

**PROJECT NO: 1651-5095  
DECEMBER 19, 2019**

**SENT VIA: EMAIL:  
C/O PATRICKP@GSAI.CA**

Mary Nordstrom  
Community Planner, Community Services  
Town of Caledon  
6311 Old Church Road  
Caledon, ON L7C 1J6

**Attention: Ms. Mary Nordstrom**

**RE: TRAFFIC ASSESSMENT  
TEMPORARY ZONING BY-LAW AMENDMENT APPLICATION  
10795 HIGHWAY 9  
TOWN OF CALEDON**

Dear Ms. Nordstrom,

C.F. Crozier & Associates Inc. (Crozier) was retained by Lions Group Inc. to provide transportation engineering services in support of a Temporary Zoning By-Law Amendment (ZBA) application for the existing commercial development at 10795 Highway 9 in the Town of Caledon.

The purpose of the Temporary ZBA application is to bring the subject property into conformance with the Town's Zoning By-Law. To support the application, Crozier has prepared a Traffic Assessment containing analysis of the following transportation components:

- Existing traffic operations on Highway 9 during the weekday a.m. and p.m. peak hours; and
- Sightline availability at the existing site accesses to the subject property.

## **1.0 SUBJECT PROPERTY**

The subject property covers an area of approximately 9.76 acres and is located in a rural environment with existing commercial uses on the south side of Highway 9. The subject property currently consists of a demolition business with a contractor's facility, business office, and open storage.

The site consists of two full-moves accesses to Highway 9, with the easterly access shared with the adjacent 10819 Highway 9 property to the east.

**Attachment A** contains the Existing Conditions Plan including a key map of the subject property.

The proponent has operated the demolition business on the subject property since 2006. However, Town of Caledon staff (Town staff) have recently indicated that not all material being stored on the site is accessory to the demolition business and thus the site is not entirely in conformance with the Town's Zoning By-Law.

## 2.0 TEMPORARY ZBA APPLICATION

The proposed Temporary ZBA application is to permit the existing uses for a temporary period of three years. As part of the application, the Town has requested that a comprehensive Traffic Impact Study (TIS) be submitted.

However, the Temporary ZBA application does not propose any new development on the subject property or revisions to the existing buildings. Therefore, a scoped Traffic Assessment has been prepared to support the application in lieu of a comprehensive Traffic Impact Study.

## 3.0 EXISTING CONDITIONS

### 3.1 Boundary Road Network

The boundary road network at the site frontage is described in **Table 1**.

**Table 1: Boundary Road Network**

Feature	Roadway	
	Highway 9	Tottenham Road
Direction	Two-way (East-West)	Two-way (North-South)
Classification	2B – Arterial <sup>1</sup>	Primary Arterial – Controlled Access <sup>2</sup>
Jurisdiction	Ministry of Transportation of Ontario (MTO)	County of Simcoe (County Road 10)
Speed Limit	80 km/h (posted)	80 km/h (posted)
Span	Highway 10 (Orangeville) to Highway 400	Highway 9 to County Road 90 (Angus)
Number of lanes total	Four travel lanes (site frontage) Two travel lanes (east and west of site frontage)	Two travel lanes
Median type	Centre lane (site frontage)	None
Shoulder Type	Gravel	Gravel
Pedestrian Facilities	None	None
Cycling Facilities	None	None
Transit Services	None	None

Note 1: Classification per the MTO's Highway Corridor Management Manual (September 2018)

Note 2: Classification per the County of Simcoe Official Plan Schedule 5.5.1. "County Transportation Systems"

The intersection of Highway 9 and Tottenham Road is signalized, operating under a semi-actuated mode of control with Highway 9 as the major street. The site accesses to 10795 Highway 9 are unsignalized.

### 3.2 Traffic Data

Turning movement counts were conducted by Spectrum Traffic Data Inc. staff on Tuesday December 3, 2019 at the intersections of Highway 9 and Tottenham Road, and Highway 9 and the site accesses between 6:00 a.m. – 10:00 a.m., and 3:00 p.m. – 7:00 p.m. to determine existing traffic volumes. **Figure 1** illustrates the existing traffic volumes on the boundary road network.

**Table 2** outlines the total recorded inbound and outbound traffic volumes at the site accesses to the subject property.

**Table 2: Site Traffic Volumes**

Peak Hour	Trips Generated		
	Inbound	Outbound	Total
Weekday A.M.	0	1	1
Weekday P.M.	2	4	6
<b>Total Traffic</b>	<b>2</b>	<b>5</b>	<b>7</b>

The subject property is currently generating a total of 7 two-way trips during the weekday a.m. and p.m. peak hours combined. These traffic volumes are considered negligible from a traffic operations perspective and are typically not associated with traffic operational issues.

Intersection analysis was conducted utilizing peak hour factors (PHFs) as calculated for each intersection during each time period. **Table 3** outlines the calculated peak hour factors at each intersection during each peak hour.

**Table 3: Peak Hour Factors**

Intersection	Peak Hour	Peak Hour Factor
Highway 9 and Tottenham Road	Weekday A.M. 7:15 a.m. – 8:15 a.m.	0.96
	Weekday P.M. 4:30 p.m. – 5:30 p.m.	0.97
Highway 9 and Easterly Site Access	Weekday A.M. 7:15 a.m. – 8:15 a.m.	0.95
	Weekday P.M. 4:30 p.m. – 5:30 p.m.	0.96
Highway 9 and Westerly Site Access	Weekday A.M. 7:15 a.m. – 8:15 a.m.	0.94
	Weekday P.M. 4:30 p.m. – 5:30 p.m.	0.94

The PHFs outlined above reflect near uniform traffic flow during the weekday a.m. and p.m. peak hours. The intersection PHFs for the site accesses reflect the peak hours of the through traffic on Highway 9 given the negligible traffic volumes entering and exiting the site accesses.

Over the entire eight-hour count, a total of 13 inbound and 13 outbound trips were recorded at the site accesses to the subject property. These traffic volumes are considered negligible from a traffic operations perspective and are typically not associated with traffic operational issues.

Signal timing data for the signalized intersection of Highway 9 and Tottenham Road was provided by the MTO.

**Attachment C** contains the traffic counts and signal timing plans.

### 3.4 Intersection Modelling

The boundary road network was modelled in Synchro 9.2 using existing roadway geometrics, collected traffic data, and default modelling parameters such as ideal saturation flow rates and lost time values.

For the purposes of conservative analysis, the site accesses to Highway 9 were modelled as one consolidated access.

The assessment of intersections is based on the "Highway Capacity Manual (HCM)" methodology. Intersections are assessed using a Level of Service (LOS) metric with ranges of delay assigned a letter from "A" to "F"; "A" representing low delays and "F" representing heavy delays. 95<sup>th</sup> percentile queue lengths were derived from SimTraffic using the average of three runs with a 10-minute seeding interval and 60-minute recording interval.

**Attachment B** contains the Level of Service (LOS) definitions for signalized and unsignalized intersection analysis and capacity analysis worksheets generated by Synchro 9.2.

### 3.5 Intersection Operations

The existing intersection operations at the study intersections were analyzed using the existing traffic volumes illustrated in **Figure 1. Table 4** outlines the 2019 existing traffic operations.

**Table 4: Total Traffic Operations**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>	95 <sup>th</sup> Percentile Queue Length > Storage Length
Highway 9 and Tottenham Road	Signal	A.M.	B	14.1 s	0.72 (SBL)	54.1 m > 40 m (SBL)
		P.M.	B	12.6 s	0.68 (EBL)	96.6 m > 85 m (EBL)
Highway 9 and Site Access	Stop (Minor Street)	A.M.	B	12.8 s	0.01 (NBLR)	None
		P.M.	B	12.9 s	0.01 (NBLR)	None

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).  
The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000).

Note 2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted.

The boundary road network is currently operating at LOS "B" with low control delays and no critical volume-to-capacity ratios. These operations indicate that the boundary road network is currently operating at satisfactory levels of service.

The 95<sup>th</sup> percentile queue lengths for the southbound left-turn and eastbound left-turn movements at Highway 9 and Tottenham Road exceed their respective storage lengths during the weekday a.m. and p.m. peak hours, respectively. However, the effective storage lengths provided by the taper

lengths can accommodate the extended queue lengths without impeding the adjacent through lanes.

It is noted that the 95<sup>th</sup> percentile queue length for the eastbound left-turn movement during the weekday p.m. peak hour extends past the easterly site access. However, there were no recorded outbound left-turn movements at the site accesses during the weekday peak hours. Also, it was observed via camera footage that the eastbound left-turn lengths dissipate within one cycle length, which is also evidenced by the eastbound left-turn movement operations.

The consolidated Highway 9 site access is currently operating with low delays and no critical volume-to-capacity ratios. There is reserve capacity at the site access for increased traffic volumes to and from the site.

#### **4.0 SIGHT DISTANCE ASSESSMENT**

The available sightlines at the proposed site access on Highway 9 were measured and compared to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR). Sight distance was measured from the proposed site accesses using the following assumptions:

- A standard driver eye height of 1.08 metres for a passenger car, and
- A 4.4 metre setback from the approximate extension of the outer curb to represent a vehicle waiting to exit the site.

Intersection sight distance is calculated using equation 9.9.1 from the GDGCR as outlined below:

$$ISD = 0.278 * V_{major} * tg$$

Where;

*ISD* = Intersection Sight Distance

*V major* = design speed of roadway (km/h)

*tg* = assumed time gap for vehicles to turn from stop onto roadway (s)

The design speed of a roadway in an urban environment is typically 10-20 km/h greater than the posted speed limit. The posted speed limit on Highway 9 is 80 km/h. Therefore, a design speed of 100 km/h was assumed for the sight distance analysis.

Per Table 9.9.3 in the TAC GDGCR, the base time gap for vehicles for the critical movement exiting the site (left-turns) from a stop onto a two-way highway with no median and a grade less than 3% is 7.5 seconds. However, an additional time gap of 1.5 metres must be added to account for the additional eastbound through lane, eastbound left-turn lane at Highway 9 and Tottenham Road, and centre lane.

The calculated minimum sight distance required at the existing site accesses to 10795 Highway 9 is 255 metres. The measured sight distance exceeds 350 metres in both directions, thus satisfying minimum sight distance requirements per the TAC GDGCR.

## 5.0 CONCLUSIONS

The analysis contained within this Traffic Assessment concludes that no traffic operations issues or safety hazards are identifiable with the subject property operating as it currently does. Therefore, the Temporary ZBA application can be supported from a traffic operations and safety perspective.

We trust that this Traffic Assessment addresses the Town's traffic concerns. Should you have any questions or require any further information, please feel free to give us a call.

Yours truly,

**C.F. CROZIER & ASSOCIATES INC.**



Alexander J. W. Fleming, MBA, P.Eng.  
Associate

**C.F. CROZIER & ASSOCIATES INC.**



Darren J. Loro, C.E.T.  
Transportation Technologist

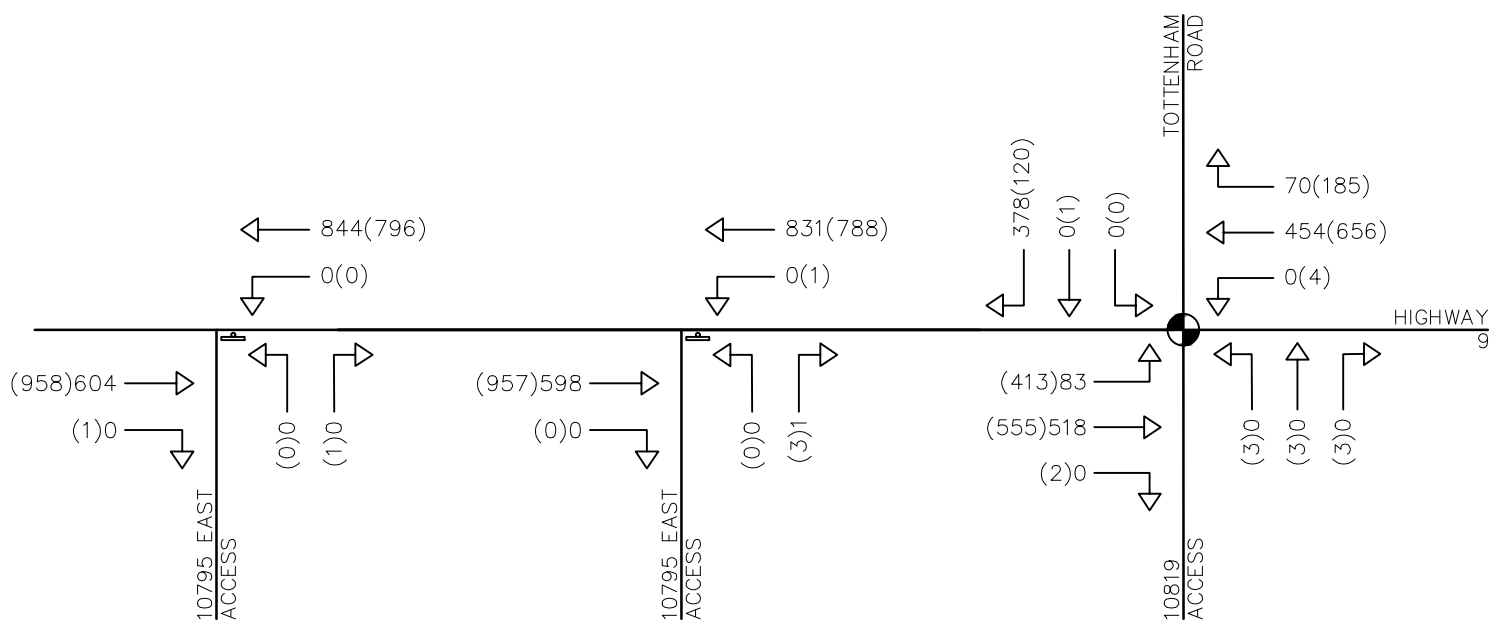
Encl.

Attachment A – Existing Conditions Plan  
Attachment B – Traffic Data  
Attachment C – Detailed Capacity Analysis Worksheets





Figure 1 – Existing Traffic Volumes

/dl

N:\1600\1651-Lions Group Inc\5095-10795&10819 Highway 9\Letters\2019.12.19 10795 Highway 9 Traffic Assessment.docx



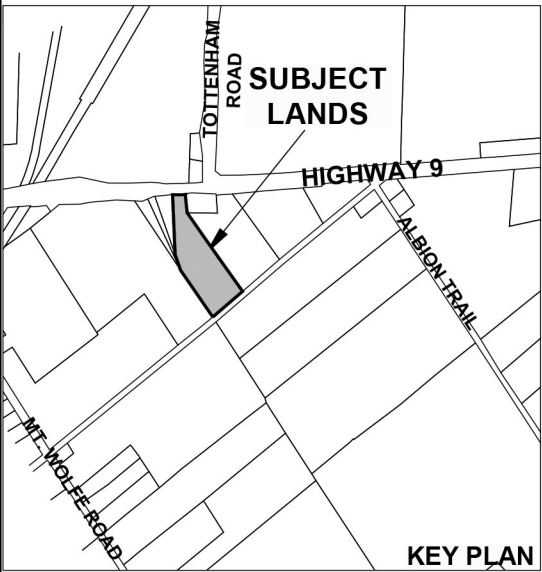
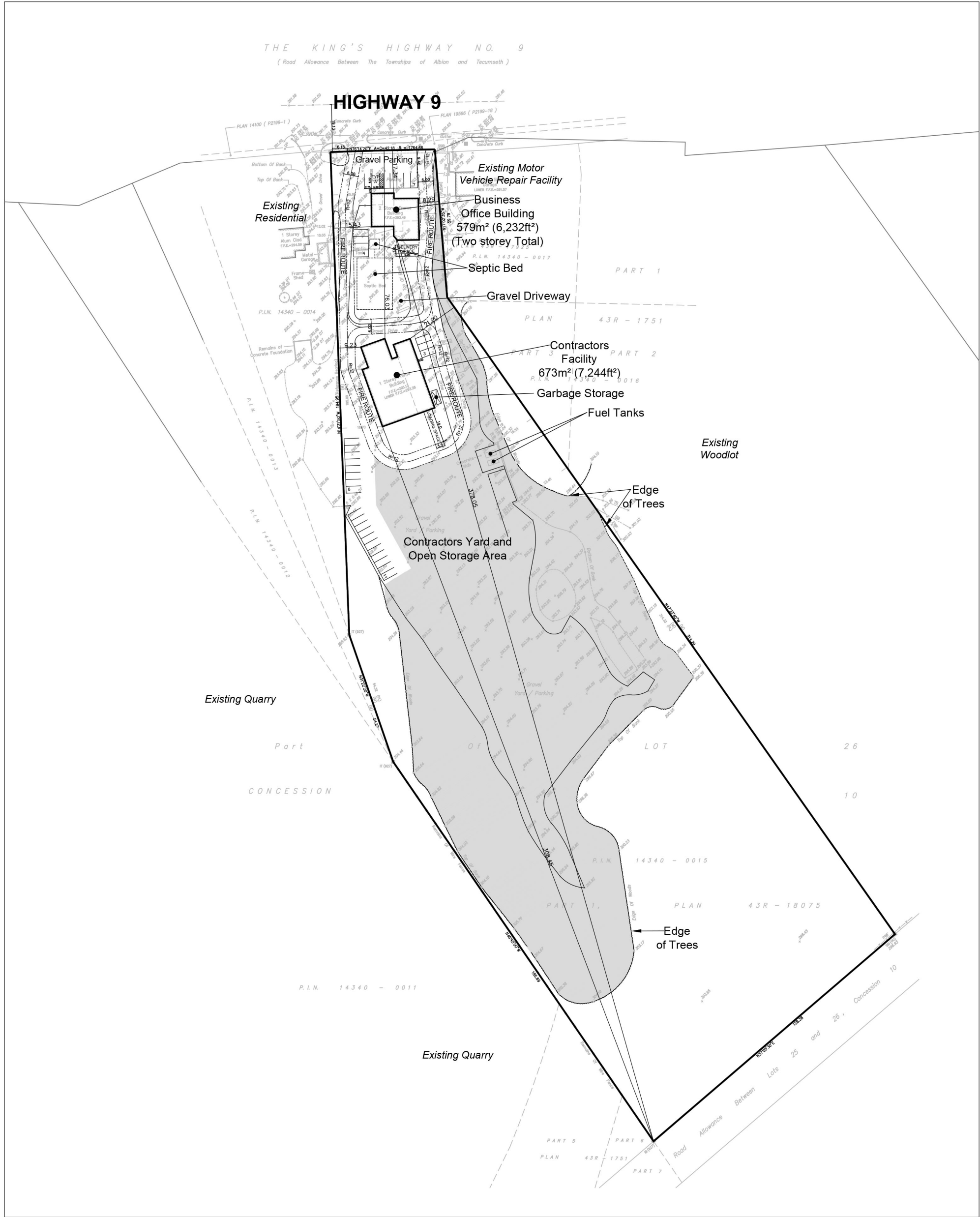
NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

<div>Legend</div> <div><div> SIGNAL CONTROL</div><div> STOP CONTROL</div><div> WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES</div></div>	<div>Project</div> <div>10795 HIGHWAY 9</div>	<div> <b>CROZIER</b> CONSULTING ENGINEERS</div> <div>The HarbourEdge Building, 40 Huron Street, Suite 301, Collingwood, ON L9Y 4R3 705 446-3510 T 705 446-3520 F www.ccrozier.ca info@ccrozier.ca</div>
	<div>Drawing</div> <div>EXISTING TRAFFIC VOLUMES</div>	

# **ATTACHMENT A**

## EXISTING CONDITIONS PLAN





**EXISTING CONDITIONS  
PLAN**

**10795 HIGHWAY 9**  
PART OF LOT 26, CONCESSION 10  
GEOGRAPHIC TOWNSHIP OF ALBION  
TOWN OF CALEDON  
REGIONAL MUNICIPALITY OF PEEL

**Site Statistics**

Subject Lands: 3.95ha (9.76ac)  
Total Building GFA: 1,252m<sup>2</sup> (13,476ft<sup>2</sup>)  
Open Storage Area: 1.72ha (4.25ac)

**Parking Statistics**

Parking Spaces Provided: 32  
Barrier Free Space Provided: 1  
Loading Space Provided: 1  
Delivery Space Provided: 1

**Notes:**  
Typical Perpendicular Parking Space: 2.75m x 6.0m  
Typical Barrier Free Space: 3.4m x 6.0m + 1.5m Aisle  
Typical Loading Space: 3.5m x 14.0m  
Typical Delivery Space: 3.5m x 9.0m



Scale 1:1500  
September 13, 2019

**GSAI**  
Glen Schnarr & Associates Inc.

## **ATTACHMENT B**

### TRAFFIC DATA



Turning Movement Count (1 . HWY 9 & TOTTENHAM RD / #10819 EAST ACCESS) CustID: 99900015 MioID: 730562

Start Time	N Approach TOTTENHAM RD						E Approach HWY 9						S Approach #10819 EAST ACCESS						W Approach HWY 9						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total			
06:00:00	85	0	47	0	0	132	6	51	0	0	0	57	0	0	0	0	0	0	0	99	13	0	0	112	301		
06:15:00	77	0	41	0	0	118	8	65	0	0	0	73	0	0	0	0	0	0	0	133	18	0	0	151	342		
06:30:00	89	0	55	0	0	144	10	62	0	0	0	72	0	0	0	0	0	0	0	107	15	0	0	122	338		
06:45:00	152	0	68	0	0	220	14	74	0	0	0	88	0	0	0	0	0	0	0	138	17	0	0	155	463	1444	
07:00:00	93	0	61	0	0	154	19	80	0	0	0	99	1	0	0	0	0	1	0	119	14	0	0	133	387	1530	
07:15:00	101	0	46	0	0	147	21	107	0	0	0	128	0	0	0	0	0	0	0	131	25	0	0	156	431	1619	
07:30:00	101	0	41	0	0	142	15	107	0	0	0	122	0	0	0	0	0	0	0	117	17	0	0	134	398	1679	
07:45:00	91	0	59	0	0	150	22	114	0	0	0	136	0	0	0	0	0	0	0	133	21	0	0	154	440	1656	
08:00:00	85	0	49	0	0	134	12	126	0	0	0	138	0	0	0	0	0	0	0	137	20	0	0	157	429	1698	
08:15:00	67	0	34	0	0	101	22	110	0	0	0	132	0	0	0	0	0	0	0	133	26	0	0	159	392	1659	
08:30:00	60	0	29	0	0	89	17	96	0	0	0	113	0	0	0	0	0	0	0	141	29	0	0	170	372	1633	
08:45:00	40	0	33	0	0	73	22	89	3	0	0	114	0	0	0	0	0	0	0	127	28	0	0	155	342	1535	
09:00:00	64	0	40	0	0	104	20	82	1	0	0	103	0	0	0	0	0	0	0	130	24	0	0	154	361	1467	
09:15:00	45	1	30	0	0	76	11	72	0	0	0	83	0	0	0	0	0	0	0	133	19	0	0	152	311	1386	
09:30:00	39	0	32	0	0	71	15	83	0	0	0	98	0	0	0	0	0	0	0	126	18	0	0	144	313	1327	
09:45:00	40	0	39	0	0	79	13	72	0	0	0	85	0	0	0	0	0	0	0	108	19	0	0	127	291	1276	
***BREAK***																											
15:00:00	23	1	18	0	0	42	27	129	1	0	0	157	0	0	1	0	0	1	0	108	61	0	0	169	369		
15:15:00	47	0	23	0	0	70	44	137	0	0	0	181	1	0	0	0	0	1	0	106	68	0	0	174	426		
15:30:00	38	0	22	0	0	60	26	149	1	0	0	176	1	0	0	0	0	1	0	121	100	0	0	221	458		
15:45:00	28	0	23	0	0	51	39	147	0	0	0	186	0	0	0	0	0	0	0	142	75	0	0	217	454	1707	
16:00:00	35	0	27	0	0	62	48	140	1	0	0	189	1	0	1	0	0	2	0	121	85	0	0	206	459	1797	
16:15:00	29	0	29	0	0	58	36	160	0	0	0	196	0	0	1	0	0	1	0	129	84	0	0	213	468	1839	
16:30:00	29	0	28	0	0	57	48	165	2	0	0	215	0	0	0	0	0	0	0	123	97	0	0	220	492	1873	
16:45:00	34	1	20	0	0	55	46	165	2	0	0	213	0	0	0	0	0	0	2	141	103	0	0	246	514	1933	
17:00:00	28	0	33	0	0	61	44	144	0	0	0	188	3	3	3	0	0	9	0	159	111	0	0	270	528	2002	
17:15:00	29	0	22	0	0	51	47	182	0	0	0	229	0	0	0	0	0	0	0	132	102	0	0	234	514	2048	
17:30:00	38	0	23	0	0	61	31	130	0	0	0	161	0	0	0	0	0	0	0	113	101	0	0	214	436	1992	
17:45:00	26	0	24	0	0	50	44	174	1	0	0	219	0	0	0	0	0	0	0	100	89	0	0	189	458	1936	
18:00:00	22	0	21	0	0	43	41	121	1	0	0	163	1	1	1	0	0	3	1	88	79	0	0	168	377	1785	
18:15:00	25	0	16	0	0	41	37	98	0	0	0	135	0	1	0	0	0	1	0	71	81	0	0	152	329	1600	



18:30:00	20	0	7	0	0	27	27	85	1	0	0	113	0	0	1	0	0	1	0	68	55	0	0	123	264	1428
18:45:00	12	0	11	0	0	23	34	71	0	0	0	105	0	0	0	0	0	0	0	42	62	0	0	104	232	1202
Grand Total	1692	3	1051	0	0	2746	866	3587	14	0	0	4467	8	5	8	0	0	21	3	3776	1676	0	0	5455	12689	-
Approach%	61.6%	0.1%	38.3%	0%		-	19.4%	80.3%	0.3%	0%		-	38.1%	23.8%	38.1%	0%		-	0.1%	69.2%	30.7%	0%		-	-	-
Totals %	13.3%	0%	8.3%	0%		21.6%	6.8%	28.3%	0.1%	0%		35.2%	0.1%	0%	0.1%	0%		0.2%	0%	29.8%	13.2%	0%		43%	-	-
Heavy	49	0	50	0		-	52	377	0	0		-	1	0	0	0		-	0	456	50	0		-	-	-
Heavy %	2.9%	0%	4.8%	0%		-	6%	10.5%	0%	0%		-	12.5%	0%	0%	0%		-	0%	12.1%	3%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Broken Clouds (-6.81 °C)

Start Time	N Approach TOTTENHAM RD						E Approach HWY 9						S Approach #10819 EAST ACCESS						W Approach HWY 9						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:15:00	101	0	46	0	0	147	21	107	0	0	0	128	0	0	0	0	0	0	0	131	25	0	0	156	431
07:30:00	101	0	41	0	0	142	15	107	0	0	0	122	0	0	0	0	0	0	0	117	17	0	0	134	398
07:45:00	91	0	59	0	0	150	22	114	0	0	0	136	0	0	0	0	0	0	0	133	21	0	0	154	440
08:00:00	85	0	49	0	0	134	12	126	0	0	0	138	0	0	0	0	0	0	0	137	20	0	0	157	429
Grand Total	378	0	195	0	0	573	70	454	0	0	0	524	0	0	0	0	0	0	0	518	83	0	0	601	1698
Approach%	66%	0%	34%	0%	-	-	13.4%	86.6%	0%	0%	-	-	0%	0%	0%	0%	-	0%	86.2%	13.8%	0%	-	-	-	-
Totals %	22.3%	0%	11.5%	0%	33.7%	4.1%	26.7%	0%	0%	30.9%	0%	0%	0%	0%	0%	0%	0%	30.5%	4.9%	0%	35.4%	-	-	-	-
PHF	0.94	0	0.83	0	0.96	0.8	0.9	0	0	0.95	0	0	0	0	0	0	0.95	0.83	0	0.96	-	-	-	-	-
Heavy	6	0	8	0	14	12	51	0	0	63	0	0	0	0	0	0	72	7	0	79	-	-	-	-	-
Heavy %	1.6%	0%	4.1%	0%	2.4%	17.1%	11.2%	0%	0%	12%	0%	0%	0%	0%	0%	0%	13.9%	8.4%	0%	13.1%	-	-	-	-	-
Lights	372	0	187	0	559	58	403	0	0	461	0	0	0	0	0	0	446	76	0	522	-	-	-	-	-
Lights %	98.4%	0%	95.9%	0%	97.6%	82.9%	88.8%	0%	0%	88%	0%	0%	0%	0%	0%	0%	86.1%	91.6%	0%	86.9%	-	-	-	-	-
Single-Unit Trucks	0	0	6	0	6	8	32	0	0	40	0	0	0	0	0	0	39	5	0	44	-	-	-	-	-
Single-Unit Trucks %	0%	0%	3.1%	0%	1%	11.4%	7%	0%	0%	7.6%	0%	0%	0%	0%	0%	0%	7.5%	6%	0%	7.3%	-	-	-	-	-
Buses	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	-	-	-	-	-
Buses %	0.3%	0%	0%	0%	0.2%	0%	0.2%	0%	0%	0.2%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	-	-	-	-	-
Articulated Trucks	5	0	2	0	7	4	18	0	0	22	0	0	0	0	0	0	32	2	0	34	-	-	-	-	-
Articulated Trucks %	1.3%	0%	1%	0%	1.2%	5.7%	4%	0%	0%	4.2%	0%	0%	0%	0%	0%	0%	6.2%	2.4%	0%	5.7%	-	-	-	-	-



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (0.28 °C)

Start Time	N Approach TOTTENHAM RD						E Approach HWY 9						S Approach #10819 EAST ACCESS						W Approach HWY 9						Int. Total (15 min)	
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total		
16:30:00	29	0	28	0	0	57	48	165	2	0	0	215	0	0	0	0	0	0	0	0	123	97	0	0	220	492
16:45:00	34	1	20	0	0	55	46	165	2	0	0	213	0	0	0	0	0	0	2	141	103	0	0	246	514	
17:00:00	28	0	33	0	0	61	44	144	0	0	0	188	3	3	3	0	0	9	0	159	111	0	0	270	528	
17:15:00	29	0	22	0	0	51	47	182	0	0	0	229	0	0	0	0	0	0	0	132	102	0	0	234	514	
Grand Total	120	1	103	0	0	224	185	656	4	0	0	845	3	3	3	0	0	9	2	555	413	0	0	970	2048	
Approach%	53.6%	0.4%	46%	0%		-	21.9%	77.6%	0.5%	0%		-	33.3%	33.3%	33.3%	0%		-	0.2%	57.2%	42.6%	0%		-	-	
Totals %	5.9%	0%	5%	0%		10.9%	9%	32%	0.2%	0%		41.3%	0.1%	0.1%	0.1%	0%		0.4%	0.1%	27.1%	20.2%	0%		47.4%	-	
PHF	0.88	0.25	0.78	0		0.92	0.96	0.9	0.5	0		0.92	0.25	0.25	0.25	0		0.25	0.25	0.87	0.93	0		0.9	-	
Heavy	5	0	2	0		7	4	46	0	0		50	0	0	0	0		0	0	44	6	0		50	-	
Heavy %	4.2%	0%	1.9%	0%		3.1%	2.2%	7%	0%	0%		5.9%	0%	0%	0%	0%		0%	0%	7.9%	1.5%	0%		5.2%	-	
Lights	115	1	101	0		217	181	610	4	0		795	3	3	3	0		9	2	511	407	0		920	-	
Lights %	95.8%	100%	98.1%	0%		96.9%	97.8%	93%	100%	0%		94.1%	100%	100%	100%	0%		100%	100%	92.1%	98.5%	0%		94.8%	-	
Single-Unit Trucks	2	0	1	0		3	1	20	0	0		21	0	0	0	0		0	0	16	1	0		17	-	
Single-Unit Trucks %	1.7%	0%	1%	0%		1.3%	0.5%	3%	0%	0%		2.5%	0%	0%	0%	0%		0%	0%	2.9%	0.2%	0%		1.8%	-	
Buses	0	0	0	0		0	1	2	0	0		3	0	0	0	0		0	0	0	0	0		0	-	
Buses %	0%	0%	0%	0%		0%	0.5%	0.3%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-	
Articulated Trucks	3	0	1	0		4	2	24	0	0		26	0	0	0	0		0	0	28	5	0		33	-	
Articulated Trucks %	2.5%	0%	1%	0%		1.8%	1.1%	3.7%	0%	0%		3.1%	0%	0%	0%	0%		0%	0%	5%	1.2%	0%		3.4%	-	

Peak Hour: 07:15 AM - 08:15 AM Weather: Broken Clouds (-6.81 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (0.28 °C)







Turning Movement Count (3 . HWY 9 & #10795 EAST ACCESS)

Start Time	E Approach HWY 9					S Approach #10795 EAST ACCESS					W Approach HWY 9					Int. Total (15 min)		Int. Total (1 hr)	
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total				
06:00:00	133	0	0	0	133	0	0	0	0	0	0	117	0	0	117	250			
06:15:00	144	0	0	0	144	1	1	0	0	2	0	142	0	0	142	288			
06:30:00	160	0	0	0	160	0	0	0	0	0	0	125	0	0	125	285			
06:45:00	235	0	0	0	235	0	0	0	0	0	0	153	0	0	153	388		1211	
07:00:00	175	0	0	0	175	0	0	0	0	0	0	134	0	0	134	309		1270	
07:15:00	203	0	0	0	203	1	0	0	0	1	0	155	0	0	155	359		1341	
07:30:00	210	0	0	0	210	0	0	0	0	0	0	131	0	0	131	341		1397	
07:45:00	203	0	0	0	203	0	0	0	0	0	0	152	0	0	152	355		1364	
08:00:00	215	0	0	0	215	0	0	0	0	0	0	160	0	0	160	375		1430	
08:15:00	173	1	0	0	174	0	0	0	0	0	0	158	0	0	158	332		1403	
08:30:00	154	1	0	0	155	0	0	0	0	0	0	172	0	0	172	327		1389	
08:45:00	127	0	0	0	127	1	0	0	0	1	0	152	0	0	152	280		1314	
09:00:00	144	0	0	0	144	0	0	0	0	0	0	157	0	0	157	301		1240	
09:15:00	121	1	0	0	122	0	0	0	0	0	1	161	0	0	162	284		1192	
09:30:00	121	0	0	0	121	1	0	0	0	1	0	143	0	0	143	265		1130	
09:45:00	112	0	0	0	112	0	0	0	0	0	0	127	0	0	127	239		1089	
***BREAK***																			
15:00:00	154	0	0	0	154	0	0	0	0	0	0	163	0	0	163	317			
15:15:00	176	0	0	0	176	0	0	0	0	0	0	178	0	0	178	354			
15:30:00	183	0	0	0	183	0	0	0	0	0	0	223	0	0	223	406			
15:45:00	186	0	0	0	186	0	0	0	0	0	0	215	0	0	215	401		1478	
16:00:00	184	0	0	0	184	1	0	0	0	1	0	209	0	0	209	394		1555	
16:15:00	188	1	0	0	189	0	0	0	0	0	0	215	0	0	215	404		1605	
16:30:00	209	0	0	0	209	0	0	0	0	0	0	216	0	0	216	425		1624	



16:45:00	196	0	0	0	196	2	0	0	0	2	0	256	0	0	256	454	1677
17:00:00	178	0	0	0	178	1	0	0	0	1	0	251	0	0	251	430	1713
17:15:00	205	1	0	0	206	0	0	0	0	0	0	234	0	0	234	440	1749
17:30:00	170	0	0	0	170	0	0	0	0	0	0	208	0	0	208	378	1702
17:45:00	199	2	0	0	201	0	0	0	0	0	0	188	0	0	188	389	1637
18:00:00	138	0	0	0	138	0	0	0	0	0	0	171	0	0	171	309	1516
18:15:00	122	0	0	0	122	0	0	0	0	0	0	150	0	0	150	272	1348
18:30:00	104	0	0	0	104	0	0	0	0	0	0	122	0	0	122	226	1196
18:45:00	84	0	0	0	84	2	1	0	0	3	0	110	0	0	110	197	1004
<b>Grand Total</b>	<b>5306</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>5313</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>1</b>	<b>5448</b>	<b>0</b>	<b>0</b>	<b>5449</b>	<b>10774</b>	<b>-</b>
<b>Approach%</b>	99.9%	0.1%	0%		-	83.3%	16.7%	0%		-	0%	100%	0%		-	-	-
<b>Totals %</b>	49.2%	0.1%	0%		49.3%	0.1%	0%	0%		0.1%	0%	50.6%	0%		50.6%	-	-
<b>Heavy</b>	413	4	0		-	5	1	0		-	0	500	0		-	-	-
<b>Heavy %</b>	7.8%	57.1%	0%		-	50%	50%	0%		-	0%	9.2%	0%		-	-	-
<b>Bicycles</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-



**Peak Hour: 07:15 AM - 08:15 AM Weather: Broken Clouds (-6.81 °C)**

Start Time	E Approach HWY 9					S Approach #10795 EAST ACCESS					W Approach HWY 9					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:15:00	203	0	0	0	203	1	0	0	0	1	0	155	0	0	155	359
07:30:00	210	0	0	0	210	0	0	0	0	0	0	131	0	0	131	341
07:45:00	203	0	0	0	203	0	0	0	0	0	0	152	0	0	152	355
08:00:00	215	0	0	0	215	0	0	0	0	0	0	160	0	0	160	375
<b>Grand Total</b>	<b>831</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>831</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>598</b>	<b>0</b>	<b>0</b>	<b>598</b>	<b>1430</b>
<b>Approach%</b>	100%	0%	0%		-	100%	0%	0%		-	0%	100%	0%		-	-
<b>Totals %</b>	58.1%	0%	0%		58.1%	0.1%	0%	0%		0.1%	0%	41.8%	0%		41.8%	-
<b>PHF</b>	0.97	0	0		0.97	0.25	0	0		0.25	0	0.93	0		0.93	-
<b>Heavy</b>	56	0	0		56	1	0	0		1	0	82	0		82	-
<b>Heavy %</b>	6.7%	0%	0%		6.7%	100%	0%	0%		100%	0%	13.7%	0%		13.7%	-
<b>Lights</b>	775	0	0		775	0	0	0		0	0	516	0		516	-
<b>Lights %</b>	93.3%	0%	0%		93.3%	0%	0%	0%		0%	0%	86.3%	0%		86.3%	-
<b>Single-Unit Trucks</b>	30	0	0		30	1	0	0		1	0	43	0		43	-
<b>Single-Unit Trucks %</b>	3.6%	0%	0%		3.6%	100%	0%	0%		100%	0%	7.2%	0%		7.2%	-
<b>Buses</b>	3	0	0		3	0	0	0		0	0	1	0		1	-
<b>Buses %</b>	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
<b>Articulated Trucks</b>	23	0	0		23	0	0	0		0	0	38	0		38	-
<b>Articulated Trucks %</b>	2.8%	0%	0%		2.8%	0%	0%	0%		0%	0%	6.4%	0%		6.4%	-

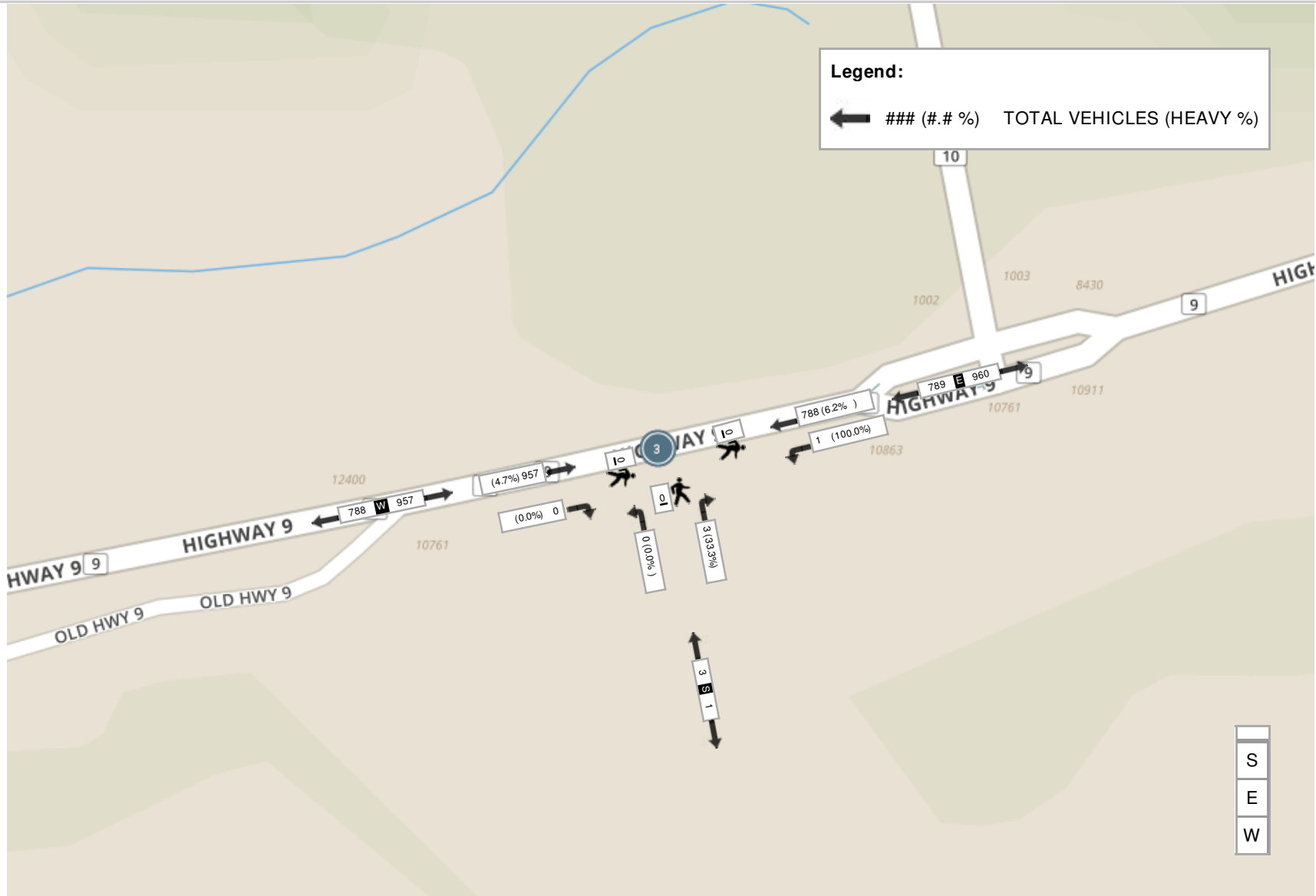


**Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (0.28 °C)**

Start Time	E Approach HWY 9					S Approach #10795 EAST ACCESS					W Approach HWY 9					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:30:00	209	0	0	0	209	0	0	0	0	0	0	216	0	0	216	425
16:45:00	196	0	0	0	196	2	0	0	0	2	0	256	0	0	256	454
17:00:00	178	0	0	0	178	1	0	0	0	1	0	251	0	0	251	430
17:15:00	205	1	0	0	206	0	0	0	0	0	0	234	0	0	234	440
<b>Grand Total</b>	<b>788</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>789</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>957</b>	<b>0</b>	<b>0</b>	<b>957</b>	<b>1749</b>
<b>Approach%</b>	99.9%	0.1%	0%		-	100%	0%	0%		-	0%	100%	0%		-	-
<b>Totals %</b>	45.1%	0.1%	0%		45.1%	0.2%	0%	0%		0.2%	0%	54.7%	0%		54.7%	-
<b>PHF</b>	0.94	0.25	0		0.94	0.38	0	0		0.38	0	0.93	0		0.93	-
<b>Heavy</b>	49	1	0		50	1	0	0		1	0	45	0		45	-
<b>Heavy %</b>	6.2%	100%	0%		6.3%	33.3%	0%	0%		33.3%	0%	4.7%	0%		4.7%	-
<b>Lights</b>	739	0	0		739	2	0	0		2	0	912	0		912	-
<b>Lights %</b>	93.8%	0%	0%		93.7%	66.7%	0%	0%		66.7%	0%	95.3%	0%		95.3%	-
<b>Single-Unit Trucks</b>	21	1	0		22	1	0	0		1	0	19	0		19	-
<b>Single-Unit Trucks %</b>	2.7%	100%	0%		2.8%	33.3%	0%	0%		33.3%	0%	2%	0%		2%	-
<b>Buses</b>	2	0	0		2	0	0	0		0	0	0	0		0	-
<b>Buses %</b>	0.3%	0%	0%		0.3%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Articulated Trucks</b>	26	0	0		26	0	0	0		0	0	26	0		26	-
<b>Articulated Trucks %</b>	3.3%	0%	0%		3.3%	0%	0%	0%		0%	0%	2.7%	0%		2.7%	-



**Peak Hour: 04:30 PM - 05:30 PM    Weather: Overcast Clouds (0.28 °C)**





Turning Movement Count (4 . HWY 9 & #10795 WEST ACCESS)

Start Time	E Approach HWY 9					S Approach #10795 WEST ACCESS					W Approach HWY 9					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
06:00:00	134	0	0	0	134	0	0	0	0	0	0	121	0	0	121	255	
06:15:00	135	0	0	0	135	0	0	0	0	0	1	133	0	0	134	269	
06:30:00	156	0	0	0	156	0	0	0	0	0	0	126	0	0	126	282	
06:45:00	239	0	0	0	239	0	0	0	0	0	0	160	0	0	160	399	1205
07:00:00	175	0	0	0	175	0	0	0	0	0	0	123	0	0	123	298	1248
07:15:00	211	0	0	0	211	0	0	0	0	0	0	150	0	0	150	361	1340
07:30:00	208	0	0	0	208	0	0	0	0	0	0	143	0	0	143	351	1409
07:45:00	203	0	0	0	203	0	0	0	0	0	0	149	0	0	149	352	1362
08:00:00	222	0	0	0	222	0	0	0	0	0	0	162	0	0	162	384	1448
08:15:00	175	0	0	0	175	0	0	0	0	0	0	154	0	0	154	329	1416
08:30:00	155	0	0	0	155	0	0	0	0	0	0	172	0	0	172	327	1392
08:45:00	131	0	0	0	131	0	0	0	0	0	1	152	0	0	153	284	1324
09:00:00	140	0	0	0	140	0	0	0	0	0	0	162	0	0	162	302	1242
09:15:00	121	0	0	0	121	0	0	0	0	0	0	156	0	0	156	277	1190
09:30:00	126	0	0	0	126	0	0	0	0	0	0	143	0	0	143	269	1132
09:45:00	109	0	0	0	109	0	0	0	0	0	0	124	0	0	124	233	1081
***BREAK***																	
15:00:00	158	0	0	0	158	0	0	0	0	0	0	162	0	0	162	320	
15:15:00	180	1	0	0	181	0	0	0	0	0	0	188	0	0	188	369	
15:30:00	194	0	0	0	194	0	0	0	0	0	0	211	0	0	211	405	
15:45:00	179	0	0	0	179	0	0	0	0	0	0	221	0	0	221	400	1494
16:00:00	183	0	0	0	183	0	0	0	0	0	0	205	0	0	205	388	1562
16:15:00	177	0	0	0	177	0	0	0	0	0	0	224	0	0	224	401	1594
16:30:00	202	0	0	0	202	0	0	0	0	0	0	209	0	0	209	411	1600



16:45:00	201	0	0	0	201	0	0	0	0	0	0	253	0	0	253	454	1654
17:00:00	177	0	0	0	177	0	0	0	0	0	1	246	0	0	247	424	1690
17:15:00	216	0	0	0	216	1	0	0	0	1	0	250	0	0	250	467	1756
17:30:00	162	0	0	0	162	0	0	0	0	0	0	211	0	0	211	373	1718
17:45:00	204	0	0	0	204	0	0	0	0	0	0	175	0	0	175	379	1643
18:00:00	145	0	0	0	145	0	0	0	0	0	0	170	0	0	170	315	1534
18:15:00	108	0	0	0	108	0	0	0	0	0	0	153	0	0	153	261	1328
18:30:00	115	0	0	0	115	0	0	0	0	0	0	124	0	0	124	239	1194
18:45:00	81	0	0	0	81	0	0	0	0	0	1	109	0	0	110	191	1006
<b>Grand Total</b>	<b>5322</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>5323</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>5441</b>	<b>0</b>	<b>0</b>	<b>5445</b>	<b>10769</b>	<b>-</b>
<b>Approach%</b>	100%	0%	0%		-	100%	0%	0%		-	0.1%	99.9%	0%		-	-	-
<b>Totals %</b>	49.4%	0%	0%		49.4%	0%	0%	0%		0%	0%	50.5%	0%		50.6%	-	-
<b>Heavy</b>	414	1	0		-	0	0	0		-	2	499	0		-	-	-
<b>Heavy %</b>	7.8%	100%	0%		-	0%	0%	0%		-	50%	9.2%	0%		-	-	-
<b>Bicycles</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-





**Peak Hour: 07:15 AM - 08:15 AM Weather: Broken Clouds (-6.81 °C)**

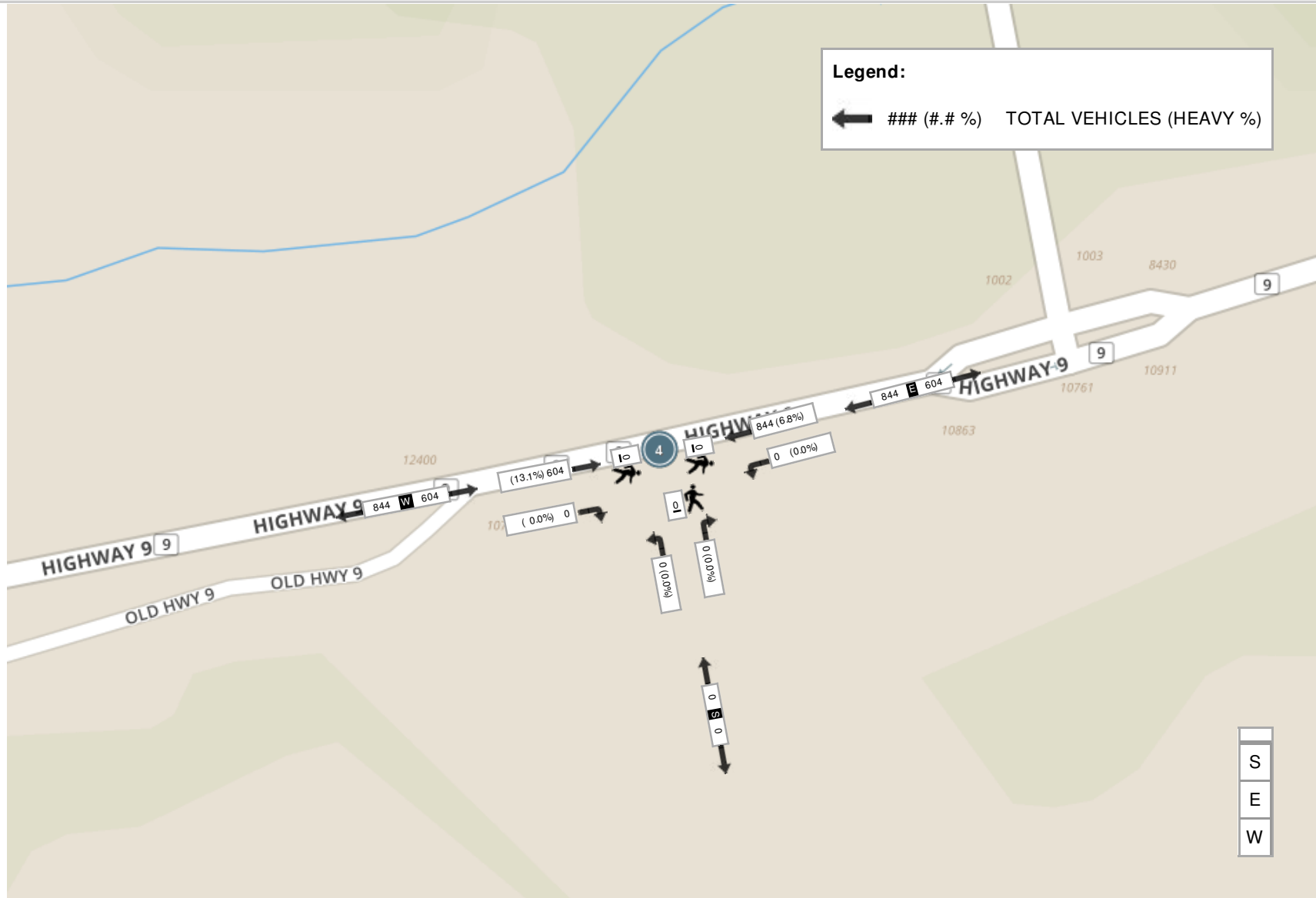
Start Time	E Approach HWY 9					S Approach #10795 WEST ACCESS					W Approach HWY 9					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
07:15:00	211	0	0	0	211	0	0	0	0	0	0	150	0	0	150	361
07:30:00	208	0	0	0	208	0	0	0	0	0	0	143	0	0	143	351
07:45:00	203	0	0	0	203	0	0	0	0	0	0	149	0	0	149	352
08:00:00	222	0	0	0	222	0	0	0	0	0	0	162	0	0	162	384
<b>Grand Total</b>	<b>844</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>844</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>604</b>	<b>0</b>	<b>0</b>	<b>604</b>	<b>1448</b>
<b>Approach%</b>	100%	0%	0%		-	0%	0%	0%		-	0%	100%	0%		-	-
<b>Totals %</b>	58.3%	0%	0%		58.3%	0%	0%	0%		0%	0%	41.7%	0%		41.7%	-
<b>PHF</b>	0.95	0	0		0.95	0	0	0		0	0	0.93	0		0.93	-
<b>Heavy</b>	57	0	0		57	0	0	0		0	0	79	0		79	-
<b>Heavy %</b>	6.8%	0%	0%		6.8%	0%	0%	0%		0%	0%	13.1%	0%		13.1%	-
<b>Lights</b>	787	0	0		787	0	0	0		0	0	525	0		525	-
<b>Lights %</b>	93.2%	0%	0%		93.2%	0%	0%	0%		0%	0%	86.9%	0%		86.9%	-
<b>Single-Unit Trucks</b>	32	0	0		32	0	0	0		0	0	43	0		43	-
<b>Single-Unit Trucks %</b>	3.8%	0%	0%		3.8%	0%	0%	0%		0%	0%	7.1%	0%		7.1%	-
<b>Buses</b>	3	0	0		3	0	0	0		0	0	1	0		1	-
<b>Buses %</b>	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.2%	0%		0.2%	-
<b>Articulated Trucks</b>	22	0	0		22	0	0	0		0	0	35	0		35	-
<b>Articulated Trucks %</b>	2.6%	0%	0%		2.6%	0%	0%	0%		0%	0%	5.8%	0%		5.8%	-



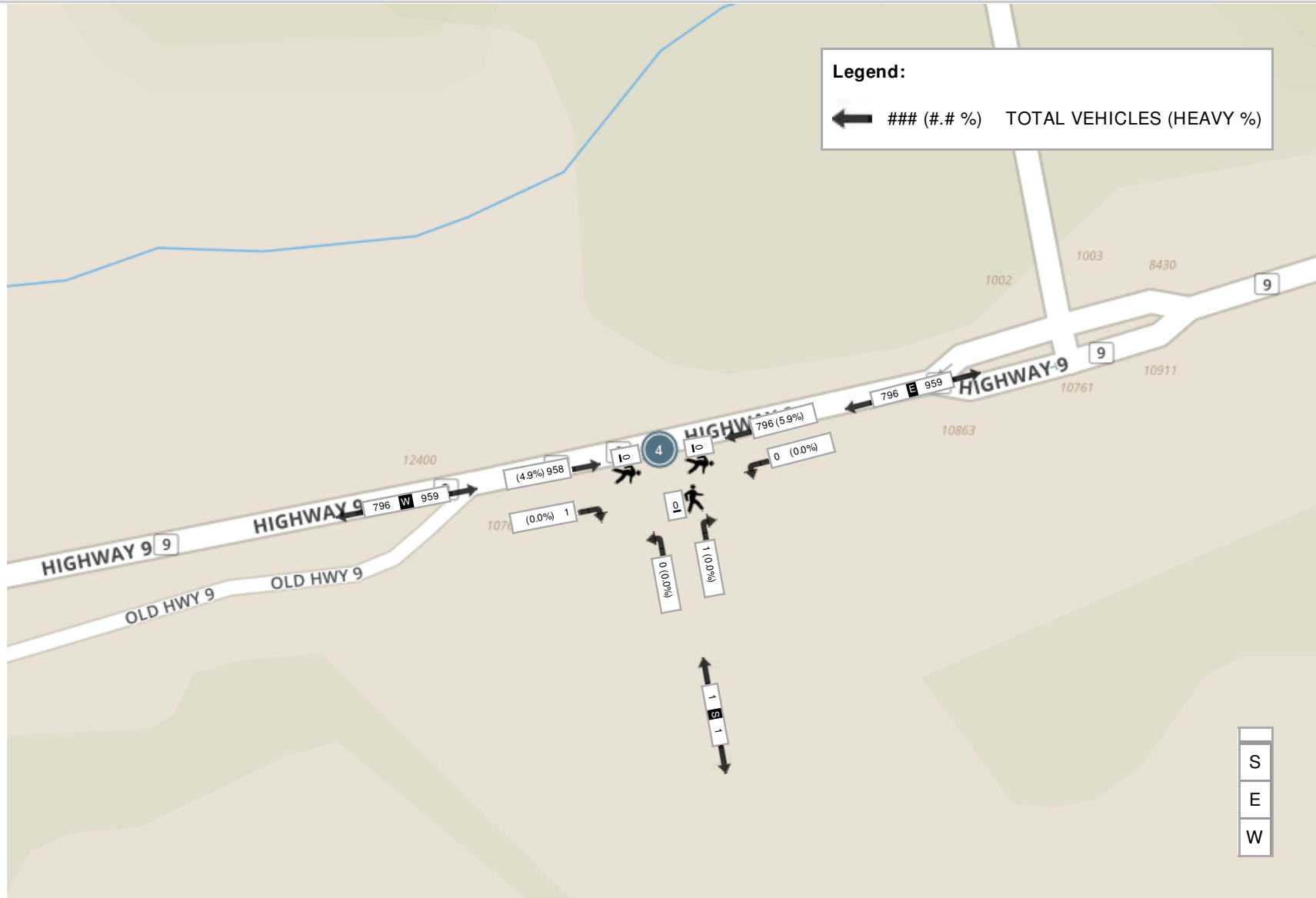
**Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (0.28 °C)**

Start Time	E Approach HWY 9					S Approach #10795 WEST ACCESS					W Approach HWY 9					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:30:00	202	0	0	0	202	0	0	0	0	0	0	209	0	0	209	411
16:45:00	201	0	0	0	201	0	0	0	0	0	0	253	0	0	253	454
17:00:00	177	0	0	0	177	0	0	0	0	0	1	246	0	0	247	424
17:15:00	216	0	0	0	216	1	0	0	0	1	0	250	0	0	250	467
<b>Grand Total</b>	796	0	0	0	796	1	0	0	0	1	1	958	0	0	959	<b>1756</b>
<b>Approach%</b>	100%	0%	0%		-	100%	0%	0%		-	0.1%	99.9%	0%		-	-
<b>Totals %</b>	45.3%	0%	0%		45.3%	0.1%	0%	0%		0.1%	0.1%	54.6%	0%		54.6%	-
<b>PHF</b>	0.92	0	0		0.92	0.25	0	0		0.25	0.25	0.95	0		0.95	-
<b>Heavy</b>	47	0	0		47	0	0	0		0	0	47	0		47	-
<b>Heavy %</b>	5.9%	0%	0%		5.9%	0%	0%	0%		0%	0%	4.9%	0%		4.9%	-
<b>Lights</b>	749	0	0		749	1	0	0		1	1	911	0		912	-
<b>Lights %</b>	94.1%	0%	0%		94.1%	100%	0%	0%		100%	100%	95.1%	0%		95.1%	-
<b>Single-Unit Trucks</b>	20	0	0		20	0	0	0		0	0	17	0		17	-
<b>Single-Unit Trucks %</b>	2.5%	0%	0%		2.5%	0%	0%	0%		0%	0%	1.8%	0%		1.8%	-
<b>Buses</b>	1	0	0		1	0	0	0		0	0	0	0		0	-
<b>Buses %</b>	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Articulated Trucks</b>	26	0	0		26	0	0	0		0	0	30	0		30	-
<b>Articulated Trucks %</b>	3.3%	0%	0%		3.3%	0%	0%	0%		0%	0%	3.1%	0%		3.1%	-

Peak Hour: 07:15 AM - 08:15 AM Weather: Broken Clouds (-6.81 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (0.28 °C)



# ase Timing 1-8 - Set 1, Peel - Hwy 9 @ Tottenham Rd

Next

Phase:

1

4

8

Prev.

Save

Upload

Dnload

Toggle

Copy

Close

Walk

0

7

0

7

0

7

0

7

Pedestrian Clear

0

23

0

23

0

23

0

23

Minimum Green

0

20

0

10

7

20

0

10

Passage

0.0

4.0

0.0

3.0

3.0

4.0

0.0

3.0

Maximum 1

0

50

0

35

15

50

0

35

Maximum 2

0

50

0

40

20

50

0

40

Yellow Change

0.0

5.9

0.0

5.9

3.0

5.9

0.0

5.9

Red Clear

0.0

1.7

0.0

2.7

0.0

1.7

0.0

2.7

Red Revert

0.0

2.0

0.0

2.0

0.0

2.0

0.0

2.0

Added Initial

0.0

1.0

0.0

0.0

0.0

1.0

0.0

0.0

Maximum Initial

0

34

0

0

0

34

0

0

Time Before Reduction

0

0

0

0

0

0

0

0

Cars Before Reduction

0

0

0

0

0

0

0

0

Time To Reduce

0

0

0

0

0

0

0

0

Reduce By

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

Minimum Gap

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

Dynamic Max Limit

0

0

0

0

0

0

0

0

Dynamic Max Step

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

Alternate Walk

0

0

0

0

0

0

0

0

Advance Walk

0

0

0

0

0

0

0

0

Delay Walk

0

0

0

0

0

0

0

0

Alternate Passage

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

Start Delay

0

0

0

0

0

0

0

0

Conditional Svc. Min.

0

0

0

0

0

0

0

0

Green Clear

0

0

0

0

0

0

0

0

Alternate Ped Clear

0

0

0

0

0

0

0

0

Alternate Min Green

0

0

0

0

0

0

0

0

## **ATTACHMENT C**

### DETAILED CAPACITY ANALYSIS WORKSHEETS

## Level of Service Definitions

### Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	$\leq 10$	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	$> 10$ and $\leq 15$	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	$> 15$ and $\leq 25$	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	$> 25$ and $\leq 35$	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	$> 35$ and $\leq 50$	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	$> 50$	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

## Level of Service Definitions

### Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	$\leq 10$	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	$> 10$ and $\leq 20$	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	$> 20$ and $\leq 35$	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	$> 35$ and $\leq 55$	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	$> 55$ and $\leq 80$	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	$> 80$	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.





















Adapted from Highway Capacity Manual 2000, Transportation Research Board



Lanes, Volumes, Timings  
1: #10819/Tottenham Road & Highway 9

2019 Existing Conditions AM

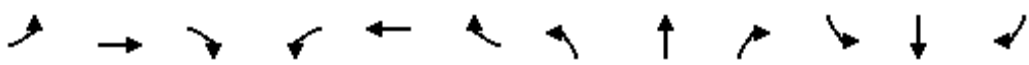
12/11/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	518	0	0	454	70	0	0	0	195	0	378
Future Volume (vph)	83	518	0	0	454	70	0	0	0	195	0	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.5	2.9	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	85.0		0.0	85.0		85.0	0.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	75.0			80.0			7.6			40.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850					0.850	
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1616	3131	0	1752	3216	1365	0	1879	0	1736	1583	0
Flt Permitted	0.456									0.757		
Satd. Flow (perm)	775	3131	0	1752	3216	1365	0	1879	0	1383	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						85						469
Link Speed (k/h)		80			80			50			80	
Link Distance (m)		187.6			227.5			62.5			163.3	
Travel Time (s)		8.4			10.2			4.5			7.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	14%	0%	0%	11%	17%	0%	0%	0%	4%	0%	2%
Adj. Flow (vph)	86	540	0	0	473	73	0	0	0	203	0	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	540	0	0	473	73	0	0	0	203	394	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)		3.3			3.3			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.04	1.01	1.01	1.11	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00
Turning Speed (k/h)	24		14	24		14	24		14	24		14
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)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	
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)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	
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)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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	pm+pt	NA		Perm	NA	Perm				Perm	NA	

Lanes, Volumes, Timings  
1: #10819/Tottenham Road & Highway 9

2019 Existing Conditions AM

12/11/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	5	2		6	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.0	37.6		37.6	37.6	37.6	38.6	38.6		38.6	38.6	
Total Split (s)	20.0	70.0		50.0	50.0	50.0	40.0	40.0		40.0	40.0	
Total Split (%)	18.2%	63.6%		45.5%	45.5%	45.5%	36.4%	36.4%		36.4%	36.4%	
Maximum Green (s)	17.0	62.4		42.4	42.4	42.4	31.4	31.4		31.4	31.4	
Yellow Time (s)	3.0	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.7		1.7	1.7	1.7	2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.6		7.6	7.6	7.6		8.6		8.6	8.6	
Lead/Lag	Lead			Lag			Lag					
Lead-Lag Optimize?	Yes			Yes			Yes					
Vehicle Extension (s)	3.0	4.0		4.0	4.0	4.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		Max	Max	Max	None	None		None	None	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		23.0		23.0	23.0	23.0	23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	
Act Effct Green (s)	67.3	62.7			54.0	54.0				20.2	20.2	
Actuated g/C Ratio	0.68	0.63			0.54	0.54				0.20	0.20	
v/c Ratio	0.15	0.27			0.27	0.09				0.72	0.57	
Control Delay	7.3	9.4			14.5	3.2				51.3	4.4	
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	
Total Delay	7.3	9.4			14.5	3.2				51.3	4.4	
LOS	A	A			B	A				D	A	
Approach Delay		9.1			13.0						20.4	
Approach LOS		A			B						C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 99.2

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 14.1

Intersection LOS: B

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15










Splits and Phases: 1: #10819/Tottenham Road & Highway 9



Lanes, Volumes, Timings  
2: #10795 & Highway 9

2019 Existing Conditions AM

12/11/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	598	0	0	831	0	1
Future Volume (vph)	598	0	0	831	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	3131	0	0	3336	813	0
Flt Permitted						
Satd. Flow (perm)	3131	0	0	3336	813	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	121.5			187.6	61.8	
Travel Time (s)	5.5			8.4	4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	14%	0%	0%	7%	0%	100%
Adj. Flow (vph)	629	0	0	875	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	629	0	0	875	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.3			3.3	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.0%			ICU Level of Service A		
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 2: #10795 & Highway 9

2019 Existing Conditions AM

12/11/2019

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	598	0	0	831	0	1
Future Volume (Veh/h)	598	0	0	831	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	629	0	0	875	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)				187		
pX, platoon unblocked					0.93	
vC, conflicting volume			629		1066	314
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			629		927	314
tC, single (s)			4.1		6.8	8.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	4.3
p0 queue free %			100		100	100
cM capacity (veh/h)			963		253	462
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	419	210	292	583	1	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	1	
cSH	1700	1700	963	1700	462	
Volume to Capacity	0.25	0.12	0.00	0.34	0.00	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	0.0	0.0	0.0	0.0	12.8	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.8	
Approach LOS					B	
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			33.0%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection: 1: #10819/Tottenham Road & Highway 9

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	TR	T	T	R	L	TR
Maximum Queue (m)	28.5	51.2	38.7	64.3	55.2	17.6	62.9	67.6
Average Queue (m)	11.2	24.5	14.9	29.9	14.3	5.3	30.4	28.9
95th Queue (m)	22.1	44.7	33.6	53.7	37.9	13.9	54.1	53.6
Link Distance (m)		170.0	170.0	216.9	216.9			145.8
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	85.0					85.0	40.0	
Storage Blk Time (%)							4	2
Queuing Penalty (veh)							16	3

Intersection: 2: #10795 & Highway 9

Movement	NB
Directions Served	LR
Maximum Queue (m)	12.6
Average Queue (m)	0.6
95th Queue (m)	6.0
Link Distance (m)	47.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	





















Network Summary

Network wide Queuing Penalty: 20
----------------------------------

Lanes, Volumes, Timings  
1: #10819/Tottenham Road & Highway 9

2019 Existing Conditions PM













12/11/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	413	555	2	4	656	186	3	3	3	103	1	120
Future Volume (vph)	413	555	2	4	656	186	3	3	3	103	1	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.5	2.9	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6
Storage Length (m)	85.0		0.0	85.0		85.0	0.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (m)	75.0			80.0			7.6			40.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850		0.955			0.851	
Flt Protected	0.950			0.950				0.984		0.950		
Satd. Flow (prot)	1711	3303	0	1665	3336	1566	0	1766	0	1770	1555	0
Flt Permitted	0.338			0.436				0.867		0.752		
Satd. Flow (perm)	609	3303	0	764	3336	1566	0	1556	0	1401	1555	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				192		3			124	
Link Speed (k/h)		80			80			50			80	
Link Distance (m)		187.6			227.5			62.5			163.3	
Travel Time (s)		8.4			10.2			4.5			7.3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	8%	0%	0%	7%	2%	0%	0%	0%	2%	0%	4%
Adj. Flow (vph)	426	572	2	4	676	192	3	3	3	106	1	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	426	574	0	4	676	192	0	9	0	106	125	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)		3.3			3.3			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.04	1.01	1.01	1.11	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00
Turning Speed (k/h)	24		14	24		14	24		14	24		14
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)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	
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)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	
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)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
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	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	

Lanes, Volumes, Timings  
1: #10819/Tottenham Road & Highway 9

2019 Existing Conditions PM

12/11/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		
Detector Phase	5	2		6	6	6	4	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.0	37.6		37.6	37.6	37.6	38.6	38.6		38.6	38.6	
Total Split (s)	20.0	70.0		50.0	50.0	50.0	40.0	40.0		40.0	40.0	
Total Split (%)	18.2%	63.6%		45.5%	45.5%	45.5%	36.4%	36.4%		36.4%	36.4%	
Maximum Green (s)	17.0	62.4		42.4	42.4	42.4	31.4	31.4		31.4	31.4	
Yellow Time (s)	3.0	5.9		5.9	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.7		1.7	1.7	1.7	2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.6		7.6	7.6	7.6		8.6		8.6	8.6	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	4.0		4.0	4.0	4.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		Max	Max	Max	None	None		None	None	
Walk Time (s)		7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		23.0		23.0	23.0	23.0	23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	
Act Effct Green (s)	67.1	62.5		44.9	44.9	44.9		12.7		12.7	12.7	
Actuated g/C Ratio	0.73	0.68		0.49	0.49	0.49		0.14		0.14	0.14	
v/c Ratio	0.68	0.25		0.01	0.41	0.22		0.04		0.55	0.39	
Control Delay	10.8	6.2		14.5	16.7	3.1		28.7		47.4	10.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	10.8	6.2		14.5	16.7	3.1		28.7		47.4	10.5	
LOS	B	A		B	B	A		C		D	B	
Approach Delay		8.1			13.7			28.7			27.5	
Approach LOS		A			B			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 91.4

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 12.6

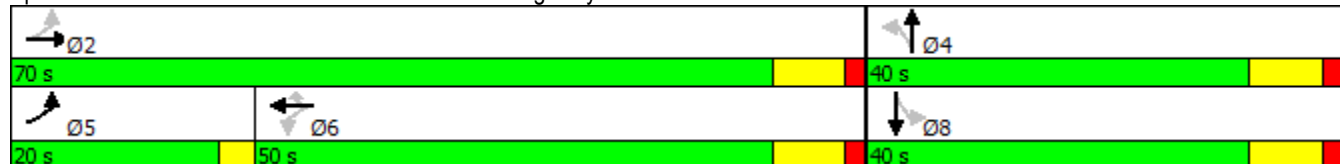
Intersection LOS: B

Intersection Capacity Utilization 70.2%

ICU Level of Service C

Analysis Period (min) 15










Splits and Phases: 1: #10819/Tottenham Road & Highway 9



Lanes, Volumes, Timings  
2: #10795 & Highway 9

2019 Existing Conditions PM

12/11/2019

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	957	1	1	788	0	4
Future Volume (vph)	957	1	1	788	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	3400	0	0	3368	1300	0
Flt Permitted						
Satd. Flow (perm)	3400	0	0	3368	1300	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	121.5			187.6	61.8	
Travel Time (s)	5.5			8.4	4.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	0%	0%	6%	0%	25%
Adj. Flow (vph)	997	1	1	821	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	998	0	0	822	4	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.3			3.3	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.5%			ICU Level of Service A		
Analysis Period (min)	15					



# HCM Unsignalized Intersection Capacity Analysis

## 2: #10795 & Highway 9

2019 Existing Conditions PM

12/11/2019

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	957	1	1	788	0	4
Future Volume (Veh/h)	957	1	1	788	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	997	1	1	821	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)				187		
pX, platoon unblocked					0.88	
vC, conflicting volume			998		1410	499
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			998		1188	499
tC, single (s)			4.1		6.8	7.4
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.5
p0 queue free %			100		100	99
cM capacity (veh/h)			701		161	460
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	665	333	275	547	4	
Volume Left	0	0	1	0	0	
Volume Right	0	1	0	0	4	
cSH	1700	1700	701	1700	460	
Volume to Capacity	0.39	0.20	0.00	0.32	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.1	0.0	12.9	
Lane LOS			A		B	
Approach Delay (s)	0.0		0.0		12.9	
Approach LOS					B	
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			36.5%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection: 1: #10819/Tottenham Road & Highway 9

Movement	EB	EB	EB	WB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	LTR	L	TR
Maximum Queue (m)	110.6	42.0	33.3	5.3	77.4	73.9	28.9	11.2	41.2	36.4
Average Queue (m)	54.1	17.1	12.5	0.6	45.4	30.8	12.2	1.8	17.8	11.0
95th Queue (m)	96.6	34.7	28.0	4.0	68.7	61.7	24.4	7.9	31.4	24.1
Link Distance (m)		170.0	170.0		216.9	216.9		48.5		145.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	85.0			85.0			85.0		40.0	
Storage Blk Time (%)	3				0	0			0	0
Queuing Penalty (veh)	10				0	0			0	0

Intersection: 2: #10795 & Highway 9

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	2.8	11.2
Average Queue (m)	0.1	0.8
95th Queue (m)	1.5	5.2
Link Distance (m)	170.0	47.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 10