future Base (2035) PM Peak Hour Intersection 95th Percentile Queues

Intersection	Control	Year	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		2021	20	96		56	139		46	73		51	23	0
		2035	8	215		88	64		64	90		79	22	13
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		2021	93	98	15	72	102	20	195	149		79	41	
		2035	224	159	26	48	125	10	196	282		153	52	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		2021				58		8		34		29	32	
		2035				240		21		167		60	46	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		2021	68		68				24	38			28	10
		2035	127		68				93	139			41	22
Driveway 1 / South Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		2021		0	0	0.2 veh	0					0.3 veh		0
		2035		0	0	0.4 veh	0					0.6 veh		0
Driveway 2 / Central Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		2021		0	0	0.4 veh	0					2.4 veh		0
		2035		0	0	0.8 veh	0					4.1 veh		0
Driveway 3 / North Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		2021		0	0	0.5 veh	0					0.6 veh		0
		2035		0	0	1.0 veh	0					1.2 veh		0

2.6 Future with Project Conditions Analysis

This section describes the process used to estimate trips generated by the Project, the process used to distribute these trips to and from the surrounding road network, the resultant future with Project condition peak hour turning movement count volumes, and the resultant analysis of future with Project condition traffic operations.

2.6.1 Development Trip Generation

Trip generation for the proposed development was estimated using the Institute of Transportation Engineers' *Trip Generation Manual, 10th Edition*. Additionally, previously-collected traffic count data for intersections within the Fraser Richmond Port Lands was used to provide an estimate of vehicle classification (i.e. heavy vehicle percentage), as these lands feature a heavy concentration of facilities similar to the proposed development, and therefore provide a more appropriate approach than assuming the new development mimics ambient vehicle classification splits in the study area.

The trip generation rate applied for the proposed development is shown in **Table 2.20**.

Table 2.20: Development Peak Hour Trip Generation Rate (Based on ITE Trip Generation Manual, 10th Edition)

Land Use Type	# Floors	Per	Land Use Code	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Average Rate	% Entering	% Leaving	Average Rate	% Entering	% Leaving
Warehousing	N/A	1,000 ft ²	150	0.17	77%	23%	0.19	27%	73%

Note that supplementary information provided in the Trip Generation Manual indicates that the AM peak hour for warehousing typically occurs between 11:30 – 12:30, and the PM peak hour typically occurs between 15:00 – 16:00. However, in order to provide a conservative assessment of potential traffic operations implications of the Project, the peak hour development traffic will be assumed to coincide with the localized peak hours for each intersection that were analyzed previously for the existing condition and future base condition scenarios.

As described previously, the development consists of two buildings: a smaller North Building featuring a floor area of 150,690 ft², and a larger South Building featuring a floor area of 236,545 ft². Applying the above-noted trip generation rate to the two buildings yields the development trip generation shown in **Table 2.21**.

Table 2.21: Development Peak Hour Trip Generation Total by Building (Based on ITE Trip Generation Manual, 10th Edition)

Building	Independent Variable (Gross Floor Area)	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Total	% Entering	% Leaving	Total	% Entering	% Leaving
North Building	150,690 ft ²	26	20	6	29	8	21
South Building	236,545 ft ²	40	31	9	45	12	33
Development Total	388,235 ft²	66	51	15	74	20	54

Development-generated trips can consist of either heavy vehicles (e.g. the trucks delivering goods to and/or picking up goods from the warehouses) as well as passenger vehicle trips (e.g. employee vehicles, service vehicles, or facility visitors).

A traffic count conducted at the intersection of Blundell Road / Portside Road / No. 8 Road within the Fraser Richmond Port Lands was used to estimate the split between vehicle classifications for entering and leaving moments in both the weekday AM and PM peak hours. The resultant vehicle classifications splits are shown in **Table 2.22**.

Table 2.22: East Access Intersection Turning Movement Volumes

Vehicle Class	Weekday AM Peak Hour		Weekday PM Peak Hour	
	% Entering	% Leaving	% Entering	% Leaving
Heavy Vehicles	41%	75%	67%	42%
Passenger Vehicles	59%	25%	33%	58%
All Vehicles	100%	100%	100%	100%

Combining the total trip generation estimates for the two buildings as shown in **Table 2.21** with the vehicle classification splits as shown in **Table 2.22** yields the classified trip generation estimates for the two buildings shown in **Table 2.23**.

Table 2.23: East Access Intersection Turning Movement Volumes

Building	Vehicle Class	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Total	% Entering	% Leaving	Total	% Entering	% Leaving
North Building	Heavy Vehicles	13	8	4	14	5	9
	Passenger Vehicles	13	12	1	15	3	12
	All Vehicles	26	20	6	29	8	21
South Building	Heavy Vehicles	20	13	7	22	8	14
	Passenger Vehicles	21	18	2	23	4	19
	All Vehicles	40	31	9	45	12	33
Development Total	Heavy Vehicles	32	21	11	36	13	23
	Passenger Vehicles	34	30	4	38	7	31
	All Vehicles	66	51	15	74	20	54

Vehicles travelling to/from the proposed development must do so from one of the three driveway accesses connecting the site to Scott Road. Vehicle movements via each of the three driveway accesses were allocated as follows:

- North Access: Used by Passenger Vehicles travelling to/from the North Building
- Central Access: Used by Heavy Vehicles travelling to/from the North Building as well as Heavy Vehicles travelling to/from the South Building
- South Access: Used by Passenger Vehicles travelling to/from the North Building

The resultant classified trip generation for each of the three accesses is shown below in **Table 2.24**.

Table 2.24: East Access Intersection Turning Movement Volumes

Driveway Access Location	Weekday AM Peak Hour								Weekday PM Peak Hour							
	Entering				Leaving				Entering				Leaving			
	Heavy Vehicle	Passenger Vehicle	Total	Heavy Vehicle %	Heavy Vehicle	Passenger Vehicle	Total	Heavy Vehicle %	Heavy Vehicle	Passenger Vehicle	Total	Heavy Vehicle %	Heavy Vehicle	Passenger Vehicle	Total	Heavy Vehicle %
North Driveway	0	12	12	0%	0	1	1	0%	0	3	3	0%	0	12	12	0%
Central Driveway	21	0	21	100%	11	0	11	100%	13	0	13	100%	23	0	23	100%
South Driveway	0	18	18	0%	0	2	2	0%	0	4	4	0%	0	19	19	0%
All Accesses	21	30	51	41%	11	4	15	75%	13	7	20	67%	23	31	54	42%

Peak hour factor assumptions were also developed for each driveway. As the peak hours factors from the existing development are not necessarily indicative of peak hour factors, the following assumptions were applied:

- For the North and South Driveways: A peak hour factor of 0.25, meaning that all trips in and out of the Project site were assumed to occur within a 15-minute window within the peak hour. This assumption can act, for example, as a proxy for a shift change within the peak hour where all employees arrive immediately before their shift begins and/or depart immediately after their shift ends.
- For the Central Driveway: A peak hour factor of 0.75, meaning that all truck trips in and out would occur within a 45-minute window within the peak hour, and that there would be a 15-minute period of inefficiency where no trucks would traffic in or out (for example, during a shift change).

These peak hour factors are intended to support a more conservative assessment of driveway capacity. In contrast, a peak hour factor of 1.0 implies a perfectly uniform distribution of traffic over the course of the peak hour, and therefore will improve overall operations.

2.6.2 Development Trip Distribution

The trip generation analysis, culminating in a classified trip generation estimate for each of the three driveway accesses for the proposed development, is described above. However, in order to assess the traffic operations implications of the proposed development, it is necessary to assess what route(s) inbound (i.e. entering) vehicles are anticipated to use to enter the proposed development, and what route(s) outbound (i.e. leaving) vehicles are anticipated to use upon leaving the proposed development. Specifically, it is necessary to understand the number of right turning or left turn movements in and out of the three driveway accesses, as well as what movements these vehicles are making through any of the four signalized intersections included in the study area.

The proportion of trips to/from the Project site to/from each of the surrounding routes were assumed to be identical to the proportional distribution of trips to/from the Traffic Analysis Zone from the Surrey Sub-Area Model that contains the Project site. Separate distributions were extracted from the Surrey Sub-Area Model for passenger vehicles and heavy vehicles (specifically, the Heavy Goods Vehicle classification within the model). The resultant proportional distribution of trips is shown in **Table 2.25**.

Table 2.25: Proportional Distribution of Trips to/from the Project Site

External Origin / Destination Zone	Weekday AM Peak Hour				Weekday PM Peak Hour			
	Entering		Leaving		Entering		Leaving	
	Heavy Vehicles	Passenger Vehicles	Heavy Vehicles	Passenger Vehicles	Heavy Vehicles	Passenger Vehicles	Heavy Vehicles	Passenger Vehicles
Tannery E of Scott	0%	33%	0%	25%	0%	29%	0%	38%
Tannery W of SFPR	0%	0%	0%	0%	0%	0%	0%	0%
SFPR S of Tannery	29%	6%	20%	6%	25%	8%	25%	1%
SFPR N of Old Yale	0%	0%	0%	0%	0%	0%	0%	0%
Old Yale E of Scott	14%	20%	20%	25%	0%	21%	25%	13%
Old Yale W of SFPR	0%	0%	0%	0%	0%	0%	0%	0%
Scott S of Tannery	14%	9%	20%	13%	25%	8%	25%	15%
Scott N of Old Yale	43%	31%	40%	31%	50%	33%	25%	32%

2.6.3 Future with Project Conditions Peak Hour Volumes

The Project trip volumes summarized in **Table 2.24** were distributed using the proportioning in **Table 2.25** and then assigned as individual turning movements through one (or more, as applicable) intersections within the study area. The existing traffic volumes in and out of the Project site associate with the site's current land use were removed from the network by a similar process.

Forecast Future with Project conditions turning movement volumes for the AM and PM peak hours are shown in **Table 2.26** and **Table 2.27**, respectively. Note that the corresponding 2035 future base condition volumes are also provided for reference to highlight how volumes are anticipated to change as a result of the Project.

As shown, the change in overall volumes within the study area is anticipated to be relatively minor.

Table 2.26: Forecast Future Base (2035) and Future with Project (2035) AM Peak Hour Intersection Turning Movement Count Volumes

Intersection	Control	Scenario	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	Base	136	1,395	160	1,691	32	562	190	784	25	24	30	79	90	161	70	321	2,875
		Project	136	1,398	162	1,696	32	576	190	798	25	24	30	79	99	161	70	330	2,903
Scott Road and Tannery Road	4 leg; signalized	Base	220	1,246	43	1,509	30	416	164	610	348	302	426	1,076	173	525	158	856	4,051
		Project	220	1,249	43	1,512	25	412	161	598	350	302	426	1,078	173	525	166	864	4,052
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Base					600	0	154	754		178	1	179	781	270		1,051	1,984
		Project					600	0	154	754		178	1	179	778	270		1,048	1,981
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Base	352	171	402	925					104	674		778		699	35	734	2,437
		Project	352	171	404	927					104	674		778		696	35	731	2,436
Driveway 1 / South Driveway	3 leg; unsignalized	Base		1,748	3	1,751	0		0	608					3		1	4	2,363
		Project		1,755	9	1,764	10		0	610					1		1	2	2,376
Driveway 2 / Central Driveway	3 leg; unsignalized	Base		1,740	9	1,749	2		0	599					11		1	12	2,360
		Project		1,746	10	1,756	11		0	616					5		7	12	2,384
Driveway 3 / North Driveway	3 leg; unsignalized	Base		1,739	2	1,741	1		0	597					3		2	5	2,343
		Project		1,745	8	1,753	6		0	621					1		1	2	2,376

Table 2.27: Current (2021) and Forecast Future (2035) PM Peak Hour Intersection Turning Movement Count Volumes

Intersection	Control	Scenario	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	Base	23	1,525	329	1,877	199	947	74	1,220	166	169	88	423	138	54	163	355	3,875
		Project	23	1,533	332	1,888	199	944	74	1,217	166	169	88	423	137	54	163	354	3,882
Scott Road and Tannery Road	4 leg; signalized	Base	413	1,330	310	2,053	76	978	86	1,140	466	615	646	1,727	289	219	60	568	5,488
		Project	413	1,328	310	2,051	83	981	86	1,150	464	615	646	1,725	289	219	55	563	5,489
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Base					600	0	158	758		929	94	1,023	285	237		522	2,303
		Project					600	0	158	758		929	94	1,023	285	237		522	2,303
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Base	107	279	504	890					307	1223		1,530		416	236	652	3,072
		Project	107	279	502	888					307	1223		1,530		416	236	652	3,070
Driveway 1 / South Driveway	3 leg; unsignalized	Base		1,853	2	1,855	2		0	1,140					2		1	3	2,998
		Project		1,843	2	1,845	2		0	1,143					10		9	19	3,007
Driveway 2 / Central Driveway	3 leg; unsignalized	Base		1,844	10	1,854	6		0	1,136					10		9	19	3,009
		Project		1,846	6	1,852	7		0	1,138					12		10	22	3,012
Driveway 3 / North Driveway	3 leg; unsignalized	Base		1,846	7	1,853	7		0	1,137					6		3	9	2,999
		Project		1,855	1	1,856	1		0	1,132					7		6	13	3,001

2.6.4 Future with Project Conditions Traffic Operations Outputs

Analysis outputs of the following intersection-level metrics are documented herein:

- Intersection Level of Service in **Table 2.28.** and **Table 2.29** for the AM and PM peak hours, respectively.
- Volume-to-Capacity Ratio; in **Table 2.30.** and **Table 2.31** for the AM and PM peak hours, respectively.
- 50th percentile queue lengths in **Table 2.32.** and **Table 2.33** for the AM and PM peak hours, respectively.
- 95th percentile queue lengths in **Table 2.34.** and **Table 2.35** for the AM and PM peak hours, respectively.

In all cases, the corresponding 2035 future base condition performance metrics are also provided for reference.

Detailed intersection capacity analysis outputs are also provided in **Appendix A.** Note that intersection signal timings were not further adjusted for this scenario relative to the future base conditions scenario as the purpose of the signal timings was to reflect overall changes in travel patterns and volumes in the area, rather than to specifically optimize traffic operations for the Project in particular.

In general, the Project is not anticipated to significantly impact traffic at any of the four signalized intersections within the study area as the volume of traffic generated by the Project is very minor in comparison with the overall traffic volumes already on the road network. The traffic operations impacts of the Project are further mitigated as a result of the Project being located on a brownfield rather than greenfield site. More specifically, although the Project will generate additional traffic volumes, these increase will be partially offset by the removal of traffic volumes associated with the existing land uses; this results in a net increase in traffic volumes that is lower than the gross Project trip generate estimates.

At the Scott Road / Old Yale Road Intersection:

- Overall, operations at the intersection are not anticipated to change relative to the Future Base Condition scenario.
- The intersection continues to operate well in the AM peak hour, and in the PM peak hour, several key movements (NBL, SBL, WBL) continue to see operational challenges.

At the Scott Road / Tannery Road Intersection:

- Overall, operations at the intersection are not anticipated to change relative to the Future Base Condition scenario.
- In the AM peak hour, several key movements (NBL, SBL, EBL, WBT and WBR) continue to see operational challenges.
- In the PM peak hour, several key movements (NBL, SBL, SBT, EBL, EBT, EBR, and WBL) continue to see operational challenges.
- Southbound left-turning queues are not anticipated to regularly the available storage capacity. This is a critical consideration as queue spillbacks from the southbound left turn lang at the Scott Road / Tannery Road intersection into the inside left turn through lane could obstruct vehicles making a westbound left turn out of the South Driveway.

- In the PM peak hour, 95th percentile queues for southbound through movements at the Scott Road / Tannery Road intersection are anticipated to be in the range of 126 metres. Given that the South Driveway is located roughly 120 metres upstream of the southbound stop bar; queues of this length would obstruct a vehicle making a westbound left turn out of the South Driveway. However, as this is a 95th percentile queue, observed queues are only anticipated to exceed this length 5% of the time during the peak hour (or for three minutes out of the peak hour). In contrast, 50th percentile movements are in the range of 98 metres, which would allow westbound left-turn movements out of the South Driveway. In practice, this finding means that employee vehicles leaving the South Building may have challenges making a westbound left turn out of the South Driveway, and that these vehicles would need to either (i) be patient and wait longer for a gap, (ii) make a westbound right turn and use an alternate route to reach their destination, or (iii) use the internal frontage road to access the North Driveway, and then use the North Driveway, which is not anticipated to be affected by southbound queuing at the Scott Road / Tannery Road intersection, to make a westbound left turn.
- It is noted that these queue length findings are sensitive to the signal timing re-optimization that was undertaken as part of the Future Base Conditions analysis, and that if in practice the road authority were to adopt an alternate approach to signal timing (e.g. a timing plan that deliberately prioritized certain movements) then this finding could change. As this queue lengths are metered in part by the upstream intersection at Scott Road and Old Yale Road, changes to the signal timings at either of these intersections could yield alternate queue length findings.

At the Highway 17 / Tannery Road westbound ramp terminal Intersection:

- Overall, operations at the intersection are not anticipated to change relative to the Future Base Condition scenario.
- In the AM peak hour, several key movements (SBL, SBT, EBTR, EBR and WBL) continue to see operational challenges.
- In the PM peak hour, several key movements (SBL, SBT, EBT/EBR and WBL) continue to see operational challenges.

At the Highway 17 / Tannery Road eastbound ramp terminal intersection:

- Overall, operations at the intersection are not anticipated to change relative to the Future Base Condition scenario.
- The EBL and EBT will continue to see operational challenges in both the AM and PM. The NBT will also see challenges in the PM.

At the driveways:

- At all three driveways, left turning movements in and out of Project site (i.e. SBL and WBL, respectively) operate with a Level of Service E or F. For inbound movements, the SBL operates below capacity, although in the AM the South Driveway comes closest to reaching capacity. For outbound movements, the WBL from the Central Driveway used by trucks from both warehouses operates above capacity and could experience significant delays. The 95th percentile queues for the WBL movement from the Central Driveway reaches approximately 4 vehicle lengths in the PM peak hour (although this represents passenger-car equivalent vehicle lengths, not truck lengths). However, the potential exists for several outbound trucks to queue within the central loading dock aisle while waiting for a gap in the Scott Road

traffic stream for one or more of these trucks to make a westbound left turn movement. In practice, this suggests that in the peak hour, WBL trucks may experience extended delays, and on occasion may simply need to “give up” and make a WBR and use a more circuitous route to reach their destination.

- It is noted that, as described in Section 2.6.1, the above analysis is based on conservative assumptions related to the overlap between Project trip generation peak hour and Scott Road peak hour, and a conservative peak hour factor (as described in Section 2. In practice, if the Project trip generation PM peak hour and the Scott Road PM peak hour are offset from one another, or traffic volumes to and from the Project site are more evenly distributed within the peak hour, then delays will be reduced and operations will improve.
- Right-turning movements in and out of the Project site (i.e. NBR and WBR, respectively) operate without issue.

Table 2.28: Forecast Future Base (2035) and Future with Project (2035) AM Peak Hour Intersection Level of Service

Intersection	Control	Scenario	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	Base	D	A		B	D	B		C	D	C		C	D	D	A	D	B
		Project	D	A		B	D	C		C	D	C		C	D	D	A	D	B
Scott Road and Tannery Road	4 leg; signalized	Base	E	D	A	D	E	D	C	D	F	D		F	D	F		F	F
		Project	E	D	A	D	E	D	C	D	F	D		E	D	F		F	F
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Base					E		A	E		E		E	F	C		E	E
		Project					E		A	E		E		E	F	C		E	E
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Base	D		B	D					F	F		F		D	A	D	E
		Project	D		B	D					F	F		F		D	A	D	E
Driveway 1 / South Driveway	3 leg; unsignalized	Base		A	A	A	A	A		A					F		A	F	A
		Project		A	A	A	E	A		A					E		A	E	A
Driveway 2 / Central Driveway	3 leg; unsignalized	Base		A	A	A	E	A		A					F		A	F	A
		Project		A	A	A	F	A		A					F		A	F	A
Driveway 3 / North Driveway	3 leg; unsignalized	Base		A	A	A	E	A		A					F		A	F	A
		Project		A	A	A	E	A		A					F		A	F	A

Table 2.29: Forecast Future Base (2035) and Future with Project (2035) PM Peak Hour Intersection Level of Service

Intersection	Control	Scenario	Northbound				Southbound				Eastbound				Westbound				Overall Intersection
			NBL	NBT	NBR	App.	SBL	SBT	SBR	App.	EBL	EBT	EBR	App.	WBL	WBT	WBR	App.	
Scott Road and Old Yale Road	4 leg; signalized	Base	E	D		D	F	B		C	D	D		D	F	D	A	D	D
		Project	E	D		D	F	B		C	D	D		D	F	D	A	D	D
Scott Road and Tannery Road	4 leg; signalized	Base	F	D	A	F	F	E	B	E	E	F		F	F	D		F	F
		Project	F	D	A	F	F	E	B	E	E	F		F	F	D		F	F
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Base					F		B	F		F		F	F	C		E	F
		Project					F		B	F		F		F	F	C		E	F
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Base	E		C	D					F	E		F		D	B	C	E
		Project	E		C	D					F	E		F		D	B	C	E
Driveway 1 / South Driveway	3 leg; unsignalized	Base		A	A	A	F	A		A					F		A	F	A
		Project		A	A	A	E	A		A					F		A	F	A
Driveway 2 / Central Driveway	3 leg; unsignalized	Base		A	A	A	F	A		A					F		A	F	A
		Project		A	A	A	F	A		A					F		A	F	A
Driveway 3 / North Driveway	3 leg; unsignalized	Base		A	A	A	F	A		A					F		A	F	A
		Project		A	A	A	E	A		A					F		A	F	A

Table 2.30: Forecast Future Base (2035) and Future with Project (2035) AM Peak Hour Intersection Volume to Capacity Ratio

Intersection	Control	Scenario	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Base	0.67	0.57		0.28	0.39		0.26	0.22		0.52	0.56	0.25
		Project	0.68	0.57		0.28	0.40		0.25	0.21		0.55	0.55	0.24
Scott Road and Tannery Road	4 leg; signalized	Base	0.90	0.91	0.08	0.29	0.52	0.51	1.20	0.98		0.65	1.34	
		Project	0.89	0.91	0.08	0.25	0.52	0.51	1.21	0.92		0.65	1.36	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Base				1.05		0.35		0.88		1.05	0.47	
		Project				1.05		0.35		0.88		1.04	0.47	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Base	0.96		0.42				0.85	0.84			0.86	0.12
		Project	0.96		0.37				0.85	0.84			0.85	0.12
Driveway 1 / South Driveway	3 leg; unsignalized	Base		0.00	0.00	0.00	0.00					0.40		0.00
		Project		0.00	0.00	0.93	0.00					0.08		0.00
Driveway 2 / Central Driveway	3 leg; unsignalized	Base		0.00	0.00	0.03	0.00					0.69		0.00
		Project		0.00	0.00	0.42	0.00					0.57		0.00
Driveway 3 / North Driveway	3 leg; unsignalized	Base		0.00	0.00	0.03	0.00					0.21		0.00
		Project		0.00	0.00	0.20	0.00					0.04		0.00

Table 2.31: Forecast Future Base (2035) and Future with Project (2035) PM Peak Hour Intersection Volume to Capacity Ratio

Intersection	Control	Scenario	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Base	0.37	0.98		0.97	0.43		0.64	0.68		1.02	0.17	0.35
		Project	0.37	0.99		0.97	0.43		0.64	0.68		1.01	0.17	0.35
Scott Road and Tannery Road	4 leg; signalized	Base	1.82	0.94	0.49	0.93	1.00	0.31	0.97	1.43		1.45	0.66	
		Project	1.82	0.94	0.49	1.01	1.00	0.32	0.97	1.43		1.45	0.65	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Base				1.25		0.39		1.18		1.07	0.45	
		Project				1.25		0.39		1.18		1.07	0.45	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Base	0.94		0.61				0.93	0.87			0.72	0.67
		Project	0.94		0.60				0.93	0.87			0.72	0.67
Driveway 1 / South Driveway	3 leg; unsignalized	Base		0.00	0.00	0.12	0.00					0.18		0.00
		Project		0.00	0.00	0.03	0.00					0.61		0.00
Driveway 2 / Central Driveway	3 leg; unsignalized	Base		0.00	0.00	0.24	0.00					1.46		0.00
		Project		0.00	0.00	0.28	0.00					1.40		0.00
Driveway 3 / North Driveway	3 leg; unsignalized	Base		0.00	0.00	0.31	0.00					0.35		0.00
		Project		0.00	0.00	0.02	0.00					0.34		0.00

Table 2.32: Forecast Future Base (2035) and Future with Project (2035) AM Peak Hour Intersection 50th Percentile Queues

Intersection	Control	Scenario	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		Base	64	32		9	40		7	7		25	38	0
		Project	65	36		9	41		7	7		28	38	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		Base	56	138	0	7	22	2	122	87		45	128	
		Project	56	138	0	6	22	2	123	84		45	130	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		Base				146		6		24		86	42	
		Project				146		6		24		85	42	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		Base	116		29				23	81			50	0
		Project	116		28				23	81			50	0
South Driveway	3 leg; unsignalized	Storage Length												
		Base												
		Project												
Central Driveway	3 leg; unsignalized	Storage Length												
		Base												
		Project												
North Driveway	3 leg; unsignalized	Storage Length												
		Base												
		Project												

Table 2.33: Forecast Future Base (2035) and Future with Project (2035) PM Peak Hour Intersection 50th Percentile Queues

Intersection	Control	Scenario	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		Base	7	211		67	64		44	62		42	14	0
		Project	7	212		67	64		44	62		41	14	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		Base	193	131	6	24	97	6	121	262		125	38	
		Project	193	131	7	27	98	6	120	262		125	38	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		Base				171		8		141		34	35	
		Project				171		8		141		34	35	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		Base	82		48				74	114			33	8
		Project	82		48				74	114			33	8
South Driveway	3 leg; unsignalized	Storage Length												
		Base												
		Project												
Central Driveway	3 leg; unsignalized	Storage Length												
		Base												
		Project												
North Driveway	3 leg; unsignalized	Storage Length												
		Base												
		Project												

Table 2.34: Forecast Future Base (2035) and Future with Project (2035) AM Peak Hour Intersection 95th Percentile Queues

Intersection	Control	Scenario	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		Base	39	43		18	64		13	13		34	56	0
		Project	37	44		18	67		12	13		36	55	0
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		Base	118	152	0	19	52	40	156	110		65	149	
		Project	118	153	0	16	52	39	157	96		65	151	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		Base				215		10		31		123	58	
		Project				215		10		31		122	58	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		Base	157		42				49	80			70	0
		Project	157		41				49	80			69	0
South Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		Base		0	0	0 veh	0					1.3 veh		0
		Project		0	0	0.3 veh	0					0.2 veh		0
Central Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		Base		0	0	0.1 veh	0					2.0 veh		0
		Project		0	0	1.4 veh	0					1.8 veh		0
North Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		Base		0	0	0.1 veh	0					0.7 veh		0
		Project		0	0	0.7 veh	0					0.1 veh		0

Table 2.35: Forecast Future Base (2035) and Future with Project (2035) PM Peak Hour Intersection 95th Percentile Queues

Intersection	Control	Scenario	Northbound			Southbound			Eastbound			Westbound		
			NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Scott Road and Old Yale Road	4 leg; signalized	Storage Length	80	-		45	-		35	-		30	-	25
		Base	8	215		88	64		64	90		79	22	13
		Project	8	219		88	64		64	90		79	22	13
Scott Road and Tannery Road	4 leg; signalized	Storage Length	115	-	110	85	-	85	-	-		65	-	
		Base	224	159	26	48	125	10	196	282		153	52	
		Project	224	159	27	53	126	10	195	282		153	51	
Highway 17 Tannery Road Interchange westbound ramp terminal	4 leg; signalized	Storage Length				-		50		-		-	-	
		Base				240		21		167		60	46	
		Project				240		21		167		60	46	
Highway 17 Tannery Road Interchange eastbound ramp terminal	4 leg; signalized	Storage Length	-		100				-	-			-	60
		Base	127		68				93	139			41	22
		Project	127		67				93	139			41	22
South Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		Base		0	0	0.4 veh	0					0.6 veh		0
		Project		0	0	0.1 veh	0					2.9 veh		0
Central Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		Base		0	0	0.8 veh	0					4.1 veh		0
		Project		0	0	0.9 veh	0					3.9 veh		0
North Driveway	3 leg; unsignalized	Storage Length		-	-	-	-					-		-
		Base		0	0	1.0 veh	0					1.2 veh		0
		Project		0	0	0 veh	0					1.3 veh		0

3. SITE LAYOUT AND GEOMETRIC REVIEW

While the previous section focused on the anticipated traffic operational impacts of the Project, this section focuses on the proposed layout of the Project with respect to the following considerations:

- Access to the Adjacent Road Network, focusing on the geometric interface between the Project, Scott Road, and other nearby roads and intersections as applicable;
- Internal Site Circulation, focusing on truck manoeuvrability with the site; and,
- Site Parking Provisions, focusing on the provision of passenger vehicle parking.

3.1 Access to Adjacent Road Network

The assessment in this section is primarily informed by the Transportation Association of Canada *Geometric Design Guide for Canadian Roads* 2017 edition (“TAC”), specifically, Chapter 8: Access and Chapter 9: Intersections. Additionally, where applicable, the City of Surrey *Design Criteria Manual* 2020 edition was also considered.

For the purposes of this analysis, the following design vehicles have been assumed for each driveway access:

- North Driveway: Passenger Vehicle with a length of 5.6 metres; however, it is acknowledged that this driveway could occasionally be used by up to medium single-unit trucks (MSU design vehicle) such as service vehicles, courier trucks delivering parcels to the office area, etc.
- Central Driveway: WB-20, an 18-wheel tractor semi-trailer with a length of 22.7 metres; and,
- South Driveway: Same as North Driveway.

The following considerations were assessed with respect to access to the adjacent road network:

- Distance from horizontal curves on Scott Road;
- Skew angles between Project driveways and Scott Road;
- Turning radii on the three Project driveways;
- Project driveway corner clearances from the Scott Road / Tannery Road intersection;
- Widths of the three Project driveways;
- Spacing between the three Project driveways, and to adjacent driveways on Scott Road;
- Project driveway access density;
- Spacing of Project driveways with respect to driveways on the opposite side of Scott Road;
- Clear throat length of the three Project driveways;
- Considerations for road gradients on Scott Road and the Project driveways;
- Sight distances for the three Project driveways; and,
- Scott Road pavement markings.

3.1.1 Distance from Horizontal Curves

Accesses on horizontal curves are undesirable and should be avoided whenever possible. As described in TAC Section 8.4.1, it is desirable that accesses be located a minimum of 150 metres from the end of the curve.

In the case of the Project, Scott Road features a horizontal curvature just south of the Tannery Road / 104 Avenue intersection. The end of this horizontal curvature was found to be spaced 155 metres from the nearest driveway (the South Driveway). This finding is summarized in **Table 3.1**.

Table 3.1: Distance from Horizontal Curves – Summary of Findings

Design Element	Minimum Distance from Horizontal Curve per TAC Section 8.4.1	Distance from Horizontal Curve Provided	Finding
South Driveway to Scott Road horizontal curvature south of Tannery Road / 104 Avenue	150 metres	155 metres	Consistent with TAC

3.1.2 Skew Angles

The driveways are perpendicular to Scott Road; and therefore, the accesses are not subject to any considerations relating to skew angles.

3.1.3 Driveway Turning Radii

Minimum turning radii are summarized in TAC Section 8.4.9, and classified by land use type (residential, commercial, and industrial). For the purposes of this assessment, the North Driveway and South Driveway was classified as commercial uses, while the Central Driveway was classified as industrial use. This assessment is summarized in **Table 3.2**.

Table 3.2: Driveway Turning Radii – Summary of Findings

Design Element	Driveway Turning Radii per TAC Table 8.9.1	Radius Provided	Finding	Supplementary Recommendations
North Driveway	4.5 metres – 12.0 metres	5 metres	Consistent with TAC	See below
Central Driveway	9.0 metres – 15.0 metres	Inbound: 10 metres Outbound: Compound Curve (3 metres / 15 metres)	Generally consistent with TAC	See below
South Driveway	4.5 metres – 12.0 metres	5 metres	Consistent with TAC	See below

The North and South Driveways feature a 5-metre radius, which is within the range of radii recommended by TAC, albeit towards the lower end of the design domain. Therefore, a supplementary AutoTURN swept analysis was conducted for the North and South Driveways using the design vehicle (passenger vehicle). With the 5-metre radius, passenger vehicles are still able to enter and exit the driveway simultaneously, as shown below in **Figure 3.1**. With a 5-metre radius, larger vehicles such as an MSU are not able to enter and exit the driveway simultaneously; however, these vehicles are still able to enter and exit by making use of both the entry and exit

lanes within the driveway. Given that use of the North and South Driveways by larger vehicles such as an MSU is anticipated to be relatively rare, a 5-metre radius is acceptable.

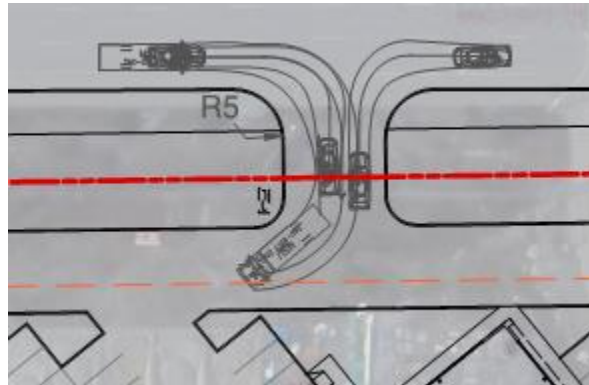


Figure 3.1: North/South Driveway Passenger Vehicle Swept Path Analysis (South Driveway Shown)

In developing a geometry for the Central Driveway, the following guiding principles were applied:

- The driveway geometry should allow for a southbound left-turning (i.e. inbound) vehicle to enter without conflicting with a truck queued at the edge of the Central Driveway waiting for a gap in the northbound traffic stream on Scott Road. This will avoid the risk that southbound left-turning (i.e. inbound) and westbound left-turning (i.e. outbound) truck mutually block one another. Specifically, this configuration will avoid instances where the inbound truck has right of way but cannot proceed because the driveway isn't large enough to use until the outbound vehicle departs the driveway, and outbound vehicle cannot depart the driveway to make a westbound left turn because the inbound vehicle is already occupying the two way left turn lane).
- Westbound right-turning (i.e. outbound) vehicles should be able to turn into the second (i.e. middle) northbound lane on Scott Road rather than having to turn into the first (i.e. outside) lane.
- Northbound right-turning (i.e. inbound vehicles) do not need to be accommodated simultaneously with westbound left- or right- turning (i.e. outbound) trucks, meaning that these trucks can oversweep into onto the "outbound" side of the driveway. These inbound movements will wait in the curbside lane for an outbound vehicle to depart. Unlike inbound vehicles approaching via a southbound left-turn movement, these inbound vehicles approaching via a northbound right-turning movement will not conflict with outbound trucks, however they may temporarily obstruct any trailing northbound traffic in the curb lane on Scott Road.

The approach outlined above is fairly typical with respect to truck accesses for warehouses, although it is acknowledged that warehousing developments typically have accesses connecting to industrial collector roads rather than directly onto six lane arterial roads. While the curve radii of the Central Driveway could be further widened to allow for northbound right-turn inbound movements to proceed simultaneously with outbound movements and/or for westbound right-turn outbound movements to turn directly into the curb lane along Scott Road, the proposed approach is intended to ensure the driveway operates reasonably efficiently without creating an expansive driveway that increases the sense of exposure to traffic for people walking or cycling along the east side of Scott Road.

Based on these considerations, an AutoTURN swept analysis was also conducted for the Central Driveway to confirm the geometry summarized above in **Table 3.2** is appropriate. As shown in **Figure 3.2.**, the swept path analysis confirms that at the South curve radius (adjacent to the inbound lane) a 10-metre radius is able to accommodate the WB-20 design vehicle. In the event that the road authority requires that northbound right-turning vehicles need to proceed simultaneously with outbound vehicles, then the radius must increase to 15 metres.

Similarly, the swept path analysis also confirms that at the North curve radius (adjacent to outbound lane) a compound curve consisting of a 3-metre radius centered 6.5 metres from the edge of the roadway, transitioning into a 15-metre radius curve is able to accommodate the WB-20 design vehicle. In the event that the road authority requires that westbound right-turning (i.e. outbound) vehicles must be able to turn into the curb lane rather than the middle lane, then a compound curve is recommended, consisting of a 3-metre radius centered 9.5 metres from the edge of the road, transitioning into a 50-metre radius.

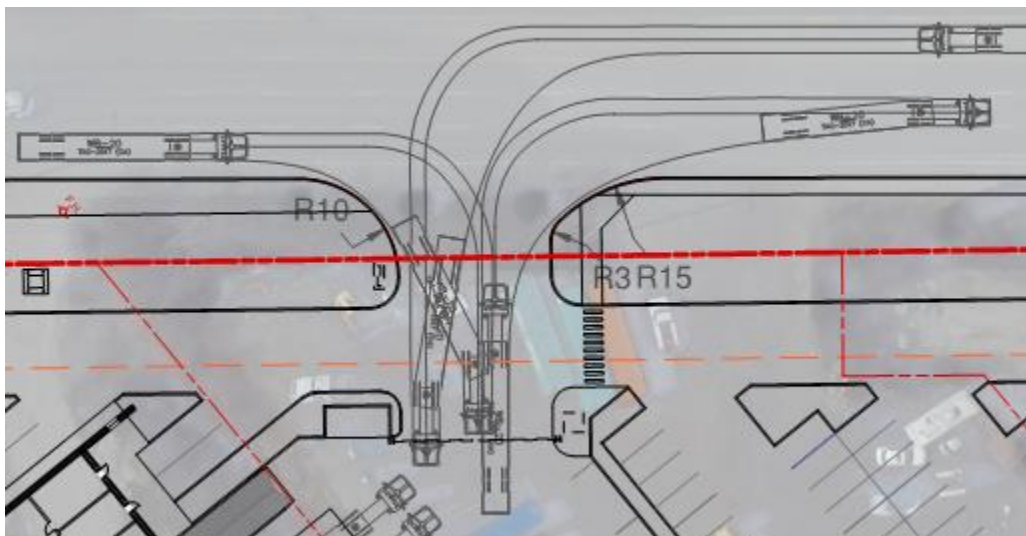


Figure 3.2: Central Driveway WB-20 Swept Path Analysis

3.1.4 Driveway Corner Clearance from Intersection

As described in TAC Section 8.8.1, a minimum distance should be provided between an intersection and the nearest driveway. For an arterial roadway without a concrete median, the minimum setback is 70 metres.

In the case of the Project, the nearest intersection is the intersection of Scott Road with Tannery Road / 104 Avenue. The edge of this crossroad is located 120 metres from the South Driveway. This finding is summarized in **Table 3.3**.

Table 3.3: Corner Clearance – Summary of Findings

Design Element	Minimum Corner Clearance from Intersection per TAC Section 8.4.1	Corner Clearance Provided	Finding
South Driveway to edge of Tannery Road / 104 Avenue roadway cross-section	70 metres	120 metres	Consistent with TAC

3.1.5 Driveway Width

Minimum driveway widths are summarized in TAC Table 8.9.1, and classified by land use type (residential, commercial, and industrial) and driveway directionality (i.e. one-way driveway for either inbound or outbound movements, or a two-way driveway for both inbound and outbound movements). For the purposes of this assessment, the North Driveway and South Driveway will be classified as commercial uses, while the Central Driveway will be classified as industrial use. All driveways are two-way. This assessment is summarized in **Table 3.4**.

Table 3.4: Driveway Widths – Summary of Findings

Driveway	Recommended Driveway Width per TAC Table 8.9.1	Distance Provided	Finding
North Driveway	7.2 – 12.0 metres	10 metres	Consistent with TAC
Central Driveway	9.0 – 15.0 metres	15 metres	Consistent with TAC
South Driveway	7.2 – 12.0 metres	10 metres	Consistent with TAC

3.1.6 Spacing of Adjacent Driveways

In addition to driveway corner clearances from adjacent intersections, as documented in TAC Section 8.9.8, minimum spacings between adjacent driveways are also recommended. The recommended spacing between adjacent industrial driveways is summarized in **Table 3.5**, along with the spacing provided between driveways within the Project site as well as to adjacent properties. Note that there are no adjacent driveways along Scott Road to the south of the Project site prior to the Tannery Road / 104 Avenue intersection; the development currently under construction at 10472 Scott Road will have a driveway fronting 104 Avenue instead of Scott Road.

Table 3.5: Spacing of Adjacent Driveways – Summary of Findings

Driveway Pairs	Recommended Minimum Driveway Spacing per TAC Section 8.9.8	Spacing Provided	Finding
North Access to North Adjacent Driveway (10648/10674 Scott Road)	3 metres, but ideally larger for high volume driveways	77 metres	Consistent with TAC
North Access to Central Access	3 metres, but ideally larger for high volume driveways	70 metres	Consistent with TAC
Central Access to South Access	3 metres, but ideally larger for high volume driveways	61 metres	Consistent with TAC

For reference, Section 6.5.1 of the City of Surrey *Design Criteria Manual* requires a minimum driveway spacing of 50 metres along arterial streets; the proposed layout is consistent with this requirement.

3.1.7 Driveway Access Density

Desirable maximum driveway access density (or the number of driveways along a given property frontage length) is discussed in TAC Section 8.9.8. Specifically, TAC Table 8.9.1 outlines an appropriate number of driveways based on the frontage length being within a given range. The overall frontage for the 10566, 10582 & 10620/10626 Scott Road Project site is 310 metres. This assessment is summarized in **Table 3.6**.

Table 3.6: Driveway Access Density – Summary of Findings

Provided Frontage Length	Maximum Number of Driveways per TAC Table 8.9.2	Number of Driveways Provided	Finding
302 metres	4 or more driveways	3 driveways	Consistent with TAC

3.1.8 Spacing to Driveways on Opposite Side of the Road

Per TAC Section 8.9.9, on moderate to high volumes undivided arterial roads fronted by moderate to high volume driveways, the spacing of driveways on opposites sides of the road is a design consideration.

For reference, while the east side of Scott Road, both currently and proposed for the future as part of the Project, only features three driveways along a 302-metre frontage length, the opposite (i.e. west) side of Scott Road currently features seven driveways along this same length of roadway. Positioning the three driveways proposed as part of the Project to avoid overlapping with left turn movements at all seven driveways on the opposite side of the Scott Road is not possible. In effect, the future condition with the Project in place will be similar to the current condition where left-turn movements from the two-way left turn lane into the three existing driveways on the east side of Scott Road can conflict with left-turn movements from the two-way left turn lane into the seven existing driveways on the west side of Scott Road.

While the west side of Scott Road features a high driveway access density, it is noted that all of these driveways service various automotive businesses with relatively small parking lots; thus, these driveways have relatively small volumes of vehicles making left turns in from Scott Road that could potentially conflict with vehicles making left turns in to the Project site via one of the three proposed driveways. Specifically, as shown previously in **Table 2.4**, over the course of a seven-hour count, the five most significant driveways on the west side of Scott Road averaged no more than three left-turns in per hour.

3.1.9 Clear Throat Length

Ideally, driveways should have a minimum throat (the distance between the roadway on one side of the driveway and internal circulation area on the other side) in order to operate efficiently and without impacting other traffic on either the roadway or within the development site. Guidance for clear throat lengths is provided in TAC Section 8.9.10 and are summarized in in **Table 3.7** below. Note that all minimum throat length values correspond to the Light Industrial Land use within TAC Table 8.9.3.

Table 3.7: Clear Throat Length – Summary of Findings

Driveway	Development Size Served	Minimum Throat Length per TAC Table 8.9.3	Throat Length Provided	Finding	Supplementary Recommendations
North Driveway	150,690 ft ² / 10,698 m ² (services North Building only)	30 metres	10.8 metres	Not consistent with TAC	See below
Central Driveway	388,235 ft ² / 35,986 m ² (services both buildings)	30 metres	12.6 metres	Not consistent with TAC	See below
South Driveway	236,545 ft ² / 22,007 m ² (services South Building only)	30 metres	13.9 metres	Not consistent with TAC	See below

As shown, all three driveways have a narrower clear throat length than TAC recommendations. However, providing the recommended 30 metre clear throat lengths would impact the sizing of the warehousing and result

in diminished overall floor area. Therefore, the following measures are recommended to mitigate potential issues related to the narrower throat lengths:

- For the North Driveway and South Driveway, provide clear signage to ensure that large trucks destined to the North Building or South Building do not inadvertently use these entrances. The clear throat lengths at these two driveways are adequate for smaller vehicles such as passenger vehicles and smaller delivery trucks (i.e. MSU).
- For the Central Driveway, the key issue created by the narrow clear throat length is that an inbound truck will need to stop at the internal intersection and not be able to proceed into the truck loading dock aisle. If this occurs, given that the provided throat length is 12.6 metres and a WB-20 is 22.7 metres, then the rear of the trailer will protrude back onto the road right of way and obstruct the sidewalk, bicycle lane and curbside general-purpose lane. To reduce the risk of this occurring, it is recommended that the internal circulation road be provided with stop signs and stop bars at the north and south approaches to this internal intersection in order to guarantee that inbound trucks have right of way and will not be obstructed by traffic on the frontage road. Noting that the frontage road is not anticipated to be heavily used, with this right-of-way in place for the inbound movements on the Central Driveway, the frontage road itself can be used to accommodate inbound trucks that are bound for the truck loading dock aisle. This configuration is shown in **Figure 3.3**. In the event that issues persist, then “do not block intersection” signage and associated pavement marking hatching could also be installed.

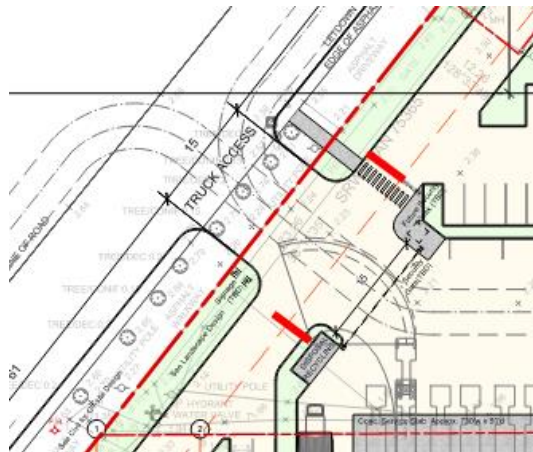


Figure 3.3: Central Driveway Stop Bar Placement (Shown in Red)

For reference, Section 6.5.5.3 of the City of Surrey *Design Criteria Manual* also considered driveway throat lengths (referred to in the manual as Queuing Storage). For the North and South Driveways, the queuing storage requirement is a function of the adjacent parking lot sizing. Both driveways are within the 100-150 parking stall range, which requires a queuing length of 12 metres. The North Driveway is slightly lower than this value (10.8 metres) while the South Driveway is compliant (13.9 metres). While the North Driveway is slightly shorter than requirements, it is noted that forecast peak parking demand (described further in Section 3.3) for this Driveway is below 100 vehicles, which would result in actual parking volumes being within the 0-100 range, which requires only six metres of queueing length. For the Central Driveway, a minimum spacing of 24 metres (or one truck length) is required; while the proposed layout is lower than this value, the proposed signage and pavement marking strategy described above is intended to mitigate this issue.

3.1.10 Gradients

Per TAC Section 8.4.8, it is recommended that gradients be kept as flat as reasonable in order to help ensure that minimum stopping sight distances are obtained. It is estimated that the mainline gradient along Scott Road is less than 1% in the vicinity of the Project driveways. Gradients at the three Project driveways will be confirmed through subsequent design, but are recommended to be as flat as possible while allowing for tie-in, drainage, etc. (typically, this would be a 1% downhill grade towards the roadway)

3.1.11 Sight Distances

Intersection sight distances were reviewed at each of the three driveway accesses in and out of the Project site based on TAC Section 9.9.2.3. The resultant findings are summarized in **Table 3.8** below. Note that as described above, grades on Scott Road are estimated to be less than 1%, and therefore no grade-related adjustments to the time gap are required. However, adjustments are required for Scott Road having multiple lanes to cross, and therefore the time gap is adjusted to reflect two additional through lanes as well as the two-way left turn lane.

Table 3.8: Intersection Sight Distance – Summary of Findings

Driveway	Vehicle Type	Intersection Control Case	Vertex	Time Gap (t_g)	Major Road Design Speed (V_{major})	Intersection Sight Distance	Sight Distance Provided	Finding
North Driveway	Passenger car	Case B1: Left turn from the Minor Road	4.4 metres from Scott Road edge of pavement	7.5 seconds + $0.5 * 3$ lanes = 9.0 seconds	60 km/h	150 metres	>150 metres	Consistent with TAC
		Case B2: Right turn from the Minor Road	4.4 metres from Scott Road edge of pavement	6.5 seconds	60 km/h	150 metres	>150 metres	Consistent with TAC
Central Driveway	Combination truck (WB-20)	Case B1: Left turn from the Minor Road	4.4 metres from Scott Road edge of pavement	11.5 seconds + $0.7 * 3$ lanes = 13.6 seconds	60 km/h	227 metres (for design check purposes, rounded up to 230 metres)	>230 metres	Consistent with TAC
		Case B2: Right turn from the Minor Road	4.4 metres from Scott Road edge of pavement	10.5 seconds	60 km/h	227 metres (for design check purposes, rounded up to 230 metres)	>230 metres	Consistent with TAC
South Driveway	Passenger car	Case B1: Left turn from the Minor Road	4.4 metres from Scott Road edge of pavement	7.5 seconds + $0.5 * 3$ lanes = 9.0 seconds	60 km/h	150 metres	>150 metres	Consistent with TAC
		Case B2: Right turn from the Minor Road	4.4 metres from Scott Road edge of pavement	6.5 seconds	60 km/h	150 metres	>150 metres	Consistent with TAC

The resultant sight triangles are also shown in **Figure 3.4**.

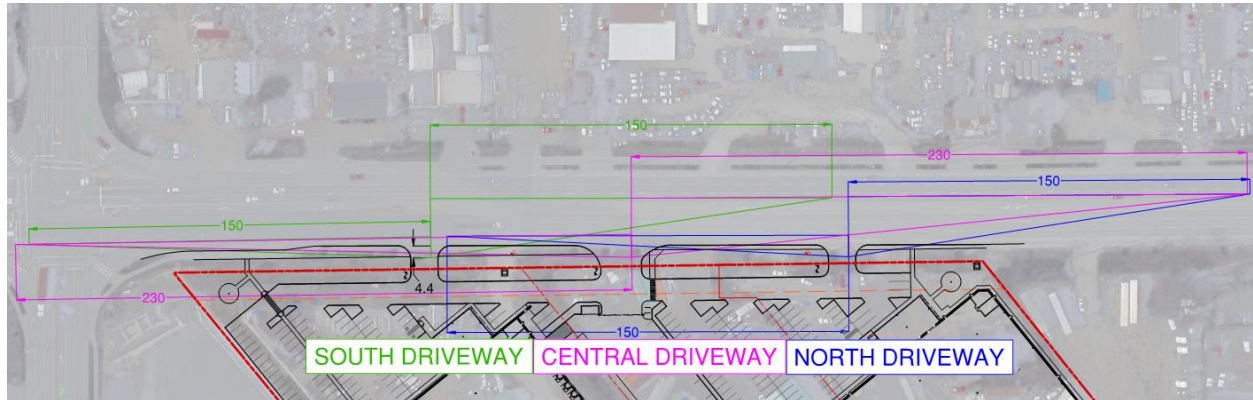


Figure 3.4: Sight Triangles (Note: Sight Triangles Colour-Coded by Driveway)

As shown, intersection sight distances are adequate, subject to ensuring that any vegetation within 4.4 metres of the road edge along the site frontage is maintained to be low to the ground (at most, one metre in height given that passenger car drivers typically have an eye height of 1.05 metres above pavement and passenger vehicles can have a height of 1.30 metres).

It is acknowledged that a westbound right-turning vehicle from Tannery Road onto Scott Road will be within the intersection sight distance for the South and Central Driveways. However, the distance from this right-turn and the driveways exceeds the Stopping Sight Distance for a 60 km/h roadway (85 metres, per TAC Table 2.5.2). It is noted that this approach is also compliant with City of Surrey *Design Criteria Manual* Section 6.4.7.

3.1.12 Scott Road Modifications

At the South Driveway, vehicles making a westbound left turn out of the site will conflict with median gore markings provided upstream of the concrete median provided for the southbound left turn lane, as shown in **Figure 3.5**, and therefore these pavement markings will need to be removed. While the median gore markings do not conflict with the nearby existing driveway (Driveway 1), the South Driveway is located slightly further south of Driveway 1 and therefore conflicts. However, it is noted that the South Driveway is intended to be used only by smaller vehicles, the swept path of the outbound vehicles will not conflict with the end of the concrete median.

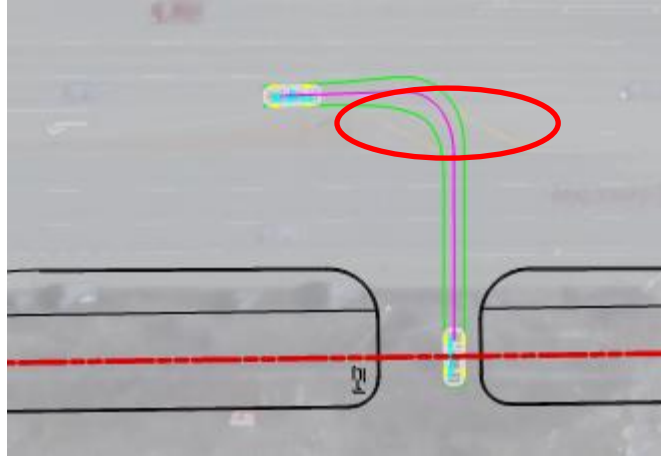


Figure 3.5: South Driveway Westbound Left Turn Median Gore Markings

This median gore marking may have originally been installed to discourage left-in movements to Driveway 8 on the opposite (west) side of Scott Road. However, traffic counts completed as part of this study show that volumes into this driveway are relatively low to begin with (12 vehicles over a 7 hour period), and 3 of those 12 vehicles were observed to already make a left-in movement regardless of the presence of the pavement markings.

3.2 Internal Site Circulation Considerations

Internal site layout was reviewed from the perspective of ensuring that adequate room was provided for truck circulation in and out of loading bays.

The swept path for a truck reversing into a loading bay is shown in **Figure 3.6** below. As shown, adequate clearance is provided, with the caveat that the adjacent loading bay must only have a trailer present (i.e. the reversing manoeuvre would conflict with the tractor).

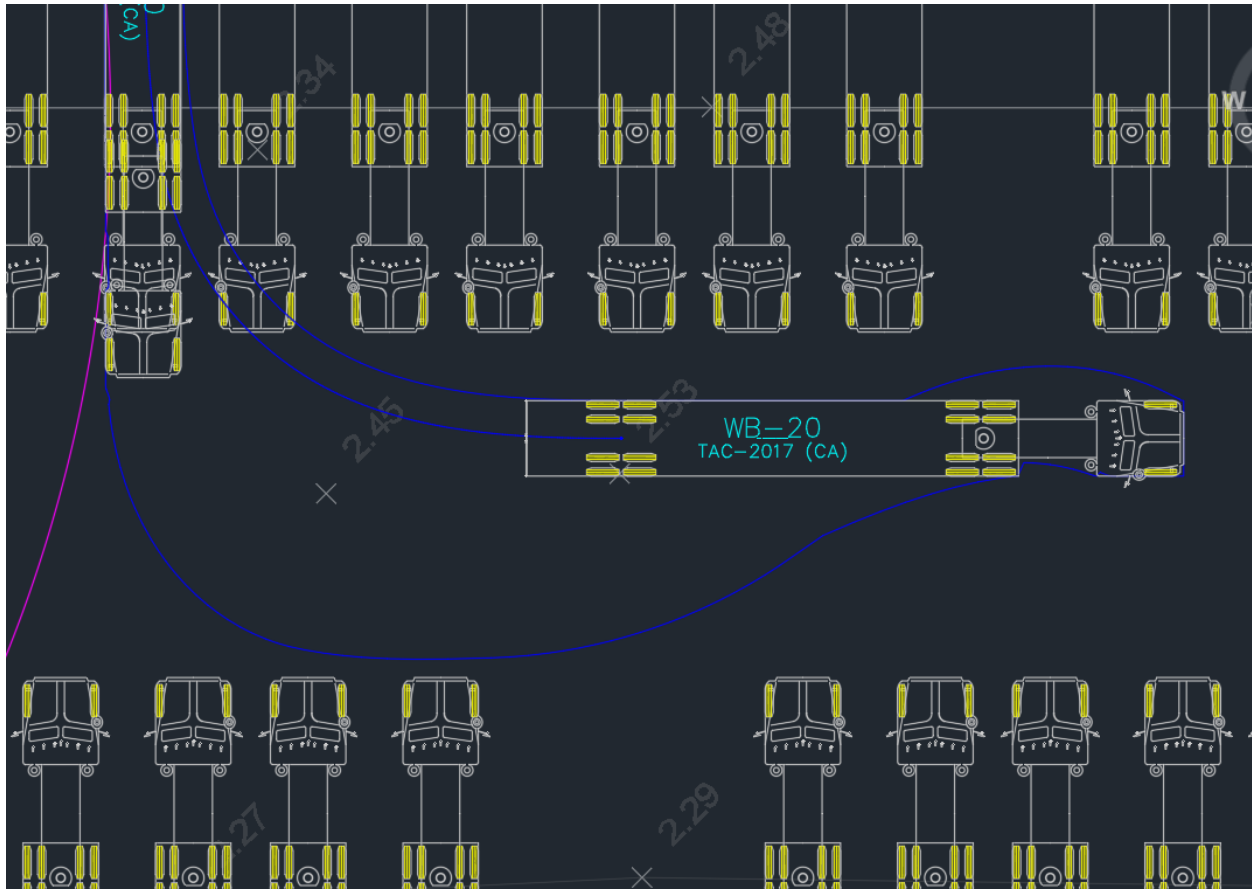


Figure 3.6: Swept Path of Truck Reversing-In Manoeuvre

The swept path for a truck pulling out of a loading bay is shown in **Figure 3.7** below. As shown, although tight, sufficient clearance is provided, with the caveat that the adjacent loading bay must only have a trailer present (i.e. the reversing manoeuvre would conflict if a tractor was also present). It is acknowledged that the swept path analysis was conducted under a conservative scenario wherein trucks docked on the opposite side of the loading dock aisle consist of both a trailer and a tractor. In practice, tractors are often only present when trucks are being picked up or dropped off, and do not necessarily remain with the trailer. Therefore, under the more common scenario wherein only trailers are present on the opposite side of the loading dock, additional maneuverability would be provided. In other common circumstances, such as if either the outbound truck or the truck on the opposite side of the aisle are smaller than a WB-20 (e.g. one of these trucks was pulling a shorter 40 foot marine container instead), then additional clearance is also provided.

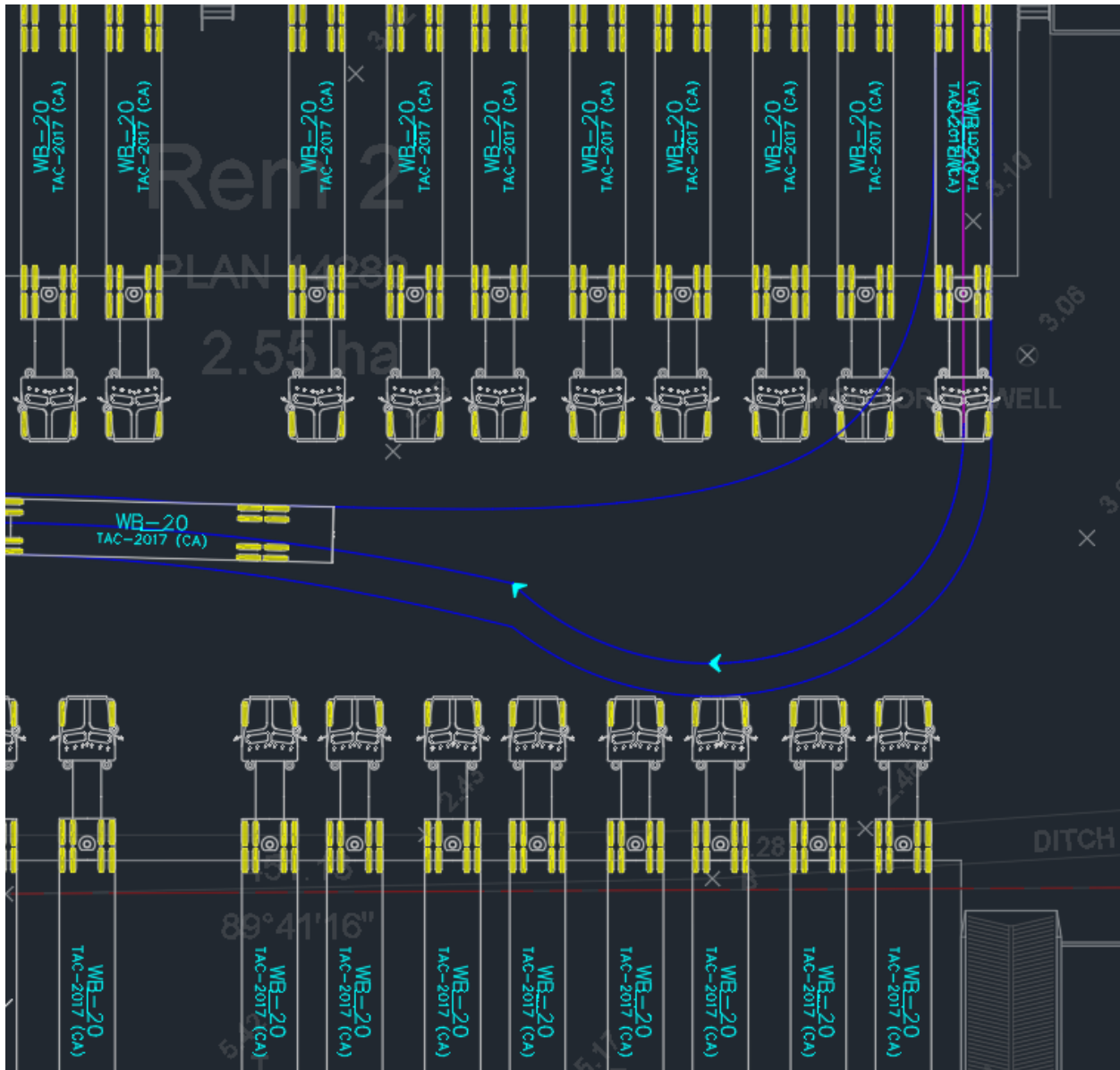


Figure 3.7: Swept Path of Truck Pulling-Out Manoeuvre

3.3 Site Parking Provisions

Passenger vehicle parking demand for the proposed development was estimated using the Institute of Transportation Engineers *Parking Generation Manual, 4th Edition*, and compared against proposed parking provisions. The resultant findings are summarized in **Table 3.9** and **3.10**. As shown, sufficient parking supply is provided.

Table 3.9: ITE Trip Generation Manual Parking Demand per Floor Space

Land Use Type	# Floors	Per	Land Use Code	Average Rate	Notes
Warehousing	n/a	1,000 ft ²	150	0.41 vehicles per 1000 ft ²	Peak periods for parking demand are 09:00 – 12:00 and 14:00 – 15:00. 85 th percentile parking demand is 0.67 vehicles per 1000 ft ²

Table 3.10: Site Parking Provisions – Summary of Findings

Type	Independent Variable (Gross Floor Area)	Forecasted Parking Demand	Parking Provided	Finding	Notes
North Building	150,690 ft ²	62 vehicles	113 stalls (primary lot) + 6 stalls (secondary lot) = 119 stalls (total)	Parking supply exceeds anticipated demand.	85 th percentile sensitivity scenario parking demand is 101 vehicles; available parking supply would still exceed anticipated demand.
South Building	236,545 ft ²	97 vehicles	97 stalls (primary lot) + 70 stalls (secondary lot) = 167 stalls (total)	Parking supply exceeds anticipated demand.	85 th percentile sensitivity scenario parking demand is 159 vehicles; available parking supply would still exceed anticipated demand.
Development Total	388,235 ft ²	159 vehicles	286 stalls	Parking supply exceeds anticipated demand.	85 th percentile sensitivity scenario parking demand is 260 vehicles; available parking supply would still exceed anticipated demand.

4. SUMMARY OF FINDINGS

Key study findings with respect to traffic operations include:

- Relative to existing (2021) conditions, forecast future (2035) baseline traffic demands will increase as a result of both overall growth in demand as well as road network changes associated with the Pattullo Bridge Replacement Project. While the Scott Road and Old Yale Road intersection will continue to operate reasonably well in the future, the Scott Road and Tannery Road intersection as well as the two Highway 17 Tannery Road Interchange ramp terminal intersections will all see degraded performance.
- The overall impact of the Project on traffic operations at nearby signalized intersections is anticipated to be very minor as the volumes generated by the Project are very small in comparison to the forecast future background traffic demands.
- Some operational challenges are anticipated with respect to left-turn access out of the Project driveways:
 - For passenger vehicles making westbound left-turn movements out of the South Driveway, due to queues from the Scott Road / Tannery Road intersection resulting in a lack of space availability in the southbound receiving lanes on Scott Road. While this finding is based on a conservative assessment of traffic operations, in practice, at times passenger vehicles making this movement may face extended delays, may need to make a westbound right turn instead and use a slightly more circuitous route to access their destination, or may choose to use the internal frontage road to access the North Driveway and make a westbound left turn from there instead).
 - For trucks making westbound left-turn movements out of the Central Driveway in the PM, due to higher truck volumes and a lack of gaps in the northbound traffic stream. While this finding is based on a conservative assessment of traffic operations, in practice, at times trucks making this movement may face extended delays or may need to make a westbound right turn instead and use a slightly more circuitous route to access their destination. Note that while this consideration may affect internal queuing and site operations, it is not anticipated to impact overall operations along Scott Road.

Key study findings with respect to site layout and geometric review include:

- Overall, the Project site interface with the adjacent road network meets most national (and where applicable, municipal) design guidelines. However, several design considerations were identified for incorporation into subsequent design development:
 - Providing signage to ensure right-of-way for inbound trucks at the Central Driveway as a means to mitigate operational concerns related to a narrower clear throat length (as described in Section 3.1.8).
 - Ensuring that landscaping along the site frontage does not compromise sightlines from the three Project driveways (as described in Section 3.1.10).
 - Removal of Scott Road median gore markings near South Driveway (as described in Section 3.1.11).
- The internal layout of the site provides adequate clearances with respect to facilitating truck maneuverability.
- Employee vehicle parking capacity is sufficient to meet anticipated demand.

APPENDIX A

Synchro Intersection Analysis Outputs

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	148	136	98	388	86	224	935	52	65	583	301
Future Volume (vph)	107	148	136	98	388	86	224	935	52	65	583	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		85.0	65.0		0.0	115.0		110.0	85.0		85.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.930			0.973				0.850			0.850
Flt Protected	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (prot)	1088	2800	0	1770	3328	0	1517	4940	1468	1703	4893	1357
Flt Permitted	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (perm)	1088	2800	0	1770	3328	0	1517	4940	1468	1703	4893	1357
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168			21				175			354
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			234.1			219.3			163.7	
Travel Time (s)		27.2			16.9			15.8			11.8	
Peak Hour Factor	0.79	0.82	0.81	0.84	0.83	0.83	0.89	0.85	0.93	0.96	0.93	0.85
Heavy Vehicles (%)	51%	4%	23%	2%	5%	8%	19%	5%	10%	6%	6%	19%
Adj. Flow (vph)	135	180	168	117	467	104	252	1100	56	68	627	354
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	121	362	0	117	571	0	252	1100	56	68	627	354
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	0.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									6			2
Detector Phase	4	4		3	3		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	9.0	9.0		9.0	9.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	33.0	33.0		16.0	16.0		14.0	28.0	28.0	14.0	28.0	28.0
Total Split (s)	21.0	21.0		26.0	26.0		25.0	47.0	47.0	18.0	40.0	40.0
Total Split (%)	18.8%	18.8%		23.2%	23.2%		22.3%	42.0%	42.0%	16.1%	35.7%	35.7%
Maximum Green (s)	14.0	14.0		19.0	19.0		18.0	40.0	40.0	11.0	33.0	33.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-2.0	-2.0	-2.0	0.0	-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	4.0	4.0	5.0	4.0	4.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)	4.0	4.0						7.0	7.0		7.0	7.0
Flash Dont Walk (s)	22.0	22.0						14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)	0	0						0	0		0	0
Act Effct Green (s)	16.5	16.5		23.0	23.0		26.3	45.2	45.2	10.2	28.2	26.2
Actuated g/C Ratio	0.15	0.15		0.21	0.21		0.23	0.40	0.40	0.09	0.25	0.23
v/c Ratio	0.76	0.65		0.32	0.82		0.71	0.55	0.08	0.44	0.51	0.60
Control Delay	74.4	29.7		41.1	51.8		51.6	28.0	0.2	69.8	36.4	13.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.4	29.7		41.1	51.8		51.6	28.0	0.2	69.8	36.4	13.1
LOS	E	C		D	D		D	C	A	E	D	B
Approach Delay		40.9			50.0			31.1			30.7	
Approach LOS		D			D			C			C	
90th %ile Green (s)	14.0	14.0		19.0	19.0		21.5	40.0	40.0	11.0	29.5	29.5
90th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	14.0	14.0		19.0	19.0		25.4	40.0	40.0	11.0	25.6	25.6
70th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	14.0	14.0		19.0	19.0		27.9	40.0	40.0	11.0	23.1	23.1
50th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	14.2	14.2		23.5	23.5		25.7	36.1	36.1	10.2	20.6	20.6
30th %ile Term Code	Max	Max		Gap	Gap		Gap	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	11.5	11.5		19.4	19.4		21.1	60.1	60.1	0.0	32.0	32.0
10th %ile Term Code	Gap	Gap		Gap	Gap		Gap	Coord	Coord	Skip	Coord	Coord
Queue Length 50th (m)	29.5	22.8		23.4	65.0		51.1	73.7	0.0	12.6	28.9	0.0
Queue Length 95th (m)	#49.8	33.9		38.1	78.0		#94.5	82.4	0.0	32.4	54.6	39.8
Internal Link Dist (m)		353.6			210.1			195.3			139.7	
Turn Bay Length (m)				65.0			115.0		110.0	85.0		85.0
Base Capacity (vph)	165	568		363	699		356	2029	705	167	1529	649
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.64		0.32	0.82		0.71	0.54	0.08	0.41	0.41	0.55
Intersection Summary												

Lanes, Volumes, Timings

1095: Scott Road & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 112

Offset: 32 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 35.9

Intersection LOS: D

Intersection Capacity Utilization 61.7%

ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1095: Scott Road & Tannery Road



Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	48	82	105	110	106	47	1063	69	34	798	159
Future Volume (vph)	90	48	82	105	110	106	47	1063	69	34	798	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	30.0		25.0	80.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.911				0.850		0.989			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1421	1552	0	1656	1727	1509	1656	4756	0	1626	4641	0
Flt Permitted	0.608			0.516			0.950			0.950		
Satd. Flow (perm)	910	1552	0	899	1727	1509	1656	4756	0	1626	4641	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		84				166		11			49	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		470.5			207.6			440.4			488.8	
Travel Time (s)		33.9			14.9			31.7			35.2	
Peak Hour Factor	0.75	0.71	0.82	0.75	0.89	0.68	0.51	0.90	0.75	0.77	0.92	0.81
Heavy Vehicles (%)	27%	2%	18%	9%	10%	7%	9%	7%	19%	11%	9%	7%
Adj. Flow (vph)	120	68	100	140	124	156	92	1181	92	44	867	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	168	0	140	124	156	92	1273	0	44	1063	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Existing AM Peak 7:30 am 12/31/2011 Existing AM Peak
MDA

Synchro 10 Report
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Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8			4		4						
Detector Phase	8	8		4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	12.0	23.0		12.0	23.0	
Total Split (s)	53.0	53.0		53.0	53.0	53.0	17.0	38.0		21.0	42.0	
Total Split (%)	47.3%	47.3%		47.3%	47.3%	47.3%	15.2%	33.9%		18.8%	37.5%	
Maximum Green (s)	46.0	46.0		46.0	46.0	46.0	10.0	32.0		14.0	36.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	2.0		3.0	2.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	-3.0	-3.0	-2.0		-3.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0		10.0			10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)	24.3	24.3		24.3	24.3	24.3	15.4	65.4		13.0	63.3	
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.14	0.58		0.12	0.57	
v/c Ratio	0.61	0.42		0.72	0.33	0.34	0.40	0.46		0.23	0.40	
Control Delay	51.5	20.5		60.1	37.6	6.1	65.8	6.7		47.0	16.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	51.5	20.5		60.1	37.6	6.1	65.8	6.7		47.0	16.1	
LOS	D	C		E	D	A	E	A		D	B	
Approach Delay		33.4			33.4			10.7			17.3	
Approach LOS		C			C			B			B	
90th %ile Green (s)	31.1	31.1		31.1	31.1	31.1	16.9	46.9		14.0	44.0	
90th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Hold	Coord	
70th %ile Green (s)	24.8	24.8		24.8	24.8	24.8	14.3	56.6		10.6	52.9	
70th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Gap	Coord	
50th %ile Green (s)	21.1	21.1		21.1	21.1	21.1	12.4	61.6		9.3	58.5	
50th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Gap	Coord	
30th %ile Green (s)	17.3	17.3		17.3	17.3	17.3	10.6	65.0		9.7	64.1	
30th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Hold	Coord	
10th %ile Green (s)	12.0	12.0		12.0	12.0	12.0	0.0	87.0		0.0	87.0	
10th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Skip	Coord		Skip	Coord	
Queue Length 50th (m)	25.2	16.2		30.2	24.3	0.0	22.1	25.3		9.4	48.3	
Queue Length 95th (m)	32.7	21.0		38.0	36.7	3.1	19.6	31.8		17.1	78.1	
Internal Link Dist (m)		446.5			183.6			416.4			464.8	
Turn Bay Length (m)	35.0			30.0		25.0	80.0			45.0		
Base Capacity (vph)	398	726		393	755	753	234	2782		246	2644	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.30	0.23		0.36	0.16	0.21	0.39	0.46		0.18	0.40	
Intersection Summary												

Lanes, Volumes, Timings

1101: Scott Road & Old Yale Rd

09/22/2021

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 112

Offset: 103 (92%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 18.1

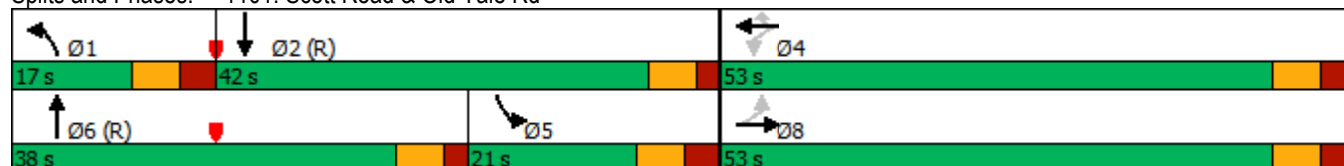
Intersection LOS: B

Intersection Capacity Utilization 53.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1101: Scott Road & Old Yale Rd



Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  				 			
Traffic Volume (vph)	43	220	0	0	820	96	121	137	160	0	0	0
Future Volume (vph)	43	220	0	0	820	96	121	137	160	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		60.0	0.0		100.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.976				
Satd. Flow (prot)	1195	2888	0	0	4550	1380	0	1519	2450	0	0	0
Flt Permitted	0.950							0.976				
Satd. Flow (perm)	1195	2888	0	0	4550	1380	0	1519	2450	0	0	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						112						
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		89.3			377.6			402.7			412.3	
Travel Time (s)		6.4			27.2			29.0			29.7	
Peak Hour Factor	0.83	0.74	0.95	0.95	0.94	0.86	0.76	0.80	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	51%	25%	0%	0%	14%	17%	33%	12%	16%	0%	0%	0%
Adj. Flow (vph)	52	297	0	0	872	112	159	171	176	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	297	0	0	872	112	0	330	176	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (m)	2.0	10.0			10.0	2.0	2.0	10.0	2.0			
Trailing Detector (m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Position(m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Size(m)	2.0	0.6			0.6	2.0	2.0	0.6	2.0			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	1	6			2			4				

Existing AM Peak 7:30 am 12/31/2011 Existing AM Peak
MDA

Synchro 10 Report
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Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						2	4		4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	6.0	10.0			10.0	10.0	7.0	7.0	7.0			
Minimum Split (s)	11.6	24.0			19.0	19.0	12.3	12.3	12.3			
Total Split (s)	14.6	57.0			45.0	45.0	33.3	33.3	33.3			
Total Split (%)	15.7%	61.4%			48.4%	48.4%	35.8%	35.8%	35.8%			
Maximum Green (s)	9.0	50.0			38.0	38.0	28.0	28.0	28.0			
Yellow Time (s)	4.5	5.0			5.0	5.0	4.3	4.3	4.3			
All-Red Time (s)	1.1	2.0			2.0	2.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	5.6	7.0			7.0	7.0		5.3	5.3			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	Min			Min	Min	None	None	None			
Walk Time (s)		10.0			7.0	7.0						
Flash Dont Walk (s)		7.0			5.0	5.0						
Pedestrian Calls (#/hr)		0			0	0						
Act Effct Green (s)	8.4	25.8			18.9	18.9		18.8	18.8			
Actuated g/C Ratio	0.14	0.44			0.32	0.32		0.32	0.32			
v/c Ratio	0.31	0.23			0.59	0.22		0.68	0.22			
Control Delay	35.5	10.4			20.3	5.7		27.9	18.1			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	35.5	10.4			20.3	5.7		27.9	18.1			
LOS	D	B			C	A		C	B			
Approach Delay		14.1			18.6			24.5				
Approach LOS		B			B			C				
90th %ile Green (s)	9.0	41.5			26.9	26.9	28.0	28.0	28.0			
90th %ile Term Code	Max	Hold			Gap	Gap	Max	Max	Max			
70th %ile Green (s)	9.0	37.6			23.0	23.0	23.9	23.9	23.9			
70th %ile Term Code	Max	Hold			Gap	Gap	Gap	Gap	Gap			
50th %ile Green (s)	8.5	34.3			20.2	20.2	19.8	19.8	19.8			
50th %ile Term Code	Gap	Hold			Gap	Gap	Gap	Gap	Gap			
30th %ile Green (s)	0.0	13.7			13.7	13.7	13.0	13.0	13.0			
30th %ile Term Code	Skip	Hold			Gap	Gap	Gap	Gap	Gap			
10th %ile Green (s)	0.0	10.3			10.3	10.3	9.9	9.9	9.9			
10th %ile Term Code	Skip	Hold			Gap	Gap	Gap	Gap	Gap			
Queue Length 50th (m)	6.3	10.1			35.3	0.0		38.1	9.7			
Queue Length 95th (m)	17.8	16.4			56.0	9.6		62.0	19.7			
Internal Link Dist (m)		65.3			353.6			378.7			388.3	
Turn Bay Length (m)						60.0			100.0			
Base Capacity (vph)	208	2396			3208	1006		827	1334			
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.25	0.12			0.27	0.11		0.40	0.13			
Intersection Summary												

Lanes, Volumes, Timings

2658: SFPR EB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 92.9

Actuated Cycle Length: 58.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 19.4

Intersection LOS: B

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

90th %ile Actuated Cycle: 81.8

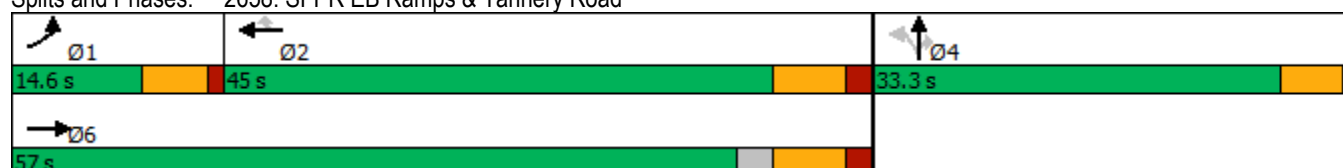
70th %ile Actuated Cycle: 73.8

50th %ile Actuated Cycle: 66.4

30th %ile Actuated Cycle: 39

10th %ile Actuated Cycle: 32.5

Splits and Phases: 2658: SFPR EB Ramps & Tannery Road



Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑						↑	↑
Traffic Volume (vph)	0	120	1	699	242	0	0	0	0	165	0	109
Future Volume (vph)	0	120	1	699	242	0	0	0	0	165	0	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		50.0
Storage Lanes	0		0	2		0	0		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	2517	0	3019	1610	0	0	0	0	0	1517	1214
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	2517	0	3019	1610	0	0	0	0	0	1517	1214
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2										160
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.5			89.3			127.2			500.7	
Travel Time (s)		14.8			6.4			9.2			36.1	
Peak Hour Factor	0.95	0.71	0.25	0.94	0.82	0.95	0.95	0.95	0.95	0.83	0.95	0.68
Heavy Vehicles (%)	0%	44%	0%	16%	18%	0%	0%	0%	0%	19%	0%	33%
Adj. Flow (vph)	0	169	4	744	295	0	0	0	0	199	0	160
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	744	295	0	0	0	0	0	199	160
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2		1	2					1	2	1
Detector Template		Thru		Left	Thru					Left	Thru	Right
Leading Detector (m)		10.0		2.0	10.0					2.0	10.0	2.0
Trailing Detector (m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Position(m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Size(m)		0.6		2.0	0.6					2.0	0.6	2.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4						9.4	
Detector 2 Size(m)		0.6			0.6						0.6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type		NA		Prot	NA					Perm	NA	Perm
Protected Phases		6		5	2						4	

Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										4		4
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		10.0		6.0	10.0					7.0	7.0	7.0
Minimum Split (s)		15.3		10.2	17.3					12.1	12.1	12.1
Total Split (s)		18.3		51.2	70.3					20.1	20.1	20.1
Total Split (%)		20.2%		56.6%	77.8%					22.2%	22.2%	22.2%
Maximum Green (s)		13.0		47.0	65.0					15.0	15.0	15.0
Yellow Time (s)		4.3		3.5	4.3					4.1	4.1	4.1
All-Red Time (s)		1.0		0.7	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0						0.0	0.0
Total Lost Time (s)		5.3		4.2	5.3						5.1	5.1
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		Min		None	Min					None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					5.0							
Pedestrian Calls (#/hr)					0							
Act Effect Green (s)		10.8		20.0	35.1						12.9	12.9
Actuated g/C Ratio		0.18		0.34	0.60						0.22	0.22
v/c Ratio		0.37		0.72	0.31						0.59	0.41
Control Delay		25.4		21.6	6.9						30.3	8.1
Queue Delay		0.0		0.0	0.1						0.0	0.0
Total Delay		25.4		21.6	7.0						30.3	8.1
LOS		C		C	A						C	A
Approach Delay		25.4			17.4						20.4	
Approach LOS		C			B						C	
90th %ile Green (s)		12.9		27.6	44.7					15.0	15.0	15.0
90th %ile Term Code		Gap		Gap	Hold					Max	Max	Max
70th %ile Green (s)		10.7		23.6	38.5					15.0	15.0	15.0
70th %ile Term Code		Gap		Gap	Hold					Max	Max	Max
50th %ile Green (s)		10.0		19.6	33.8					14.1	14.1	14.1
50th %ile Term Code		Min		Gap	Hold					Gap	Gap	Gap
30th %ile Green (s)		10.0		17.1	31.3					11.7	11.7	11.7
30th %ile Term Code		Min		Gap	Hold					Gap	Gap	Gap
10th %ile Green (s)		10.0		13.5	27.7					9.2	9.2	9.2
10th %ile Term Code		Min		Gap	Hold					Gap	Gap	Gap
Queue Length 50th (m)		9.1		37.0	14.9						19.4	0.0
Queue Length 95th (m)		15.2		58.8	23.6						#46.6	5.7
Internal Link Dist (m)		181.5			65.3			103.2			476.7	
Turn Bay Length (m)												50.0
Base Capacity (vph)		605		2467	1586						395	435
Starvation Cap Reductn		0		94	386						0	0
Spillback Cap Reductn		0		0	0						0	0
Storage Cap Reductn		0		0	0						0	0
Reduced v/c Ratio		0.29		0.31	0.25						0.50	0.37
Intersection Summary												

Lanes, Volumes, Timings

2660: SFPR WB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 90.4

Actuated Cycle Length: 58.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 19.0

Intersection LOS: B

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

90th %ile Actuated Cycle: 70.1

70th %ile Actuated Cycle: 63.9

50th %ile Actuated Cycle: 58.3

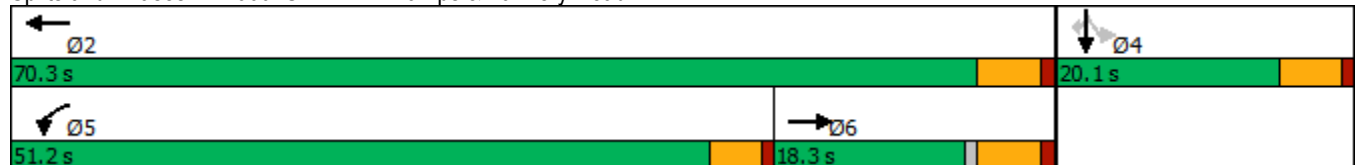
30th %ile Actuated Cycle: 53.4

10th %ile Actuated Cycle: 47.3

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2660: SFPR WB Ramps & Tannery Road



Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	1	1125	3	0	946
Future Vol, veh/h	3	1	1125	3	0	946
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	25	85	75	92	93
Heavy Vehicles, %	67	100	5	0	0	6
Mvmt Flow	8	4	1324	4	0	1017

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1733	664	0
Stage 1	1326	-	-
Stage 2	407	-	-
Critical Hdwy	7.04	9.1	-
Critical Hdwy Stg 1	7.94	-	-
Critical Hdwy Stg 2	7.34	-	-
Follow-up Hdwy	4.47	4.9	-
Pot Cap-1 Maneuver	66	208	-
Stage 1	88	-	-
Stage 2	447	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	66	208	-
Mov Cap-2 Maneuver	79	-	-
Stage 1	88	-	-
Stage 2	447	-	-

Approach	WB	NB	SB
HCM Control Delay, s	45.8	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	100	276
HCM Lane V/C Ratio	-	-	0.119	-
HCM Control Delay (s)	-	-	45.8	0
HCM Lane LOS	-	-	E	A
HCM 95th %tile Q(veh)	-	-	0.4	0

HCM 6th TWSC
3: Scott Road & Driveway 2 (Central)

09/22/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	1	1117	9	2	935
Future Vol, veh/h	11	1	1117	9	2	935
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	25	85	75	50	93
Heavy Vehicles, %	82	100	5	78	0	6
Mvmt Flow	12	4	1314	12	4	1005

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1730	663	0	0	1326
Stage 1	1320	-	-	-	-
Stage 2	410	-	-	-	-
Critical Hdwy	7.34	9.1	-	-	5.3
Critical Hdwy Stg 1	8.24	-	-	-	-
Critical Hdwy Stg 2	7.64	-	-	-	-
Follow-up Hdwy	4.62	4.9	-	-	3.1
Pot Cap-1 Maneuver	57	209	-	-	277
Stage 1	79	-	-	-	-
Stage 2	420	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	56	209	-	-	277
Mov Cap-2 Maneuver	71	-	-	-	-
Stage 1	79	-	-	-	-
Stage 2	414	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	56.9	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	85	277
HCM Lane V/C Ratio	-	-	0.188	0.014
HCM Control Delay (s)	-	-	56.9	18.2
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	0.6	0

HCM 6th TWSC
5: Scott Road & Driveway 3 (North)

09/22/2021

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	2	1116	2	1	934
Future Vol, veh/h	3	2	1116	2	1	934
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	63	85	50	25	93
Heavy Vehicles, %	67	60	5	0	0	6
Mvmt Flow	4	3	1313	4	4	1004

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1725	659	0
Stage 1	1315	-	-
Stage 2	410	-	-
Critical Hdwy	7.04	8.3	-
Critical Hdwy Stg 1	7.94	-	-
Critical Hdwy Stg 2	7.34	-	-
Follow-up Hdwy	4.47	4.5	-
Pot Cap-1 Maneuver	67	257	-
Stage 1	90	-	-
Stage 2	445	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	66	257	-
Mov Cap-2 Maneuver	81	-	-
Stage 1	90	-	-
Stage 2	439	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.1	0	0.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	116	279
HCM Lane V/C Ratio	-	-	0.062	0.014
HCM Control Delay (s)	-	-	38.1	18.1
HCM Lane LOS	-	-	E	C
HCM 95th %tile Q(veh)	-	-	0.2	0

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	394	406	250	169	166	76	180	978	178	155	1164	132
Future Volume (vph)	394	406	250	169	166	76	180	978	178	155	1164	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		85.0	65.0		0.0	115.0		110.0	85.0		85.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.946			0.947				0.850			0.850
Flt Protected	0.950	0.997		0.950			0.950			0.950		
Satd. Flow (prot)	1467	3016	0	1805	3375	0	1626	5036	1599	1719	5036	1346
Flt Permitted	0.950	0.997		0.950			0.950			0.950		
Satd. Flow (perm)	1467	3016	0	1805	3375	0	1626	5036	1599	1719	5036	1346
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		72			69				205			191
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			234.1			219.3			163.7	
Travel Time (s)		27.2			16.9			15.8			11.8	
Peak Hour Factor	0.93	0.85	0.86	0.78	0.86	0.73	0.80	0.89	0.87	0.82	0.90	0.69
Heavy Vehicles (%)	12%	3%	16%	0%	2%	0%	11%	3%	1%	5%	3%	20%
Adj. Flow (vph)	424	478	291	217	193	104	225	1099	205	189	1293	191
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	382	811	0	217	297	0	225	1099	205	189	1293	191
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	0.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									6			2
Detector Phase	4	4		3	3		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	9.0	9.0		9.0	9.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	33.0	33.0		16.0	16.0		14.0	28.0	28.0	14.0	28.0	28.0
Total Split (s)	30.0	30.0		20.0	20.0		21.0	46.0	46.0	24.0	49.0	49.0
Total Split (%)	25.0%	25.0%		16.7%	16.7%		17.5%	38.3%	38.3%	20.0%	40.8%	40.8%
Maximum Green (s)	23.0	23.0		13.0	13.0		14.0	39.0	39.0	17.0	42.0	42.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-2.0	-2.0	-2.0	0.0	-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	4.0	4.0	5.0	4.0	4.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)	4.0	4.0						7.0	7.0		7.0	7.0
Flash Dont Walk (s)	22.0	22.0						14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)	0	0						0	0		0	0
Act Effct Green (s)	26.0	26.0		16.0	16.0		18.1	41.5	41.5	16.5	41.9	39.9
Actuated g/C Ratio	0.22	0.22		0.13	0.13		0.15	0.35	0.35	0.14	0.35	0.33
v/c Ratio	1.21	1.14		0.90	0.58		0.92	0.63	0.30	0.80	0.73	0.33
Control Delay	159.2	119.8		89.5	42.4		92.0	34.9	4.9	86.8	34.4	11.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.2	119.8		89.5	42.4		92.0	34.9	4.9	86.8	34.4	11.1
LOS	F	F		F	D		F	C	A	F	C	B
Approach Delay		132.4			62.3			39.3			37.7	
Approach LOS		F			E			D			D	
90th %ile Green (s)	23.0	23.0		13.0	13.0		14.0	39.0	39.0	17.0	42.0	42.0
90th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	23.0	23.0		13.0	13.0		14.0	39.0	39.0	17.0	42.0	42.0
70th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	23.0	23.0		13.0	13.0		14.0	39.0	39.0	17.0	42.0	42.0
50th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	23.0	23.0		13.0	13.0		16.5	39.0	39.0	17.0	39.5	39.5
30th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	23.0	23.0		13.0	13.0		21.8	41.6	41.6	14.4	34.2	34.2
10th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Gap	Coord	Coord
Queue Length 50th (m)	~126.4	~121.4		53.8	28.1		~60.1	83.5	0.0	45.9	49.1	0.0
Queue Length 95th (m)	#194.5	#149.4		#78.8	40.8		#92.7	98.2	14.8	#72.4	102.1	19.7
Internal Link Dist (m)		353.6			210.1			195.3			139.7	
Turn Bay Length (m)				65.0			115.0		110.0	85.0		85.0
Base Capacity (vph)	317	709		240	509		244	1742	687	243	1846	595
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.21	1.14		0.90	0.58		0.92	0.63	0.30	0.78	0.70	0.32
Intersection Summary												

Lanes, Volumes, Timings

1095: Scott Road & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 44 (37%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 63.8

Intersection LOS: E

Intersection Capacity Utilization 77.3%

ICU Level of Service D

Analysis Period (min) 15

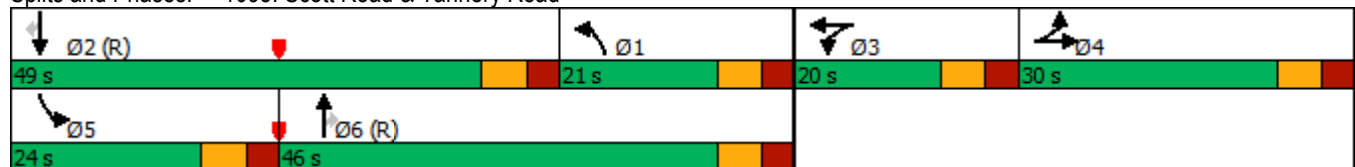
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1095: Scott Road & Tannery Road



Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	127	128	108	65	69	53	1236	255	133	1225	147
Future Volume (vph)	130	127	128	108	65	69	53	1236	255	133	1225	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	30.0		25.0	80.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.924				0.850		0.970			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	1539	0	1752	1652	1615	1347	4801	0	1671	4828	0
Flt Permitted	0.685			0.306			0.950			0.950		
Satd. Flow (perm)	1132	1539	0	564	1652	1615	1347	4801	0	1671	4828	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54				155		52			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		470.5			207.6			440.4			488.8	
Travel Time (s)		33.9			14.9			31.7			35.2	
Peak Hour Factor	0.83	0.86	0.84	0.84	0.74	0.82	0.70	0.86	0.72	0.74	0.80	0.80
Heavy Vehicles (%)	15%	6%	22%	3%	15%	0%	34%	5%	4%	8%	4%	20%
Adj. Flow (vph)	157	148	152	129	88	84	76	1437	354	180	1531	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	300	0	129	88	84	76	1791	0	180	1715	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8			4		4						
Detector Phase	8	8		4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	12.0	23.0		12.0	23.0	
Total Split (s)	56.0	56.0		56.0	56.0	56.0	18.0	43.0		21.0	46.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%	46.7%	15.0%	35.8%		17.5%	38.3%	
Maximum Green (s)	49.0	49.0		49.0	49.0	49.0	11.0	37.0		14.0	40.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	2.0		3.0	2.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	-3.0	-3.0	-2.0		-3.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0		10.0			10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)	29.9	29.9		29.9	29.9	29.9	16.0	61.3		16.8	65.1	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.13	0.51		0.14	0.54	
v/c Ratio	0.56	0.71		0.92	0.21	0.16	0.42	0.72		0.77	0.65	
Control Delay	45.6	41.9		100.7	34.6	0.7	65.2	15.3		71.8	24.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	45.6	41.9		100.7	34.6	0.7	65.2	15.3		71.8	24.0	
LOS	D	D		F	C	A	E	B		E	C	
Approach Delay		43.1			53.5			17.3			28.5	
Approach LOS		D			D			B			C	
90th %ile Green (s)	37.4	37.4		37.4	37.4	37.4	18.2	48.6		14.0	44.4	
90th %ile Term Code	Gap	Gap		Hold	Hold	Hold	Gap	Coord		Max	Coord	
70th %ile Green (s)	31.5	31.5		31.5	31.5	31.5	15.1	54.5		14.0	53.4	
70th %ile Term Code	Gap	Gap		Hold	Hold	Hold	Gap	Coord		Max	Coord	
50th %ile Green (s)	26.6	26.6		26.6	26.6	26.6	13.0	59.4		14.0	60.4	
50th %ile Term Code	Gap	Gap		Hold	Hold	Hold	Gap	Coord		Max	Coord	
30th %ile Green (s)	22.4	22.4		22.4	22.4	22.4	10.8	63.6		14.0	66.8	
30th %ile Term Code	Gap	Gap		Hold	Hold	Hold	Gap	Coord		Max	Coord	
10th %ile Green (s)	16.4	16.4		16.4	16.4	16.4	0.0	70.5		13.1	90.6	
10th %ile Term Code	Gap	Gap		Hold	Hold	Hold	Skip	Coord		Gap	Coord	
Queue Length 50th (m)	34.2	56.5		31.4	17.5	0.0	19.8	59.5		43.5	110.2	
Queue Length 95th (m)	45.7	73.3		#51.1	22.7	0.0	m19.7	m96.2		55.5	138.8	
Internal Link Dist (m)		446.5			183.6			416.4			464.8	
Turn Bay Length (m)	35.0			30.0		25.0	80.0			45.0		
Base Capacity (vph)	490	697		244	715	787	187	2478		236	2628	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.32	0.43		0.53	0.12	0.11	0.41	0.72		0.76	0.65	
Intersection Summary												

Lanes, Volumes, Timings

1101: Scott Road & Old Yale Rd

09/22/2021

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 119 (99%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 27.0

Intersection LOS: C

Intersection Capacity Utilization 70.8%

ICU Level of Service C

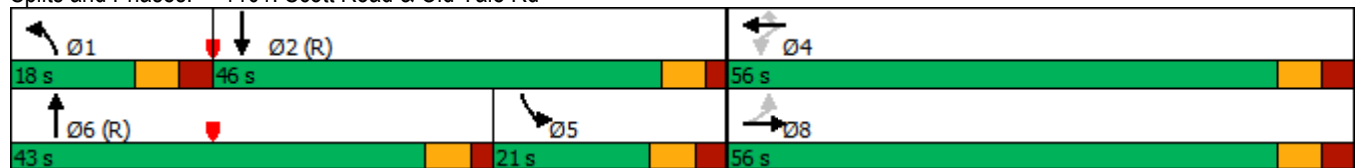
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1101: Scott Road & Old Yale Rd



Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  				 			
Traffic Volume (vph)	74	424	0	0	326	108	119	181	611	0	0	0
Future Volume (vph)	74	424	0	0	326	108	119	181	611	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		60.0	0.0		100.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.980				
Satd. Flow (prot)	1456	3112	0	0	4715	1553	0	1379	2707	0	0	0
Flt Permitted	0.950							0.980				
Satd. Flow (perm)	1456	3112	0	0	4715	1553	0	1379	2707	0	0	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						137						
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		89.3			377.6			402.7			412.3	
Travel Time (s)		6.4			27.2			29.0			29.7	
Peak Hour Factor	0.74	0.87	0.95	0.95	0.83	0.79	0.83	0.84	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	24%	16%	0%	0%	10%	4%	59%	19%	5%	0%	0%	0%
Adj. Flow (vph)	100	487	0	0	393	137	143	215	679	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	487	0	0	393	137	0	358	679	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (m)	2.0	10.0			10.0	2.0	2.0	10.0	2.0			
Trailing Detector (m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Position(m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Size(m)	2.0	0.6			0.6	2.0	2.0	0.6	2.0			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	1	6			2			4				

Existing PM Peak 4:30 pm 12/31/2011 Existing PM Peak
MDA

Synchro 10 Report
Page 10

Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						2	4		4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	6.0	10.0			10.0	10.0	7.0	7.0	7.0			
Minimum Split (s)	11.6	24.0			19.0	19.0	12.3	12.3	12.3			
Total Split (s)	20.6	50.0			31.0	31.0	40.3	40.3	40.3			
Total Split (%)	22.4%	54.4%			33.7%	33.7%	43.9%	43.9%	43.9%			
Maximum Green (s)	15.0	43.0			24.0	24.0	35.0	35.0	35.0			
Yellow Time (s)	4.5	5.0			5.0	5.0	4.3	4.3	4.3			
All-Red Time (s)	1.1	2.0			2.0	2.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	5.6	7.0			7.0	7.0		5.3	5.3			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	Min			Min	Min	None	None	None			
Walk Time (s)		10.0			7.0	7.0						
Flash Dont Walk (s)		7.0			5.0	5.0						
Pedestrian Calls (#/hr)		0			0	0						
Act Effct Green (s)	10.2	24.7			12.5	12.5		22.8	22.8			
Actuated g/C Ratio	0.17	0.40			0.20	0.20		0.37	0.37			
v/c Ratio	0.41	0.39			0.41	0.32		0.70	0.67			
Control Delay	32.5	14.2			25.8	8.2		25.6	20.5			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	32.5	14.3			25.8	8.2		25.6	20.5			
LOS	C	B			C	A		C	C			
Approach Delay		17.4			21.3			22.3				
Approach LOS		B			C			C				
90th %ile Green (s)	15.0	36.4			15.8	15.8	35.0	35.0	35.0			
90th %ile Term Code	Max	Hold			Gap	Gap	Max	Max	Max			
70th %ile Green (s)	12.3	30.7			12.8	12.8	28.9	28.9	28.9			
70th %ile Term Code	Gap	Hold			Gap	Gap	Gap	Gap	Gap			
50th %ile Green (s)	9.9	26.4			10.9	10.9	22.7	22.7	22.7			
50th %ile Term Code	Gap	Hold			Gap	Gap	Gap	Gap	Gap			
30th %ile Green (s)	8.1	23.7			10.0	10.0	17.8	17.8	17.8			
30th %ile Term Code	Gap	Hold			Min	Min	Gap	Gap	Gap			
10th %ile Green (s)	0.0	10.0			10.0	10.0	11.9	11.9	11.9			
10th %ile Term Code	Skip	Min			Min	Min	Gap	Gap	Gap			
Queue Length 50th (m)	10.9	19.5			15.5	0.0		35.1	37.4			
Queue Length 95th (m)	24.0	38.2			28.4	10.2		68.1	68.4			
Internal Link Dist (m)		65.3			353.6			378.7			388.3	
Turn Bay Length (m)						60.0			100.0			
Base Capacity (vph)	392	2308			2035	748		862	1692			
Starvation Cap Reductn	0	399			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.26	0.26			0.19	0.18		0.42	0.40			
Intersection Summary												

Lanes, Volumes, Timings

2658: SFPR EB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 91.9

Actuated Cycle Length: 61

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 20.7

Intersection LOS: C

Intersection Capacity Utilization 44.4%

ICU Level of Service A

Analysis Period (min) 15

90th %ile Actuated Cycle: 83.7

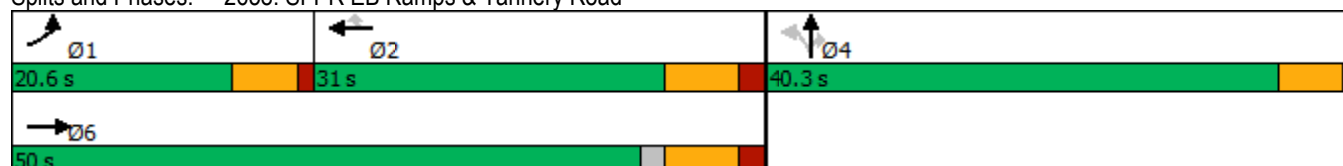
70th %ile Actuated Cycle: 71.9

50th %ile Actuated Cycle: 61.4

30th %ile Actuated Cycle: 53.8

10th %ile Actuated Cycle: 34.2

Splits and Phases: 2658: SFPR EB Ramps & Tannery Road



Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	255	48	243	202	0	0	0	0	239	0	81
Future Volume (vph)	0	255	48	243	202	0	0	0	0	239	0	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		50.0
Storage Lanes	0		0	2		0	0		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	2859	0	3072	1407	0	0	0	0	0	1492	1029
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	2859	0	3072	1407	0	0	0	0	0	1492	1029
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26										96
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.5			89.3			127.2			500.7	
Travel Time (s)		14.8			6.4			9.2			36.1	
Peak Hour Factor	0.95	0.85	0.75	0.89	0.77	0.95	0.95	0.95	0.95	0.81	0.95	0.84
Heavy Vehicles (%)	0%	14%	65%	14%	35%	0%	0%	0%	0%	21%	0%	57%
Adj. Flow (vph)	0	300	64	273	262	0	0	0	0	295	0	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	364	0	273	262	0	0	0	0	0	295	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2		1	2					1	2	1
Detector Template		Thru		Left	Thru					Left	Thru	Right
Leading Detector (m)		10.0		2.0	10.0					2.0	10.0	2.0
Trailing Detector (m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Position(m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Size(m)		0.6		2.0	0.6					2.0	0.6	2.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4						9.4	
Detector 2 Size(m)		0.6			0.6						0.6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type		NA		Prot	NA					Perm	NA	Perm
Protected Phases		6		5	2						4	

Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										4		4
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		10.0		6.0	10.0					7.0	7.0	7.0
Minimum Split (s)		15.3		10.2	17.3					12.1	12.1	12.1
Total Split (s)		25.3		32.2	58.3					32.1	32.1	32.1
Total Split (%)		28.0%		35.6%	64.5%					35.5%	35.5%	35.5%
Maximum Green (s)		20.0		28.0	53.0					27.0	27.0	27.0
Yellow Time (s)		4.3		3.5	4.3					4.1	4.1	4.1
All-Red Time (s)		1.0		0.7	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0						0.0	0.0
Total Lost Time (s)		5.3		4.2	5.3						5.1	5.1
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		Min		None	Min					None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					5.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)		13.0		10.9	28.3						16.8	16.8
Actuated g/C Ratio		0.23		0.19	0.51						0.30	0.30
v/c Ratio		0.53		0.46	0.37						0.66	0.26
Control Delay		22.1		24.4	11.3						25.6	6.0
Queue Delay		0.0		0.0	0.0						0.0	0.0
Total Delay		22.1		24.4	11.3						25.6	6.0
LOS		C		C	B						C	A
Approach Delay		22.1			18.0						20.8	
Approach LOS		C			B						C	
90th %ile Green (s)		18.0		15.2	37.4					27.0	27.0	27.0
90th %ile Term Code		Gap		Gap	Hold					Max	Max	Max
70th %ile Green (s)		14.7		12.7	31.6					20.2	20.2	20.2
70th %ile Term Code		Gap		Gap	Hold					Gap	Gap	Gap
50th %ile Green (s)		12.3		10.7	27.2					16.3	16.3	16.3
50th %ile Term Code		Gap		Gap	Hold					Gap	Gap	Gap
30th %ile Green (s)		10.3		9.1	23.6					13.2	13.2	13.2
30th %ile Term Code		Gap		Gap	Hold					Gap	Gap	Gap
10th %ile Green (s)		10.0		7.4	21.6					9.7	9.7	9.7
10th %ile Term Code		Min		Gap	Hold					Gap	Gap	Gap
Queue Length 50th (m)		15.9		12.7	14.9						25.9	0.0
Queue Length 95th (m)		33.5		29.1	31.8						58.4	8.0
Internal Link Dist (m)		181.5			65.3			103.2			476.7	
Turn Bay Length (m)												50.0
Base Capacity (vph)		1124		1602	1278						750	565
Starvation Cap Reductn		0		0	170						0	0
Spillback Cap Reductn		0		0	0						0	0
Storage Cap Reductn		0		0	0						0	0
Reduced v/c Ratio		0.32		0.17	0.24						0.39	0.17
Intersection Summary												

Lanes, Volumes, Timings

2660: SFPR WB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 90.4

Actuated Cycle Length: 56

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 20.0

Intersection LOS: C

Intersection Capacity Utilization 44.4%

ICU Level of Service A

Analysis Period (min) 15

90th %ile Actuated Cycle: 74.8

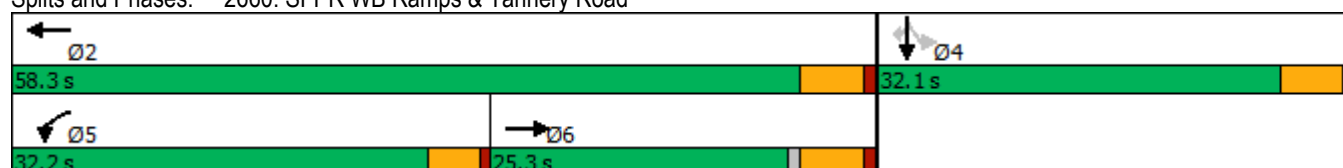
70th %ile Actuated Cycle: 62.2

50th %ile Actuated Cycle: 53.9

30th %ile Actuated Cycle: 47.2

10th %ile Actuated Cycle: 41.7

Splits and Phases: 2660: SFPR WB Ramps & Tannery Road



Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	1446	2	2	1449
Future Vol, veh/h	2	1	1446	2	2	1449
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	25	89	50	50	90
Heavy Vehicles, %	50	0	3	50	100	3
Mvmt Flow	4	4	1625	4	4	1610

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	2279	815	0
Stage 1	1627	-	-
Stage 2	652	-	-
Critical Hdwy	6.7	7.1	-
Critical Hdwy Stg 1	7.6	-	-
Critical Hdwy Stg 2	7	-	-
Follow-up Hdwy	4.3	3.9	-
Pot Cap-1 Maneuver	35	279	-
Stage 1	61	-	-
Stage 2	339	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	33	279	-
Mov Cap-2 Maneuver	53	-	-
Stage 1	61	-	-
Stage 2	320	-	-

Approach	WB	NB	SB
HCM Control Delay, s	49.4	0	0.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	89	71
HCM Lane V/C Ratio	-	-	0.09	0.056
HCM Control Delay (s)	-	-	49.4	58.7
HCM Lane LOS	-	-	E	F
HCM 95th %tile Q(veh)	-	-	0.3	0.2

HCM 6th TWSC
3: Scott Road & Driveway 2 (Central)

09/22/2021

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	9	1437	10	6	1441
Future Vol, veh/h	10	9	1437	10	6	1441
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	75	89	83	75	90
Heavy Vehicles, %	90	67	3	80	100	3
Mvmt Flow	20	12	1615	12	8	1601

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	2277	814	0
Stage 1	1621	-	-
Stage 2	656	-	-
Critical Hdwy	7.5	8.44	-
Critical Hdwy Stg 1	8.4	-	-
Critical Hdwy Stg 2	7.8	-	-
Follow-up Hdwy	4.7	4.57	-
Pot Cap-1 Maneuver	21	187	-
Stage 1	42	-	-
Stage 2	275	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	~ 19	187	-
Mov Cap-2 Maneuver	36	-	-
Stage 1	42	-	-
Stage 2	244	-	-

Approach	WB	NB	SB
HCM Control Delay, s	151	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	52	71
HCM Lane V/C Ratio	-	-	0.615	0.113
HCM Control Delay (s)	-	-	151	62
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	2.4	0.4

Notes

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

HCM 6th TWSC
5: Scott Road & Driveway 3 (North)

09/22/2021

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗		↑↑↑↑		↖↗	↑↑↑↑
Traffic Vol, veh/h	6	3	1439	7	7	1441
Future Vol, veh/h	6	3	1439	7	7	1441
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	75	89	44	58	90
Heavy Vehicles, %	17	33	3	43	86	3
Mvmt Flow	12	4	1617	16	12	1601
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2289	817	0	0	1633	0
Stage 1	1625	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.04	7.76	-	-	7.02	-
Critical Hdwy Stg 1	6.94	-	-	-	-	-
Critical Hdwy Stg 2	6.34	-	-	-	-	-
Follow-up Hdwy	3.97	4.23	-	-	3.96	-
Pot Cap-1 Maneuver	53	228	-	-	81	-
Stage 1	85	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	45	228	-	-	81	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	85	-	-	-	-	-
Stage 2	338	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	54.8	0	0.4			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	88	81	-	
HCM Lane V/C Ratio	-	-	0.182	0.149	-	
HCM Control Delay (s)	-	-	54.8	57.1	-	
HCM Lane LOS	-	-	F	F	-	
HCM 95th %tile Q(veh)	-	-	0.6	0.5	-	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	348	302	426	173	525	158	220	1246	43	30	416	164
Future Volume (vph)	348	302	426	173	525	158	220	1246	43	30	416	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		85.0	65.0		0.0	115.0		110.0	85.0		85.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.916			0.965				0.850			0.850
Flt Protected	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (prot)	1088	2489	0	1770	3296	0	1517	4940	1468	1703	4893	1357
Flt Permitted	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (perm)	1088	2489	0	1770	3296	0	1517	4940	1468	1703	4893	1357
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		296			31				175			193
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			234.1			219.3			163.7	
Travel Time (s)		27.2			16.9			15.8			11.8	
Peak Hour Factor	0.79	0.82	0.81	0.84	0.83	0.83	0.89	0.85	0.93	0.96	0.93	0.85
Heavy Vehicles (%)	51%	7%	39%	2%	5%	8%	19%	5%	10%	6%	6%	19%
Adj. Flow (vph)	441	368	526	206	633	190	247	1466	46	31	447	193
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	397	938	0	206	823	0	247	1466	46	31	447	193
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	0.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									6			2
Detector Phase	4	4		3	3		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	9.0	9.0		9.0	9.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	33.0	33.0		16.0	16.0		14.0	28.0	28.0	14.0	28.0	28.0
Total Split (s)	38.0	38.0		24.0	24.0		17.0	36.0	36.0	14.0	33.0	33.0
Total Split (%)	33.9%	33.9%		21.4%	21.4%		15.2%	32.1%	32.1%	12.5%	29.5%	29.5%
Maximum Green (s)	31.0	31.0		17.0	17.0		10.0	29.0	29.0	7.0	26.0	26.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-2.0	-2.0	-2.0	0.0	-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	4.0	4.0	5.0	4.0	4.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)	4.0	4.0						7.0	7.0		7.0	7.0
Flash Dont Walk (s)	22.0	22.0						14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)	0	0						0	0		0	0
Act Effct Green (s)	34.0	34.0		20.0	20.0		20.4	36.6	36.6	7.0	19.6	17.6
Actuated g/C Ratio	0.30	0.30		0.18	0.18		0.18	0.33	0.33	0.06	0.18	0.16
v/c Ratio	1.20	0.98		0.65	1.34		0.90	0.91	0.08	0.29	0.52	0.51
Control Delay	152.3	50.8		53.5	199.6		79.9	46.7	0.3	74.0	51.2	25.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	152.3	50.8		53.5	199.6		79.9	46.7	0.3	74.0	51.2	25.1
LOS	F	D		D	F		E	D	A	E	D	C
Approach Delay		81.0			170.4			50.2			44.8	
Approach LOS		F			F			D			D	
90th %ile Green (s)	31.0	31.0		17.0	17.0		13.6	29.0	29.0	7.0	22.4	22.4
90th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	31.0	31.0		17.0	17.0		16.4	29.0	29.0	7.0	19.6	19.6
70th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	31.0	31.0		17.0	17.0		18.7	29.0	29.0	7.0	17.3	17.3
50th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	31.0	31.0		17.0	17.0		20.1	43.0	43.0	0.0	15.9	15.9
30th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Skip	Coord	Coord
10th %ile Green (s)	31.0	31.0		17.0	17.0		23.0	43.0	43.0	0.0	13.0	13.0
10th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Skip	Coord	Coord
Queue Length 50th (m)	~122.3	87.0		44.6	~128.0		55.9	~137.6	0.0	7.3	21.5	2.3
Queue Length 95th (m)	#156.1	#110.0		65.3	#149.4		#117.8	#152.3	0.0	18.6	51.9	39.8
Internal Link Dist (m)		353.6			210.1			195.3			139.7	
Turn Bay Length (m)				65.0			115.0		110.0	85.0		85.0
Base Capacity (vph)	330	961		316	614		275	1614	597	106	1223	463
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.98		0.65	1.34		0.90	0.91	0.08	0.29	0.37	0.42
Intersection Summary												

Lanes, Volumes, Timings

1095: Scott Road & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 112

Offset: 32 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.34

Intersection Signal Delay: 83.8

Intersection LOS: F

Intersection Capacity Utilization 87.6%

ICU Level of Service E

Analysis Period (min) 15

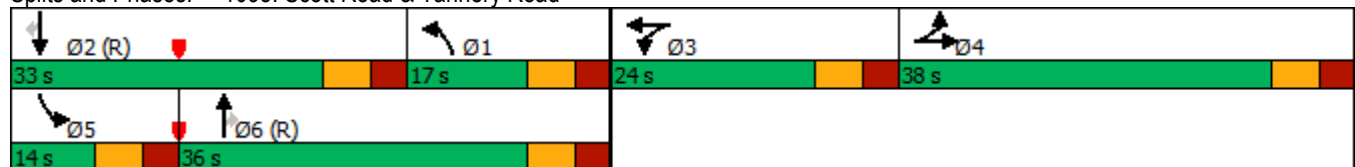
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1095: Scott Road & Tannery Road



Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	24	30	90	161	70	136	1395	160	32	562	190
Future Volume (vph)	25	24	30	90	161	70	136	1395	160	32	562	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	30.0		25.0	80.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.922				0.850		0.982			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1421	1588	0	1656	1727	1509	1656	4697	0	1626	4582	0
Flt Permitted	0.455			0.711			0.950			0.950		
Satd. Flow (perm)	681	1588	0	1239	1727	1509	1656	4697	0	1626	4582	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37				166		33			91	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		470.5			207.6			440.4			488.8	
Travel Time (s)		33.9			14.9			31.7			35.2	
Peak Hour Factor	0.75	0.71	0.82	0.75	0.89	0.68	0.51	0.90	0.75	0.77	0.92	0.81
Heavy Vehicles (%)	27%	2%	18%	9%	10%	7%	9%	7%	19%	11%	9%	7%
Adj. Flow (vph)	33	34	37	120	181	103	267	1550	213	42	611	235
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	71	0	120	181	103	267	1763	0	42	846	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8			4		4						
Detector Phase	8	8		4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	12.0	23.0		12.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0	37.0	35.0	63.0		12.0	40.0	
Total Split (%)	33.0%	33.0%		33.0%	33.0%	33.0%	31.3%	56.3%		10.7%	35.7%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	28.0	57.0		5.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	2.0		3.0	2.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	-3.0	-3.0	-2.0		-3.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0		10.0			10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)	21.1	21.1		21.1	21.1	21.1	26.9	74.1		10.5	52.0	
Actuated g/C Ratio	0.19	0.19		0.19	0.19	0.19	0.24	0.66		0.09	0.46	
v/c Ratio	0.26	0.22		0.52	0.56	0.25	0.67	0.57		0.28	0.39	
Control Delay	42.0	21.1		47.9	47.1	2.1	53.7	4.8		52.6	19.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.0	21.1		47.9	47.1	2.1	53.7	4.8		52.6	19.6	
LOS	D	C		D	D	A	D	A		D	B	
Approach Delay		27.8			35.9			11.3			21.2	
Approach LOS		C			D			B			C	
90th %ile Green (s)	24.9	24.9		24.9	24.9	24.9	31.3	62.1		5.0	35.8	
90th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Max	Coord	
70th %ile Green (s)	20.5	20.5		20.5	20.5	20.5	27.1	62.6		8.9	44.4	
70th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Max	Coord	
50th %ile Green (s)	17.9	17.9		17.9	17.9	17.9	24.0	64.8		9.3	50.1	
50th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Gap	Coord	
30th %ile Green (s)	15.4	15.4		15.4	15.4	15.4	20.8	83.6		0.0	55.8	
30th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Skip	Coord	
10th %ile Green (s)	11.7	11.7		11.7	11.7	11.7	16.2	87.3		0.0	64.1	
10th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Skip	Coord	
Queue Length 50th (m)	6.6	6.6		25.1	38.2	0.0	64.0	32.2		9.0	40.0	
Queue Length 95th (m)	12.5	12.7		33.5	56.1	0.0	m38.9	m43.4		18.1	64.3	
Internal Link Dist (m)		446.5			183.6			416.4			464.8	
Turn Bay Length (m)	35.0			30.0		25.0	80.0			45.0		
Base Capacity (vph)	200	493		365	508	561	468	3117		152	2177	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.17	0.14		0.33	0.36	0.18	0.57	0.57		0.28	0.39	
Intersection Summary												

Lanes, Volumes, Timings

1101: Scott Road & Old Yale Rd

09/22/2021

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 112

Offset: 103 (92%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 62.3%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1101: Scott Road & Old Yale Rd



Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  				 			
Traffic Volume (vph)	104	674	0	0	699	35	352	171	402	0	0	0
Future Volume (vph)	104	674	0	0	699	35	352	171	402	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		60.0	0.0		100.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.967				
Satd. Flow (prot)	1195	2888	0	0	4550	1380	0	1454	2153	0	0	0
Flt Permitted	0.950							0.967				
Satd. Flow (perm)	1195	2888	0	0	4550	1380	0	1454	2153	0	0	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						93						
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		89.3			377.6			402.7			412.3	
Travel Time (s)		6.4			27.2			29.0			29.7	
Peak Hour Factor	0.83	0.74	0.95	0.95	0.94	0.86	0.76	0.80	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	51%	25%	0%	0%	14%	17%	33%	12%	32%	0%	0%	0%
Adj. Flow (vph)	125	911	0	0	744	41	463	214	442	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	911	0	0	744	41	0	677	442	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (m)	2.0	10.0			10.0	2.0	2.0	10.0	2.0			
Trailing Detector (m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Position(m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Size(m)	2.0	0.6			0.6	2.0	2.0	0.6	2.0			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	1	6			2			4				

Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						2	4		4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	6.0	10.0			10.0	10.0	7.0	7.0	7.0			
Minimum Split (s)	11.6	24.0			19.0	19.0	12.3	12.3	12.3			
Total Split (s)	17.0	41.9			24.9	24.9	51.0	51.0	51.0			
Total Split (%)	18.3%	45.1%			26.8%	26.8%	54.9%	54.9%	54.9%			
Maximum Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
Yellow Time (s)	4.5	5.0			5.0	5.0	4.3	4.3	4.3			
All-Red Time (s)	1.1	2.0			2.0	2.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	5.6	7.0			7.0	7.0		5.3	5.3			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	Min			Min	Min	None	None	None			
Walk Time (s)		10.0			7.0	7.0						
Flash Dont Walk (s)		7.0			5.0	5.0						
Pedestrian Calls (#/hr)		0			0	0						
Act Effct Green (s)	11.2	34.1			17.3	17.3		44.0	44.0			
Actuated g/C Ratio	0.12	0.38			0.19	0.19		0.49	0.49			
v/c Ratio	0.85	0.84			0.86	0.12		0.96	0.42			
Control Delay	84.8	34.3			46.7	0.7		49.2	16.6			
Queue Delay	0.0	49.3			0.0	0.0		0.0	0.0			
Total Delay	84.8	83.7			46.7	0.7		49.2	16.6			
LOS	F	F			D	A		D	B			
Approach Delay		83.8			44.3			36.3				
Approach LOS		F			D			D				
90th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
90th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
70th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
70th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
50th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
50th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
30th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
30th %ile Term Code	Max	Hold			Max	Max	Max	Max	Max			
10th %ile Green (s)	10.3	30.9			15.0	15.0	37.3	37.3	37.3			
10th %ile Term Code	Gap	Hold			Gap	Gap	Gap	Gap	Gap			
Queue Length 50th (m)	23.4	81.0			50.0	0.0		116.1	28.9			
Queue Length 95th (m)	#49.3	79.8			#69.8	0.0		#156.7	42.4			
Internal Link Dist (m)		65.3			353.6			378.7			388.3	
Turn Bay Length (m)						60.0			100.0			
Base Capacity (vph)	151	1118			903	348		737	1092			
Starvation Cap Reductn	0	306			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.83	1.12			0.82	0.12		0.92	0.40			
Intersection Summary												

Lanes, Volumes, Timings

2658: SFPR EB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 92.9

Actuated Cycle Length: 90.4

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 55.2

Intersection LOS: E

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

90th %ile Actuated Cycle: 92.9

70th %ile Actuated Cycle: 92.9

50th %ile Actuated Cycle: 92.9

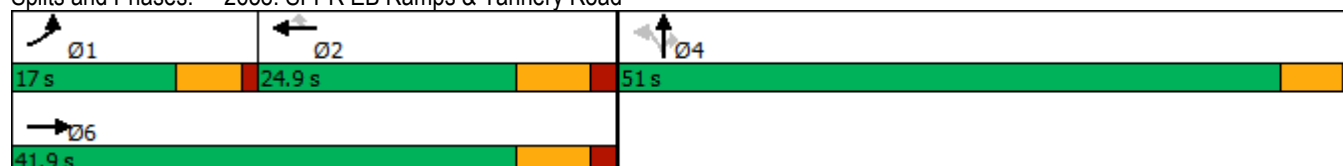
30th %ile Actuated Cycle: 92.9

10th %ile Actuated Cycle: 80.5

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2658: SFPR EB Ramps & Tannery Road



Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	178	1	781	270	0	0	0	0	600	0	154
Future Volume (vph)	0	178	1	781	270	0	0	0	0	600	0	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		50.0
Storage Lanes	0		0	2		0	0		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	2352	0	3019	1610	0	0	0	0	0	1517	1214
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	2352	0	3019	1610	0	0	0	0	0	1517	1214
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1										165
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.5			89.3			127.2			500.7	
Travel Time (s)		14.8			6.4			9.2			36.1	
Peak Hour Factor	0.95	0.71	0.25	0.94	0.82	0.95	0.95	0.95	0.95	0.83	0.95	0.68
Heavy Vehicles (%)	0%	54%	0%	16%	18%	0%	0%	0%	0%	19%	0%	33%
Adj. Flow (vph)	0	251	4	831	329	0	0	0	0	723	0	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	831	329	0	0	0	0	0	723	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2		1	2					1	2	1
Detector Template		Thru		Left	Thru					Left	Thru	Right
Leading Detector (m)		10.0		2.0	10.0					2.0	10.0	2.0
Trailing Detector (m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Position(m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Size(m)		0.6		2.0	0.6					2.0	0.6	2.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4						9.4	
Detector 2 Size(m)		0.6			0.6						0.6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type		NA		Prot	NA					Perm	NA	Perm
Protected Phases		6		5	2						4	

Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										4		4
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		10.0		6.0	10.0					7.0	7.0	7.0
Minimum Split (s)		15.3		10.2	17.3					12.1	12.1	12.1
Total Split (s)		16.4		28.0	44.4					46.0	46.0	46.0
Total Split (%)		18.1%		31.0%	49.1%					50.9%	50.9%	50.9%
Maximum Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
Yellow Time (s)		4.3		3.5	4.3					4.1	4.1	4.1
All-Red Time (s)		1.0		0.7	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0						0.0	0.0
Total Lost Time (s)		5.3		4.2	5.3						5.1	5.1
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		Min		None	Min					None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					5.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
Actuated g/C Ratio		0.12		0.26	0.43					0.45	0.45	0.45
v/c Ratio		0.88		1.05	0.47					1.05	0.35	0.35
Control Delay		70.5		78.8	21.1					75.9	6.6	6.6
Queue Delay		0.0		21.2	4.5					0.0	0.0	0.0
Total Delay		70.5		100.0	25.6					75.9	6.6	6.6
LOS		E		F	C					E	A	A
Approach Delay		70.5			78.9					59.4		
Approach LOS		E			E					E		
90th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
90th %ile Term Code		Max		Max	Hold					Max	Max	Max
70th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
70th %ile Term Code		Max		Max	Hold					Max	Max	Max
50th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
50th %ile Term Code		Max		Max	Hold					Max	Max	Max
30th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
30th %ile Term Code		Max		Max	Hold					Max	Max	Max
10th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
10th %ile Term Code		Max		Max	Hold					Max	Max	Max
Queue Length 50th (m)		24.4		~85.8	41.6					~145.9	6.2	6.2
Queue Length 95th (m)		#31.1		#122.7	58.0					#214.7	10.0	10.0
Internal Link Dist (m)		181.5			65.3			103.2		476.7		
Turn Bay Length (m)												50.0
Base Capacity (vph)		289		794	696					686	639	639
Starvation Cap Reductn		0		109	288					0	0	0
Spillback Cap Reductn		0		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.88		1.21	0.81					1.05	0.35	0.35
Intersection Summary												

Lanes, Volumes, Timings

2660: SFPR WB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 90.4

Actuated Cycle Length: 90.4

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 70.2

Intersection LOS: E

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

90th %ile Actuated Cycle: 90.4

70th %ile Actuated Cycle: 90.4

50th %ile Actuated Cycle: 90.4

30th %ile Actuated Cycle: 90.4

10th %ile Actuated Cycle: 90.4

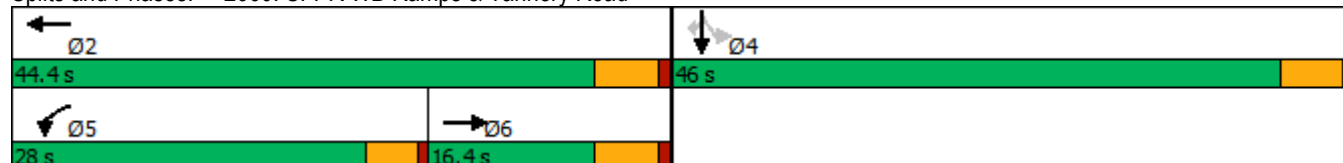
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2660: SFPR WB Ramps & Tannery Road



Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Traffic Vol, veh/h	3	1	1748	3	0	608
Future Vol, veh/h	3	1	1748	3	0	608
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	25	85	75	92	93
Heavy Vehicles, %	67	100	5	0	0	6
Mvmt Flow	8	4	2056	4	0	654
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2320	1030	0	0	2060	0
Stage 1	2058	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	7.04	9.1	-	-	5.3	-
Critical Hdwy Stg 1	7.94	-	-	-	-	-
Critical Hdwy Stg 2	7.34	-	-	-	-	-
Follow-up Hdwy	4.47	4.9	-	-	3.1	-
Pot Cap-1 Maneuver	26	101	-	-	120	-
Stage 1	24	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	26	101	-	-	120	-
Mov Cap-2 Maneuver	22	-	-	-	-	-
Stage 1	24	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	188.8	0	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	30	120	-	
HCM Lane V/C Ratio	-	-	0.396	-	-	
HCM Control Delay (s)	-	-	188.8	0	-	
HCM Lane LOS	-	-	F	A	-	
HCM 95th %tile Q(veh)	-	-	1.3	0	-	

HCM 6th TWSC
3: Scott Road & Driveway 2 (Central)

09/22/2021

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗		↑↑↑		↖↑↑	↑↑↑
Traffic Vol, veh/h	11	1	1740	9	2	597
Future Vol, veh/h	11	1	1740	9	2	597
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	25	85	75	50	93
Heavy Vehicles, %	82	100	5	78	0	6
Mvmt Flow	12	4	2047	12	4	642

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2318	1030	0	0	2059
Stage 1	2053	-	-	-	-
Stage 2	265	-	-	-	-
Critical Hdwy	7.34	9.1	-	-	5.3
Critical Hdwy Stg 1	8.24	-	-	-	-
Critical Hdwy Stg 2	7.64	-	-	-	-
Follow-up Hdwy	4.62	4.9	-	-	3.1
Pot Cap-1 Maneuver	22	101	-	-	120
Stage 1	20	-	-	-	-
Stage 2	524	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	21	101	-	-	120
Mov Cap-2 Maneuver	18	-	-	-	-
Stage 1	20	-	-	-	-
Stage 2	507	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	324.2	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	23	120
HCM Lane V/C Ratio	-	-	0.694	0.033
HCM Control Delay (s)	-	-	324.2	36
HCM Lane LOS	-	-	F	E
HCM 95th %tile Q(veh)	-	-	2	0.1

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

HCM 6th TWSC
5: Scott Road & Driveway 3 (North)

09/22/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	2	1739	2	1	596
Future Vol, veh/h	3	2	1739	2	1	596
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	63	85	50	25	93
Heavy Vehicles, %	67	60	5	0	0	6
Mvmt Flow	4	3	2046	4	4	641
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2312	1025	0	0	2050	0
Stage 1	2048	-	-	-	-	-
Stage 2	264	-	-	-	-	-
Critical Hdwy	7.04	8.3	-	-	5.3	-
Critical Hdwy Stg 1	7.94	-	-	-	-	-
Critical Hdwy Stg 2	7.34	-	-	-	-	-
Follow-up Hdwy	4.47	4.5	-	-	3.1	-
Pot Cap-1 Maneuver	27	134	-	-	121	-
Stage 1	24	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	26	134	-	-	121	-
Mov Cap-2 Maneuver	22	-	-	-	-	-
Stage 1	24	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	132.7	0	0.2			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	35	121	-	
HCM Lane V/C Ratio	-	-	0.205	0.033	-	
HCM Control Delay (s)	-	-	132.7	35.8	-	
HCM Lane LOS	-	-	F	E	-	
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	466	615	646	289	219	60	413	1330	310	76	978	86
Future Volume (vph)	466	615	646	289	219	60	413	1330	310	76	978	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		85.0	65.0		0.0	115.0		110.0	85.0		85.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.926			0.964				0.850			0.850
Flt Protected	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (prot)	1467	2913	0	1805	3428	0	1626	5036	1599	1719	5036	1335
Flt Permitted	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (perm)	1467	2913	0	1805	3428	0	1626	5036	1599	1719	5036	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		214			30				321			164
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			234.1			219.3			163.7	
Travel Time (s)		27.2			16.9			15.8			11.8	
Peak Hour Factor	0.93	0.85	0.86	0.78	0.86	0.73	0.80	0.89	0.87	0.82	0.90	0.69
Heavy Vehicles (%)	12%	3%	16%	0%	2%	0%	11%	3%	1%	5%	3%	21%
Adj. Flow (vph)	501	724	751	371	255	82	516	1494	356	93	1087	125
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	451	1525	0	371	337	0	516	1494	356	93	1087	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	0.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									6			2
Detector Phase	4	4		3	3		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	9.0	9.0		9.0	9.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	33.0	33.0		16.0	16.0		14.0	28.0	28.0	14.0	28.0	28.0
Total Split (s)	42.0	42.0		21.0	21.0		26.0	43.0	43.0	14.0	31.0	31.0
Total Split (%)	35.0%	35.0%		17.5%	17.5%		21.7%	35.8%	35.8%	11.7%	25.8%	25.8%
Maximum Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-2.0	-2.0	-2.0	0.0	-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	4.0	4.0	5.0	4.0	4.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)	4.0	4.0						7.0	7.0		7.0	7.0
Flash Dont Walk (s)	22.0	22.0						14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)	0	0						0	0		0	0
Act Effct Green (s)	38.0	38.0		17.0	17.0		21.0	38.0	38.0	7.0	26.0	24.0
Actuated g/C Ratio	0.32	0.32		0.14	0.14		0.18	0.32	0.32	0.06	0.22	0.20
v/c Ratio	0.97	1.43		1.45	0.66		1.82	0.94	0.49	0.93	1.00	0.31
Control Delay	76.5	226.7		262.4	51.2		411.0	52.0	7.5	132.4	79.1	17.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.5	226.7		262.4	51.2		411.0	52.0	7.5	132.4	79.1	17.1
LOS	E	F		F	D		F	D	A	F	E	B
Approach Delay		192.4			161.9			123.6			77.0	
Approach LOS		F			F			F			E	
90th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
90th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
70th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
50th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
30th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
10th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
Queue Length 50th (m)	120.7	~261.5		~125.4	38.4		~192.8	131.3	6.1	24.0	97.4	6.2
Queue Length 95th (m)	#195.9	#281.7		#153.3	51.9		#224.2	#159.0	26.4	m#48.2	m#125.1	m9.6
Internal Link Dist (m)		353.6			210.1			195.3			139.7	
Turn Bay Length (m)				65.0			115.0		110.0	85.0		85.0
Base Capacity (vph)	464	1068		255	511		284	1594	725	100	1091	398
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.97	1.43		1.45	0.66		1.82	0.94	0.49	0.93	1.00	0.31
Intersection Summary												

Lanes, Volumes, Timings

1095: Scott Road & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 44 (37%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.82

Intersection Signal Delay: 139.7

Intersection LOS: F

Intersection Capacity Utilization 107.0%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

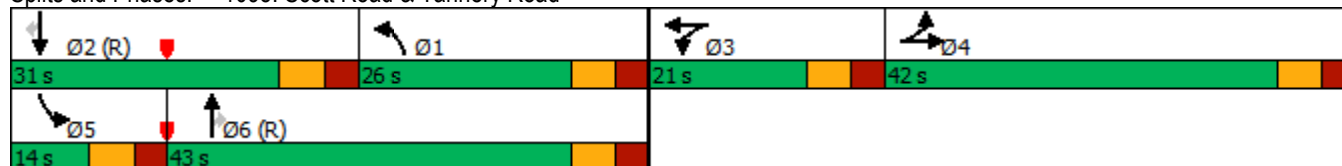
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1095: Scott Road & Tannery Road



Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	169	88	138	54	163	23	1525	329	199	947	74
Future Volume (vph)	166	169	88	138	54	163	23	1525	329	199	947	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	30.0		25.0	80.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.948				0.850		0.969			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	1615	0	1752	1652	1615	1347	4778	0	1671	4878	0
Flt Permitted	0.709			0.329			0.950			0.950		
Satd. Flow (perm)	1171	1615	0	607	1652	1615	1347	4778	0	1671	4878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22				199		71			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		470.5			207.6			440.4			488.8	
Travel Time (s)		33.9			14.9			31.7			35.2	
Peak Hour Factor	0.83	0.86	0.84	0.84	0.74	0.82	0.70	0.86	0.72	0.74	0.80	0.80
Heavy Vehicles (%)	15%	6%	22%	3%	15%	0%	34%	5%	6%	8%	4%	20%
Adj. Flow (vph)	200	197	105	164	73	199	33	1773	457	269	1184	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	302	0	164	73	199	33	2230	0	269	1277	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8			4		4						
Detector Phase	8	8		4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	12.0	23.0		12.0	23.0	
Total Split (s)	36.0	36.0		36.0	36.0	36.0	12.0	60.0		24.0	72.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%	30.0%	10.0%	50.0%		20.0%	60.0%	
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	2.0		3.0	2.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	-3.0	-3.0	-2.0		-3.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0		10.0			10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)	32.0	32.0		32.0	32.0	32.0	8.0	56.0		20.0	72.8	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.07	0.47		0.17	0.61	
v/c Ratio	0.64	0.68		1.02	0.17	0.35	0.37	0.98		0.97	0.43	
Control Delay	49.7	45.1		120.5	35.1	6.5	62.3	39.8		96.5	13.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.7	45.1		120.5	35.1	6.5	62.3	39.8		96.5	13.6	
LOS	D	D		F	D	A	E	D		F	B	
Approach Delay		47.0			54.1			40.1			28.0	
Approach LOS		D			D			D			C	
90th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
90th %ile Term Code	Max	Max		Max	Max	Max	Max	Coord		Max	Coord	
70th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
70th %ile Term Code	Max	Max		Max	Max	Max	Max	Coord		Max	Coord	
50th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
50th %ile Term Code	Hold	Hold		Max	Max	Max	Max	Coord		Max	Coord	
30th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	0.0	54.0		17.0	78.0	
30th %ile Term Code	Hold	Hold		Max	Max	Max	Skip	Coord		Max	Coord	
10th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	0.0	54.0		17.0	78.0	
10th %ile Term Code	Hold	Hold		Max	Max	Max	Skip	Coord		Max	Coord	
Queue Length 50th (m)	44.0	62.4		~41.7	13.9	0.0	6.7	211.0		67.0	63.7	
Queue Length 95th (m)	64.2	89.7		#79.0	21.7	13.0	m8.3m#215.2			#87.6	63.9	
Internal Link Dist (m)		446.5			183.6			416.4			464.8	
Turn Bay Length (m)	35.0			30.0		25.0	80.0			45.0		
Base Capacity (vph)	312	446		161	440	576	89	2267		278	2965	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.64	0.68		1.02	0.17	0.35	0.37	0.98		0.97	0.43	
Intersection Summary												

Lanes, Volumes, Timings

1101: Scott Road & Old Yale Rd

09/22/2021

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 119 (99%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 38.2

Intersection LOS: D

Intersection Capacity Utilization 83.1%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

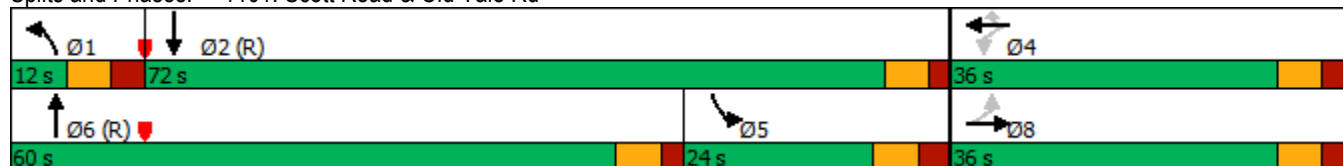
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1101: Scott Road & Old Yale Rd



Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	1223	0	0	416	236	107	279	504	0	0	0
Future Volume (vph)	307	1223	0	0	416	236	107	279	504	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		60.0	0.0		100.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.986				
Satd. Flow (prot)	1456	3112	0	0	4715	1553	0	1439	2707	0	0	0
Flt Permitted	0.950							0.986				
Satd. Flow (perm)	1456	3112	0	0	4715	1553	0	1439	2707	0	0	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						253						
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		89.3			377.6			402.7			412.3	
Travel Time (s)		6.4			27.2			29.0			29.7	
Peak Hour Factor	0.74	0.87	0.95	0.95	0.83	0.79	0.83	0.84	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	24%	16%	0%	0%	10%	4%	59%	19%	5%	0%	0%	0%
Adj. Flow (vph)	415	1406	0	0	501	299	129	332	560	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	415	1406	0	0	501	299	0	461	560	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (m)	2.0	10.0			10.0	2.0	2.0	10.0	2.0			
Trailing Detector (m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Position(m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Size(m)	2.0	0.6			0.6	2.0	2.0	0.6	2.0			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	1	6			2			4				

Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						2	4		4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	6.0	10.0			10.0	10.0	7.0	7.0	7.0			
Minimum Split (s)	11.6	24.0			19.0	19.0	12.3	12.3	12.3			
Total Split (s)	34.0	54.9			20.9	20.9	37.0	37.0	37.0			
Total Split (%)	37.0%	59.7%			22.7%	22.7%	40.3%	40.3%	40.3%			
Maximum Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
Yellow Time (s)	4.5	5.0			5.0	5.0	4.3	4.3	4.3			
All-Red Time (s)	1.1	2.0			2.0	2.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	5.6	7.0			7.0	7.0		5.3	5.3			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	Min			Min	Min	None	None	None			
Walk Time (s)		10.0			7.0	7.0						
Flash Dont Walk (s)		7.0			5.0	5.0						
Pedestrian Calls (#/hr)		0			0	0						
Act Effct Green (s)	27.2	46.0			13.2	13.2		30.3	30.3			
Actuated g/C Ratio	0.31	0.52			0.15	0.15		0.34	0.34			
v/c Ratio	0.93	0.87			0.72	0.67		0.94	0.61			
Control Delay	60.6	26.4			42.9	16.2		58.2	27.8			
Queue Delay	49.6	48.0			0.0	0.0		0.0	0.0			
Total Delay	110.1	74.4			42.9	16.2		58.2	27.8			
LOS	F	E			D	B		E	C			
Approach Delay		82.6			32.9			41.5				
Approach LOS		F			C			D				
90th %ile Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
90th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
70th %ile Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
70th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
50th %ile Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
50th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
30th %ile Green (s)	28.4	47.5			13.5	13.5	31.7	31.7	31.7			
30th %ile Term Code	Max	Hold			Gap	Gap	Max	Max	Max			
10th %ile Green (s)	22.6	38.9			10.7	10.7	25.0	25.0	25.0			
10th %ile Term Code	Gap	Hold			Gap	Gap	Gap	Gap	Gap			
Queue Length 50th (m)	74.2	114.0			32.8	7.6		81.7	48.3			
Queue Length 95th (m)	#93.0	138.8			40.8	21.8		#127.0	67.6			
Internal Link Dist (m)		65.3			353.6			378.7			388.3	
Turn Bay Length (m)						60.0			100.0			
Base Capacity (vph)	468	1690			743	457		517	972			
Starvation Cap Reductn	92	513			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	1.10	1.19			0.67	0.65		0.89	0.58			
Intersection Summary												

Lanes, Volumes, Timings

2658: SFPR EB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 91.9

Actuated Cycle Length: 88.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 60.2

Intersection LOS: E

Intersection Capacity Utilization 105.4%

ICU Level of Service G

Analysis Period (min) 15

90th %ile Actuated Cycle: 91.9

70th %ile Actuated Cycle: 91.9

50th %ile Actuated Cycle: 91.9

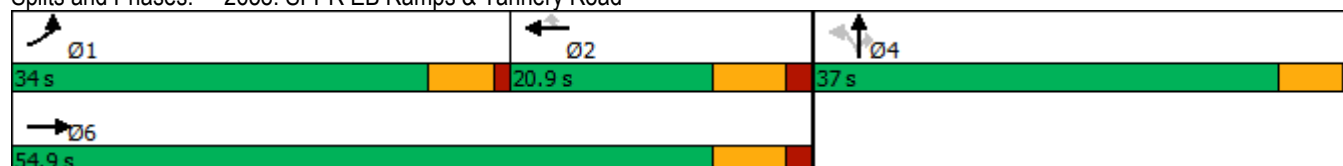
30th %ile Actuated Cycle: 91.5

10th %ile Actuated Cycle: 76.2

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2658: SFPR EB Ramps & Tannery Road



Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	929	94	285	237	0	0	0	0	600	0	158
Future Volume (vph)	0	929	94	285	237	0	0	0	0	600	0	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		50.0
Storage Lanes	0		0	2		0	0		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	2982	0	3072	1407	0	0	0	0	0	1492	1029
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	2982	0	3072	1407	0	0	0	0	0	1492	1029
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15										122
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.5			89.3			127.2			500.7	
Travel Time (s)		14.8			6.4			9.2			36.1	
Peak Hour Factor	0.95	0.85	0.75	0.89	0.77	0.95	0.95	0.95	0.95	0.81	0.95	0.84
Heavy Vehicles (%)	0%	14%	65%	14%	35%	0%	0%	0%	0%	21%	0%	57%
Adj. Flow (vph)	0	1093	125	320	308	0	0	0	0	741	0	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1218	0	320	308	0	0	0	0	0	741	188
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2		1	2					1	2	1
Detector Template		Thru		Left	Thru					Left	Thru	Right
Leading Detector (m)		10.0		2.0	10.0					2.0	10.0	2.0
Trailing Detector (m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Position(m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Size(m)		0.6		2.0	0.6					2.0	0.6	2.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4						9.4	
Detector 2 Size(m)		0.6			0.6						0.6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type		NA		Prot	NA					Perm	NA	Perm
Protected Phases		6		5	2						4	

Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										4		4
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		10.0		6.0	10.0					7.0	7.0	7.0
Minimum Split (s)		15.3		10.2	17.3					12.1	12.1	12.1
Total Split (s)		36.4		13.0	49.4					41.0	41.0	41.0
Total Split (%)		40.3%		14.4%	54.6%					45.4%	45.4%	45.4%
Maximum Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
Yellow Time (s)		4.3		3.5	4.3					4.1	4.1	4.1
All-Red Time (s)		1.0		0.7	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0						0.0	0.0
Total Lost Time (s)		5.3		4.2	5.3						5.1	5.1
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		Min		None	Min					None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					5.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
Actuated g/C Ratio		0.34		0.10	0.49					0.40	0.40	0.40
v/c Ratio		1.18		1.07	0.45					1.25	0.39	
Control Delay		118.8		112.7	17.8					154.1	10.0	
Queue Delay		0.0		0.0	3.1					0.0	0.0	
Total Delay		118.8		112.7	20.9					154.1	10.0	
LOS		F		F	C					F	B	
Approach Delay		118.8			67.7					124.9		
Approach LOS		F			E					F		
90th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
90th %ile Term Code		Max		Max	Hold					Max	Max	Max
70th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
70th %ile Term Code		Max		Max	Hold					Max	Max	Max
50th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
50th %ile Term Code		Max		Max	Hold					Max	Max	Max
30th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
30th %ile Term Code		Max		Max	Hold					Max	Max	Max
10th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
10th %ile Term Code		Max		Max	Hold					Max	Max	Max
Queue Length 50th (m)		~141.3		~33.7	35.3					~170.9	7.6	
Queue Length 95th (m)		#167.2		#59.5	46.1					#240.4	20.7	
Internal Link Dist (m)		181.5			65.3			103.2		476.7		
Turn Bay Length (m)												50.0
Base Capacity (vph)		1035		299	686					592	482	
Starvation Cap Reductn		0		0	274					0	0	
Spillback Cap Reductn		0		0	0					0	0	
Storage Cap Reductn		0		0	0					0	0	
Reduced v/c Ratio		1.18		1.07	0.75					1.25	0.39	
Intersection Summary												

Lanes, Volumes, Timings

2660: SFPR WB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 90.4

Actuated Cycle Length: 90.4

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 109.3

Intersection LOS: F

Intersection Capacity Utilization 105.4%

ICU Level of Service G

Analysis Period (min) 15

90th %ile Actuated Cycle: 90.4

70th %ile Actuated Cycle: 90.4

50th %ile Actuated Cycle: 90.4

30th %ile Actuated Cycle: 90.4

10th %ile Actuated Cycle: 90.4

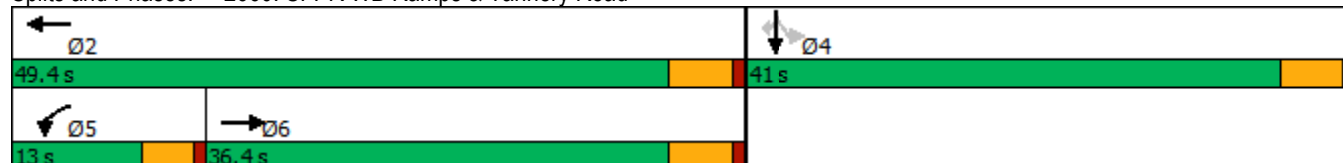
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2660: SFPR WB Ramps & Tannery Road



Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	1853	2	2	1138
Future Vol, veh/h	2	1	1853	2	2	1138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	25	89	50	50	90
Heavy Vehicles, %	50	0	3	50	100	3
Mvmt Flow	4	4	2082	4	4	1264

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	2598	1043	0
Stage 1	2084	-	-
Stage 2	514	-	-
Critical Hdwy	6.7	7.1	-
Critical Hdwy Stg 1	7.6	-	-
Critical Hdwy Stg 2	7	-	-
Follow-up Hdwy	4.3	3.9	-
Pot Cap-1 Maneuver	22	197	-
Stage 1	28	-	-
Stage 2	412	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	19	197	-
Mov Cap-2 Maneuver	25	-	-
Stage 1	28	-	-
Stage 2	362	-	-

Approach	WB	NB	SB
HCM Control Delay, s	104.2	0	0.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	44	33
HCM Lane V/C Ratio	-	-	0.182	0.121
HCM Control Delay (s)	-	-	104.2	128.6
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	0.6	0.4

HCM 6th TWSC
3: Scott Road & Driveway 2 (Central)

09/22/2021

Intersection						
Int Delay, s/veh	6.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↑↑		↔	↑↑↑
Traffic Vol, veh/h	10	9	1844	10	6	1130
Future Vol, veh/h	10	9	1844	10	6	1130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	75	89	83	75	90
Heavy Vehicles, %	90	67	3	80	100	3
Mvmt Flow	20	12	2072	12	8	1256

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2596	1042	0	0	2084
Stage 1	2078	-	-	-	-
Stage 2	518	-	-	-	-
Critical Hdwy	7.5	8.44	-	-	7.3
Critical Hdwy Stg 1	8.4	-	-	-	-
Critical Hdwy Stg 2	7.8	-	-	-	-
Follow-up Hdwy	4.7	4.57	-	-	4.1
Pot Cap-1 Maneuver	~ 12	123	-	-	34
Stage 1	~ 17	-	-	-	-
Stage 2	343	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	~ 9	123	-	-	34
Mov Cap-2 Maneuver	~ 15	-	-	-	-
Stage 1	~ 17	-	-	-	-
Stage 2	262	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	613.8	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	22	34
HCM Lane V/C Ratio	-	-	1.455	0.235
HCM Control Delay (s)	-	-	613.8	140.9
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	4.1	0.8

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

HCM 6th TWSC
5: Scott Road & Driveway 3 (North)

09/22/2021

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	3	1846	7	7	1130
Future Vol, veh/h	6	3	1846	7	7	1130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	75	89	44	58	90
Heavy Vehicles, %	17	33	3	43	86	3
Mvmt Flow	12	4	2074	16	12	1256

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	2608	1045	0
Stage 1	2082	-	-
Stage 2	526	-	-
Critical Hdwy	6.04	7.76	-
Critical Hdwy Stg 1	6.94	-	-
Critical Hdwy Stg 2	6.34	-	-
Follow-up Hdwy	3.97	4.23	-
Pot Cap-1 Maneuver	35	155	-
Stage 1	42	-	-
Stage 2	473	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	24	155	-
Mov Cap-2 Maneuver	37	-	-
Stage 1	42	-	-
Stage 2	327	-	-

Approach	WB	NB	SB
HCM Control Delay, s	120.3	0	1.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	46	39
HCM Lane V/C Ratio	-	-	0.348	0.309
HCM Control Delay (s)	-	-	120.3	134.3
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	1.2	1

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	302	426	173	525	166	220	1249	43	25	412	161
Future Volume (vph)	350	302	426	173	525	166	220	1249	43	25	412	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		85.0	65.0		0.0	115.0		110.0	85.0		85.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.916			0.964				0.850			0.850
Flt Protected	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (prot)	1088	2678	0	1770	3292	0	1517	4940	1468	1703	4893	1357
Flt Permitted	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (perm)	1088	2678	0	1770	3292	0	1517	4940	1468	1703	4893	1357
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		296			33				175			189
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			234.1			219.3			163.7	
Travel Time (s)		27.2			16.9			15.8			11.8	
Peak Hour Factor	0.79	0.82	0.81	0.84	0.83	0.83	0.89	0.85	0.93	0.96	0.93	0.85
Heavy Vehicles (%)	51%	7%	23%	2%	5%	8%	19%	5%	10%	6%	6%	19%
Adj. Flow (vph)	443	368	526	206	633	200	247	1469	46	26	443	189
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	399	938	0	206	833	0	247	1469	46	26	443	189
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	0.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									6			2
Detector Phase	4	4		3	3		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	9.0	9.0		9.0	9.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	33.0	33.0		16.0	16.0		14.0	28.0	28.0	14.0	28.0	28.0
Total Split (s)	38.0	38.0		24.0	24.0		18.0	36.0	36.0	14.0	32.0	32.0
Total Split (%)	33.9%	33.9%		21.4%	21.4%		16.1%	32.1%	32.1%	12.5%	28.6%	28.6%
Maximum Green (s)	31.0	31.0		17.0	17.0		11.0	29.0	29.0	7.0	25.0	25.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-2.0	-2.0	-2.0	0.0	-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	4.0	4.0	5.0	4.0	4.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)	4.0	4.0						7.0	7.0		7.0	7.0
Flash Dont Walk (s)	22.0	22.0						14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)	0	0						0	0		0	0
Act Effct Green (s)	34.0	34.0		20.0	20.0		20.6	36.6	36.6	7.0	19.4	17.4
Actuated g/C Ratio	0.30	0.30		0.18	0.18		0.18	0.33	0.33	0.06	0.17	0.16
v/c Ratio	1.21	0.92		0.65	1.36		0.89	0.91	0.08	0.25	0.52	0.51
Control Delay	154.5	40.7		53.5	206.2		77.7	46.9	0.3	71.7	52.1	26.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	154.5	40.7		53.5	206.2		77.7	46.9	0.3	71.7	52.1	26.2
LOS	F	D		D	F		E	D	A	E	D	C
Approach Delay		74.7			176.0			50.0			45.4	
Approach LOS		E			F			D			D	
90th %ile Green (s)	31.0	31.0		17.0	17.0		13.7	29.0	29.0	7.0	22.3	22.3
90th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	31.0	31.0		17.0	17.0		16.5	29.0	29.0	7.0	19.5	19.5
70th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	31.0	31.0		17.0	17.0		18.8	29.0	29.0	7.0	17.2	17.2
50th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	31.0	31.0		17.0	17.0		21.1	43.0	43.0	0.0	14.9	14.9
30th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Skip	Coord	Coord
10th %ile Green (s)	31.0	31.0		17.0	17.0		23.1	43.0	43.0	0.0	12.9	12.9
10th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Skip	Coord	Coord
Queue Length 50th (m)	~123.4	83.5		44.6	~130.2		55.9	~138.1	0.0	6.4	21.7	2.4
Queue Length 95th (m)	#156.7	96.2		65.3	#151.3		#117.5	#152.7	0.0	m16.3	51.5	38.5
Internal Link Dist (m)		353.6			210.1			195.3			139.7	
Turn Bay Length (m)				65.0			115.0		110.0	85.0		85.0
Base Capacity (vph)	330	1019		316	614		279	1614	597	106	1179	449
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.92		0.65	1.36		0.89	0.91	0.08	0.25	0.38	0.42
Intersection Summary												

Lanes, Volumes, Timings

1095: Scott Road & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 112

Offset: 32 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 83.5

Intersection LOS: F

Intersection Capacity Utilization 87.9%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

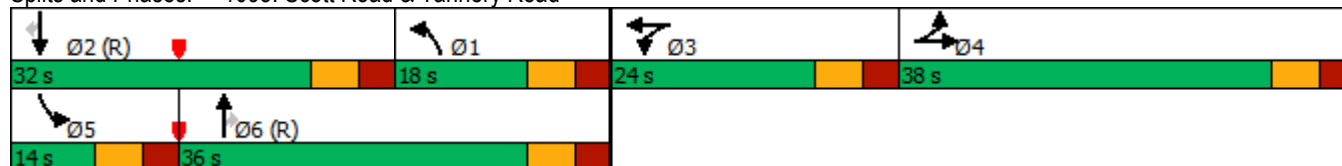
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1095: Scott Road & Tannery Road



Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	24	30	99	161	70	136	1398	162	32	576	190
Future Volume (vph)	25	24	30	99	161	70	136	1398	162	32	576	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	30.0		25.0	80.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.922				0.850		0.982			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1421	1588	0	1656	1727	1509	1656	4696	0	1626	4587	0
Flt Permitted	0.460			0.711			0.950			0.950		
Satd. Flow (perm)	688	1588	0	1239	1727	1509	1656	4696	0	1626	4587	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37				166		34			90	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		470.5			207.6			440.4			488.8	
Travel Time (s)		33.9			14.9			31.7			35.2	
Peak Hour Factor	0.75	0.71	0.82	0.75	0.89	0.68	0.51	0.90	0.75	0.77	0.92	0.81
Heavy Vehicles (%)	27%	2%	18%	9%	10%	7%	9%	7%	19%	11%	9%	7%
Adj. Flow (vph)	33	34	37	132	181	103	267	1553	216	42	626	235
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	71	0	132	181	103	267	1769	0	42	861	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8			4		4						
Detector Phase	8	8		4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	12.0	23.0		12.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0	37.0	34.0	63.0		12.0	41.0	
Total Split (%)	33.0%	33.0%		33.0%	33.0%	33.0%	30.4%	56.3%		10.7%	36.6%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	27.0	57.0		5.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	2.0		3.0	2.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	-3.0	-3.0	-2.0		-3.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0		10.0			10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)	21.5	21.5		21.5	21.5	21.5	26.8	73.7		10.4	51.7	
Actuated g/C Ratio	0.19	0.19		0.19	0.19	0.19	0.24	0.66		0.09	0.46	
v/c Ratio	0.25	0.21		0.55	0.55	0.24	0.68	0.57		0.28	0.40	
Control Delay	41.0	20.7		48.9	46.2	2.0	52.8	5.2		52.8	20.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	41.0	20.7		48.9	46.2	2.0	52.8	5.2		52.8	20.0	
LOS	D	C		D	D	A	D	A		D	C	
Approach Delay		27.1			36.1			11.4			21.6	
Approach LOS		C			D			B			C	
90th %ile Green (s)	26.3	26.3		26.3	26.3	26.3	30.7	60.7		5.0	35.0	
90th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Max	Coord		Max	Coord	
70th %ile Green (s)	21.1	21.1		21.1	21.1	21.1	27.1	62.5		8.4	43.8	
70th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Max	Coord	
50th %ile Green (s)	18.1	18.1		18.1	18.1	18.1	24.0	64.6		9.3	49.9	
50th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Gap	Coord	
30th %ile Green (s)	15.4	15.4		15.4	15.4	15.4	20.8	83.6		0.0	55.8	
30th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Skip	Coord	
10th %ile Green (s)	11.7	11.7		11.7	11.7	11.7	16.2	87.3		0.0	64.1	
10th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Gap	Coord		Skip	Coord	
Queue Length 50th (m)	6.5	6.6		27.9	38.2	0.0	64.7	35.6		9.0	41.2	
Queue Length 95th (m)	12.3	12.5		35.7	55.0	0.0	m36.7	m43.6		18.1	66.8	
Internal Link Dist (m)		446.5			183.6			416.4			464.8	
Turn Bay Length (m)	35.0			30.0		25.0	80.0			45.0		
Base Capacity (vph)	202	493		365	508	561	454	3103		151	2166	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.14		0.36	0.36	0.18	0.59	0.57		0.28	0.40	
Intersection Summary												

Lanes, Volumes, Timings

1101: Scott Road & Old Yale Rd

09/22/2021

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 112

Offset: 103 (92%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 62.4%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1101: Scott Road & Old Yale Rd



Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  				 			
Traffic Volume (vph)	104	674	0	0	696	35	352	171	404	0	0	0
Future Volume (vph)	104	674	0	0	696	35	352	171	404	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		60.0	0.0		100.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.967				
Satd. Flow (prot)	1195	2888	0	0	4550	1380	0	1454	2450	0	0	0
Flt Permitted	0.950							0.967				
Satd. Flow (perm)	1195	2888	0	0	4550	1380	0	1454	2450	0	0	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						93						
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		89.3			377.6			402.7			412.3	
Travel Time (s)		6.4			27.2			29.0			29.7	
Peak Hour Factor	0.83	0.74	0.95	0.95	0.94	0.86	0.76	0.80	0.91	0.95	0.95	0.95
Heavy Vehicles (%)	51%	25%	0%	0%	14%	17%	33%	12%	16%	0%	0%	0%
Adj. Flow (vph)	125	911	0	0	740	41	463	214	444	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	911	0	0	740	41	0	677	444	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (m)	2.0	10.0			10.0	2.0	2.0	10.0	2.0			
Trailing Detector (m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Position(m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Size(m)	2.0	0.6			0.6	2.0	2.0	0.6	2.0			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	1	6			2			4				

Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						2	4		4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	6.0	10.0			10.0	10.0	7.0	7.0	7.0			
Minimum Split (s)	11.6	24.0			19.0	19.0	12.3	12.3	12.3			
Total Split (s)	17.0	41.9			24.9	24.9	51.0	51.0	51.0			
Total Split (%)	18.3%	45.1%			26.8%	26.8%	54.9%	54.9%	54.9%			
Maximum Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
Yellow Time (s)	4.5	5.0			5.0	5.0	4.3	4.3	4.3			
All-Red Time (s)	1.1	2.0			2.0	2.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	5.6	7.0			7.0	7.0		5.3	5.3			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	Min			Min	Min	None	None	None			
Walk Time (s)		10.0			7.0	7.0						
Flash Dont Walk (s)		7.0			5.0	5.0						
Pedestrian Calls (#/hr)		0			0	0						
Act Effct Green (s)	11.2	34.1			17.3	17.3		44.0	44.0			
Actuated g/C Ratio	0.12	0.38			0.19	0.19		0.49	0.49			
v/c Ratio	0.85	0.84			0.85	0.12		0.96	0.37			
Control Delay	84.8	34.3			46.4	0.7		49.2	15.7			
Queue Delay	0.0	49.3			0.0	0.0		0.0	0.0			
Total Delay	84.8	83.7			46.4	0.7		49.2	15.7			
LOS	F	F			D	A		D	B			
Approach Delay		83.8			44.0			36.0				
Approach LOS		F			D			D				
90th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
90th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
70th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
70th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
50th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
50th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
30th %ile Green (s)	11.4	34.9			17.9	17.9	45.7	45.7	45.7			
30th %ile Term Code	Max	Hold			Max	Max	Max	Max	Max			
10th %ile Green (s)	10.3	30.9			15.0	15.0	37.3	37.3	37.3			
10th %ile Term Code	Gap	Hold			Gap	Gap	Gap	Gap	Gap			
Queue Length 50th (m)	23.4	81.0			49.6	0.0		116.1	28.2			
Queue Length 95th (m)	#49.3	79.8			#69.3	0.0		#156.7	40.8			
Internal Link Dist (m)		65.3			353.6			378.7			388.3	
Turn Bay Length (m)						60.0			100.0			
Base Capacity (vph)	151	1118			903	348		737	1242			
Starvation Cap Reductn	0	306			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.83	1.12			0.82	0.12		0.92	0.36			
Intersection Summary												

Lanes, Volumes, Timings

2658: SFPR EB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 92.9

Actuated Cycle Length: 90.4

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 55.0

Intersection LOS: D

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

90th %ile Actuated Cycle: 92.9

70th %ile Actuated Cycle: 92.9

50th %ile Actuated Cycle: 92.9

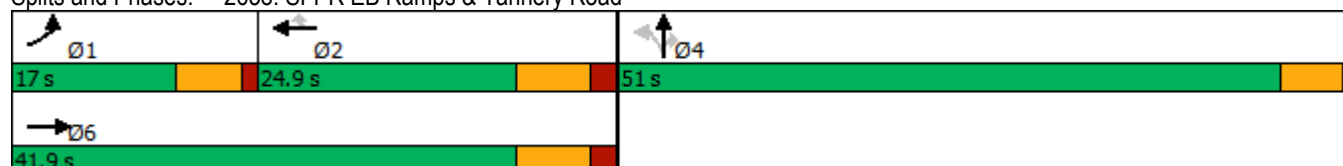
30th %ile Actuated Cycle: 92.9

10th %ile Actuated Cycle: 80.5

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2658: SFPR EB Ramps & Tannery Road



Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	178	1	778	270	0	0	0	0	600	0	154
Future Volume (vph)	0	178	1	778	270	0	0	0	0	600	0	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		50.0
Storage Lanes	0		0	2		0	0		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	2352	0	3019	1610	0	0	0	0	0	1517	1214
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	2352	0	3019	1610	0	0	0	0	0	1517	1214
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1										165
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.5			89.3			127.2			500.7	
Travel Time (s)		14.8			6.4			9.2			36.1	
Peak Hour Factor	0.95	0.71	0.25	0.94	0.82	0.95	0.95	0.95	0.95	0.83	0.95	0.68
Heavy Vehicles (%)	0%	54%	0%	16%	18%	0%	0%	0%	0%	19%	0%	33%
Adj. Flow (vph)	0	251	4	828	329	0	0	0	0	723	0	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	828	329	0	0	0	0	0	723	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2		1	2					1	2	1
Detector Template		Thru		Left	Thru					Left	Thru	Right
Leading Detector (m)		10.0		2.0	10.0					2.0	10.0	2.0
Trailing Detector (m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Position(m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Size(m)		0.6		2.0	0.6					2.0	0.6	2.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4						9.4	
Detector 2 Size(m)		0.6			0.6						0.6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type		NA		Prot	NA					Perm	NA	Perm
Protected Phases		6		5	2						4	

Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										4		4
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		10.0		6.0	10.0					7.0	7.0	7.0
Minimum Split (s)		15.3		10.2	17.3					12.1	12.1	12.1
Total Split (s)		16.4		28.0	44.4					46.0	46.0	46.0
Total Split (%)		18.1%		31.0%	49.1%					50.9%	50.9%	50.9%
Maximum Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
Yellow Time (s)		4.3		3.5	4.3					4.1	4.1	4.1
All-Red Time (s)		1.0		0.7	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0						0.0	0.0
Total Lost Time (s)		5.3		4.2	5.3						5.1	5.1
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		Min		None	Min					None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					5.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
Actuated g/C Ratio		0.12		0.26	0.43					0.45	0.45	0.45
v/c Ratio		0.88		1.04	0.47					1.05	0.35	0.35
Control Delay		70.5		77.7	21.1					75.9	6.6	6.6
Queue Delay		0.0		22.5	4.5					0.0	0.0	0.0
Total Delay		70.5		100.2	25.6					75.9	6.6	6.6
LOS		E		F	C					E	A	A
Approach Delay		70.5			79.0					59.4		
Approach LOS		E			E					E		
90th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
90th %ile Term Code		Max		Max	Hold					Max	Max	Max
70th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
70th %ile Term Code		Max		Max	Hold					Max	Max	Max
50th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
50th %ile Term Code		Max		Max	Hold					Max	Max	Max
30th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
30th %ile Term Code		Max		Max	Hold					Max	Max	Max
10th %ile Green (s)		11.1		23.8	39.1					40.9	40.9	40.9
10th %ile Term Code		Max		Max	Hold					Max	Max	Max
Queue Length 50th (m)		24.4		~85.2	41.6					~145.9	6.2	6.2
Queue Length 95th (m)		#31.1		#122.1	58.0					#214.7	10.0	10.0
Internal Link Dist (m)		181.5			65.3			103.2		476.7		
Turn Bay Length (m)												50.0
Base Capacity (vph)		289		794	696					686	639	639
Starvation Cap Reductn		0		109	288					0	0	0
Spillback Cap Reductn		0		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.88		1.21	0.81					1.05	0.35	0.35
Intersection Summary												

Lanes, Volumes, Timings

2660: SFPR WB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 90.4

Actuated Cycle Length: 90.4

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 70.2

Intersection LOS: E

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

90th %ile Actuated Cycle: 90.4

70th %ile Actuated Cycle: 90.4

50th %ile Actuated Cycle: 90.4

30th %ile Actuated Cycle: 90.4

10th %ile Actuated Cycle: 90.4

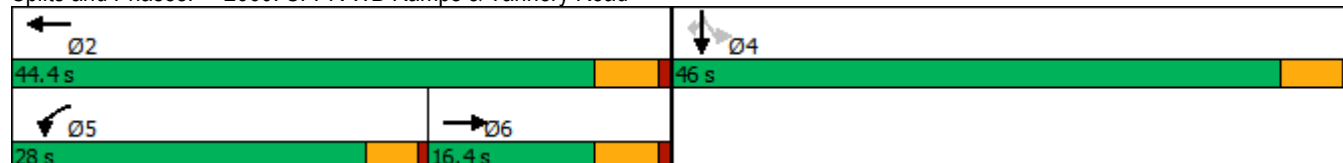
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2660: SFPR WB Ramps & Tannery Road



Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗		↑↑↑↑		↖↗	↑↑↑↑
Traffic Vol, veh/h	1	1	1755	9	10	600
Future Vol, veh/h	1	1	1755	9	10	600
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	25	85	75	92	93
Heavy Vehicles, %	0	0	5	0	0	6
Mvmt Flow	3	4	2065	12	11	645
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2351	1039	0	0	2077	0
Stage 1	2071	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	5.7	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	62	198	-	-	117	-
Stage 1	52	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	56	198	-	-	117	-
Mov Cap-2 Maneuver	47	-	-	-	-	-
Stage 1	52	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	49.8	0	0.6			
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	87	117	-	
HCM Lane V/C Ratio	-	-	0.076	0.093	-	
HCM Control Delay (s)	-	-	49.8	38.9	-	
HCM Lane LOS	-	-	E	E	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.3	-	

HCM 6th TWSC
3: Scott Road & Driveway 2 (Central)

09/22/2021

Intersection						
Int Delay, s/veh	2.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	7	1746	10	11	605
Future Vol, veh/h	5	7	1746	10	11	605
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	85	75	75	93
Heavy Vehicles, %	100	100	5	100	100	6
Mvmt Flow	7	9	2054	13	15	651
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2351	1034	0	0	2067	0
Stage 1	2061	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Critical Hdwy	7.7	9.1	-	-	7.3	-
Critical Hdwy Stg 1	8.6	-	-	-	-	-
Critical Hdwy Stg 2	8	-	-	-	-	-
Follow-up Hdwy	4.8	4.9	-	-	4.1	-
Pot Cap-1 Maneuver	16	100	-	-	35	-
Stage 1	16	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	9	100	-	-	35	-
Mov Cap-2 Maneuver	14	-	-	-	-	-
Stage 1	16	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	243	0	3.7			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	28	35	-	
HCM Lane V/C Ratio	-	-	0.571	0.419	-	
HCM Control Delay (s)	-	-	243	168.1	-	
HCM Lane LOS	-	-	F	F	-	
HCM 95th %tile Q(veh)	-	-	1.8	1.4	-	

HCM 6th TWSC
5: Scott Road & Driveway 3 (North)

09/22/2021

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	1745	8	6	615
Future Vol, veh/h	1	1	1745	8	6	615
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	63	85	50	25	93
Heavy Vehicles, %	0	0	5	0	0	6
Mvmt Flow	1	2	2053	16	24	661
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2373	1035	0	0	2069	0
Stage 1	2061	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	5.7	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	60	199	-	-	118	-
Stage 1	53	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	48	199	-	-	118	-
Mov Cap-2 Maneuver	48	-	-	-	-	-
Stage 1	53	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	50.5	0	1.5			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	82	118	-	
HCM Lane V/C Ratio	-	-	0.036	0.203	-	
HCM Control Delay (s)	-	-	50.5	43.1	-	
HCM Lane LOS	-	-	F	E	-	
HCM 95th %tile Q(veh)	-	-	0.1	0.7	-	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	464	615	646	289	219	55	413	1328	310	83	981	86
Future Volume (vph)	464	615	646	289	219	55	413	1328	310	83	981	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		85.0	65.0		0.0	115.0		110.0	85.0		85.0
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.926			0.966				0.850			0.850
Flt Protected	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (prot)	1467	2913	0	1805	3434	0	1626	5036	1599	1719	5036	1324
Flt Permitted	0.950	0.998		0.950			0.950			0.950		
Satd. Flow (perm)	1467	2913	0	1805	3434	0	1626	5036	1599	1719	5036	1324
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		214			26				318			164
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			234.1			219.3			163.7	
Travel Time (s)		27.2			16.9			15.8			11.8	
Peak Hour Factor	0.93	0.85	0.86	0.78	0.86	0.73	0.80	0.89	0.87	0.82	0.90	0.69
Heavy Vehicles (%)	12%	3%	16%	0%	2%	0%	11%	3%	1%	5%	3%	22%
Adj. Flow (vph)	499	724	751	371	255	75	516	1492	356	101	1090	125
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	449	1525	0	371	330	0	516	1492	356	101	1090	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	0
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	0.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	

Lanes, Volumes, Timings
1095: Scott Road & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									6			2
Detector Phase	4	4		3	3		1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	9.0	9.0		9.0	9.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	33.0	33.0		16.0	16.0		14.0	28.0	28.0	14.0	28.0	28.0
Total Split (s)	42.0	42.0		21.0	21.0		26.0	43.0	43.0	14.0	31.0	31.0
Total Split (%)	35.0%	35.0%		17.5%	17.5%		21.7%	35.8%	35.8%	11.7%	25.8%	25.8%
Maximum Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-2.0	-2.0	-2.0	0.0	-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0		4.0	4.0		5.0	4.0	4.0	5.0	4.0	4.0
Recall Mode	None	None		None	None		None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)	4.0	4.0						7.0	7.0		7.0	7.0
Flash Dont Walk (s)	22.0	22.0						14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)	0	0						0	0		0	0
Act Effct Green (s)	38.0	38.0		17.0	17.0		21.0	38.0	38.0	7.0	26.0	24.0
Actuated g/C Ratio	0.32	0.32		0.14	0.14		0.18	0.32	0.32	0.06	0.22	0.20
v/c Ratio	0.97	1.43		1.45	0.65		1.82	0.94	0.49	1.01	1.00	0.32
Control Delay	75.6	226.7		262.4	51.4		411.0	51.8	7.6	152.0	79.7	17.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.6	226.7		262.4	51.4		411.0	51.8	7.6	152.0	79.7	17.0
LOS	E	F		F	D		F	D	A	F	E	B
Approach Delay		192.3			163.1			123.6			79.3	
Approach LOS		F			F			F			E	
90th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
90th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
70th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
50th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
30th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	35.0	35.0		14.0	14.0		19.0	36.0	36.0	7.0	24.0	24.0
10th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	Coord
Queue Length 50th (m)	120.1	~261.5		~125.4	37.9		~192.8	131.2	6.6	~27.2	97.7	6.1
Queue Length 95th (m)	#194.8	#281.7		#153.3	51.4		#224.2	#158.8	27.2	m#53.3	m#125.9	m9.5
Internal Link Dist (m)		353.6			210.1			195.3			139.7	
Turn Bay Length (m)				65.0			115.0		110.0	85.0		85.0
Base Capacity (vph)	464	1068		255	508		284	1594	723	100	1091	396
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.97	1.43		1.45	0.65		1.82	0.94	0.49	1.01	1.00	0.32
Intersection Summary												

Lanes, Volumes, Timings

1095: Scott Road & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 44 (37%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.82

Intersection Signal Delay: 140.1

Intersection LOS: F

Intersection Capacity Utilization 107.0%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

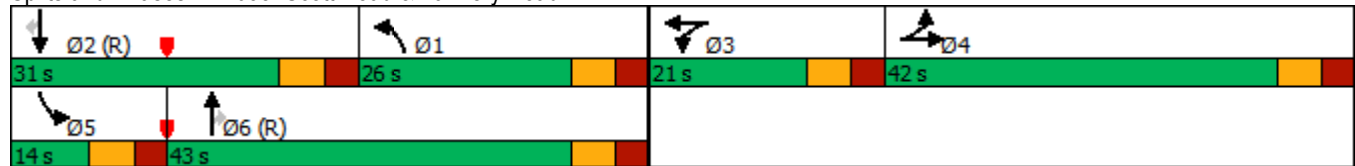
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1095: Scott Road & Tannery Road



Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	169	88	137	54	163	23	1533	332	199	944	74
Future Volume (vph)	166	169	88	137	54	163	23	1533	332	199	944	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	35.0		0.0	30.0		25.0	80.0		0.0	45.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.948				0.850		0.969			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	1615	0	1752	1652	1615	1347	4759	0	1671	4878	0
Flt Permitted	0.709			0.329			0.950			0.950		
Satd. Flow (perm)	1171	1615	0	607	1652	1615	1347	4759	0	1671	4878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22				199		72			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		470.5			207.6			440.4			488.8	
Travel Time (s)		33.9			14.9			31.7			35.2	
Peak Hour Factor	0.83	0.86	0.84	0.84	0.74	0.82	0.70	0.86	0.72	0.74	0.80	0.80
Heavy Vehicles (%)	15%	6%	22%	3%	15%	0%	34%	5%	8%	8%	4%	20%
Adj. Flow (vph)	200	197	105	163	73	199	33	1783	461	269	1180	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	302	0	163	73	199	33	2244	0	269	1273	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Lanes, Volumes, Timings
1101: Scott Road & Old Yale Rd

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8			4		4						
Detector Phase	8	8		4	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	35.0	35.0		35.0	35.0	35.0	12.0	23.0		12.0	23.0	
Total Split (s)	36.0	36.0		36.0	36.0	36.0	12.0	60.0		24.0	72.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%	30.0%	10.0%	50.0%		20.0%	60.0%	
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	2.0		3.0	2.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	-3.0	-3.0	-2.0		-3.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0		10.0			10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0			0	
Act Effct Green (s)	32.0	32.0		32.0	32.0	32.0	8.0	56.0		20.0	72.8	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.07	0.47		0.17	0.61	
v/c Ratio	0.64	0.68		1.01	0.17	0.35	0.37	0.99		0.97	0.43	
Control Delay	49.7	45.1		119.0	35.1	6.5	62.6	42.2		96.5	13.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.7	45.1		119.0	35.1	6.5	62.6	42.2		96.5	13.6	
LOS	D	D		F	D	A	E	D		F	B	
Approach Delay		47.0			53.4			42.5			28.0	
Approach LOS		D			D			D			C	
90th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
90th %ile Term Code	Max	Max		Max	Max	Max	Max	Coord		Max	Coord	
70th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
70th %ile Term Code	Max	Max		Max	Max	Max	Max	Coord		Max	Coord	
50th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	54.0		17.0	66.0	
50th %ile Term Code	Hold	Hold		Max	Max	Max	Max	Coord		Max	Coord	
30th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	0.0	54.0		17.0	78.0	
30th %ile Term Code	Hold	Hold		Max	Max	Max	Skip	Coord		Max	Coord	
10th %ile Green (s)	29.0	29.0		29.0	29.0	29.0	0.0	54.0		17.0	78.0	
10th %ile Term Code	Hold	Hold		Max	Max	Max	Skip	Coord		Max	Coord	
Queue Length 50th (m)	44.0	62.4		~41.0	13.9	0.0	6.9	212.4		67.0	63.5	
Queue Length 95th (m)	64.2	89.7		#79.0	21.7	13.0	m8.2m#219.0			#87.6	63.6	
Internal Link Dist (m)		446.5			183.6			416.4			464.8	
Turn Bay Length (m)	35.0			30.0		25.0	80.0			45.0		
Base Capacity (vph)	312	446		161	440	576	89	2259		278	2965	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.64	0.68		1.01	0.17	0.35	0.37	0.99		0.97	0.43	
Intersection Summary												

Lanes, Volumes, Timings

1101: Scott Road & Old Yale Rd

09/22/2021

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 119 (99%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 39.3

Intersection LOS: D

Intersection Capacity Utilization 83.2%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

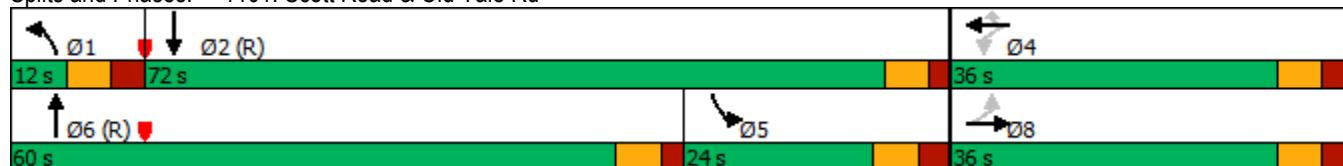
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1101: Scott Road & Old Yale Rd



Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  				 			
Traffic Volume (vph)	307	1223	0	0	416	236	107	279	502	0	0	0
Future Volume (vph)	307	1223	0	0	416	236	107	279	502	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		60.0	0.0		100.0	0.0		0.0
Storage Lanes	1		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.986				
Satd. Flow (prot)	1456	3112	0	0	4715	1553	0	1439	2707	0	0	0
Flt Permitted	0.950							0.986				
Satd. Flow (perm)	1456	3112	0	0	4715	1553	0	1439	2707	0	0	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						253						
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		89.3			377.6			402.7			412.3	
Travel Time (s)		6.4			27.2			29.0			29.7	
Peak Hour Factor	0.74	0.87	0.95	0.95	0.83	0.79	0.83	0.84	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	24%	16%	0%	0%	10%	4%	59%	19%	5%	0%	0%	0%
Adj. Flow (vph)	415	1406	0	0	501	299	129	332	558	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	415	1406	0	0	501	299	0	461	558	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (m)	2.0	10.0			10.0	2.0	2.0	10.0	2.0			
Trailing Detector (m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Position(m)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Size(m)	2.0	0.6			0.6	2.0	2.0	0.6	2.0			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(m)		9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	1	6			2			4				

Lanes, Volumes, Timings
2658: SFPR EB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						2	4		4			
Detector Phase	1	6			2	2	4	4	4			
Switch Phase												
Minimum Initial (s)	6.0	10.0			10.0	10.0	7.0	7.0	7.0			
Minimum Split (s)	11.6	24.0			19.0	19.0	12.3	12.3	12.3			
Total Split (s)	34.0	54.9			20.9	20.9	37.0	37.0	37.0			
Total Split (%)	37.0%	59.7%			22.7%	22.7%	40.3%	40.3%	40.3%			
Maximum Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
Yellow Time (s)	4.5	5.0			5.0	5.0	4.3	4.3	4.3			
All-Red Time (s)	1.1	2.0			2.0	2.0	1.0	1.0	1.0			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	5.6	7.0			7.0	7.0		5.3	5.3			
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	Min			Min	Min	None	None	None			
Walk Time (s)		10.0			7.0	7.0						
Flash Dont Walk (s)		7.0			5.0	5.0						
Pedestrian Calls (#/hr)		0			0	0						
Act Effct Green (s)	27.2	46.0			13.2	13.2		30.3	30.3			
Actuated g/C Ratio	0.31	0.52			0.15	0.15		0.34	0.34			
v/c Ratio	0.93	0.87			0.72	0.67		0.94	0.60			
Control Delay	60.6	26.4			42.9	16.2		58.2	27.8			
Queue Delay	49.6	48.0			0.0	0.0		0.0	0.0			
Total Delay	110.1	74.4			42.9	16.2		58.2	27.8			
LOS	F	E			D	B		E	C			
Approach Delay		82.6			32.9			41.5				
Approach LOS		F			C			D				
90th %ile Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
90th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
70th %ile Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
70th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
50th %ile Green (s)	28.4	47.9			13.9	13.9	31.7	31.7	31.7			
50th %ile Term Code	Max	Max			Max	Max	Max	Max	Max			
30th %ile Green (s)	28.4	47.5			13.5	13.5	31.7	31.7	31.7			
30th %ile Term Code	Max	Hold			Gap	Gap	Max	Max	Max			
10th %ile Green (s)	22.6	38.9			10.7	10.7	25.0	25.0	25.0			
10th %ile Term Code	Gap	Hold			Gap	Gap	Gap	Gap	Gap			
Queue Length 50th (m)	74.2	114.0			32.8	7.6		81.7	48.1			
Queue Length 95th (m)	#93.0	138.8			40.8	21.8		#127.0	67.2			
Internal Link Dist (m)		65.3			353.6			378.7			388.3	
Turn Bay Length (m)						60.0			100.0			
Base Capacity (vph)	468	1690			743	457		517	972			
Starvation Cap Reductn	92	513			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	1.10	1.19			0.67	0.65		0.89	0.57			
Intersection Summary												

Lanes, Volumes, Timings

2658: SFPR EB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 91.9

Actuated Cycle Length: 88.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 60.2

Intersection LOS: E

Intersection Capacity Utilization 105.4%

ICU Level of Service G

Analysis Period (min) 15

90th %ile Actuated Cycle: 91.9

70th %ile Actuated Cycle: 91.9

50th %ile Actuated Cycle: 91.9

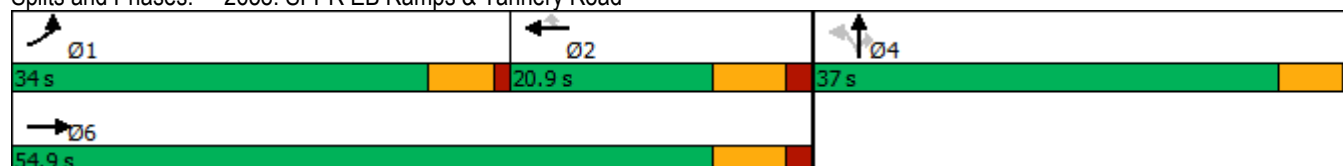
30th %ile Actuated Cycle: 91.5

10th %ile Actuated Cycle: 76.2

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2658: SFPR EB Ramps & Tannery Road



Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	929	94	285	237	0	0	0	0	600	0	158
Future Volume (vph)	0	929	94	285	237	0	0	0	0	600	0	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		50.0
Storage Lanes	0		0	2		0	0		0	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	2982	0	3072	1407	0	0	0	0	0	1492	1029
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	2982	0	3072	1407	0	0	0	0	0	1492	1029
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15										122
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.5			89.3			127.2			500.7	
Travel Time (s)		14.8			6.4			9.2			36.1	
Peak Hour Factor	0.95	0.85	0.75	0.89	0.77	0.95	0.95	0.95	0.95	0.81	0.95	0.84
Heavy Vehicles (%)	0%	14%	65%	14%	35%	0%	0%	0%	0%	21%	0%	57%
Adj. Flow (vph)	0	1093	125	320	308	0	0	0	0	741	0	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1218	0	320	308	0	0	0	0	0	741	188
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors		2		1	2					1	2	1
Detector Template		Thru		Left	Thru					Left	Thru	Right
Leading Detector (m)		10.0		2.0	10.0					2.0	10.0	2.0
Trailing Detector (m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Position(m)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Size(m)		0.6		2.0	0.6					2.0	0.6	2.0
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4						9.4	
Detector 2 Size(m)		0.6			0.6						0.6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type		NA		Prot	NA					Perm	NA	Perm
Protected Phases		6		5	2						4	

Lanes, Volumes, Timings
2660: SFPR WB Ramps & Tannery Road

09/22/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										4		4
Detector Phase		6		5	2					4	4	4
Switch Phase												
Minimum Initial (s)		10.0		6.0	10.0					7.0	7.0	7.0
Minimum Split (s)		15.3		10.2	17.3					12.1	12.1	12.1
Total Split (s)		36.4		13.0	49.4					41.0	41.0	41.0
Total Split (%)		40.3%		14.4%	54.6%					45.4%	45.4%	45.4%
Maximum Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
Yellow Time (s)		4.3		3.5	4.3					4.1	4.1	4.1
All-Red Time (s)		1.0		0.7	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0						0.0	0.0
Total Lost Time (s)		5.3		4.2	5.3						5.1	5.1
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		Min		None	Min					None	None	None
Walk Time (s)					7.0							
Flash Dont Walk (s)					5.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
Actuated g/C Ratio		0.34		0.10	0.49					0.40	0.40	0.40
v/c Ratio		1.18		1.07	0.45					1.25	0.39	
Control Delay		118.8		112.7	17.8					154.1	10.0	
Queue Delay		0.0		0.0	3.1					0.0	0.0	
Total Delay		118.8		112.7	20.9					154.1	10.0	
LOS		F		F	C					F	B	
Approach Delay		118.8			67.7					124.9		
Approach LOS		F			E					F		
90th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
90th %ile Term Code		Max		Max	Hold					Max	Max	Max
70th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
70th %ile Term Code		Max		Max	Hold					Max	Max	Max
50th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
50th %ile Term Code		Max		Max	Hold					Max	Max	Max
30th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
30th %ile Term Code		Max		Max	Hold					Max	Max	Max
10th %ile Green (s)		31.1		8.8	44.1					35.9	35.9	35.9
10th %ile Term Code		Max		Max	Hold					Max	Max	Max
Queue Length 50th (m)		~141.3		~33.7	35.3					~170.9	7.6	
Queue Length 95th (m)		#167.2		#59.5	46.1					#240.4	20.7	
Internal Link Dist (m)		181.5			65.3			103.2		476.7		
Turn Bay Length (m)												50.0
Base Capacity (vph)		1035		299	686					592	482	
Starvation Cap Reductn		0		0	274					0	0	
Spillback Cap Reductn		0		0	0					0	0	
Storage Cap Reductn		0		0	0					0	0	
Reduced v/c Ratio		1.18		1.07	0.75					1.25	0.39	
Intersection Summary												

Lanes, Volumes, Timings

2660: SFPR WB Ramps & Tannery Road

09/22/2021

Area Type: Other

Cycle Length: 90.4

Actuated Cycle Length: 90.4

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 109.3

Intersection LOS: F

Intersection Capacity Utilization 105.4%

ICU Level of Service G

Analysis Period (min) 15

90th %ile Actuated Cycle: 90.4

70th %ile Actuated Cycle: 90.4

50th %ile Actuated Cycle: 90.4

30th %ile Actuated Cycle: 90.4

10th %ile Actuated Cycle: 90.4

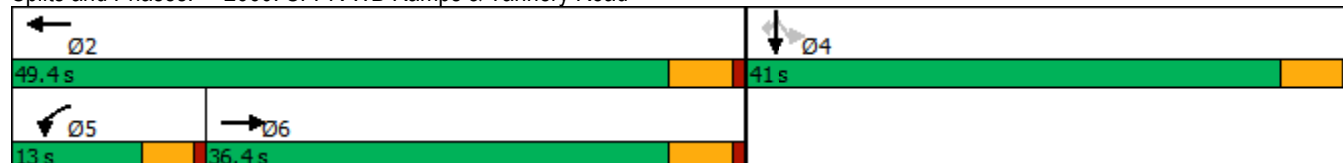
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2660: SFPR WB Ramps & Tannery Road



Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↑↑↑↑		↔	↑↑↑↑
Traffic Vol, veh/h	10	9	1843	2	2	1141
Future Vol, veh/h	10	9	1843	2	2	1141
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	25	89	50	50	90
Heavy Vehicles, %	0	0	3	0	0	3
Mvmt Flow	20	36	2071	4	4	1268
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2588	1038	0	0	2075	0
Stage 1	2073	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	5.7	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	46	198	-	-	117	-
Stage 1	52	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	44	198	-	-	117	-
Mov Cap-2 Maneuver	47	-	-	-	-	-
Stage 1	52	-	-	-	-	-
Stage 2	503	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	92	0	0.1			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	92	117	-	
HCM Lane V/C Ratio	-	-	0.609	0.034	-	
HCM Control Delay (s)	-	-	92	36.9	-	
HCM Lane LOS	-	-	F	E	-	
HCM 95th %tile Q(veh)	-	-	2.9	0.1	-	

HCM 6th TWSC
3: Scott Road & Driveway 2 (Central)

09/22/2021

Intersection						
Int Delay, s/veh	5.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	🚗🚗		🚗🚗🚗		🚗	🚗🚗🚗
Traffic Vol, veh/h	12	10	1846	6	7	1131
Future Vol, veh/h	12	10	1846	6	7	1131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	89	75	75	90
Heavy Vehicles, %	100	100	3	100	100	3
Mvmt Flow	16	13	2074	8	9	1257
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2599	1041	0	0	2082	0
Stage 1	2078	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	7.7	9.1	-	-	7.3	-
Critical Hdwy Stg 1	8.6	-	-	-	-	-
Critical Hdwy Stg 2	8	-	-	-	-	-
Follow-up Hdwy	4.8	4.9	-	-	4.1	-
Pot Cap-1 Maneuver	~ 10	99	-	-	34	-
Stage 1	~ 15	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 7	99	-	-	34	-
Mov Cap-2 Maneuver	~ 13	-	-	-	-	-
Stage 1	~ 15	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, \$	605.9		0		1.1	
HCM LOS	F					
Minor Lane/Major Mvmt			NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)			-	- 21	34	-
HCM Lane V/C Ratio			-	- 1.397	0.275	-
HCM Control Delay (s)			-	-\$ 605.9	147	-
HCM Lane LOS			-	- F	F	-
HCM 95th %tile Q(veh)			-	- 3.9	0.9	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
5: Scott Road & Driveway 3 (North)

09/22/2021

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	6	1855	1	1	1131
Future Vol, veh/h	7	6	1855	1	1	1131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	75	89	44	58	90
Heavy Vehicles, %	0	0	3	0	0	3
Mvmt Flow	14	8	2084	2	2	1257
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2592	1043	0	0	2086	0
Stage 1	2085	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Critical Hdwy	5.7	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.8	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	46	197	-	-	116	-
Stage 1	51	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	45	197	-	-	116	-
Mov Cap-2 Maneuver	46	-	-	-	-	-
Stage 1	51	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	88.2	0	0.1			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	64	116	-	
HCM Lane V/C Ratio	-	-	0.344	0.015	-	
HCM Control Delay (s)	-	-	88.2	36.5	-	
HCM Lane LOS	-	-	F	E	-	
HCM 95th %tile Q(veh)	-	-	1.3	0	-	