

TRANSPORTATION IMPACT BRIEF

132 COLLEGE STREET

**TOWNSHIP OF WEST LINCOLN
NIAGARA REGION**

PREPARED FOR:

TOWNSHIP OF WEST LINCOLN

PREPARED BY:

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JULY 2020

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Attachment No. 3

Township of West Lincoln
132 College Street

Transportation Impact Brief
July 2020

Revision Number	Date	Comments
Rev.1	July 2020	Issued for Submission

1.0 Executive Summary

C.F. Crozier & Associates Inc. (Crozier) was retained by The Township of West Lincoln to undertake a Transportation Impact Brief in support of the planning application for the site located at 132 College Street, and adjacent Township owned lands, in the Town of West Lincoln.

The subject lands cover an area of approximately 2.185 ha and currently consists of College Street School. The site envisions two 2-storey freehold townhouses for a total of 12 units, four 3-storey stacked townhouses for a total of 60 units and one 4-storey mixed-use ground floor commercial (930 m²) building with 30 units. There is one full movement access provided on Morgan Avenue and one on College Street.

Under 2020 existing conditions, the study intersection of St Catharines Street & College Street is expected to operate at a Level of Service "B" during the weekday a.m. and p.m. peak hours. The highest average delay of 11.6 seconds during the weekday a.m. peak hour and 14.6 seconds during the p.m. peak hour per vehicle is observed for the intersection of St Catharines Street & College Street. The maximum volume to capacity ratio is 0.03 during the weekday a.m. and weekday p.m. peak hours.

Under future background conditions, the study intersections are projected to operate similarly to existing conditions. The intersections are expected to operate at a Level of Service "C" or better during the weekday a.m. and p.m. peak period.

To forecast the trips generated by the proposed development, the Institute of Transportation Engineers (ITE) 10th edition data was used. The proposed development is expected to generate 58 new vehicular 2-way trips during the morning peak hour (17 trips in / 41 trips out), and 68 new vehicular 2-way trips during the afternoon peak hour (47 trips in / 21 trips out).

Traffic operations at the study intersections after the addition of site traffic is similar when compared to the future background conditions. The study intersections are expected to operate with a level of service D or better with no individual movement operating overcapacity.

The development application can be supported by a traffic operations perspective. The surrounding road network can accommodate the traffic generated from the residential development proposed for 132 College Street.

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2.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by The Township of West Lincoln to undertake a Transportation Impact Brief in support of the planning application for the site located at 132 College Street, in the Town of West Lincoln.

3.0 Existing Conditions

3.1 Development Lands

The subject lands cover an area of approximately 2.185 ha and currently consists of College Street School. The subject lands are located in a mixed-use and commercial area. The site is bounded by Morgan Avenue to the north, College Street to the west, vacant lands to the east, and residential units to the south. Figure 1 shows the site location.

3.2 Boundary Road Network

St. Catharines Street is an east-west regional road with a two-lane cross-section. There are sidewalks present along both sides of the roadway. St Catharines Street has a posted speed limit of 50 km/h. College Street is a north-south local road with a two-lane cross-section on the east side.

3.3 Traffic Data

Turning movement counts for the intersection of Griffin Street at Griffin Street N/St Catharines Street (dated June 4, 2019) were received from the Region of Niagara. Given the current COVID-19 crisis, any counts done during the pandemic would not be representative of typical conditions. Therefore, an industry-standard growth rate of 2.0% per annum was applied to through volumes along Catharines Street to grow the volumes to reflect the 2020 traffic volumes. Traffic volumes were then estimated for the intersection of College Street and St Catharines Street. Traffic along College Street was estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Detailed calculations and traffic data contained in Appendix A provides a summary of the turning movement counts. Refer to Figure 2 for the existing 2020 traffic volumes.

3.4 Traffic Modeling

The assessment of intersections is based on the method outlined in the "Highway Capacity Manual, 2010" using Synchro 10 modelling software. Intersections are assessed using a Level of Service metric, with ranges of delay assigned a letter from "A" to "F". For stop-controlled intersections, a Level of Service "A" or "B" would typically be measured during off-peak hours when lesser traffic volumes are on the roadways. Levels of Service "C" through "F" would typically be measured in the commuter peak hours when higher vehicle volumes cause longer travel times. The Level of Service (LOS) definitions for signalized and un-signalized intersections are included in Appendix B.

3.5 Intersection Operations

The traffic operations at the study intersection were analyzed based on the traffic volumes recorded in Figure 2. Detailed capacity analyses are included in Appendix C. Table 1 outlines the existing traffic Levels of Service.

Table 1 Existing Levels of Service

Intersection	Peak Hour	Level of Service (Average Delay per Vehicle(s))	Maximum V/C & V/C Ratio(s) > 0.85 (Approach)
St Catharines St & College St (Stop Control (SB))	Weekday A.M.	B (11.6 s)	0.03 (SB)
	Weekday P.M.	B (14.6 s)	0.03 (SB)

Note1: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The level of service of a stop-controlled intersection is based on the minor (stopped) approach control delay per vehicle.

Note2: The critical v/c ratio is considered to be the maximum v/c ratio at the intersection. All v/c ratios greater than 0.90 are outlined and highlighted.

As indicated in Table 1, the study intersection of St Catharines Street & College Street is expected to operate at a Level of Service "B" during the weekday a.m. and p.m. peak hours. The highest average delay of 11.6 seconds during the weekday a.m. peak hour and 14.6 seconds during the p.m. peak hour per vehicle is observed for the intersection of St Catharines Street & College Street. The maximum volume to capacity ratio is 0.03 during the weekday a.m. and weekday p.m. peak hours. These metrics indicate that the study intersections are operating efficiently with acceptable delays and reserve capacity to accommodate future increases in traffic volume.

4.0 Development Proposal

The project proposal is for the development of 132 College Street. The subject lands cover an area of approximately 2.185 ha and currently consists of College Street School. The subject lands are located in a mixed-use and commercial area. The site is bounded by Morgan Avenue to the north, College Street to the west, vacant lands to the east, and residential units to the south.

As per the proposed concept plan dated January 29, 2020 (Figure 1), the site envisions two 2-storey freehold townhouses for a total of 12 units, four 3-storey stacked townhouses for a total of 60 units and one 4-storey mixed-use ground floor commercial (930 m²) building with 30 units. There is one full movement access provided on Morgan Avenue and one on College Street.

5.0 Future Background Conditions

5.1 Study Horizons

As per the Niagara Region guidelines for Traffic Impact Study, horizon years corresponding to the date of the study commission, as well as five years from the full build-out year is required. Considering the opening year of 2025, 2025 and 2030 horizon years were selected to assess the full operations of the boundary road network with and without the proposed development.

5.2 Traffic Growth Rates and Background Developments

Future background traffic volumes for the 2025 and 2030 horizon years consist of the following components:

- Background traffic growth from outside the study area; and,
- Traffic generated within the study area from other proposed developments.

An industry-standard growth rate of two percent was applied to all major movements along the study intersections.

A background development located at 186 Margaret Street has been included as part of the background developments. The development is expected to generate 68 trips in the weekday a.m. peak hour and 85 trips in the weekday p.m. peak hour. 2025 and 2030, background volumes are illustrated in Figures 3 and 4.

5.3 Intersection Operations

The traffic operations at the study intersections were analyzed under future background conditions. Table 2 outlines the 2025 and 2030 future background Levels of Service. Detailed capacity analyses are included in Appendix C.

Table 2: 2025 and 2030 Future Background Levels of Service

Intersection	Peak Hour	Level of Service (Average Delay per Vehicle(s))		Maximum V/C & V/C Ratio(s) > 0.85 (Approach)	
		2025 Background	2030 Background	2025 Background	2030 Background
St Catharines St & College St (Stop Control (SB))	Weekday A.M.	B (12.2 s)	B (12.9 s)	0.03 (SB)	0.04 (SB)
	Weekday P.M.	C (17.1 s)	C (20.0 s)	0.04 (SB)	0.04 (SB)

Note1: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The level of service of a stop-controlled intersection is based on the minor (stopped) approach control delay per vehicle.

Note2: The critical v/c ratio is considered to be the maximum v/c ratio at the intersection. All v/c ratios greater than 0.90 are outlined and highlighted.

The study intersection is expected to operate at a level of service “C” or better during both weekday a.m. and p.m. peak hours, under 2025 and 2030 future background traffic conditions. Compared to existing conditions, the intersection of St Catharines Street & College Street is expected to experience a maximum increase of 5.4 seconds of control delay. The volume to capacity ratio is expected to increase by 0.01 during the weekday p.m. peak hour. These metrics indicate that the intersections are expected to continue to operate at an efficient level of service, with reserve capacity to accommodate future increases in traffic volumes.

6.0 Site Generated Traffic

The proposed daycare center will result in additional vehicles on the boundary road network that previously did not exist. The proposed development will also cause additional turning movements at the study intersections.

The trip generation of the residential facility was forecasted using the fitted curve equations provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, under the Land Use Category 220 “Multifamily Housing (Low Rise)” and Land Use Category 820 “Shopping Centre”. Trip generation estimates were based on the Concept Plan dated January 23, 2020, which proposes two 2-storey freehold townhouses for a total of 12 units, four 3-storey stacked townhouses for a total of 60 units and one 4-storey mixed-use ground floor commercial (930 m²) building with 30 units. An internal capture of 17% between the residential and commercial uses has been applied. Additionally, a 34% pass-by reduction is also applied during the p.m. peak period. According to the ITE Trip Generation Manual, the development is forecasted to generate 58 and 68 two-way trips in the weekday a.m. and p.m. peak hours, respectively. The forecasted trips are tabulated in Table 3, and the distributed trips are illustrated in Figure 5.

Table 3: Trip Generation

Land Use	Units/GFA	Parameter	Weekday A.M.			Weekday P.M.		
			In	Out	2-Way	In	Out	2-Way
Residential Multifamily Housing (Low Rise) (220)	102	Gross Trips	11	38	49	38	22	60
		Internal Capture	0	0	0	5	13	18
		Net New Trips	11	38	49	33	9	42
Retail Shopping Centre (820)	10010.40 sq.ft.	Gross Trips	6	3	9	18	20	38
		Internal Capture	0	0	0	2	5	7
		Pass by	0	0	0	2	3	5
		Net New Trips	6	3	9	14	12	26
Total Net Trips			17	41	58	47	21	68

The proposed development is expected to generate 58 new vehicular 2-way trips during the morning peak hour (17 trips in / 41 trips out), and 68 new vehicular 2-way trips during the afternoon peak hour (47 trips in / 21 trips out).

7.0 Total Traffic Conditions

7.1 Intersection Operations

The traffic operations at the study intersections were analyzed under future total conditions. Table 4 outlines 2025 and 2030 future total Levels of Service. Detailed capacity analyses are included in Appendix C. The 2025, and 2030 total traffic volumes are illustrated in Figures 6, and 7.

Table 4: 2025 and 2030 Future Total Levels of Service

Intersection	Peak Hour	Level of Service (Average Delay per Vehicle(s))		Maximum V/C & V/C Ratio(s) > 0.85 (Approach)	
		2025 Total	2030 Total	2025 Total	2030 Total
St Catharines St & College St (Stop Control (SB))	Weekday A.M.	B (12.4 s)	B (13.1 s)	0.04 (SB)	0.04 (SB)
	Weekday P.M.	C (18.4 s)	C (21.9 s)	0.04 (SB)	0.05 (SB)
College St & Site Access (Stop Control (WB))	Weekday A.M.	A (8.8 s)	A (8.8 s)	0.05 (WB)	0.045 (WB)
	Weekday P.M.	A (8.8 s)	A (8.8 s)	0.03 (WB)	0.03 (WB)

Note1: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The level of service of a stop-controlled intersection is based on the minor (stopped) approach control delay per vehicle.

Note2: The critical v/c ratio is considered to be the maximum v/c ratio at the intersection. All v/c ratios greater than 0.90 are outlined and highlighted.

The study intersections are expected to operate at an unchanged LOS "C" during both weekday a.m. and p.m. peak hours, under 2025 and 2030 future background traffic conditions. Compared to future background conditions, the intersection of St Catharines Street & College Street is expected to experience a maximum increase of 1.9 seconds of control delay. The volume to capacity ratio is expected to increase by 0.01 during the weekday p.m. peak hour. The site access at College Street is expected to operate with a level of service "A" with minimal delays and well under capacity during both horizon years. These metrics indicate that the intersections are expected to continue to operate at an efficient level of service, with the addition of the site generated traffic.

8.0 Conclusion and Recommendations

Based on the analysis, our conclusions are as follows:

Development Proposal

The proposed site will consist of:

- Two 2-storey freehold townhouses for a total of 12 units;
- Four 3-storey stacked townhouses for a total of 60 units;
- One 4-storey mixed-use ground floor commercial building with 30 units (930 m²)
- Access point of Morgan Avenue and College Street.

Existing Conditions

- Traffic volumes along Catharines Street were estimated using the turning movement counts from the intersections Griffin Street at Griffin Street N/St Catharines Street (received from the Region of Niagara).
- An industry-standard growth rate of two percent was applied to traffic volumes to reflect 2020 volumes.
- All intersections operate under capacity in both peak hours.

Background Conditions

- An industry-standard growth rate of two percent was applied to all movements along boundary roads in the study area that are not directly entering or exiting the site.
- Background developments included the site traffic generated by development located at 186 Margaret Street in the vicinity of the site.
- All intersections operate with a level of service "C" or better under future background conditions with reserve capacity to accommodate future increases in traffic volumes.

Traffic Trip Generation

- An internal capture of 17% between the residential and commercial uses has been applied. Additionally, a 34% pass-by reduction is also applied during the p.m. peak period
- The proposed development is expected to generate 58 new vehicular 2-way trips during the morning peak hour (17 trips in / 41 trips out), and 68 new vehicular 2-way trips during the afternoon peak hour (47 trips in / 21 trips out).

Future Conditions

- The intersection capacity analysis under the future total traffic conditions indicates that all the intersections will operate similarly to the future background conditions during both peak hours.

Accordingly, development can be supported by traffic operations and safety perspectives. We trust that this review satisfies any access and transportation concerns associated with the site plan for this development. Please feel free to contact the undersigned for any further information required.

Respectfully submitted,

CF CROZIER & ASSOCIATES INC.



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APPENDIX A

Traffic Data and, Signal Timing Plans

Turning Movements Report - AM Period

Location..... Griffin Street @ RR20/St Catharines Street

GeoID..... 00094

Municipality. WEST LINCOLN

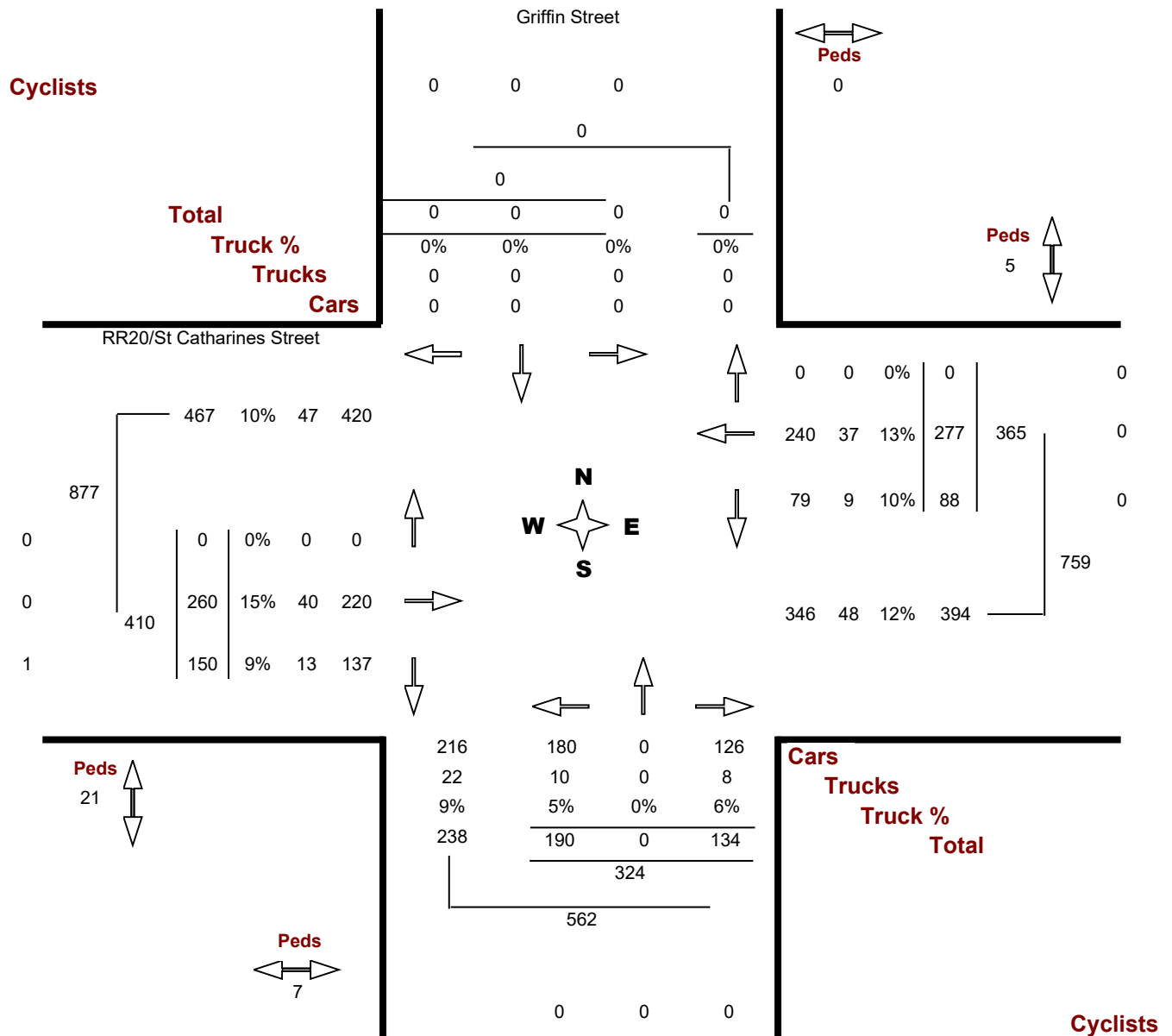
Count Date. Tuesday, 04 June, 2019

Traffic Cont. Traffic signal

Count Time. 07:00 AM — 09:00 AM

Major Dir..... East west

Peak Hour.. 08:00 AM — 09:00 AM



Turning Movement Count Report

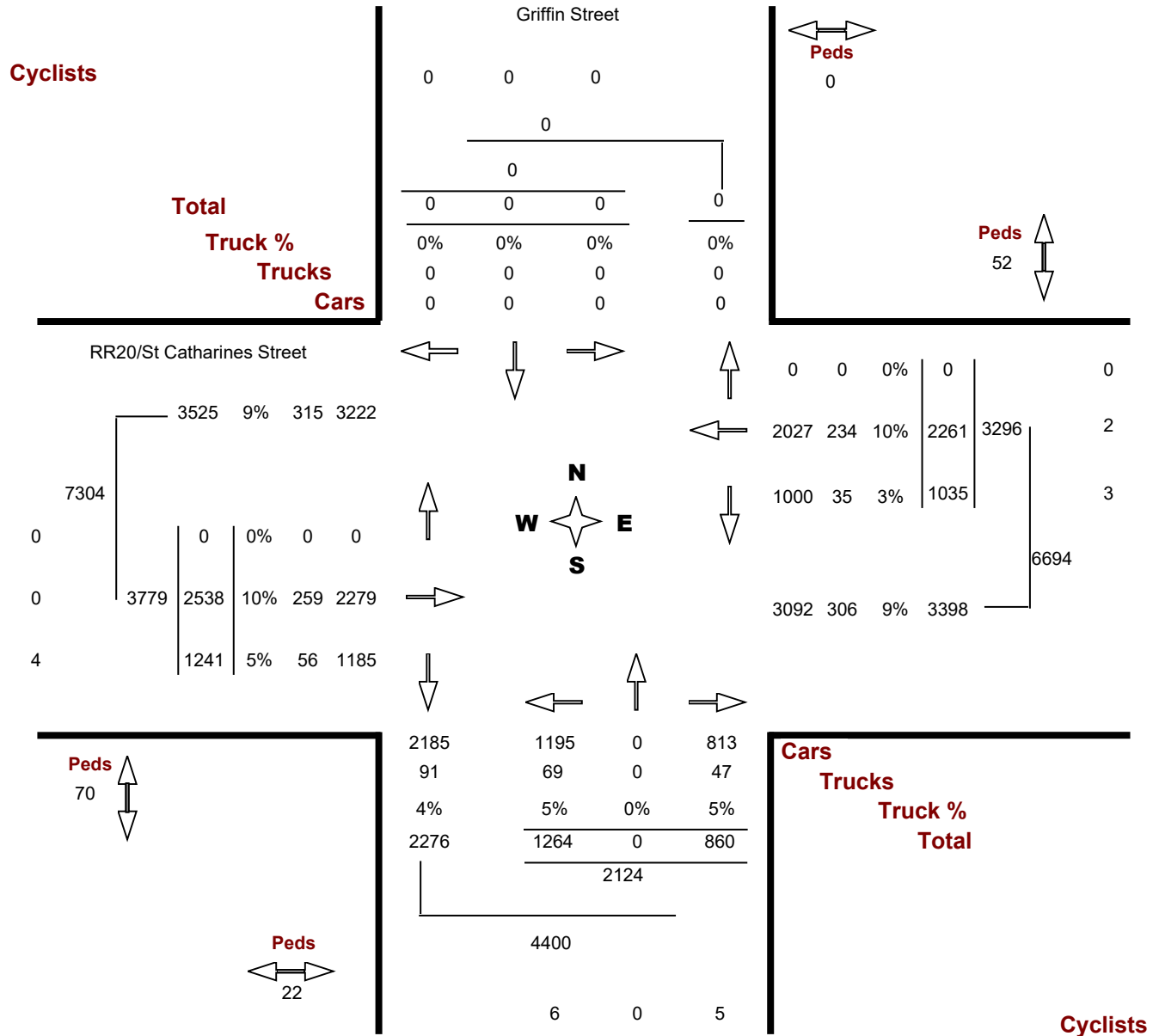
Full Study

Location..... Griffin Street @ RR20/St Catharines Street

Municipality..... WEST LINCOLN

GeoID..... 00094

Count Date..... Tuesday, 04 June, 2019





Turning Movement Count - Details Report (15 min)

Location..... Griffin Street @ RR20/St Catharines Street

Municipality..... WEST LINCOLN

Count Date..... Tuesday, June 04, 2019

Griffin Street											RR20/St Catharines Street									
North Approach						South Approach					East Approach					West Approach				
Time Period	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00 07:15	0	0	0	0	0	44	0	22	0	66	10	52	0	0	62	0	67	21	0	88
07:15 07:30	0	0	0	0	0	40	0	27	0	67	19	71	0	0	90	0	45	18	0	63
07:30 07:45	0	0	0	0	0	48	0	30	0	78	24	83	0	0	107	0	65	21	0	86
07:45 08:00	0	0	0	0	0	54	0	22	0	76	20	87	0	0	107	0	67	30	0	97
Hourly Total	0	0	0	0	0	186	0	101	0	287	73	293	0	0	366	0	244	90	0	334
08:00 08:15	0	0	0	0	0	42	0	27	0	69	21	57	0	0	78	0	60	22	0	82
08:15 08:30	0	0	0	0	0	41	0	21	0	62	16	65	0	0	81	0	65	40	0	105
08:30 08:45	0	0	0	0	0	57	0	40	0	97	21	76	0	0	97	0	57	46	0	103
08:45 09:00	0	0	0	0	0	50	0	46	0	96	30	79	0	0	109	0	78	42	0	120
Hourly Total	0	0	0	0	0	190	0	134	0	324	88	277	0	0	365	0	260	150	0	410
11:00 11:15	0	0	0	0	0	33	0	26	0	59	19	54	0	0	73	0	73	26	0	99
11:15 11:30	0	0	0	0	0	29	0	26	0	55	29	63	0	0	92	0	63	23	0	86
11:30 11:45	0	0	0	0	0	27	0	22	0	49	21	61	0	0	82	0	78	28	0	106
11:45 12:00	0	0	0	0	0	40	0	25	0	65	29	55	0	0	84	0	58	17	0	75
Hourly Total	0	0	0	0	0	129	0	99	0	228	98	233	0	0	331	0	272	94	0	366
12:00 12:15	0	0	0	0	0	33	0	27	0	60	36	53	0	0	89	0	79	32	0	111
12:15 12:30	0	0	0	0	0	28	0	24	0	52	31	69	0	0	100	0	78	34	0	112
12:30 12:45	0	0	0	0	0	30	0	28	0	58	39	79	0	0	118	0	81	30	0	111
12:45 13:00	0	0	0	0	0	49	0	34	0	83	41	74	0	0	115	0	70	26	0	96
Hourly Total	0	0	0	0	0	140	0	113	0	253	147	275	0	0	422	0	308	122	0	430
13:00 13:15	0	0	0	0	0	39	0	29	0	68	36	51	0	0	87	0	61	28	0	89
13:15 13:30	0	0	0	0	0	43	0	25	0	68	30	67	0	0	97	0	59	27	0	86
13:30 13:45	0	0	0	0	0	32	0	23	0	55	28	64	0	0	92	0	64	30	0	94
13:45 14:00	0	0	0	0	0	32	0	18	0	50	28	64	0	0	92	0	74	28	0	102
Hourly Total	0	0	0	0	0	146	0	95	0	241	122	246	0	0	368	0	258	113	0	371
15:00 15:15	0	0	0	0	0	40	0	26	0	66	42	69	0	0	111	0	68	42	0	110
15:15 15:30	0	0	0	0	0	36	0	17	0	53	39	76	0	0	115	0	80	42	0	122
15:30 15:45	0	0	0	0	0	54	0	32	0	86	33	63	0	0	96	0	89	64	0	153
15:45 16:00	0	0	0	0	0	40	0	30	0	70	42	81	0	0	123	0	100	51	0	151
Hourly Total	0	0	0	0	0	170	0	105	0	275	156	289	0	0	445	0	337	199	0	536

Attachment No. 3

Griffin Street

RR20/St Catharines Street

North Approach						South Approach					East Approach					West Approach				
Time Period	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:00 16:15	0	0	0	0	0	36	0	32	0	68	34	63	0	0	97	0	110	63	0	173
16:15 16:30	0	0	0	0	0	34	0	42	0	76	40	94	0	0	134	0	126	55	0	181
16:30 16:45	0	0	0	0	0	36	0	25	0	61	51	86	0	0	137	0	95	57	0	152
16:45 17:00	0	0	0	0	0	27	0	25	0	52	55	81	0	0	136	0	94	63	0	157
Hourly Total	0	0	0	0	0	133	0	124	0	257	180	324	0	0	504	0	425	238	0	663
17:00 17:15	0	0	0	0	0	56	0	28	0	84	41	87	0	0	128	0	118	59	0	177
17:15 17:30	0	0	0	0	0	38	0	15	0	53	49	75	0	0	124	0	110	59	0	169
17:30 17:45	0	0	0	0	0	43	0	29	0	72	39	74	0	0	113	0	107	65	0	172
17:45 18:00	0	0	0	0	0	33	0	17	0	50	42	88	0	0	130	0	99	52	0	151
Hourly Total	0	0	0	0	0	170	0	89	0	259	171	324	0	0	495	0	434	235	0	669
Grand Total	0	0	0	0	0	1264	0	860	0	2124	1035	2261	0	0	3296	0	2538	1241	0	3779
Truck %	0%	0%	0%	0%	0%	5%	0%	5%	0%	5%	3%	10%	0%	0%	8%	0%	10%	5%	0%	8%

APPENDIX B

Levels of Service Definitions

Level of Service Definitions

Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 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 ≤ 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 ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 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 ≤ 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

Attachment No. 3

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 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

APPENDIX C

Detailed Capacity Analyses












HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St

Existing AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	397	359	1	3	14
Future Volume (Veh/h)	5	397	359	1	3	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	432	390	1	3	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		69				
pX, platoon unblocked					0.85	
vC, conflicting volume	391				832	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391				716	390
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1168				336	658
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	5	432	391	18		
Volume Left	5	0	0	3		
Volume Right	0	0	1	15		
cSH	1168	1700	1700	568		
Volume to Capacity	0.00	0.25	0.23	0.03		
Queue Length 95th (m)	0.1	0.0	0.0	0.7		
Control Delay (s)	8.1	0.0	0.0	11.6		
Lane LOS	A			B		
Approach Delay (s)	0.1		0.0	11.6		
Approach LOS				B		
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			32.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St












Existing PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	550	538	3	2	8
Future Volume (Veh/h)	14	550	538	3	2	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	598	585	3	2	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		69				
pX, platoon unblocked					0.74	
vC, conflicting volume	588				1214	586
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	588				1117	586
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	98
cM capacity (veh/h)	987				168	510
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	15	598	588	11		
Volume Left	15	0	0	2		
Volume Right	0	0	3	9		
cSH	987	1700	1700	372		
Volume to Capacity	0.02	0.35	0.35	0.03		
Queue Length 95th (m)	0.4	0.0	0.0	0.7		
Control Delay (s)	8.7	0.0	0.0	15.0		
Lane LOS	A			B		
Approach Delay (s)	0.2		0.0	15.0		
Approach LOS				B		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis












2025 Future Background AM Peak Hour

5: St Catharines St & College St

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	453	400	1	3	14
Future Volume (Veh/h)	5	453	400	1	3	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	492	435	1	3	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		69				
pX, platoon unblocked					0.83	
vC, conflicting volume	436				938	436
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436				825	436
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1124				284	621
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	5	492	436	18		
Volume Left	5	0	0	3		
Volume Right	0	0	1	15		
cSH	1124	1700	1700	518		
Volume to Capacity	0.00	0.29	0.26	0.03		
Queue Length 95th (m)	0.1	0.0	0.0	0.8		
Control Delay (s)	8.2	0.0	0.0	12.2		
Lane LOS	A			B		
Approach Delay (s)	0.1		0.0	12.2		
Approach LOS				B		
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			35.9%		ICU Level of Service	A
Analysis Period (min)			15			












HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St

2025 Future Background PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	616	610	3	2	8
Future Volume (Veh/h)	14	616	610	3	2	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	670	663	3	2	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		69				
pX, platoon unblocked					0.72	
vC, conflicting volume	666				1364	664
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	666				1311	664
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	98
cM capacity (veh/h)	923				124	460
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	15	670	666	11		
Volume Left	15	0	0	2		
Volume Right	0	0	3	9		
cSH	923	1700	1700	308		
Volume to Capacity	0.02	0.39	0.39	0.04		
Queue Length 95th (m)	0.4	0.0	0.0	0.8		
Control Delay (s)	9.0	0.0	0.0	17.1		
Lane LOS	A			C		
Approach Delay (s)	0.2		0.0	17.1		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			45.2%		ICU Level of Service	A
Analysis Period (min)			15			










HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St

2025 Future Total AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	453	400	7	3	14
Future Volume (Veh/h)	16	453	400	7	3	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	492	435	8	3	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		69				
pX, platoon unblocked					0.83	
vC, conflicting volume	443				965	439
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	443				855	439
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	98
cM capacity (veh/h)	1117				268	618
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	17	492	443	18		
Volume Left	17	0	0	3		
Volume Right	0	0	8	15		
cSH	1117	1700	1700	508		
Volume to Capacity	0.02	0.29	0.26	0.04		
Queue Length 95th (m)	0.4	0.0	0.0	0.8		
Control Delay (s)	8.3	0.0	0.0	12.4		
Lane LOS	A			B		
Approach Delay (s)	0.3		0.0	12.4		
Approach LOS				B		
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			35.9%	ICU Level of Service		A
Analysis Period (min)			15			












HCM Unsignalized Intersection Capacity Analysis6: College St & Site Access

2025 Future Total AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	41	0	4	17	0	11
Future Volume (Veh/h)	41	0	4	17	0	11
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	0	4	18	0	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	25	13			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	25	13			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	991	1067			1593	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	45	22	12			
Volume Left	45	0	0			
Volume Right	0	18	0			
cSH	991	1700	1593			
Volume to Capacity	0.05	0.01	0.00			
Queue Length 95th (m)	1.1	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			5.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			










HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St

2025 Future Total PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	615	609	21	2	8
Future Volume (Veh/h)	45	615	609	21	2	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	668	662	23	2	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		69				
pX, platoon unblocked					0.71	
vC, conflicting volume	685				1440	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	685				1415	674
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				98	98
cM capacity (veh/h)	908				102	455
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	49	668	685	11		
Volume Left	49	0	0	2		
Volume Right	0	0	23	9		
cSH	908	1700	1700	280		
Volume to Capacity	0.05	0.39	0.40	0.04		
Queue Length 95th (m)	1.3	0.0	0.0	0.9		
Control Delay (s)	9.2	0.0	0.0	18.4		
Lane LOS	A			C		
Approach Delay (s)	0.6		0.0	18.4		
Approach LOS				C		
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			50.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis6: College St & Site Access












2025 Future Total PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	0	10	49	0	6
Future Volume (Veh/h)	26	0	10	49	0	6
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	0	11	53	0	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	44	38			64	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	44	38			64	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	966	1035			1538	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	28	64	7			
Volume Left	28	0	0			
Volume Right	0	53	0			
cSH	966	1700	1538			
Volume to Capacity	0.03	0.04	0.00			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.5				
Intersection Capacity Utilization		13.9%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis












5: St Catharines St & College St

2030 Future Background AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	500	443	1	3	14
Future Volume (Veh/h)	5	500	443	1	3	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	543	482	1	3	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		69				
pX, platoon unblocked					0.81	
vC, conflicting volume	483				1036	482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	483				930	482
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	97
cM capacity (veh/h)	1080				241	584
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	5	543	483	18		
Volume Left	5	0	0	3		
Volume Right	0	0	1	15		
cSH	1080	1700	1700	472		
Volume to Capacity	0.00	0.32	0.28	0.04		
Queue Length 95th (m)	0.1	0.0	0.0	0.9		
Control Delay (s)	8.3	0.0	0.0	12.9		
Lane LOS	A			B		
Approach Delay (s)	0.1		0.0	12.9		
Approach LOS				B		
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			38.6%		ICU Level of Service	A
Analysis Period (min)			15			












HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St

2030 Future Background PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	682	674	3	2	8
Future Volume (Veh/h)	14	682	674	3	2	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	741	733	3	2	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		69				
pX, platoon unblocked					0.68	
vC, conflicting volume	736				1506	734
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	736				1508	734
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	98
cM capacity (veh/h)	870				89	420
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	15	741	736	11		
Volume Left	15	0	0	2		
Volume Right	0	0	3	9		
cSH	870	1700	1700	251		
Volume to Capacity	0.02	0.44	0.43	0.04		
Queue Length 95th (m)	0.4	0.0	0.0	1.0		
Control Delay (s)	9.2	0.0	0.0	20.0		
Lane LOS	A			C		
Approach Delay (s)	0.2		0.0	20.0		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			49.0%		ICU Level of Service	A
Analysis Period (min)			15			










HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St

2030 Future Total AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	500	443	7	3	14
Future Volume (Veh/h)	16	500	443	7	3	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	543	482	8	3	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		69				
pX, platoon unblocked					0.81	
vC, conflicting volume	490				1063	486
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	490				961	486
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	97
cM capacity (veh/h)	1073				227	581
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	17	543	490	18		
Volume Left	17	0	0	3		
Volume Right	0	0	8	15		
cSH	1073	1700	1700	461		
Volume to Capacity	0.02	0.32	0.29	0.04		
Queue Length 95th (m)	0.4	0.0	0.0	0.9		
Control Delay (s)	8.4	0.0	0.0	13.1		
Lane LOS	A			B		
Approach Delay (s)	0.3		0.0	13.1		
Approach LOS				B		
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			38.6%	ICU Level of Service		A
Analysis Period (min)			15			












HCM Unsignalized Intersection Capacity Analysis6: College St & Site Access

2030 Future Total AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	41	0	4	17	0	11
Future Volume (Veh/h)	41	0	4	17	0	11
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	0	4	18	0	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	25	13			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	25	13			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	991	1067			1593	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	45	22	12			
Volume Left	45	0	0			
Volume Right	0	18	0			
cSH	991	1700	1593			
Volume to Capacity	0.05	0.01	0.00			
Queue Length 95th (m)	1.1	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		5.0				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				










HCM Unsignalized Intersection Capacity Analysis5: St Catharines St & College St

2030 Future Total PM Peak Hour

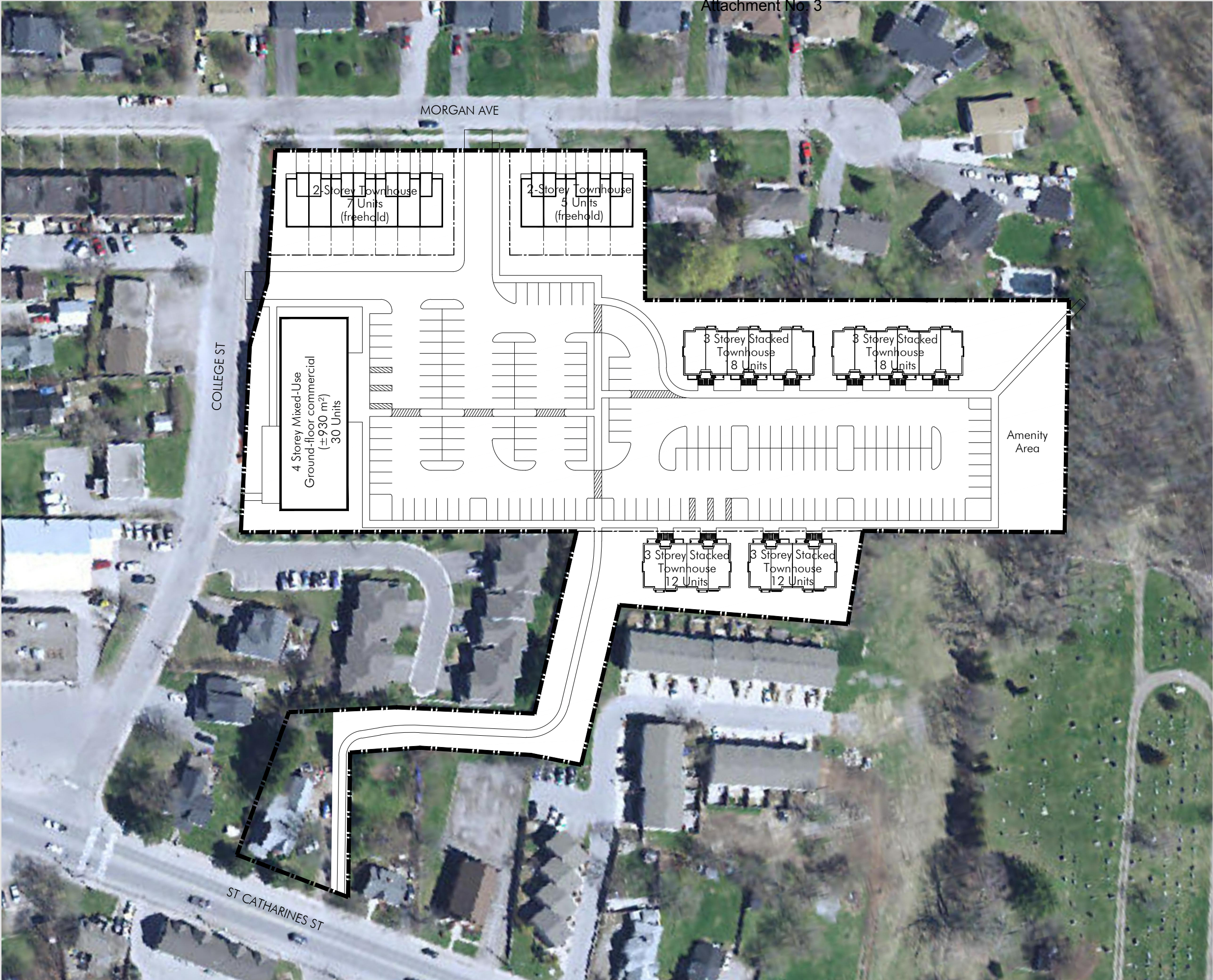
						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	681	673	21	2	8
Future Volume (Veh/h)	45	681	673	21	2	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	740	732	23	2	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		69				
pX, platoon unblocked					0.68	
vC, conflicting volume	755				1582	744
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	755				1620	744
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				97	98
cM capacity (veh/h)	855				73	415
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	49	740	755	11		
Volume Left	49	0	0	2		
Volume Right	0	0	23	9		
cSH	855	1700	1700	223		
Volume to Capacity	0.06	0.44	0.44	0.05		
Queue Length 95th (m)	1.4	0.0	0.0	1.2		
Control Delay (s)	9.5	0.0	0.0	21.9		
Lane LOS	A			C		
Approach Delay (s)	0.6		0.0	21.9		
Approach LOS				C		
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			50.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis6: College St & Site Access

2030 Future Total PM Peak Hour


						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	0	10	49	0	6
Future Volume (Veh/h)	26	0	10	49	0	6
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	0	11	53	0	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	44	38			64	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	44	38			64	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	966	1035			1538	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	28	64	7			
Volume Left	28	0	0			
Volume Right	0	53	0			
cSH	966	1700	1538			
Volume to Capacity	0.03	0.04	0.00			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.5				
Intersection Capacity Utilization		13.9%		ICU Level of Service		A
Analysis Period (min)		15				

FIGURES



Concept Plan

College Street School
132 College Street
Township of West Lincoln

 **Subject Lands**

ZONING: RM3

132 College Street
Area: ±2.185 ha
Units:
- 13 2-Storey Townhouses (Freehold)
- 30 Apartment Units
- 60 Stacked Townhouse Units
Total: 103 Units

Overall Density: 47.1 upha

Commercial: ±930 m²

Parking Required/Provided:
Commercial
1 space/30 m²: 31 spaces

Residential*
1.5 spaces/unit: 135 spaces

Accessible spaces: 6

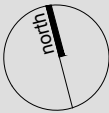
Notes:
SWOOP 2015 Aerial Imagery
*Parking requirements for non-freehold units only

Date: January 29, 2020

Scale: 1:1,000

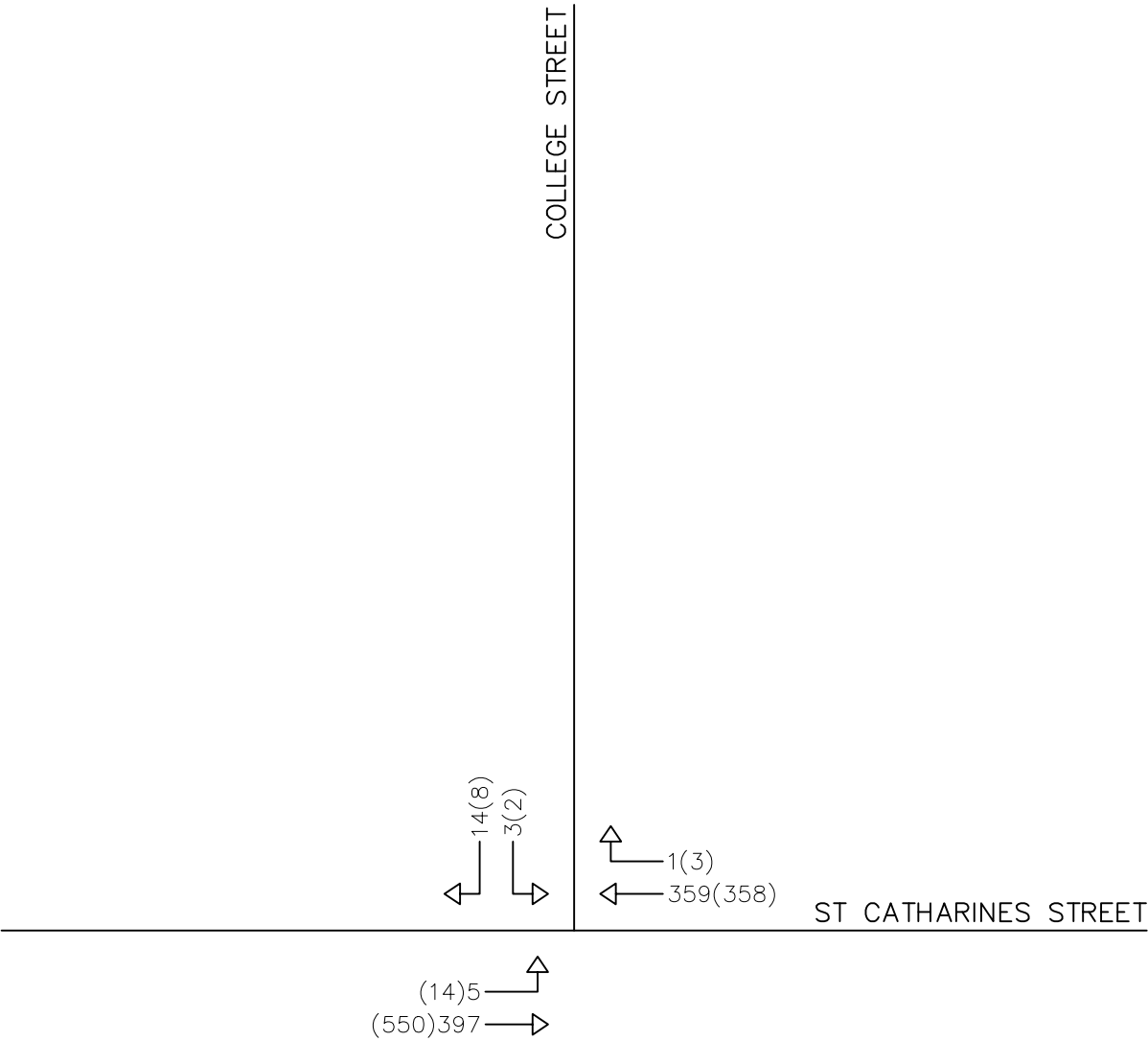
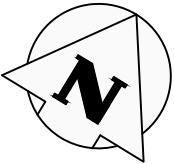
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Drawn: JB



K:\08234V - SCHOOL SITE CONCEPT PLANS\CP132 COLLEGE
ST\COLLEGE_CP_29JAN2020.DWG

NOTE:
THIS FIGURE IS SCHEMATIC ONLY
AND IS NOT TO BE SCALED.



LEGEND:
AM(PM) WEEKDAY AM(PM)
TRIP DISTRIBUTION

132 COLLEGE STREET
TOWNSHIP OF WEST LINCOLN

2020 EXISTING TRAFFIC VOLUMES

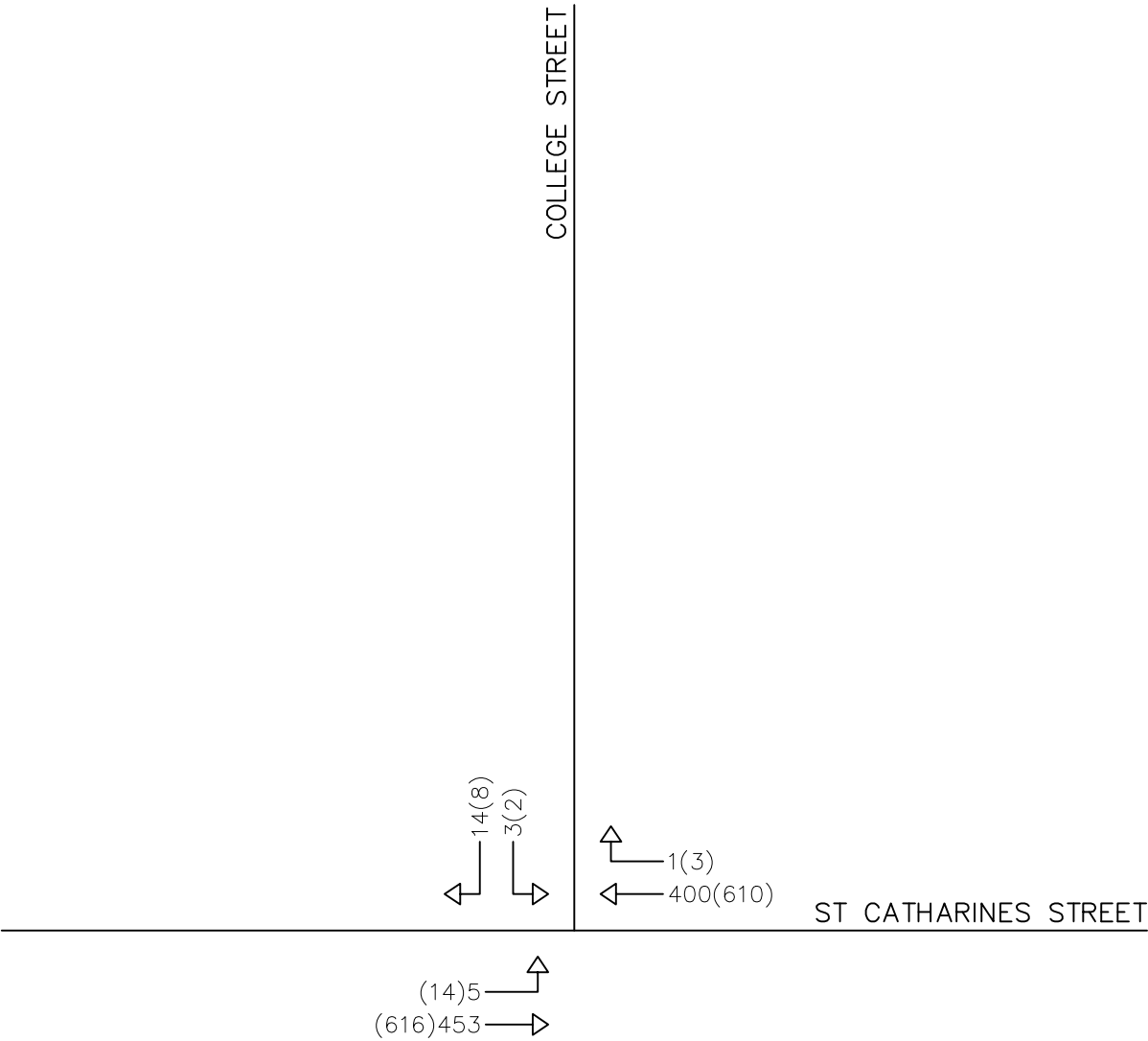
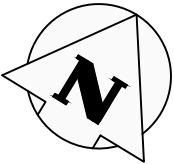


**CROZIER
& ASSOCIATES**
Consulting Engineers

2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn	A.K.	Design	Project No.	529-5576
Check	K.S.	Check	Scale	N.T.S.
			Dwg.	FIG. 02

NOTE:
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AND IS NOT TO BE SCALED.



LEGEND:
AM(PM) WEEKDAY AM(PM)
TRIP DISTRIBUTION

132 COLLEGE STREET
TOWNSHIP OF WEST LINCOLN

2025 FUTURE BACKGROUND
TRAFFIC VOLUMES

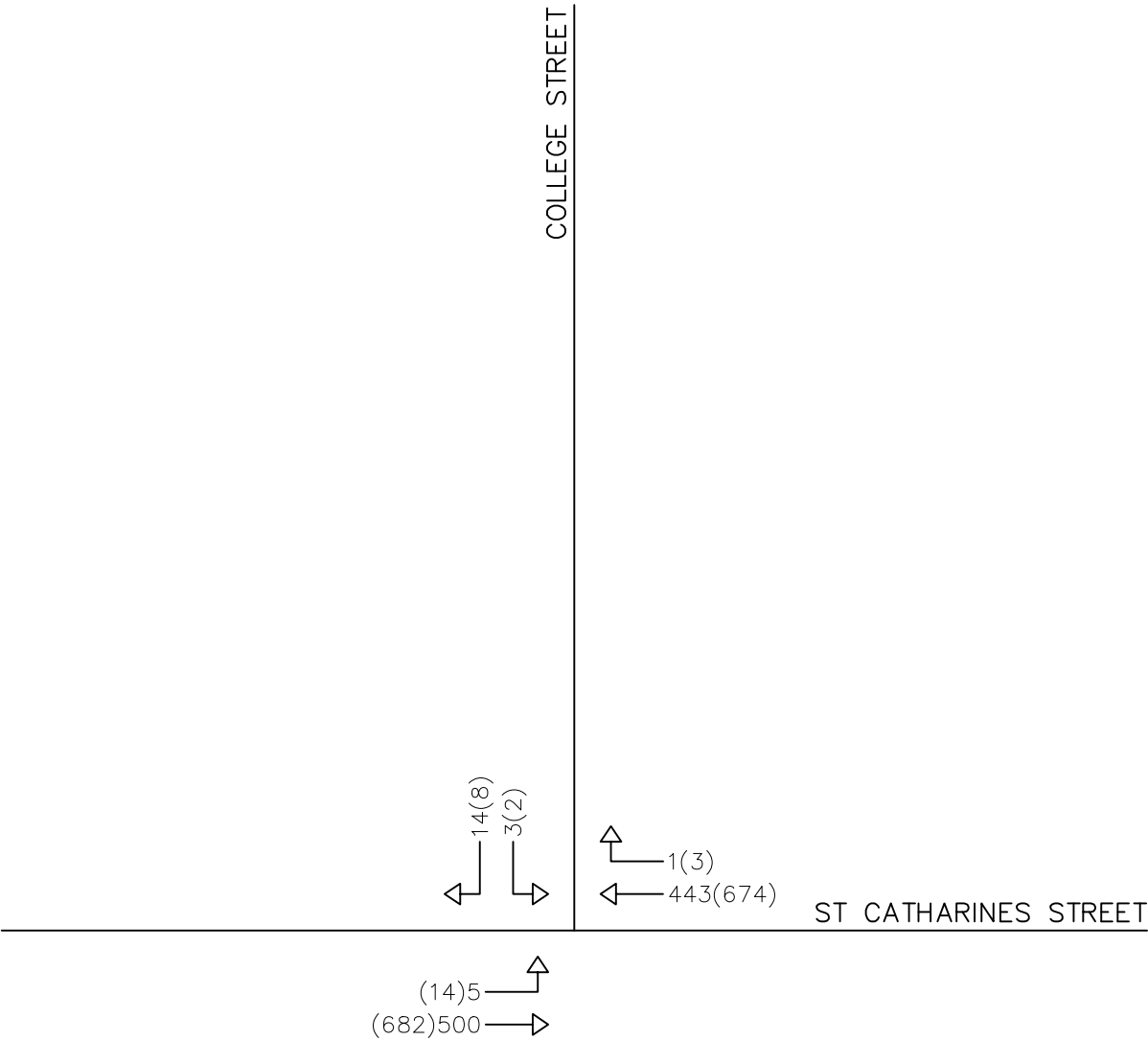
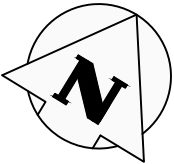


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Drawn	A.K.	Design	Project No.	529-5576
Check	K.S.	Check	Scale	N.T.S.
			Dwg.	FIG. 03

NOTE:
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LEGEND:
AM(PM) WEEKDAY AM(PM)
TRIP DISTRIBUTION

132 COLLEGE STREET
TOWNSHIP OF WEST LINCOLN

2030 FUTURE BACKGROUND
TRAFFIC VOLUMES

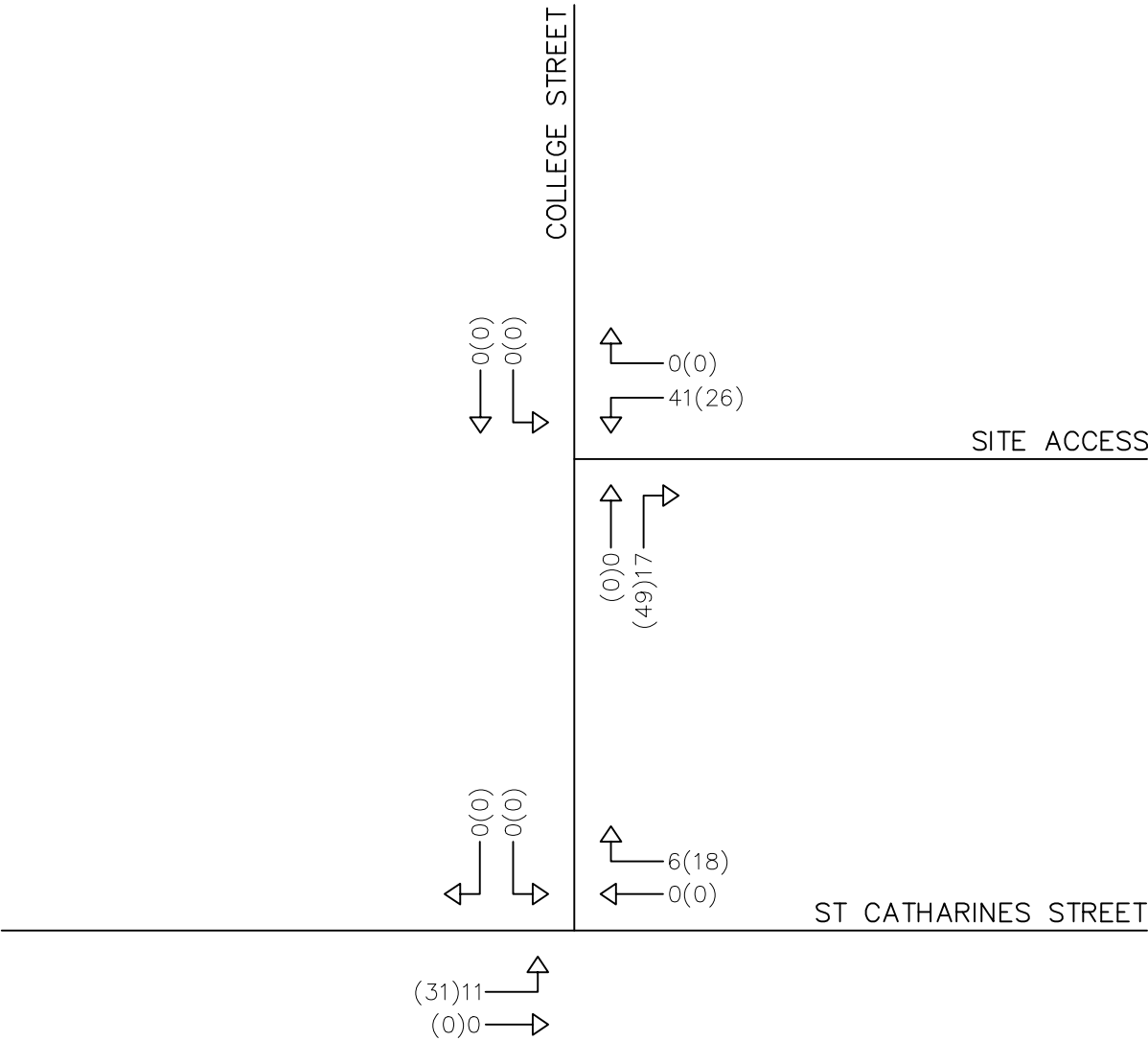
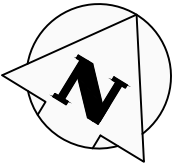


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Drawn	A.K.	Design	Project No.	529-5576
Check	K.S.	Check	Scale	N.T.S.
			Dwg.	FIG. 04

NOTE:
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AND IS NOT TO BE SCALED.



LEGEND:
AM(PM) WEEKDAY AM(PM)
TRIP DISTRIBUTION

132 COLLEGE STREET
TOWNSHIP OF WEST LINCOLN

SITE GENERATED TRIPS

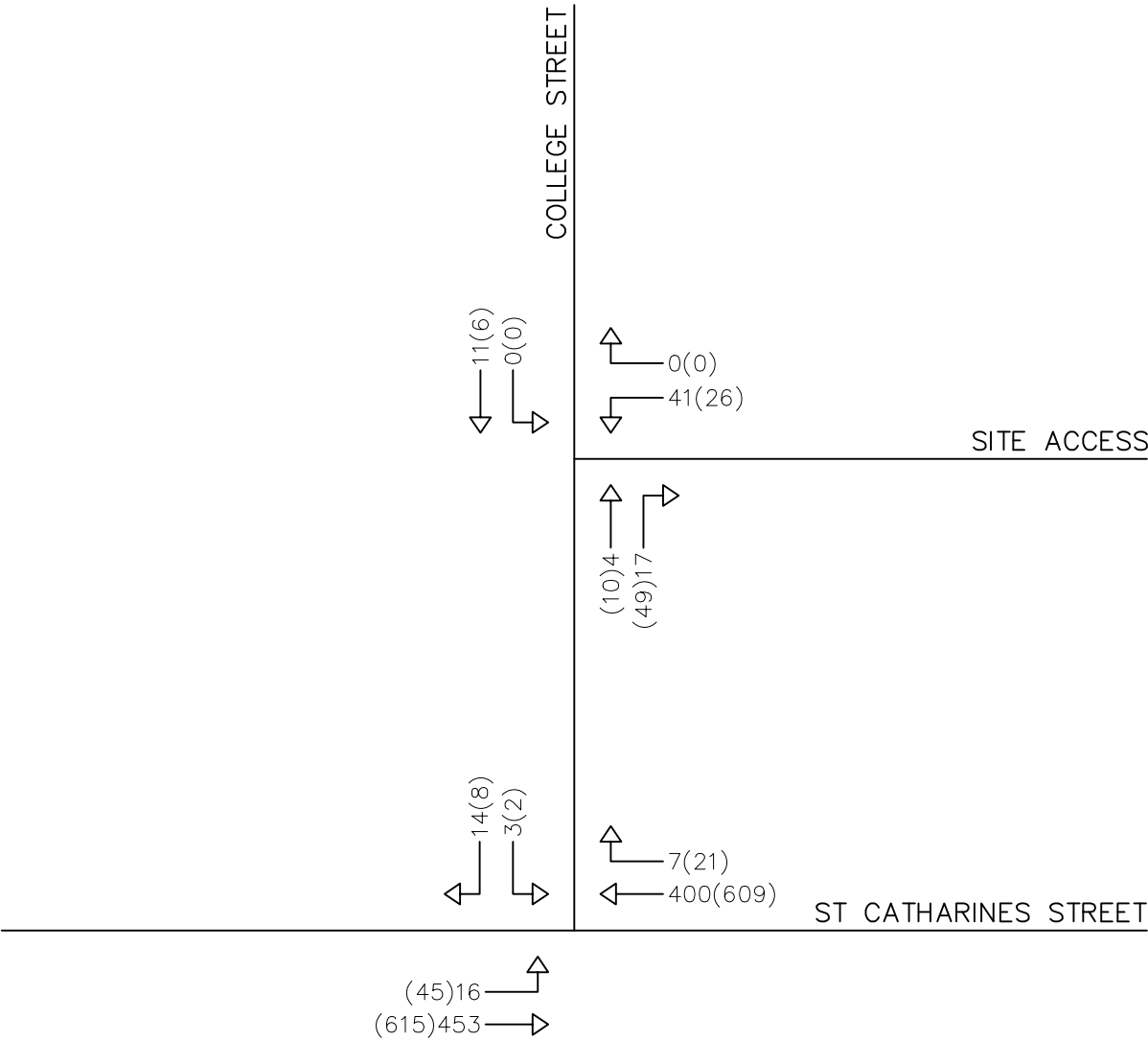
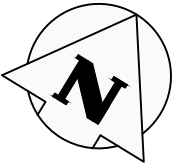


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905 875-4915 F
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Drawn	A.K.	Design	Project No.	529-5576
Check	K.S.	Check	Scale	N.T.S.
			Dwg.	FIG. 05

NOTE:
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LEGEND:
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TRIP DISTRIBUTION

132 COLLEGE STREET
TOWNSHIP OF WEST LINCOLN

2025 FUTURE TOTAL
TRAFFIC VOLUMES

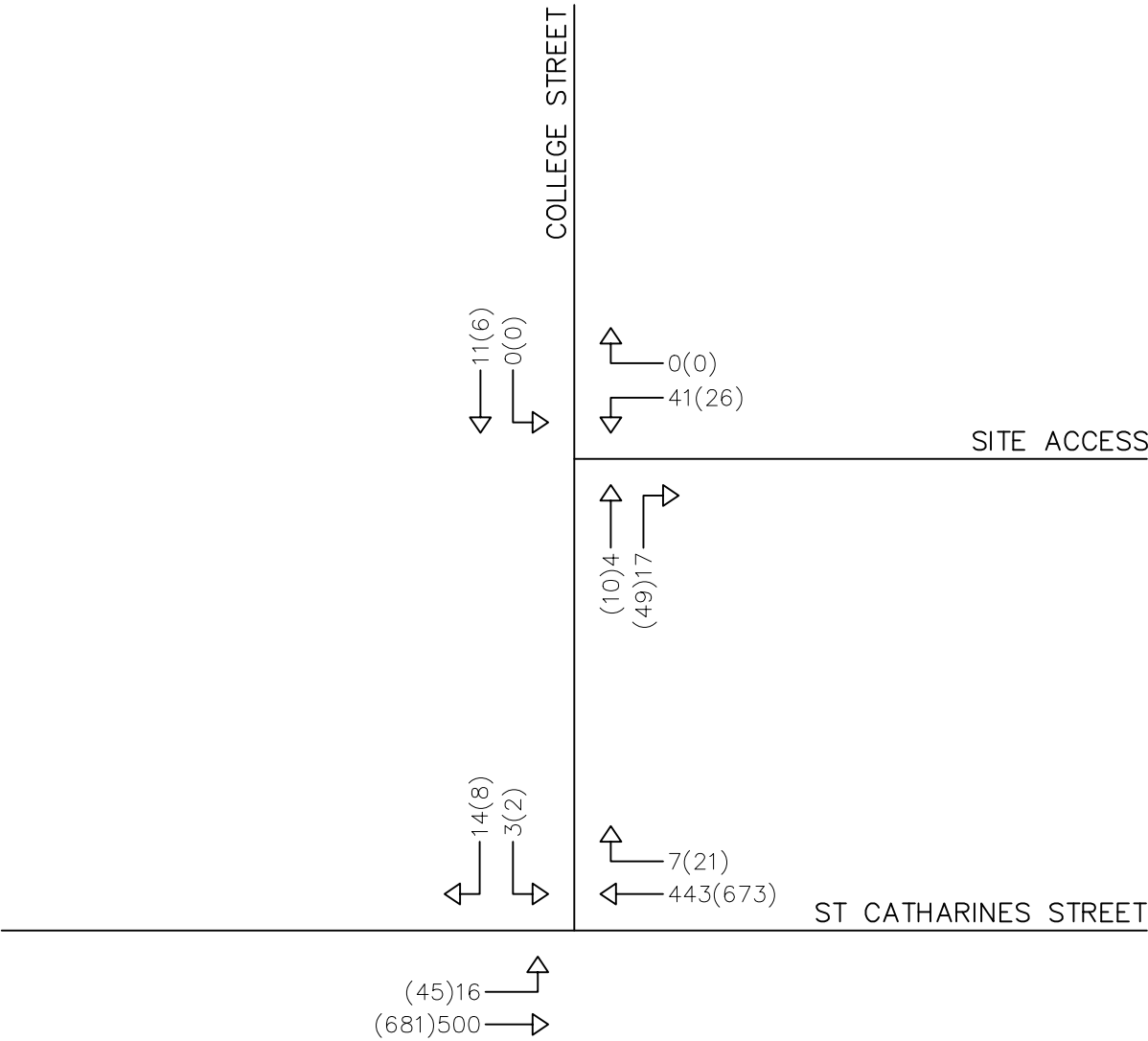
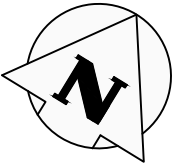


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905 875-4915 F
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Drawn	A.K.	Design	Project No.	529-5576
Check	K.S.	Check	Scale	N.T.S.
			Dwg.	FIG. 06

NOTE:
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AND IS NOT TO BE SCALED.



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TRIP DISTRIBUTION

132 COLLEGE STREET
TOWNSHIP OF WEST LINCOLN

2030 FUTURE TOTAL
TRAFFIC VOLUMES



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905 875-4915 F
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Drawn	A.K.	Design	Project No.	529-5576
Check	K.S.	Check	Scale	N.T.S.
			Dwg.	FIG. 07