AUGUST 18, 2021

REFER TO FILE: 103-5778

Town of Collingwood
545 Tenth Line North
Collingwood, ON L9Y 3Z5

Attention: Stuart West, P.Eng.
Engineering Services

RE: THE SHIPYARD DEVELOPMENT BLOCK 6
TRAFFIC OPINION LETTER
TOWN OF COLLINGWOOD, COUNTY OF SIMCOE

Dear Stuart,

This letter has been prepared to support the Official Plan Amendment and Zoning By-law Amendment Applications and to address the transportation aspects relating to the mid-rise, mixed use development located in Block 6 of the Shipyards Development Area in the Town of Collingwood.

This letter forecasts the expected trip generation of the development and reviews the proposed site from an access and circulation perspective.

Background

The site is approximately 0.73 hectares (7,312m^2) in size and is bounded by Side Launch Way to the south, a historical launch basin and dry dock to the west and east, and the Collingwood Harbour to the north.

The site is located in the Shipyards Development Area, which is located is at the north end of downtown Collingwood at the Georgian Bay shoreline. The Shipyards Development Area is bounded by Heritage Drive to the east, Huron Street to the south and an open municipally owned block to the west.

R.J. Burnside & Associates Limited (Burnside) issued a Traffic Impact Study (TIS), dated October 2003, for the entirety of The Shipyards development. A subsequent Addendum was prepared in February 2004 to address comments received from the Town and provide a revised analysis based on changes to the overall concept plan.

The recommendations that came from the studies have been implemented including the signalization of Huron Street and Heritage Drive, a two-way centre left-turn from High Street to east of Heritage Drive, a one-way northbound extension of Hurontario Street (north of Huron Street), northbound and southbound left-turn lanes on Pine Street, Hurontario Street and Heritage Drive (southbound only), and the optimization of the existing signalized intersections.

Development Proposal

The proposed development consists of a six-storey mid-rise building with 101 residential units and 3,552 square feet (330m^2) of retail space. The development also includes 25 visitor surface parking spaces including 2 short-term and 2 barrier-free, and 147 underground parking spaces including regular parking spaces, 7 tandem spaces and 1 barrier-free parking space.

These details are summarized in the development Preliminary Site Statistics table included as **Attachment A**. The Site Plan dated June 23, 2021, prepared by Giannone Petricone Associates Inc. Architects (GPA) has also been included with **Attachment A**.

Access to and from the site is proposed through a one-way inbound access from Side Launch Way and a one-way outbound access to Side Launch Way. The proposed inbound access is towards the eastern limits of the site, approximately 135 metres (centerline to centerline) west of the intersection of Side Launch Way and Heritage Drive. The proposed outbound access is towards the western limit of the site, approximately 49 metres east of the intersection of Side Launch Way and Hurontario Street (centerline to centerline). From each other, the accesses are approximately 17 metres apart (centreline to centreline).

Boundary Road Network

The boundary road network is described in **Table 1** below.

Table 1: Boundary Road Network

Roadway	Huron Street/First Street	Side Launch Way	Heritage Drive
Direction	East-West	East-West	North-South
Classification	Arterial Road	Local Road	Local Road
Jurisdiction	Town of Collingwood[1]	Town of Collingwood, however roadway is unassumed	Town of Collingwood
Posted Speed Limit (km/h)	50 km/h	40 km/h (Assumed)	40 km/h
Total Number of Lanes	5	2	2
Pedestrian/ Cycling Facilities	3m multi-use trail on north side of roadway with 3m grass boulevard (varies) 1.5m sidewalk on south side of roadway	1.5m sidewalk with a 3m multi-use pathway on south side of roadway	2.5m sidewalk with a 2m grass boulevard on the west side of the roadway

Note[1]: Huron Street/First Street is a segment of Highway 26, which is part of the MTO's connecting link program through the Town of Collingwood.

Existing Operations

In August 2019, Burnside produced the Collingwood Transportation Study Update (TSU) on behalf of the Town of Collingwood. The TSU is an update to the Town of Collingwood Transportation Study that was completed by C.C. Tatham & Associates Ltd. (Tatham) in July 2012. The purpose of the TSU was to estimate the future traffic volumes to be generated by the many proposed developments in the Town, and to review the anticipated impacts of the traffic growth on 20 key intersections in the Town's road network over the medium-term (2031) and long-term (2041) horizons. Relevant excerpts from the 2019 Collingwood Transportation Study Update have been included as **Attachment B**.

The anticipated impacts on the traffic operations were used to determine any infrastructure improvements that may be required at Town intersections in the 2031 and 2041 horizon years. Turning movement counts at the 20 key intersections were undertaken in December 2018 and were increased using a seasonal adjustment factor of 5% to reflect typical weekday summer conditions.
The intersections of First Street and Pine Street and First Street/Huron Street and Hurontario Street were included in TSU analysis. While the intersection of Huron Street and Heritage Drive was not assessed in the TSU, the Burnside Shipyards TIS Addendum forecasted that by 2013, the intersection would operate

with a LOS "B" assuming signalized conditions with eastbound and southbound left-turn lanes, which is the current geometric configuration of the intersection. The traffic operations under seasonally adjusted 2018 traffic volume conditions are summarized in **Table 2**.

Table 2: Existing Intersection Operations

Intersection	Movement	Roadway Peak Hour	Delay	LOS	v/c ratio
First Street & Pine Street	Overall	Weekday A.M.	13 s	B	0.42
		Weekday P.M.	17 s	B	0.58
First Street/Huron Street & Hurontario Street	Overall	Weekday A.M.	10 s	A	0.37
		Weekday P.M.	11 s	B	0.50

Note: These operations were obtained from Section 2.5.1 (Table 6) of the Transportation Study Update (Burnside, August 2019)

The intersections are operating well under existing conditions with reserve capacity for increases in traffic volumes. Given the level of development adjacent to these intersections in comparison to the areas surrounding Heritage Drive, it can reasonably be assumed that the intersection of Huron Street & Heritage Drive is also operating well under current traffic volume conditions.

Trip Generation (August 2021)

The trip generation of the proposed development was forecasted using the fitted curve equations provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. The residential dwelling units were assessed using Land Use Category (LUC) 221 "Multifamily Housing (Mid-Rise)" and the commercial space was assessed using LUC 820 "Shopping Centre". The forecasted trip generation of the proposed development is summarized in **Table 3**. Relevant excerpts from the ITE Trip Generation Manual, 10th Edition have been included as **Attachment C**.

Table 3: Trip Generation (Peak Hour)

Land Use	ITE Land-Use Code	No. of Units/ GFA	Roadway Peak Hour	Number of Trips		
				Inbound	Outbound	Total
Multifamily Housing (Mid-Rise)	221	101	Weekday A.M.	9	26	35
			Weekday P.M.	27	18	45
			Saturday	24	25	49
Shopping Centre	820	3,552 ft^2	Weekday A.M.	2	1	3
			Weekday P.M.	6	8	14
			Saturday	8	8	16
Total			**Weekday A.M.**	**11**	**27**	**38**
			Weekday P.M.	**33**	**26**	**59**
			Saturday	**32**	**33**	**65**

It is important to note the ITE average rate was used in the calculation of the weekday a.m. peak hour trip generation for the retail component, as it would typically only be employees arriving at this time. The fitted curve equation was utilized for the remaining time periods.

As defined by the ITE Trip Generation Handbook, 3rd Edition, primary trips are made for the specific purpose of visiting the generator. Pass-by trips are made as intermediate stops on the way from an origin to a primary destination without a route diversion. Accordingly, these vehicles do not increase the volume of vehicles on the roadway. The pass-by percentage for commercial uses in the a.m. peak hour is typically assumed to be zero, as most trips would represent employees going into work. In the

p.m. peak hour, the average pass-by percentage is 34 percent, and the Saturday average pass-by percentage is 26 percent. Accordingly, based on the trip generation estimate summarized in **Table 3**, the development is expected to generate 10 pass-by trips and 18 primary trips during the weekday p.m. peak hour and 7 pass-by trips and 19 primary trips during the Saturday peak hour.

Original Trip Generation (Burnside, 2003)

Burnside prepared the original TIS report for the Shipyards Development in October 2003. The original development proposal referred to Block 6 as "Block D." The development was originally proposed to include 50 mid-rise condominiums units, 20,200 ft^2 of commercial space and 4,260 ft^2 of restaurant space. Relevant excerpts from the 2003 Burnside Transportation Impact Study have been included as **Attachment D** for reference.

The Burnside TIS forecasted the trip generation using the data provided in the ITE Trip Generation Manual, 6th Edition. To provide a comparison, the trip generation of the original elements of Block 6 was forecasted using ITE Trip Generation Manual, 10th Edition. The trip generation is summarized in **Table 4** below. Relevant excerpts have been included as **Attachment E**.

Table 4: Original (Burnside, 2003) Trip Generation (Peak Hour)

Land Use	ITE 6th Ed. Land-Use Code	ITE 10th Ed. Land-Use Code	No. of Units/ GFA	Roadway Peak Hour	Number of Trips		
					Inbound	Outbound	Total
Multifamily Housing (Mid-Rise)	230	221	50	Weekday A.M.	4	13	17
				Weekday P.M.	14	9	23
				Saturday	14	14	28
Commercial	814	820	20,200 ft^2	Weekday A.M.	12	7	19
				Weekday P.M.	37	40	77
				Saturday	47	44	91
Restaurant	831	932	4,260 ft^2	Weekday A.M.	23	19	42
				Weekday P.M.	26	16	42
				Saturday	24	24	48
Total				**Weekday A.M.**	**39**	**39**	**78**
				Weekday P.M.	**77**	**65**	**142**
				Saturday	**85**	**82**	**167**

The revised development proposal results in 40, 83 and 102 less trips generated in the weekday a.m., p.m. and Saturday peak hours respectively, when compared to the original proposal for Block 6.

Future Traffic Operations

As noted previously, the TSU assessed the operations of the Town's road network over the medium-term (2031) and long-term (2041) horizons. The future operations were assessed under future background conditions and future development conditions. The background conditions were based purely on growth within the Town and surrounding areas, not attributed to new developments proposed within Town. The future development conditions included the background growth as well as the proposed developments within the Town of Collingwood. Relevant excerpts from the 2019 Collingwood Transportation Study Update have been included as **Attachment B**.

The 2031 and 2041 background intersection operations are summarized in **Table 5** and **Table 6**.

Table 5: 2031 Background Intersection Operations

Intersection	Roadway Peak Hour	Delay	LOS	Overall v/c ratio	Maximum v/c ratio
First Street & Pine Street	Weekday A.M.	13 s	B	0.45	0.46 (WBTR)
	Weekday P.M.	18 s	B	0.62	0.72 (NBL)
First Street/Huron Street & Hurontario Street	Weekday A.M.	10 s	A	0.40	0.65 (NBL)
	Weekday P.M.	12 s	B	0.53	0.74 (NBL)

Note: These operations were obtained from Section 4.1.1 (Table 9) of the Transportation Study Update (Burnside, August 2019)

Table 6: 2041 Background Intersection Operations

Intersection	Roadway Peak Hour	Delay	LOS	Overall v/c ratio	Maximum v/c ratio
First Street & Pine Street	Weekday A.M.	13 s	B	0.47	0.48 (NBTR)
	Weekday P.M.	18 s	B	0.66	0.76 (NBL)
First Street/Huron Street & Hurontario Street	Weekday A.M.	10 s	B	0.42	0.66 (NBL)
	Weekday P.M.	12 s	B	0.56	0.76 (NBL)

Note: These operations were obtained from Section 4.2.1 (Table 12) of the Transportation Study Update (Burnside, August 2019)

It can be seen that the background increase in traffic volumes is anticipated to have a negligible impact on the operations of the intersections of First Street & Pine Street and First Street/Huron Street and Hurontario Street.

To assess the impact of the various proposed developments on the operations of the Town's road network, Burnside referenced future development locations and estimated development statistics and occupancy percentages based on information available and confirmed by Town staff. While the development assumptions did not include the subject site, it did include the additional lands in the Shipyards Development Area.

The 2031 and 2041 future intersection operations are summarized in **Table 7** and **Table 8**.

Table 7: 2031 Total Intersection Operations

Intersection	Roadway Peak Hour	Delay	LOS	Overall v/c Ratio	Maximum v/c Ratio
First Street & Pine Street	Weekday A.M.	13 s	B	0.54	0.58 (WBTR)
	Weekday P.M.	22 s	C	0.85	0.82 (EBT)
First Street/Huron Street & Hurontario Street	Weekday A.M.	13 s	B	0.54	0.78 (NBL)
	Weekday P.M.	17 s	B	0.77	0.89 (NBL)

Note: These operations were obtained from Section 7.1.1 (Table 18) of the Transportation Study Update (Burnside, August 2019)

Table 8: 2041 Total Intersection Operations

Intersection	Roadway Peak Hour	Delay	LOS	Overall v/c Ratio	Maximum v/c Ratio
First Street & Pine Street	Weekday A.M.	13 s	B	0.61	0.64 (WBTR)
	Weekday P.M.	27 s	C	0.96	0.94 (NBL)
First Street/Huron Street & Hurontario Street	Weekday A.M.	14 s	B	0.62	0.81 (NBL)
	Weekday P.M.	21 s	C	0.87	0.93 (NBL)

Note: These operations were obtained from Section 7.2.1 (Table 22) of the Transportation Study Update (Burnside, August 2019)

Based on the above traffic operations, it is concluded that the study intersections can accommodate the growth in traffic attributed to the proposed development.

Access Locations

As noted previously, access to the site is proposed through a one-way inbound access and a one-way outbound access, both on Side Launch Way.

Driveway Spacing

As described in Section 8.9.8 and illustrated in Figure 8.9.2 of the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), the minimum spacing between commercial driveways on local and collector roads is 3.0 metres, measured between the end and start of the curb returns on the adjacent driveways. While curb radii will be established as part of future applications, assuming a 4.5 metre radius, the minimum for commercial driveways, provides approximately 3.0-metre separation between the inbound and outbound accesses.

Corner Clearance

As illustrated in Figure 8.8.2 of the TAC GDGCR, the corner clearance to accesses at major intersections is measured between the edge of the curb of the crossroad and the driveway.

The inbound and outbound accesses are separated by an island approximately 12 meters in width that abuts the surface parking spaces. The Site Plan can be referenced in **Attachment A**.

The minimum corner clearance was assessed between the Side Launch Way inbound access and the intersection of Side Launch Way and Heritage Drive, and between the Side Launch Way outbound access and intersections of Side Launch Way and Hurontario Street. The minimum corner clearance requirements, per TAC GDGCR Figure 8.8.2, are summarized in **Table 9**. Relevant excerpts from TAC GDGCR have been included as **Attachment F**.

Table 9: Minimum Corner Clearance Requirements

Access	Roadway Classification	Intersecting Roadway	Control Type	Minimum Clearance	Proposed Separation
Side Launch Way	Local	Heritage Drive	Stop	15 m	128 m
	Local	Hurontario Street	Stop	15 m	45 m

As summarized above, the proposed spacing between the site accesses and the nearby intersections meets the minimum requirements described in TAC GDGCR.

Sight Distance Measurement

A sight distance analysis was conducted to confirm that there is sufficient sight distance for drivers approaching and exiting the proposed site accesses. While Side Launch Way does not currently have a posted speed limit, it was assumed to be 40 km/h since the Town of Collingwood's Design Standards specify that local urban roadways have a speed limit of 40 km/h. The Town's Design Standards also specify that 40 km/h posted speed limit roadways have a design speed of 50 km/h.

Per the Town's Design Standards, the minimum stopping sight distance for roadways with a design speed of 50 km/h is 65 metres. Relevant excerpts from the Town's Design Standards have been included as **Attachment G**.

Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. For these accesses, the applicable cases include "Case B1 – Left turns from the minor road", "Case B2 – Right turns from the minor road" and "Case F – Left turns from the major road". Comparing all three cases, Case B1 has the greatest sight distance requirement of 105 metres for 50 km/h design speed roads.

Oncoming traffic headed westbound approaches the outbound site access from the intersection of Side Launch Way and Heritage Drive. While the 90 metres of sight distance to the east is less than the minimum requirement of 105 meters, curvature of the roadway prior to the site access encourages lower speeds. Additionally, Heritage Drive is approximately 50-metres beyond the 90-metre sight distance. This distance would not allow drivers to road length to attain the 50 km/h design speed. A sight distance of 85 meters is required for a 40 km/h design speed road.

Relevant excerpts from TAC GDGCR have been included as **Attachment F**. The minimum and available sight distances are summarized in **Table 10**.

Table 10: Minimum Sight Distance Requirements

Access	Oncoming Traffic	Stopping Sight Distance		Intersection Sight Distance	
		Minimum Standard	Available Distance	Minimum Standard	Available Distance
Side Launch Way	Eastbound	65 m	285 m	105 m	285 m
	Westbound	65 m	90 m	85 m	90 m

As summarized above, the proposed accesses can be supported from a sight distance perspective.

Truck Turning Analysis

A truck turning analysis was undertaken to support the development application and the proposed site layout. The truck turning analysis was completed using AutoTurn modelling software and the following design vehicles were assessed:

- Front-loading garbage truck
- Emergency fire vehicles
- Passenger Car

The vehicle manoeuverability diagrams have been included as **Attachment H**. It can be seen that turning movements internal to the site are acceptable.

Active Transportation

The Town of Collingwood has an extensive trail network with several connections near Block 6 of the Shipyards development. The trails within close proximity to the Site are:

- Train Trail
- Birch Street Trail
- Boardwalk Trail
- Harbourview Trail

Side Launch Way is a section of the Harbourview Trail. The hard-surface trail crosses Maple Street North to the west of the proposed development site and continues through to Birch Street. This connection point provides access to the Birch Street Trail, Harbourview Trail and Boardwalk Trail all within 200 meters or less of each other.

To the east of the proposed development, Side Launch Way connects to the Train Trail along Heritage Drive. These trails are suitable for cyclists, walkers and joggers. They connect to local points of interest such as the Millennium Park, the Collingwood Museum, Arboretum, Labyrinth, and the Promenade, as well as many other trails. A map illustrating the aforementioned trails has been included in **Attachment I**.

Within Block 6, sidewalks are proposed along Side Launch Way with two connection points to a proposed boardwalk/promenade around the development site. The addition of sidewalk at Block 6 will connect the site to the larger Shipyards development. This will provide an increase in active transportation opportunities along the harbour. As the future boardwalk/promenade is designed to wrap around the north, east and west sides of the property, there will be continuous connection from the site to the boardwalk/promenade.

The site design allows for the safe movement of visitors and customers from the surface parking to the lobby and retail spaces fronting Side Launch Way. The entrance to the lobby and retail spaces is located adjacent to the surface visitor parking and does not require crossing of the ramp to the underground parking or the loading area.

In addition to it its trail network, the Town of Collingwood provides multiple transit routes within Town and to the neighbouring municipalities of the Town of the Blue Mountains and the Town of Wasaga Beach. The main Transit Hub is located in the south-east quadrant of Pine Street and Second Street, approximately 500 meters from Block 6, and services the following routes:

- Collingwood Crosstown
- Collingwood East Route
- Collingwood West Route
- Collingwood Wasaga Beach Link
- Blue Mountain Transit Link

The Collingwood Crosstown Route has service seven days a week, beginning at 6:30 a.m. on weekdays and 7:00 a.m. on weekends and ending at 9:00 p.m. The route extends from Cranberry Trail West to Georgian College and provides connectivity to locations such as the Collingwood Downtown, the Legion, the YMCA and the Collingwood General and Marine Hospital. A map of the existing transit network has been included as **Attachment J**.

Conclusions

The proposed development is forecasted to generate 38 and 59 two-way trips during the weekday a.m. and p.m. peak hours, respectively, along with 65 two-way Saturday peak hour trips. The original 2003 Burnside TIS referred to Black 6 development as "Block D" and proposed 50 mid-rise condominiums, 20,200 ft^2 of commercial space and 4260 ft^2 of restaurant space. The revised development proposal results in 40, 83 and 102 less trips generated in the weekday a.m., p.m., and Saturday peak hours, respectively, than what was considered in the 2003 Burnside TIS.

The 2019 Transportation Study Update completed by Burnside assessed the existing (2019), background and total intersection operations at 20 intersections within the Town of Collingwood. This analysis included the signalized intersections of First Street and Pine Street and First Street/Huron Street and Hurontario Street. The future background and total analyses were completed for the 2031 and 2041 horizon years. The total conditions included the background growth as well as proposed developments within the Town of Collingwood, including sites within the Shipyards Development Area.

Under existing traffic volume conditions, the intersections of First Street and Pine Street and First Street/Huron Street and Hurontario Street are operating with a LOS "B" or better in the weekday a.m. and p.m. peak hours, and a maximum control delay of 17 seconds. Under 2031 and 2041 total traffic volume conditions, the intersections are anticipated to continue operating well with a LOS "C" or better and maximum control delay of 27 seconds.

These operations indicate that the boundary road network has reserve capacity for increases in traffic volumes. These operations do not indicate that the addition of the development traffic will have a negative impact on the boundary road network. Given the similar level of development along Heritage Drive, it can reasonably be expected that the intersection can accommodate the increases in traffic volumes generated by the proposed development.

The locations of the proposed accesses were reviewed and compared with the TAC GDGCR minimum corner clearance requirements. For both accesses, the minimum corner clearance is 15 metres. The proposed Side Launch Way inbound access is approximately 128 meters from the intersection with Heritage Drive and the proposed Side Launch Way outbound access is approximately 45 meters from the intersection with Hurontario Street. As such, the minimum corner clearance is satisfied.

Stopping sight distance and intersection sight distance requirements were also reviewed based on the Town's Design Standards and the TAC GDGCR standards. The review concluded that the stopping and intersection sight distance available for vehicles approaching and exiting the site is supportable.

The proposed site layout was analysed for truck turning using AutoTurn modelling software. Analysis concluded that movements internal to the site are acceptable.
The location of the Block 6 development allows for use of existing active transportation facilities in the area. The development is connected to an extensive trail network and local attractions, while sidewalks along Side Launch Way and surrounding the development connect pedestrians to the existing network. The main Transit Hub is approximately 500 meters from the site and provides transit links throughout Collingwood and neighbouring municipalities.

Based on the above, the proposed development can be supported from a transportation perspective. Any minor changes to the plan will not affect the conclusions in this letter. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Yours truly,

C.F. CROZIER & ASSOCIATES INC.

Madeleine Ferguson, P.Eng.
Manager of Transportation
AF/kh.mf

C.F. CROZIER & ASSOCIATES INC.

Kerianne Hagan, EIT
Engineering Intern, Transportation

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Encl.

Attachment A:	Site Plan (GPA, June 2021)
Attachment B:	Collingwood Transportation Study Update Excerpts (Burnside, August 2019)
Attachment C:	ITE Trip Generation Excerpts
Attachment D:	Burnside TIS (October 2003) Excerpts
Attachment E:	ITE Trip Generation for Burnside TIS Excerpts
Attachment F:	TAC GDGCR Excerpts
Attachment G:	Town of Collingwood Design Standards Excerpts
Attachment H:	Vehicle Manoeuvring Diagrams
Attachment I:	Collingwood Trail Map
Attachment J:	Collingwood Transit Map

Attachment A
Site Plan
(GPA, June 2021)

SITEPLAN LEGEND

TW	TOP OF WALL
00.000	EXISTING GRADE
00.000	PROPOSED GRADE
PRIMARY ENTRY	PRIMARY ENTRY/EXIT
SECONDARY ENTRY	SECONDARY ENTRY/EXIT
	WALL MOUNTED LIGHT
	SOFFIT LIGHT (SEE R.C.P.)
	FIRE DEPT CONNECTION
MH	MANHOLE

Collingwood Block 6 Preliminary Statistics 2021-08-10

SITE AREA: 7,312 M2

LEVELS	GCA		GFA *		RETAIL		UNIT TYPE/ UNIT COUNT																									
								AVE. AREA			1B	AVE. AREA			1B+D	AVE. AREA			2B	AVE. AREA			2B+D	AVE.AREA			TOTAL UNIT	AVE. UNIT SIZE		
	M²	FT²	M²	FT²	M²	FT²	STUDIO	M²	FT²	%		M²	FT²	%		M²	FT²	%		M²	FT²	%		M²	FT²	%			M²	FT²
LEVEL 1	2,055	22,120	1,675	18,030	330	3,552	-	-			1	70	753	13%	7	80	861	100%	0	0	0	0%	0	0	0	0%	8	79	848	
LEVEL 2	1,933	20,807	1,893	20,376			-	-			5	62	663	25%	3	70	753	15%	9	95	1,023	45%	3	120	1,292	15%	20	87	933	
LEVEL 3	1,921	20,677	1,881	20,247			-	-			5	62	663	25%	3	70	753	15%	9	95	1,023	45%	3	120	1,292	15%	20	87	933	
LEVEL 4	1,921	20,677	1,881	20,247			-	-			5	62	663	25%	3	70	753	15%	9	95	1,023	45%	3	120	1,292	15%	20	87	933	
LEVEL 5	1,921	20,677	1,881	20,247			-	-			5	62	663	25%	3	70	753	15%	9	95	1,023	45%	3	120	1,292	15%	20	87	933	
LEVEL 6	1,634	17,588	1,594	17,158			-	-			0	0	0	0%	0	0	0	0%	4	98	1,055	31%	9	130	1,399	69%	13	120	1,293	
TOTAL	**11,385**	**122,547**	**10,805**	**116,304**	**330**	**3,552**					**21**	**62**	**667**	**21%**	**19**	**74**	**793**	**19%**	**40**	**95**	**1026**	**40%**	**21**	**124**	**1,338**	**21%**	**101**	**90**	**972**	
FSI:		1.56		1.48																										
P1	6,185	66,569	6,185	66,569		-	-	-																						

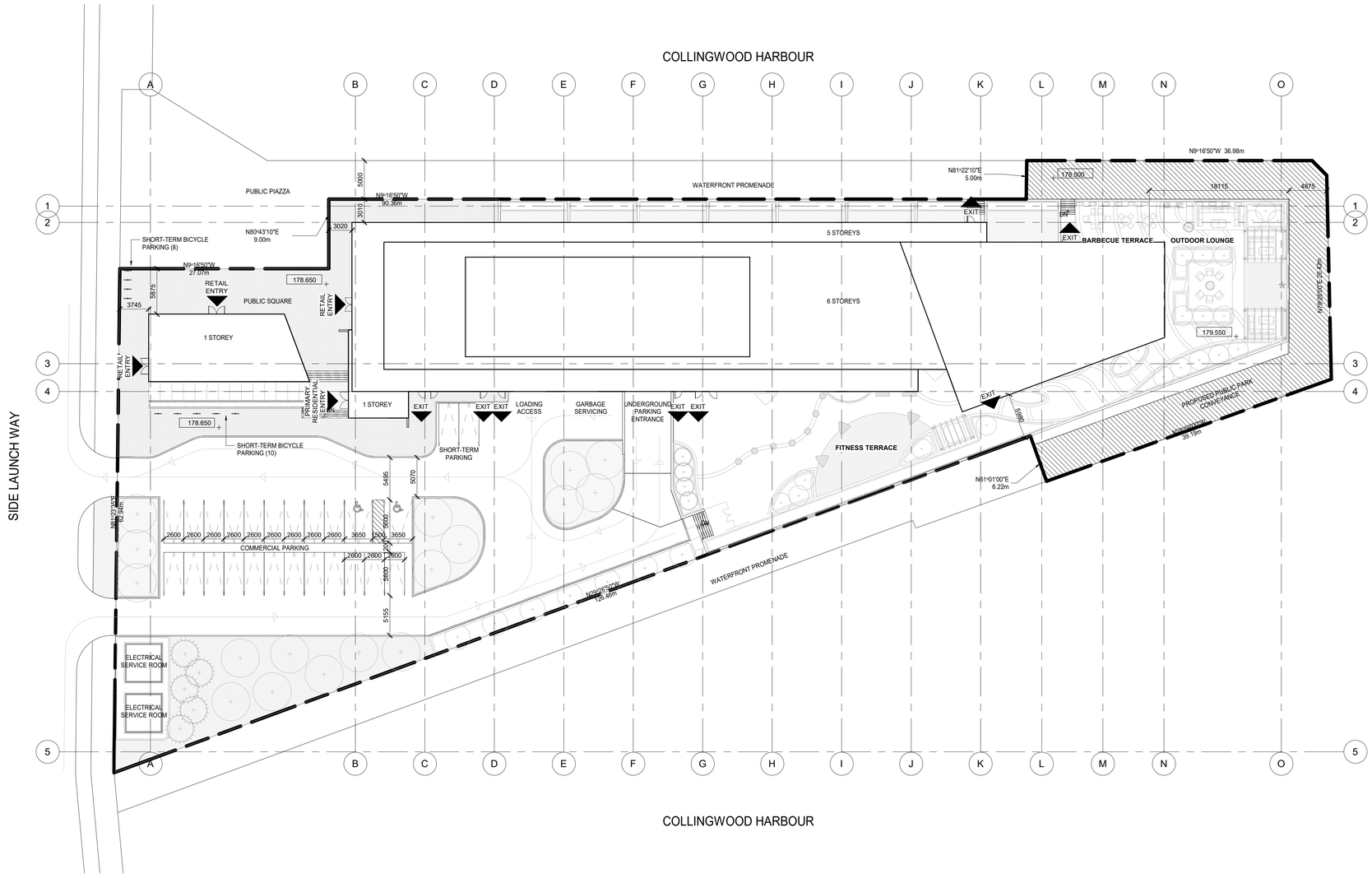
Note:
* GFA
Gross Floor Area refers to all the above grade area enlcosed by building envelop excluding any loading area, mechanical/ electrical rooms required, vertical and horizontal means of egress and main shaft openings.

DENSITY		
TOTAL GFA	10,805.0	m²
LAND AREA	7,312.0	m²
FSI	1.5	

BUILDING USE [BY-LAW -]		
RESIDENTIAL GFA	-	m²
NON-RESIDENTIAL GFA	-	m²
TOTAL	-	m²

CAR PARKING	
Resident Required	101
Residential Visitor Required	-
Non-Residential Required	-
TOTAL REQUIRED	101
Resident Provided	147
Commercial Surface Parking Provic	23
TOTAL PROVIDED	170
TOTAL L.E.V. PROVIDED	-
TOTAL E.V.S.E. PROVIDED	- ###

BICYCLE STORAGE	
Residential Long Term Requ	20
Residential Short Term Req	0
Non Res.	2
TOTAL REQUIRED	22
Residential Long Term Prov	56
Residential Short Term Pro	10
Non Res. Short Term Provic	8
TOTAL PROVIDED	74



1 SITE PLAN
ZBA-A1.02 1 : 300

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Revision Date

NOT FOR CONSTRUCTION

PRELIMINARY

Revision Date

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COLLINGWOOD BLOCK 6 - PRELIMINARY DESIGN & STATISTICS

Side Launch Way, Collingwood, ON

SHEET TITLE

SITE PLAN

DRAWN BY:	Author
CHECKED BY:	Checker
PROJECT START DATE:	06/23/21
PROJECT NO.:	0001

SHEET NUMBER

ZBA-A1.02

Attachment B

Collingwood Transportation Study Update Excerpts (Burnside, August 2019)

Collingwood Transportation Study Update

Town of Collingwood
97 Hurontario Street
Collingwood, ON L9Y 3Z5

R.J. Burnside & Associates Limited
3 Ronell Crescent
Collingwood ON L9Y 4J6 CANADA

August 2019
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Record of Revisions

Revision	Date	Description
0	April 25, 2019	Initial Draft Submission to Town of Collingwood
1	August 27, 2019	Final Submission to Town of Collingwood

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2.4 Existing Traffic Volumes

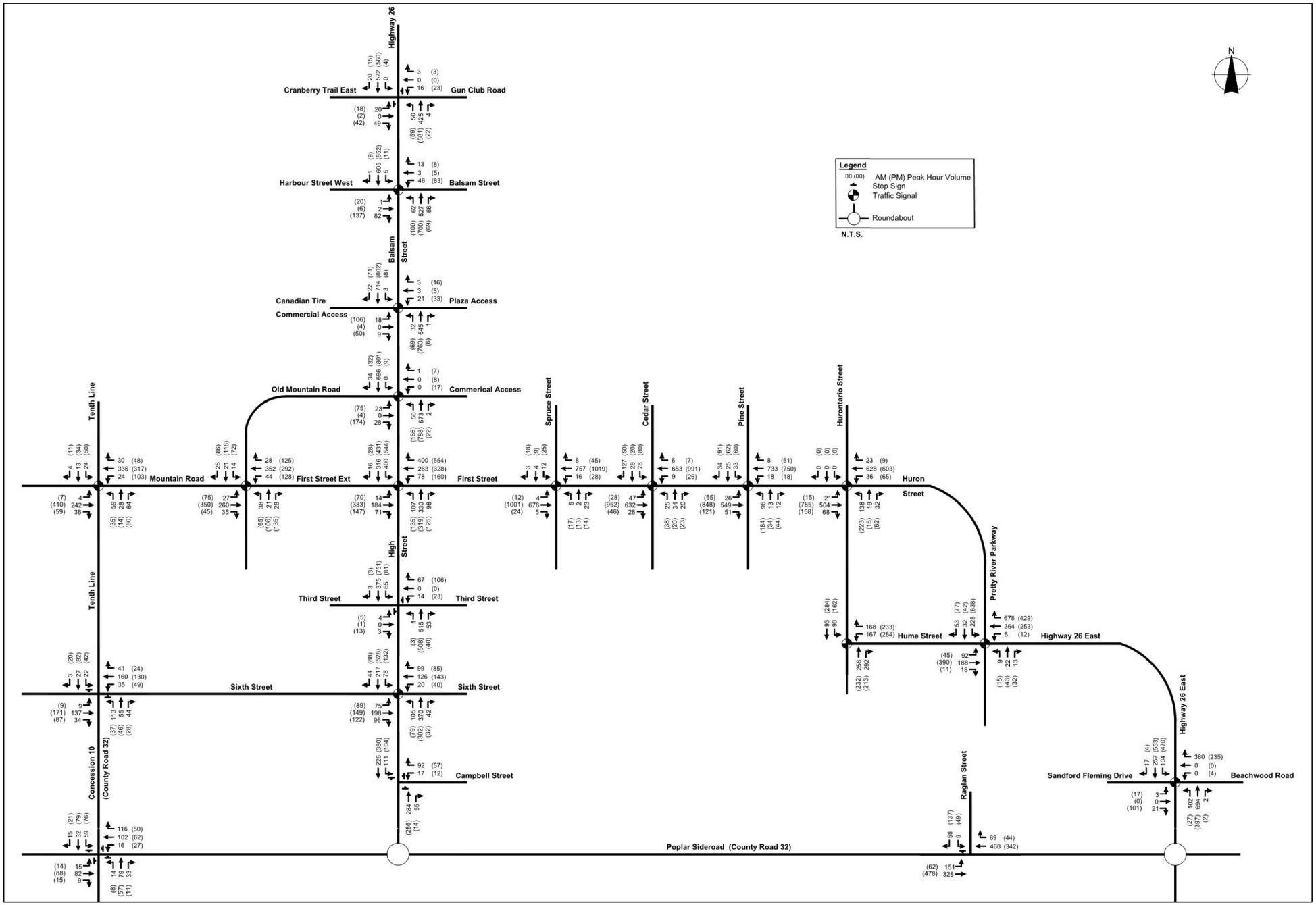
Turning Movement Counts (TMCs) were conducted on behalf of Burnside by Ontario Traffic Inc. (OTI) at the 20 key intersections in the Study Area on Wednesday, December 12, 2018. Data was collected at each intersection between 7:00 AM to 9:00 AM, 11:00 AM to 2:00 PM, and 3:00 PM to 6:00 PM. The TMC data for the AM and PM peak periods is provided in Appendix A (data for the 11:00 AM to 2:00 PM period will be provided to the Town digitally).

Since the proposed Sandford Fleming Drive connection to the Beachwood Road/Highway 26 intersection has been included as an existing condition, minor turning volumes were added to the Sandford Fleming Drive leg of the intersection based on assumed traffic generation and distribution for the surrounding land uses.

The weekday AM and PM peak periods were selected for analysis purposes as these time periods represent the typical peak periods throughout the Town's road network. Often, for tourist/recreational locations such as Collingwood, traffic volumes are highest in the summer months. Since the TMCs for this study were collected on December 12, the data was compared with historic summer and winter traffic counts from various sources (e.g. Town, County, traffic studies from other consultants) to determine what overall seasonal adjustment factor should be applied. The results of our comparisons indicated that the application of a 5.0% adjustment factor would be most reasonable, therefore the TMC volumes were increased by 5.0% to represent existing summer weekday conditions.

The existing traffic volumes, which include the application of the seasonal adjustment factor outlined above, are illustrated in Figure 4.

Figure 4: Existing Traffic Volumes



2.4.1 Alternate Route and Traffic Diversion

The *2012 Transportation Study* identified potential diversion of through traffic to use Poplar Sideroad as an alternate route through Collingwood, providing relief to critical locations along Highway 26, such as the First Street and High Street intersection. As noted in the previous section, Poplar Sideroad and Concession 10 were upgraded in 2012 and transferred to Simcoe County as County Road 32 in 2014. With the opening of the Highway 26 realignment in 2012, destination signs now direct traffic to The Blue Mountains to follow Poplar Sideroad in order to promote the use of this alternate route. Historical traffic volumes were reviewed to provide insight into the extent of use of County Road 32 as an alternate route through Collingwood. These volumes are summarized in Table 5 for various sections of County Road 32.

Table 5: Historical Traffic Volumes on County Road 32

Segment of County Road 32	Summer Average Daily Traffic			
	2008	2013	2015	2018[1]
Poplar Sideroad Highway 26 to Hurontario Street	2600	6000	7800	9000
Poplar Sideroad Hurontario Street to High Street	5400	7000	7500[2]	NA
Poplar Sideroad High Street to Concession 10	NA	NA	3200	4250
Concession 10 Poplar Sideroad to Sixth Street	1600	3200	3500	4400

1. It is noted that Highway 26 was being reconstructed between Poplar Sideroad and Pretty River Parkway during the summer of 2018, which could have increased traffic along County Road 32.
2. Estimated based on 2014 traffic volume
NA – Not Available

Although the historical data is somewhat limited, it shows that that there was a significant increase in traffic on County Road 32 between 2008 and 2013, after the road was upgraded. Considerable growth continues until 2018, however, it is noted that there was construction on Highway 26 north of Poplar Sideroad during the summer of 2018, therefore, the 2018 volumes could have been influenced by traffic temporarily detouring along County Road 32. In general, this traffic growth seems to indicate that County Road 32 has started to take on a role as an alternate route into and around Collingwood and it stands to reason that this role will become increasingly important as traffic grows throughout the Town.

2.5 Existing Traffic Operations

2.5.1 Intersection Operations

Existing traffic operations were assessed at the 20 Study Area intersections based on the lane configurations shown in Figure 3 and the traffic volumes shown in Figure 4.

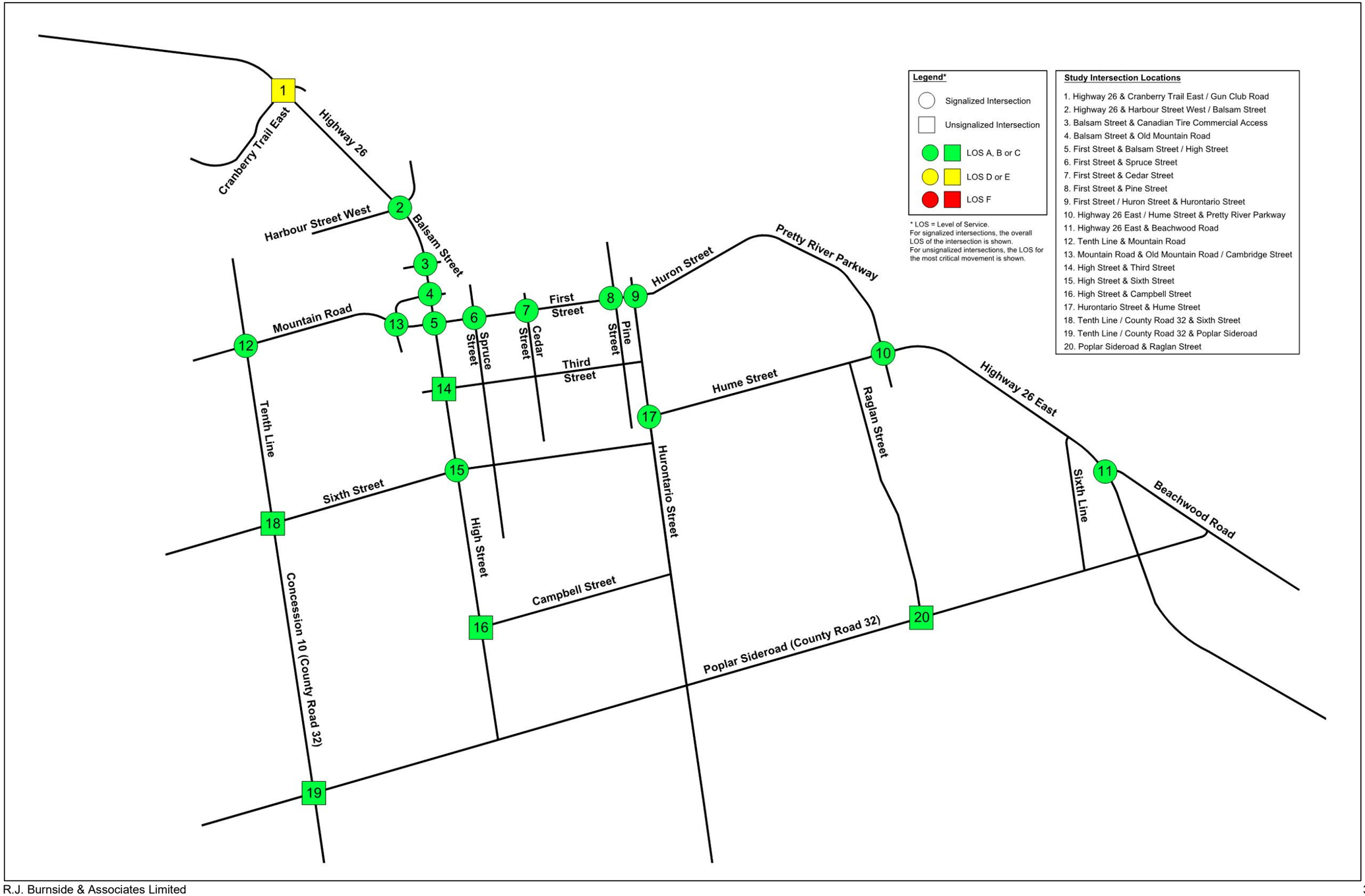
Existing signal timings were applied in the analysis. The existing Synchro analyses are included in Appendix B, and the traffic operations are summarized in Table 6 and Table 7 for signalized and unsignalized intersections, respectively. Figure 5 provides a visual representation of the existing level of service at the study area intersections.

For the purposes of this study, movements at signalized intersections shown in the traffic operations summary tables throughout this report are individual movements with a v/c ratio at or above 0.85 and/or a LOS F.

Table 6: Existing (2019) Signalized Intersection Operations

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Delay (s)	LOS	v/c ratio	Delay (s)	LOS	v/c ratio
Balsam Street/Harbour Street W & Highway 26	Overall	10	A	0.39	12	B	0.47
Balsam Street & CT Entrance/Plaza Access	Overall	6	A	0.35	11	B	0.44
Balsam Street & Old Mountain Road/Commercial Access	Overall	5	A	0.37	11	B	0.44
First Street & Balsam Street/High Street	Overall	31	C	0.59	35	C	0.70
First Street & Spruce Street	Overall	5	A	0.32	7	A	0.39
First Street & Cedar Street	Overall	12	B	0.35	9	A	0.43
First Street & Pine Street	Overall	13	B	0.42	17	B	0.58
First Street/Huron Street & Hurontario Street	Overall	10	A	0.37	11	B	0.50
Hume Street/Highway 26 E & Pretty River Parkway	Overall	17	B	0.50	36	C	0.56
Highway 26 E & Beachwood Road/Sandford Fleming Drive	Overall	16	B	0.53	13	B	0.71
Tenth Line & Mountain Road	Overall	10	A	0.44	10	A	0.51
Mountain Road & Old Mountain Road/Cambridge Street	Overall	13	B	0.36	21	C	0.44
High Street & Sixth Street	Overall	18	B	0.48	16	B	0.46
Hurontario Street & Hume Street	Overall	16	B	0.40	16	B	0.45

Figure 5: Existing Level of Service



4.0 Background Traffic Operations

This section reviews background traffic operations in the Study Area in horizon years 2031 and 2041. Background traffic volumes in each horizon year consist of a 0.5% compound annual growth rate applied to the existing traffic volumes shown in Figure 4.

4.1 2031 Background Traffic Operations

4.1.1 Intersection Operations

Forecasted background traffic volumes at intersections in the Study Area in horizon year 2031 were analyzed using Synchro software, based on the traffic volumes shown in Figure 6 and the lane configurations and traffic controls shown in Figure 3. The signal timings at the Highway 26 East/Pretty River Parkway intersection were optimized, however the applied signal timings at all other intersections in the Study Area remained the same as in existing conditions.

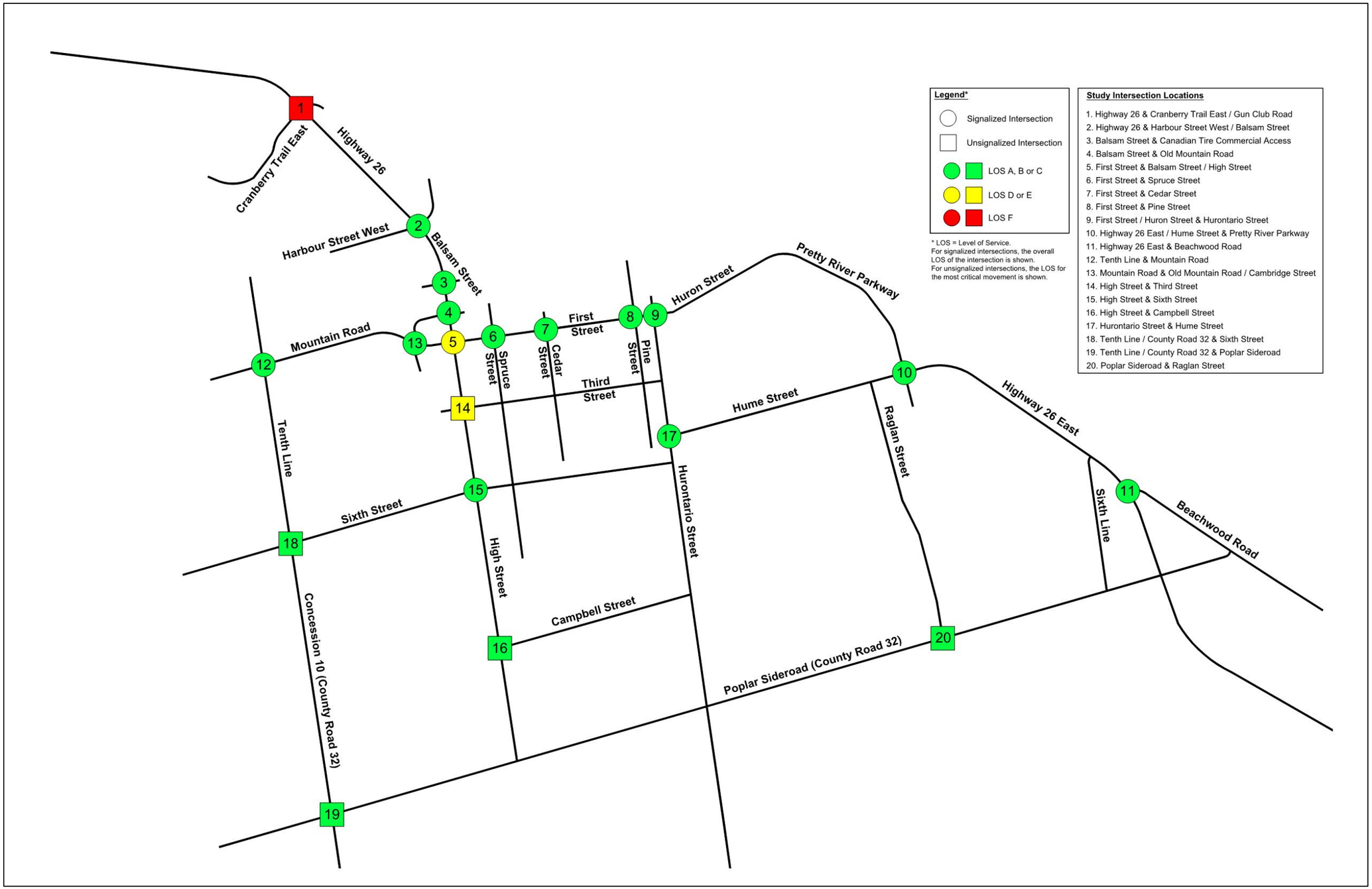
The 2031 background traffic operations are summarized in Table 9 and Table 10 for signalized and unsignalized intersections in the Study Area, respectively and also illustrated in Figure 8. Detailed Synchro reports for the 2031 background traffic conditions are provided in Appendix C.

Table 9: 2031 Background Signalized Intersection Operations

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Delay (s)	LOS	v/c ratio	Delay (s)	LOS	v/c ratio
Balsam Street/Harbour Street W & Highway 26	Overall	10	A	0.41	12	B	0.51
Balsam Street & CT Entrance/Plaza Access	Overall	6	A	0.37	11	B	0.47
Balsam Street & Old Mountain Road/Commercial Access	Overall	6	A	0.40	11	B	0.47
First Street & Balsam Street/High Street	Overall	32	C	0.63	37	D	0.74
First Street & Spruce Street	Overall	5	A	0.34	8	A	0.42
First Street & Cedar Street	Overall	12	B	0.37	10	A	0.46
First Street & Pine Street	Overall	13	B	0.45	18	B	0.62
First Street/Huron Street & Hurontario Street	Overall	10	A	0.40	12	B	0.53
Hume Street/Highway 26 E & Pretty River Parkway [1]	Overall	17	B	0.53	24	C	0.59
Highway 26 E & Beachwood Road/Sandford Fleming Drive	Overall	17	B	0.58	14	B	0.76
	SBL	9	A	0.37	18	B	0.86
Tenth Line & Mountain Road	Overall	10	B	0.48	10	B	0.55
Mountain Road & Old Mountain Road/Cambridge Street	Overall	13	B	0.38	21	C	0.46
High Street & Sixth Street	Overall	19	B	0.51	17	B	0.49
Hurontario Street & Hume Street	Overall	16	B	0.42	17	B	0.48

1. Signal timings improved in both the AM and PM peak hour scenarios.

Figure 8: 2031 Background Conditions Level of Service



Road	Location	Lanes per Direction	Capacity (vph)	Traffic Volumes		Volume to Capacity (v/c)	
			NB/EB	NB/ EB	SB/ WB	NB/E B	SB/ WB
Cambridge Street	S of Mountain Road	1	500	325	309	0.65	0.62
	W of High Street	1	500	20	6	0.04	0.01
Third Street	E of High Street	1	700	129	137	0.18	0.20
Sixth Street	E of High Street	1	700	332	284	0.47	0.41
	W of High Street	1	900	382	329	0.42	0.37
Campbell Street	E of High Street	1	500	125	74	0.25	0.15

As shown in Table 11, all road segments reviewed are operating at less than 86% of the assumed road capacity. Therefore, the number of lanes on the road segments outlined in Table 11 are operationally acceptable under 2031 background traffic conditions, from a link capacity perspective, under these traffic conditions.

4.2 2041 Background Traffic Operations

4.2.1 Intersection Operations

Forecast background traffic volumes at intersections in the Study Area in horizon year 2041 were analyzed using Synchro software, based on the traffic volumes shown in Figure 7 and the existing lane configurations and traffic controls shown in Figure 3. The signal timings at the Highway 26 East/Pretty River Parkway intersection were optimized, however the applied signal timings at all other intersections in the Study Area remained the same as in existing conditions.

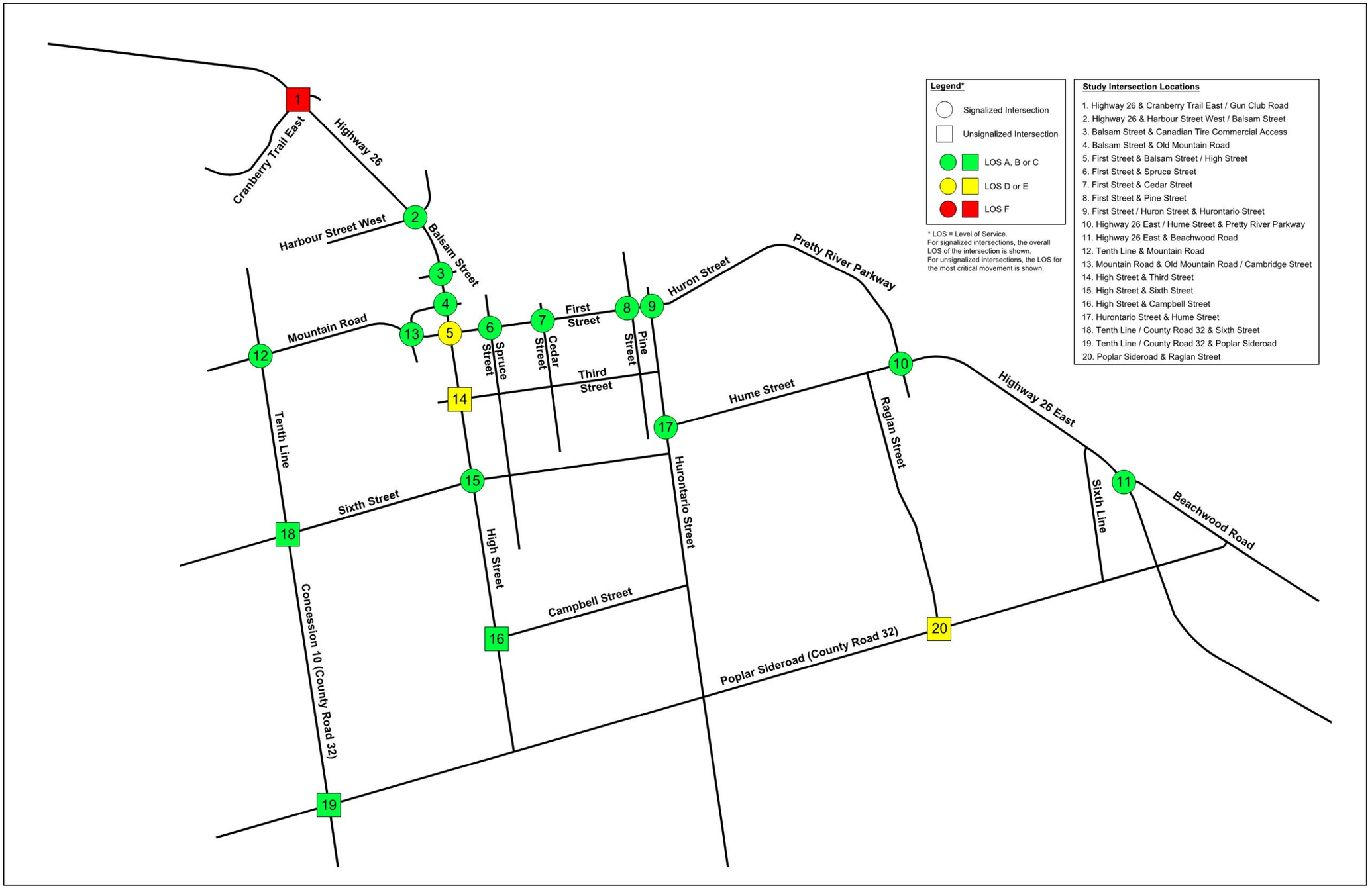
The 2041 background traffic operations are summarized in Table 12 and Table 13 for signalized and unsignalized intersections in the Study Area, respectively, and also illustrated in Figure 9. Detailed Synchro reports for the 2041 background traffic conditions are provided in Appendix D.

Table 12: 2041 Background Signalized Intersection Operations

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Delay (s)	LOS	v/c ratio	Delay (s)	LOS	v/c ratio
Balsam Street/Harbour Street W & Highway 26	Overall	10	A	0.44	13	B	0.55
Balsam Street & CT Entrance/Plaza Access	Overall	6	A	0.39	12	B	0.50
Balsam Street & Old Mountain Road/Commercial Access	Overall	6	A	0.42	12	B	0.49
First Street & Balsam Street/High Street	Overall	34	C	0.67	39	D	0.79
	SBL	41	D	0.75	55	E	0.87
	SBLTR	38	D	0.75	46	D	0.86
First Street & Spruce Street	Overall	5	A	0.35	8	A	0.44
First Street & Cedar Street	Overall	12	B	0.39	10	B	0.48
First Street & Pine Street	Overall	13	B	0.47	18	B	0.66
First Street/Huron Street & Hurontario Street	Overall	10	B	0.42	12	B	0.56
Hume Street/Highway 26 E & Pretty River Parkway [1]	Overall	18	B	0.57	27	C	0.62
Highway 26 E & Beachwood Road/Sandford Fleming Drive	Overall	18	B	0.62	17	B	0.82
	SBL	10	A	0.41	27	C	0.92
Tenth Line & Mountain Road	Overall	11	B	0.50	11	B	0.59
Mountain Road & Old Mountain Road/Cambridge Street	Overall	13	B	0.40	22	C	0.49
High Street & Sixth Street	Overall	20	C	0.53	18	B	0.51
Hurontario Street & Hume Street	Overall	16	B	0.44	17	B	0.51

1. Signal timings improved in both the AM and PM peak hour scenarios.

Figure 9: 2041 Background Conditions Level of Service



5.0 Town of Collingwood Future Developments

5.1 Proposed Development Details

To more precisely estimate traffic growth in specific locations in the Town, the type, size, location, status, and phasing of various developments have been considered. A map of the future development locations, prepared by Cole Engineering, is illustrated in Figure 10.

Developments anticipated to be completed and occupied by horizon years 2031 and 2041 were considered in this study. The assumed percentage occupancy of each development within the 2031 and 2041time periods was estimated by Burnside based on the most recent information available and confirmed by Town staff. Details on all developments considered in the traffic volume projections and analysis in this study, including the assumed percentage occupancy and corresponding numerical identifiers in relation to the map in Figure 10, have been summarized in Table 15 and Table 16 for horizon years 2031 and 2041, respectively.

Figure 10: Town of Collingwood Future Development Map (Cole Engineering)

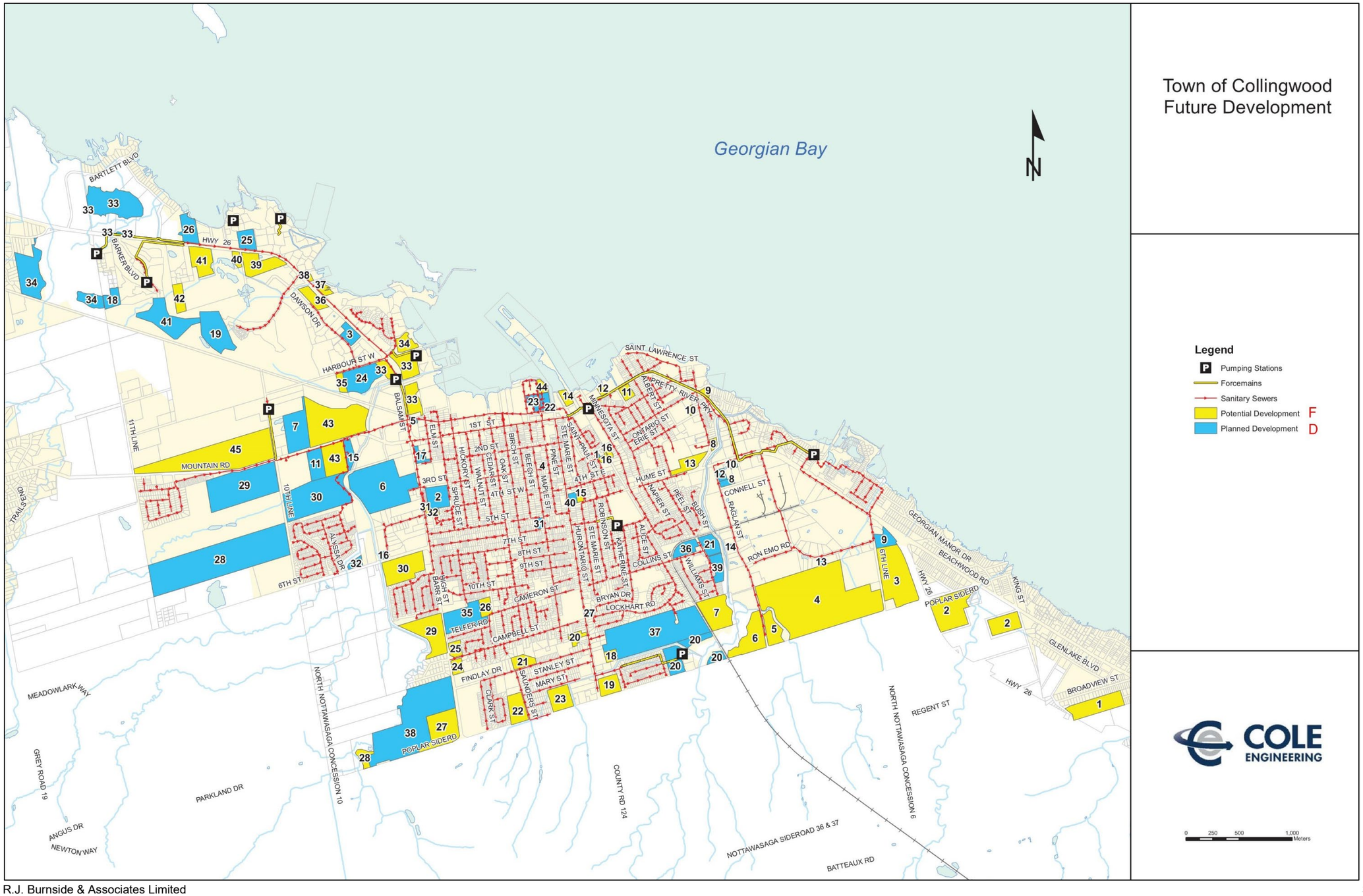


Table 15: Town of Collingwood Medium-Term Developments (Horizon Year 2031)

ID	Name	Land Use	Area (HA)	Number of Residential Units	ICI Development	Estimated Residential Population	Estimated Occupancy 2018	Forecasted Occupancy 2031	Forecasted Occupancy 2041
7F	King (452 Raglan)	Residential	7.44	57 - singles, 205 townhouses		657		100%	
11F	Parkridge	Office	1.40		40,000 sq.ft. commercial			100%	
14F	Duncap Waterfront Hotel	Residential and Hotel	1.15	80 apartments	40 hotel rooms	152		100%	
20F	Blackmoor Gate Property	Residential	1.35	34 - singles and semis		99		100%	
30F	580 Sixth Street and adjacent property	Residential	8.42	114 - townhouses, 128 apartments		517		50%	100%
39F	Silvercreek Development	Residential	5.57	267 apartments		507		100%	
43F	Mountain Street Industrial Property	Commercial / Industrial	24.16		9,097 sq.m. commercial / industrial			100%	
44F	Huronic Village	Residential		13 - townhouses		31		100%	
45F-A	Panorama North	Residential	20.10	122 - singles, 580 - townhouses, 219 - apartments		2162		50%	100%
1D	Ambulance Station	Community Services	0.15					100%	
2D	Mountainview Public School	Community Services	4.11					100%	
3D	Cranberry Inn extension	Commercial	2.20					100%	
4D	Third Street	Commercial	0.06					100%	
5D	10 Balsam Commercial Plaza	Commercial	0.40					100%	
6D	Regional Commercial District	Commercial	21.07					100%	
7D	Van Dolder's	Industrial	8.09		12,806 sq.m commercial / industrial		20%	100%	
8D	Ace Cabs	Industrial	0.78					100%	
9D	BMC Automotive	Industrial	2.50					100%	
10D	Collingwood Service Station	Industrial	0.38					100%	
11D	Georgian Bay Biomed	Industrial	4.00		8,700 sq.m. marijuana grow-op			100%	
12D	Dunn Hotel	Industrial	0.88					100%	
13D	Isowater	Industrial	0.41					100%	
14D	360 Raglan	Industrial	0.40					100%	
15D	100 Mountain Road	Commercial / Industrial	2.12		1,784 sq.m. commercial / industrial			100%	
16D	Stewart Road Reservoir	Other	0.50					100%	
17D	Affordable Housing Project	Residential	1.32	147 - apartments		279		100%	
18D	Silver Glen	Residential	2.27	50 - townhouses		120		100%	
19D	Blue Fairways	Residential	8.49	262 - townhouses		629	80%	100%	
20D	Pretty River Estates Phase 2	Residential	7.19	21 - singles and semis, 152 - townhouses		426		100%	
21D	Riverside Midrise	Residential	2.85	156 - townhouses		374		100%	
22D	Shipyards Condo E	Residential	1.48	28 - townhouses		67		100%	
23D	Mackinaw Village	Residential	1.21	28 - townhouses		67	15%	100%	
24D	Balmoral	Residential and Commercial	6.95	54 - semis, 199 townhouses	2,800 sq.m.	624	50%	100%	
28D	Linksview	Residential and School	40.68	439 - singles, 8 - townhouses, 190 - apartments	School	1653		80%	100%
29D	Mair Mills Village	Residential	19.70	127 - singles, 192 - apartments	1,130 sq.m. commercial	733		100%	
30D	Red Maple (Consar Development)	Residential	17.89	131 - singles and semis, 147 - townhouses		733		100%	
33D	The Preserve at Georgian Bay (Bridgewater)	Residential	37.16	539 - townhouses, 116 - apartments		1514		100%	
36D	Riverside Townhomes	Residential	2.54	57 - townhouses		137		100%	
37D	Eden Oak McNabb	Residential	27.00	256 - singles and semis, 120 - townhouses		1,030		100%	
38D	Summitview Phases 1 and 2	Residential	31.58	233 - singles and semis, 173 - townhouses		1,091		100%	
39D	Harmony Living	Residential	2.45	80 - townhouses		192		100%	
40D	Monaco	Residential and Commercial	0.76	260 - condo apartments	2,600 sq.m.	494		100%	
42D	Mountaincroft Residential (Final Phase)	Residential		69 singles		200		100%	
43D	410 Raglan Street	Industrial	2.21		6,689 sq.m. warehouse			100%	
*	Windfall Medium Density	Residential		242 condo units				100%	
*	Windfall	Residential		571 - singles and townhouse units				100%	
*	Second Nature	Residential		236 - singles and townhouse units				100%	
*	Nederand Development	Residential		121 - singles				100%	

* Known Town of The Blue Mountains developments in close proximity to Collingwood that were specifically considered in the traffic projections and analysis in this study.

Table 16: Town of Collingwood Long-Term Developments (Horizon Year 2041)

ID	Name	Land Use	Area (HA)	Number of Residential Units	ICI Development	Estimated Residential Population	Estimated Occupancy 2018	Forecasted Occupancy 2031	Forecasted Occupancy 2041
1F	Braeside	Residential	7.26	15 - singles		44		0%	100%
2F	Batteaux Creek Subdivision (Beachwood Estates)	Residential	15.28	20 - singles		58		0%	100%
3F	2906 Sixth Street and 7026 Poplar Sideroad	Industrial	14.99					0%	100%
4F	Eden Oaks Industrial	Industrial	50.73					0%	100%
6F	Poplar and Raglan	Industrial	7.29					0%	100%
8F	Memory Care Facility	Hospital	0.61			72		0%	100%
9F	500 Ontario Street	Residential	0.64	60 - townhouses		144		0%	100%
10F	Legion Redevelopment	Residential	0.44			70		0%	100%
12F	Courthouse	Residential	0.57	68 - townhouses		163		0%	100%
13F	Hospital	Hospital	3.00					0%	100%
15F	282 Ste. Marie Street	Residential and Commercial	0.48	69 - condominiums	929 sq.m commercial	168		0%	100%
16F	Reinhart Warehouse	Residential	1.19	23 - singles and semis		67		0%	100%
18F	Church Severance	Residential	1.16	44 - singles and semis		128		0%	100%
19F	Poplar and Hurontario	Highway Commercial	3.26					0%	100%
21F	Findlay Property	Residential	2.20	22 - singles and semis		64		0%	100%
22F	50 Saunders Drive	Residential	4.17	74 - singles and semis		215		0%	100%
23F	Old Organic Farm	Residential	4.32	76 - singles and semis		221		0%	100%
24F	Collingwood Nursing Home	Residential	1.41	47 - singles and semis		136		0%	100%
25F	197 Campbell Street	Residential	1.62	32 - singles and semis		93		0%	100%
26F	Property adjacent to Helen Court Homes	Residential	1.84	59 - singles and semis		171		0%	100%
27F	Northwest corner of Poplar and High Street (Summitview Phase 3)	Residential	8.94	340 - singles and semis		986		0%	100%
28F	8070 Poplar Sideroad	Residential	1.56	30 - singles and semis		87		0%	100%
29F	Fumo property located on the west side of High Street	Residential	8.86	300 - singles and semis		870		0%	100%
31F	115 High Street	Residential	0.21	15 - townhouses		36		0%	100%
32F	121 High Street	Residential	0.75	6 - townhouses		15		0%	100%
33F	Commercial / hotel development	Commercial	9.63						
34F	Living Waters	Hotel	2.34	253 - hotel units (apartments)		481		0%	100%
35F	16 Harbour Street or Law property	Residential	1.18	23 - singles and semis		67		0%	100%
36F	Dawson Drive East property	Residential	2.46	48 - singles and semis		139		0%	100%
37F	White Street property	Residential	1.02	20 - singles and semis		58		0%	100%
38F	#38F - Gunn Club Road	Residential	0.49	10 - singles and semis		29		0%	100%
40F	Griffith's property	Residential	1.02	30 - singles and semis		87		0%	100%
41F	Greentree property	Residential	4.93	88 - singles and semis		255		0%	100%
42F	Georgian Manor Resorts	Residential	2.49	150 apartments		285		0%	100%
45F-B	Remainder of Mair Mills North	Residential	7.00	Assume same density as Panorama North development		750		0%	50%
25D	Harhay	Residential	2.81	154 - townhouses		370		0%	100%
27D	655 Hurontario Street Apartments	Residential	0.42	32 - apartments		77		0%	100%
31D	Victoria Annex	Residential	0.60	19 - townhouses		46		0%	100%
32D	Georgian Meadows	Residential	1.01	25 - townhouses		60		0%	100%
34D	Huntingwood	Residential	11.82	92 - singles and semis, 62 - townhouses		416		0%	100%
35D	Helen Court Homes	Residential	7.56	66 - singles and semis, 189 - townhouses		645		0%	100%
41D	Cranberry	Residential	9.14	314 - townhouses		754		0%	100%

5.2 Development Traffic Generation

The Town provided numerous transportation impact study (TIS) reports for various proposed developments. Where available, Burnside applied traffic generation and distribution projections from available reports in the total traffic scenarios in this study. Where TIS reports were not available, the size (for industrial, commerical, and institutional developments) or number of units (for residential developments) were used, in conjunction with trip rate information contained in the *Trip Generation Manual 10th Edition* (Institute of Transportation Engineers [ITE], September 2017), in order to estimate the volume of vehicles travelling to/from each development during the AM and PM peak hours. Estimated trip generation volumes for each development were distributed based on existing travel patterns and origin/destination considerations.

Table 17 below provides a summary of the trip generation volumes applied for each development, in addition to the source of the trip generation estimates (i.e., either from TIS reports received from the Town or ITE trip generation rates) and the percentage of the development traffic applied in the 2031 and/or 2041 total traffic scenarios. The total development traffic volumes that were applied in the 2031 and 2041 total traffic scenarios are summarized at the bottom of Table 17.

Table 17: Proposed Development Trip Generations Estimates

Map ID	Development Name	TIS or ITE	AM Peak Hour			PM Peak Hour			Assumed Occupancy	
			In	Out	Tot.	In	Out	Tot.	2031	2041
7F	King (452 Raglan)	TIS	33	106	139	108	63	171	100%	
11F	Parkridge	TIS	80	10	90	14	82	96	100%	
14F	Duncap Waterfront Hotel	ITE	19	29	48	34	26	60	100%	
20F	Blackmoor Gate Property	TIS	9	26	35	25	14	39	100%	
30F	580 Sixth Street and adjacent property	TIS	37	115	152	114	70	184	50%	100%
39F	Silvercreek Development	ITE	25	71	96	71	46	117	100%	
43F	Mountain Street Industrial Property	ITE	45	21	66	94	113	207	100%	
44F	Huronic Village	ITE	2	5	7	6	4	10	100%	
45F-A	Panorama North	TIS	144	453	597	431	286	717	50%	100%
2D	Mountainview Public School	ITE	36	31	67	8	9	17	100%	
3D	Cranberry Inn extension	ITE	5	4	9	6	6	12	100%	
6D	Regional Commercial District	TIS	213	130	343	685	742	1427	100%	
7D	Van Dolder's	TIS	97	15	112	16	102	119	100%	
8D	Ace Cabs	TIS	163	77	240	98	165	263	100%	
10D	Collingwood Service Station									
12D	Dunn Hotel									
9D	BMC Automotive	ITE	57	12	69	17	62	79	100%	
11D	Georgian Bay Biomed	TIS	23	13	36	14	24	38	100%	
13D	Isowater	ITE	14	3	17	5	17	22	100%	
14D	360 Raglan	ITE	14	3	17	4	17	21	100%	
15D	100 Mountain Road	ITE	9	4	13	19	22	41	100%	
17D	Affordable Housing Project	TIS	31	34	65	37	40	77	100%	

Map ID	Development Name	TIS or ITE	AM Peak Hour			PM Peak Hour			Assumed Occupancy	
			In	Out	Tot.	In	Out	Tot.	2031	2041
18D	Silver Glen	ITE	6	19	25	20	12	32	100%	
19D	Blue Fairways	ITE	28	93	121	93	54	147	100%	
20D	Pretty River Estates Phase 2	ITE	18	62	80	61	36	97	100%	
21D	Riverside Midrise	TIS	12	35	47	37	24	61	100%	
22D	Shipyards Condo E	ITE	3	11	14	12	7	19	100%	
23D	Mackinaw Village	ITE	3	11	14	12	7	19	100%	
24D	Balmoral	TIS	78	147	225	151	118	269	100%	
28D	Linksview	TIS	104	391	495	404	217	621	80%	100%
29D	Mair Mills Village	TIS	40	144	184	150	84	234	100%	
30D	Red Maple (Consar Development)	TIS	37	130	167	137	75	212	100%	
33D	The Preserve at Georgian Bay (Bridgewater)	TIS	64	212	276	198	118	316	100%	
36D	Riverside Townhomes	ITE	6	22	28	23	13	36	100%	
37D	Eden Oak McNabb	TIS	68	208	276	218	133	351	100%	
38D	Summitview Phases 1 and 2	TIS	67	201	268	216	132	348	100%	
39D	Hamony Living	ITE	9	30	39	30	18	48	100%	
40D	Monaco	TIS	30	70	100	75	65	140	100%	
42D	Mountaincroft Residential (Final Phase)	TIS	71	209	280	243	135	378	100%	
43D	410 Raglan Street	TIS	26	8	34	10	27	37	100%	
*	Windfall Medium Density	TIS	27	5	32	12	25	37	100%	
*	Windfall	TIS	96	32	128	64	109	173	100%	
*	Second Nature	TIS	27	9	36	18	31	49	100%	
*	Nederand Development	TIS	35	11	46	21	38	59	100%	
1F	Braeside	ITE	4	11	15	10	6	16	0%	100%
2F	Batteaux Creek Subdivision (Beachwood Estates)	ITE	5	14	19	14	8	22	0%	100%
3F	2906 Sixth Street and 7026 Poplar Sideroad	ITE	233	48	281	60	227	287	0%	100%
4F	Eden Oaks Industrial	ITE	603	124	727	145	546	691	0%	100%
6F	Poplar and Raglan	ITE	133	27	160	36	135	171	0%	100%
8F	Memory Care Facility	ITE	6	2	8	2	6	8	0%	100%
9F	500 Ontario Street	ITE	6	16	22	16	11	27	0%	100%
10F	Legion Redevelopment	ITE	3	8	11	9	5	14	0%	100%
12F	Courthouse	ITE	6	18	24	19	12	31	0%	100%
13F	Hospital	ITE	20	7	27	8	20	28	0%	100%
15F	282 Ste. Marie Street	TIS	17	38	55	42	36	78	0%	100%
18F	Church Severance	ITE	9	27	36	29	17	46	0%	100%
19F	Poplar and Hurontario	ITE	43	39	82	49	46	95	0%	100%
21F	Findlay Property	ITE	5	15	20	15	9	24	0%	100%
22F	50 Saunders Drive	ITE	14	43	57	48	28	76	0%	100%
23F	Old Organic Farm	ITE	15	44	59	49	29	78	0%	100%
24F	Collingwood Nursing Home	ITE	10	28	38	31	18	49	0%	100%
25F	197 Campbell Street	ITE	7	21	28	21	13	34	0%	100%
26F	Property adjacent to Helen Court Homes	ITE	12	35	47	38	23	61	0%	100%
27F	Northwest corner of Poplar and High Street (Summitview Phase 3)	ITE	63	189	252	212	125	337	0%	100%
28F	8070 Poplar Sideroad	ITE	7	19	26	20	12	32	0%	100%

Map ID	Development Name	TIS or ITE	AM Peak Hour			PM Peak Hour			Assumed Occupancy	
			In	Out	Tot.	In	Out	Tot.	2031	2041
29F	Fumo property located on the west side of High Street	ITE	56	166	222	187	110	297	0%	100%
31F	115 High Street	ITE	2	6	8	7	4	11	0%	100%
32F	121 High Street	ITE	1	2	3	3	2	5	0%	100%
33F	Commercial / hotel development	ITE	76	46	122	153	173	326	0%	100%
34F	Living Waters	ITE	71	50	121	62	59	121	0%	100%
35F	16 Harbour Street or Law property	ITE	5	16	21	16	9	25	0%	100%
36F	Dawson Drive East property	ITE	10	29	39	32	18	50	0%	100%
37F	White Street property	ITE	5	14	19	14	8	22	0%	100%
38F	#38F - Gunn Club Road	ITE	3	9	12	7	4	11	0%	100%
40F	Griffith's property	ITE	7	19	26	20	12	32	0%	100%
41F	Greentree property	ITE	17	50	67	57	33	90	0%	100%
42F	Georgian Manor Resorts	ITE	14	40	54	40	26	66	0%	100%
45F-B	Remainder of Mair Mills North	TIS	72	227	299	216	143	359	0%	100%
25D	Harhay	ITE	14	41	55	41	27	68	0%	100%
27D	655 Hurontario Street Apartments	ITE	3	9	12	9	6	15	0%	100%
31D	Victoria Annex	ITE	2	5	7	5	3	8	0%	100%
32D	Georgian Meadows	ITE	3	10	13	11	6	17	0%	100%
34D	Huntingwood	ITE	25	74	99	84	49	133	0%	100%
35D	Helen Court Homes	ITE	33	106	139	110	64	174	0%	100%
41D	Cranberry	ITE	33	111	144	111	65	176	0%	100%

-	AM Peak Hour			PM Peak Hour		
	In	Out	Tot.	In	Out	Tot.
2031 Total Development Traffic**	1,800	2,861	4,661	3,658	3,167	6,825
2041 Total Development Traffic**	3,584	5,025	8,609	6,069	5,541	11,610

* Town of The Blue Mountains developments in close proximity to Collingwood that were specifically considered in the traffic projections and analysis in this study.

** Includes 2031 Total Development Traffic amounts.

As shown in Table 17, planned developments in the Town of Collingwood are forecast to generate a total of 4,661 and 6,825 trips during the 2031 weekday AM and PM peak hours, respectively, assuming the occupancy percentages outlined in Table 17 are realized by horizon year 2031. By horizon year 2041, assuming full occupancy of all developments outlined in Table 17, the total number of trips to be generated are 8,609 and 11,610 trips during the 2041 weekday AM and PM peak hours, respectively.

Note that the turning movement counts (TMCs) conducted in December 2018 have captured traffic from some of the developments outlined in Table 17 that have already been partially built-out and occupied at the time the TMCs were conducted. Any developments that were partially occupied and captured in the December 2018 TMCs were adjusted accordingly for analysis purposes (e.g., if a specific development was 40% occupied in December 2018, then 60% of the traffic volume amounts shown in Table 17 were applied in the total traffic scenarios in this study).

For developments that TIS reports were not available, traffic volumes were distributed amongst the Study Area intersections according to the logical routing of vehicles to/from various locations within and outside of the Town (e.g., Stayner). Traffic volumes were primarily distributed on arterial and collector roads near a proposed development, with some traffic being distributed to local/collector roads not reviewed in this study. In general, traffic volumes were reduced as distances increased between the traffic generator and any particular intersection, due to overall dispersal of traffic throughout the network.

The total development traffic, that was added to the road network in the total traffic scenarios considered later in this study, are illustrated in Figure 11 and Figure 12 for the medium-term (2031) and long-term (2041) horizons, respectively.

Figure 11: Medium-Term (2031) Development Traffic Volumes

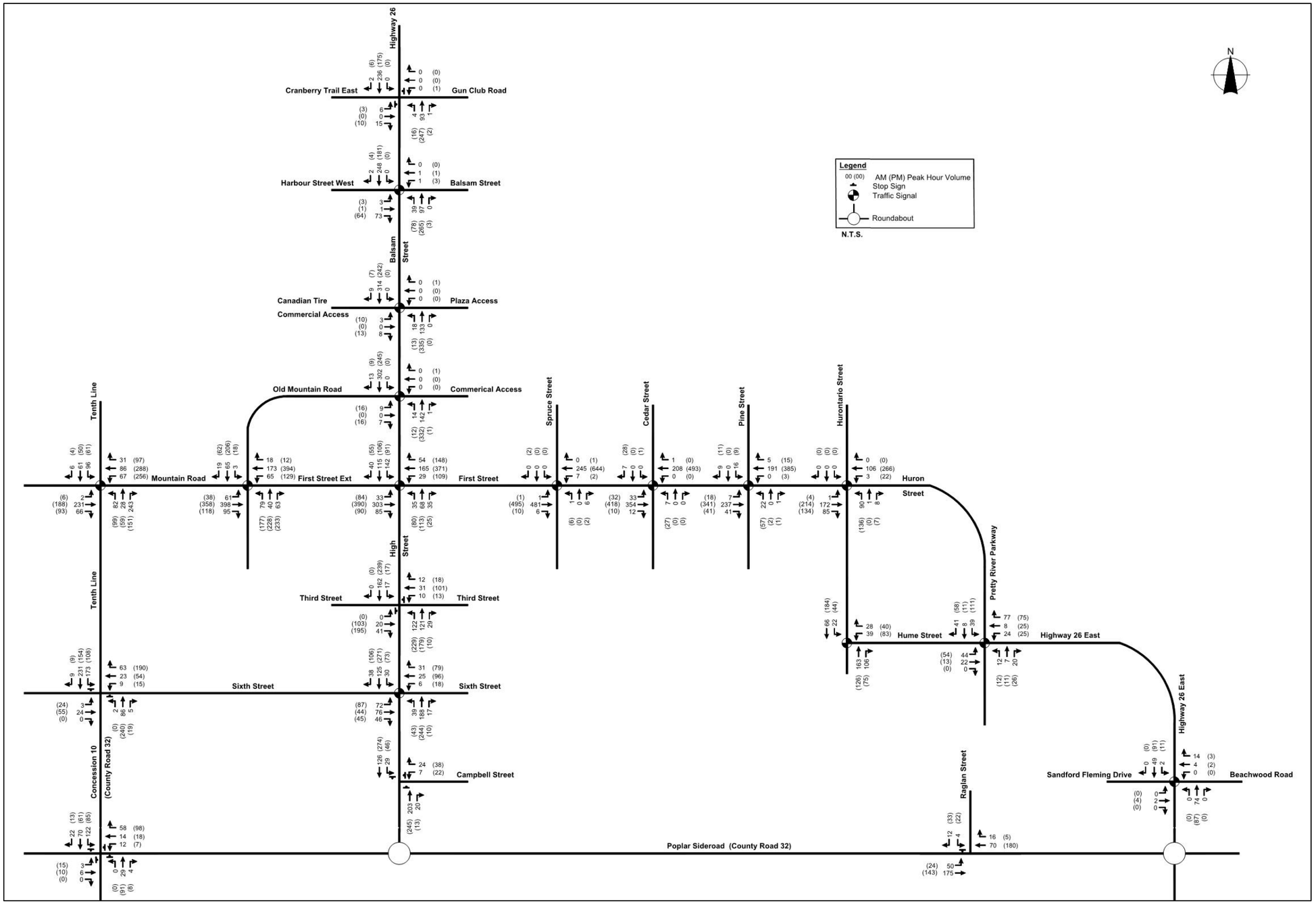
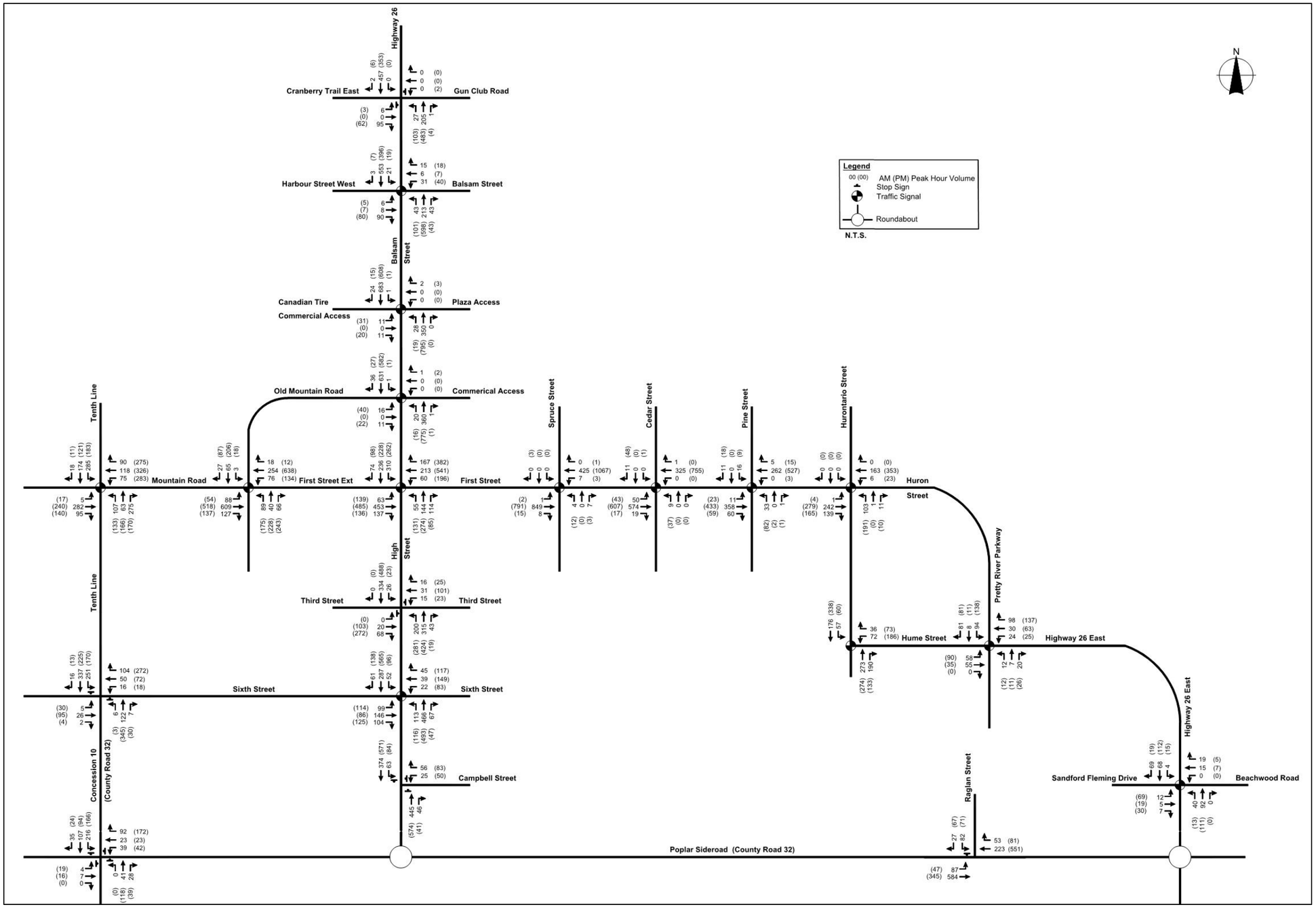


Figure 12: Long-Term (2041) Development Traffic Volumes



7.0 Total Traffic Operations

This section reviews total traffic operations in the Study Area in horizon years 2031 and 2041. Total traffic volumes in each horizon year consist of the addition of the 2031/2041 development traffic forecasts to the 2031/2041 background traffic volumes.

7.1 2031 Total Traffic Operations

7.1.1 Intersection Operations

Forecasted total traffic volumes at intersections in the Study Area in horizon year 2031 were analyzed using Synchro software, based on the traffic volumes shown in Figure 13. Optimized signal timings were applied at the signalized intersections in the Study Area to ensure that traffic operations were optimized.

The 2031 total traffic operations are summarized in Table 18 and Table 19 for signalized and unsignalized intersections in the Study Area, respectively, and also displayed in Figure 15. Detailed Synchro reports for the 2031 total traffic conditions are provided in Appendix E.

Table 18: 2031 Total Signalized Intersection Operations

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Delay (s)	LOS	v/c ratio	Delay (s)	LOS	v/c ratio
Highway 26 & Cranberry Trail E/Gun Club Road	Overall	10	B	0.65	9	A	0.62
Balsam Street/Harbour Street W & Highway 26	Overall	13	B	0.58	17	B	0.82
Balsam Street & CT Entrance/Plaza Access	Overall	8	A	0.53	12	B	0.58
Balsam Street & Old Mountain Road/Commercial Access	Overall	8	A	0.55	13	B	0.61
First Street & Balsam Street/High Street	Overall	53	D	0.92	80	E	**1.12**
	EBTR	57	E	0.91	104	**F**	**1.09**
	WBL	46	D	0.74	137	**F**	**1.14**
	NBTR	68	E	0.94	107	**F**	**1.05**
	SBL	74	E	0.96	109	**F**	**1.06**
	SBLTR	64	E	0.96	87	**F**	**1.03**
First Street & Spruce Street	Overall	6	A	0.49	10	A	0.64
First Street & Cedar Street	Overall	11	B	0.51	11	B	0.64
First Street & Pine Street	Overall	13	B	0.54	22	C	0.85
First Street/Huron Street & Hurontario Street	Overall	13	B	0.54	17	B	0.77
	NBL	49	D	0.78	56	E	0.89
Hume Street/Highway 26 E & Pretty River Parkway	Overall	22	C	0.66	27	C	0.70
Highway 26 E & Beachwood Road/Sandford Fleming Drive	Overall	18	B	0.64	18	B	0.84
	SBL	10	A	0.42	32	C	0.94
Tenth Line & Mountain Road	Overall	69	E	**1.07**	256	**F**	**1.77**
	WBLTR	47	D	0.98	386	**F**	**1.80**
	NBLTR	145	**F**	**1.22**	355	**F**	**1.65**
	SBLTR	79	E	0.99	262	**F**	**1.41**
Mountain Road & Old Mountain Road/Cambridge Street	Overall	19	B	0.59	76	E	**1.16**
	EBTR	21	C	0.63	78	E	**1.02**
	WBL	14	B	0.40	132	**F**	**1.14**
	NBL	26	C	0.48	76	E	0.95
	NBTR	25	C	0.27	72	**F**	**1.12**
	SBTR	36	D	0.56	67	E	0.95
High Street & Third Street/Cambridge Street	Overall	11	B	0.37	19	B	0.72
High Street & Sixth Street	Overall	27	C	0.73	31	C	0.89
	EBL	37	D	0.77	79	E	0.96
	EBTR	39	D	0.88	23	C	0.59
	SBTR	23	C	0.49	37	D	0.90
Hurontario Street & Hume Street	Overall	18	B	0.61	20	B	0.69

Figure 15: 2031 Total Conditions Level of Service

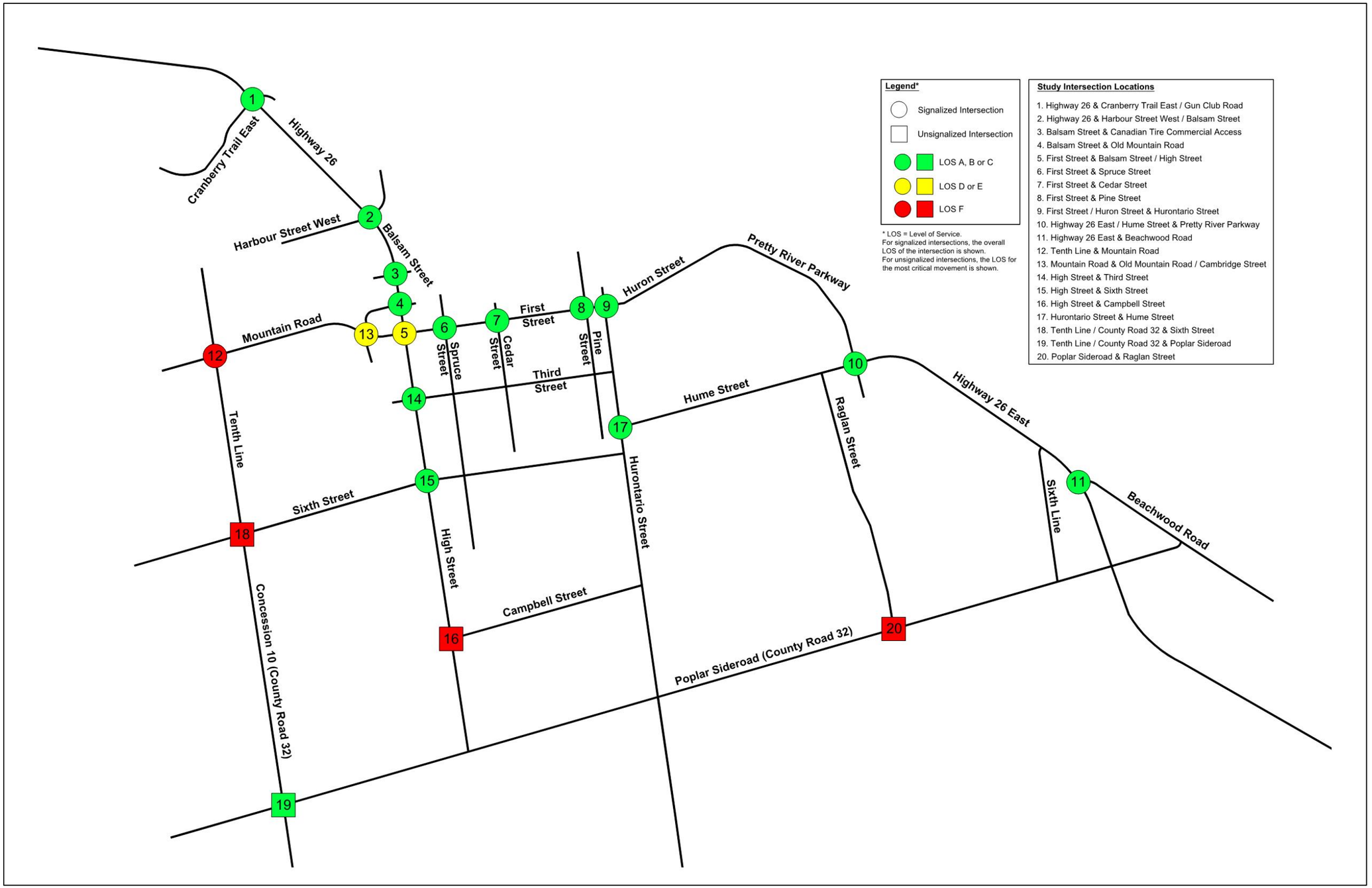
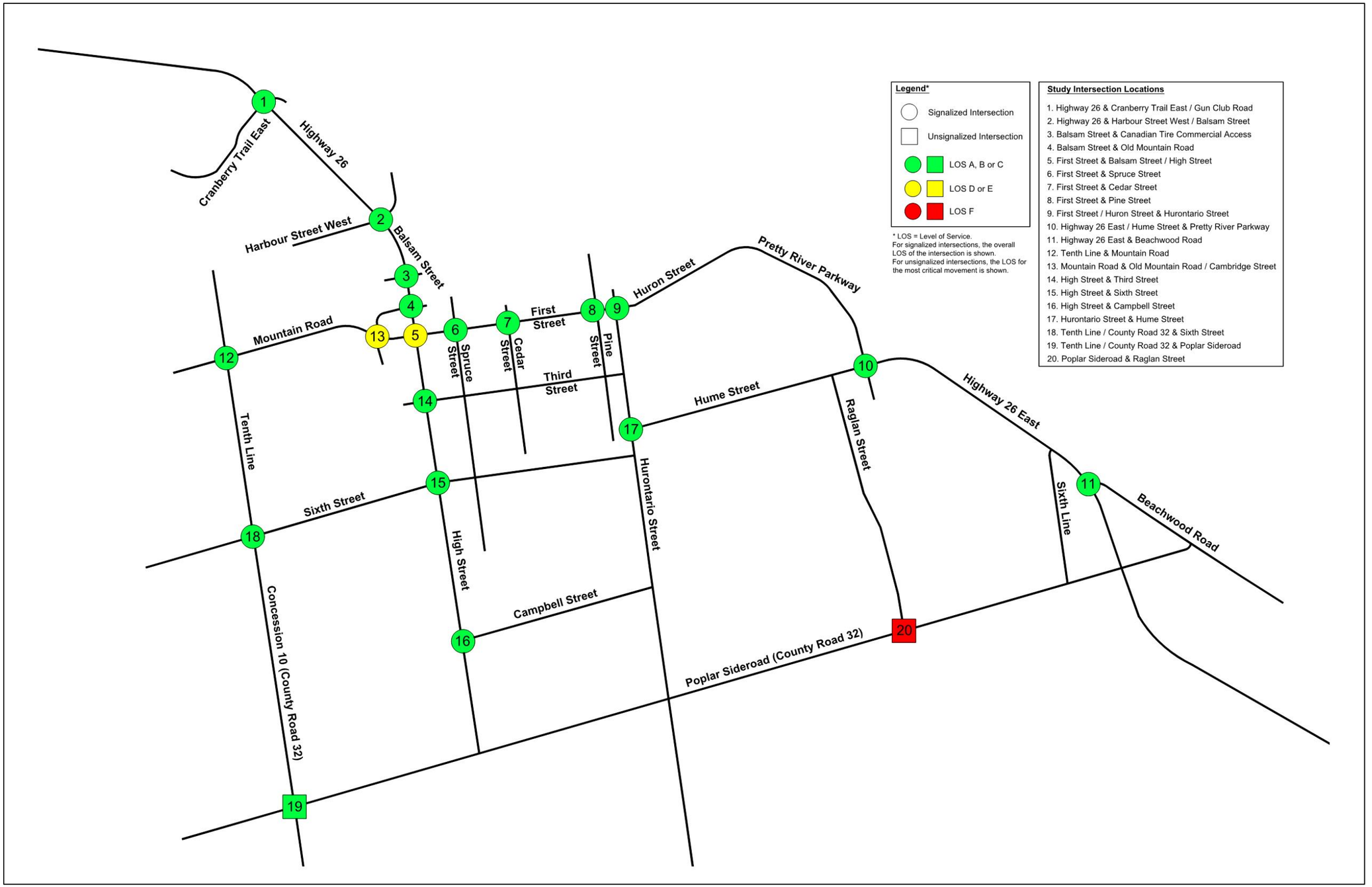


Figure 16: 2031 Total Conditions With Intersection Improvements Level of Service



local road and may be reclassified as a collector or arterial road in the future, which would increase the roads assumed capacity, if road designs support such classifications. Therefore, the capacity of Old Mountain Road is considered sufficient to accommodate 2031 total traffic volumes.

Cambridge Street (South of Mountain Road)

The v/c ratio on Cambridge Street, south of Mountain Road under 2031 total traffic conditions, is forecasted to be 1.37 and 1.09 in the northbound and southbound directions, respectively, assuming that Cambridge Street is reclassified as a collector road by 2031 and assuming that road designs support such a reclassification.

Localized traffic volumes on Cambridge Street, immediately south of Mountain Road, are forecasted to be significantly higher than the volumes on Cambridge Street immediately west of High Street, due to the location of developments and commercial driveways on Cambridge Street. Given that the v/c ratio on Cambridge Street immediately west of High Street is only 0.45 and 0.48 in the eastbound and westbound directions, respectively, it is probable that volumes may only exceed the assumed capacity near the Mountain Road intersection. A northbound right-turn lane has been recommended under 2031 total traffic conditions at the Mountain Road and Cambridge Street intersection, in addition to the existing northbound through and northbound left-turn lanes, which is considered sufficient to accommodate the increased northbound traffic at this location. Also, a centre TWLTL currently extends along the length of Cambridge Street, further increasing the assumed road capacity. Therefore, the capacity of Cambridge Street is considered sufficient to accommodate 2031 total traffic volumes.

7.2 2041 Total Traffic Operations

7.2.1 Intersection Operations

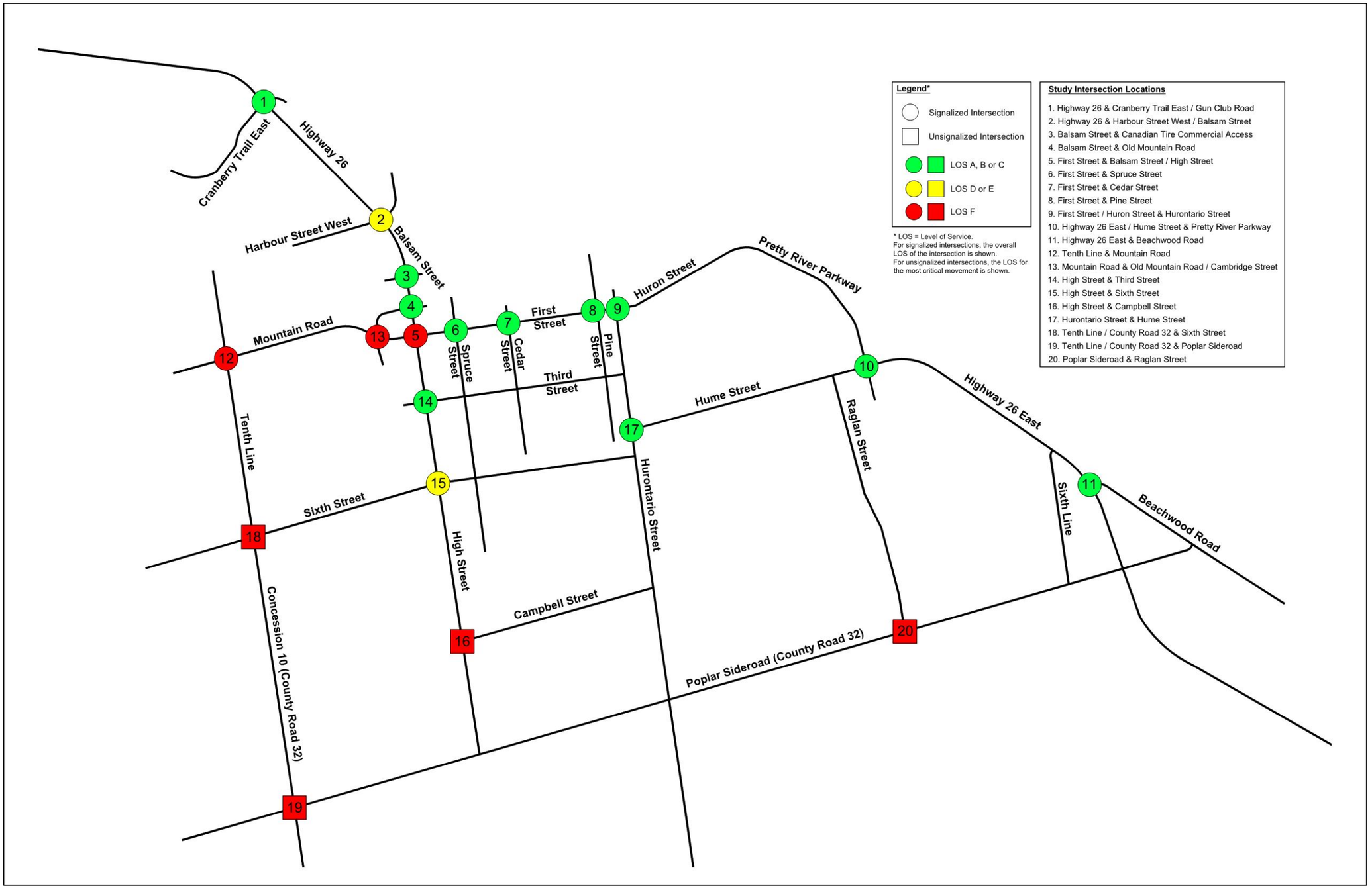
Forecast total traffic volumes at intersections in the Study Area in horizon year 2041 were analyzed using Synchro software, based on the traffic volumes shown in Figure 14. Optimized signal timings were applied at the signalized intersections in the Study Area to ensure that traffic operations were optimized.

The 2041 total traffic operations are summarized in Table 22 and Table 23 for signalized and unsignalized intersections in the Study Area, respectively, and also displayed in Figure 17. Detailed Synchro reports for the 2041 total traffic conditions are provided in Appendix H.

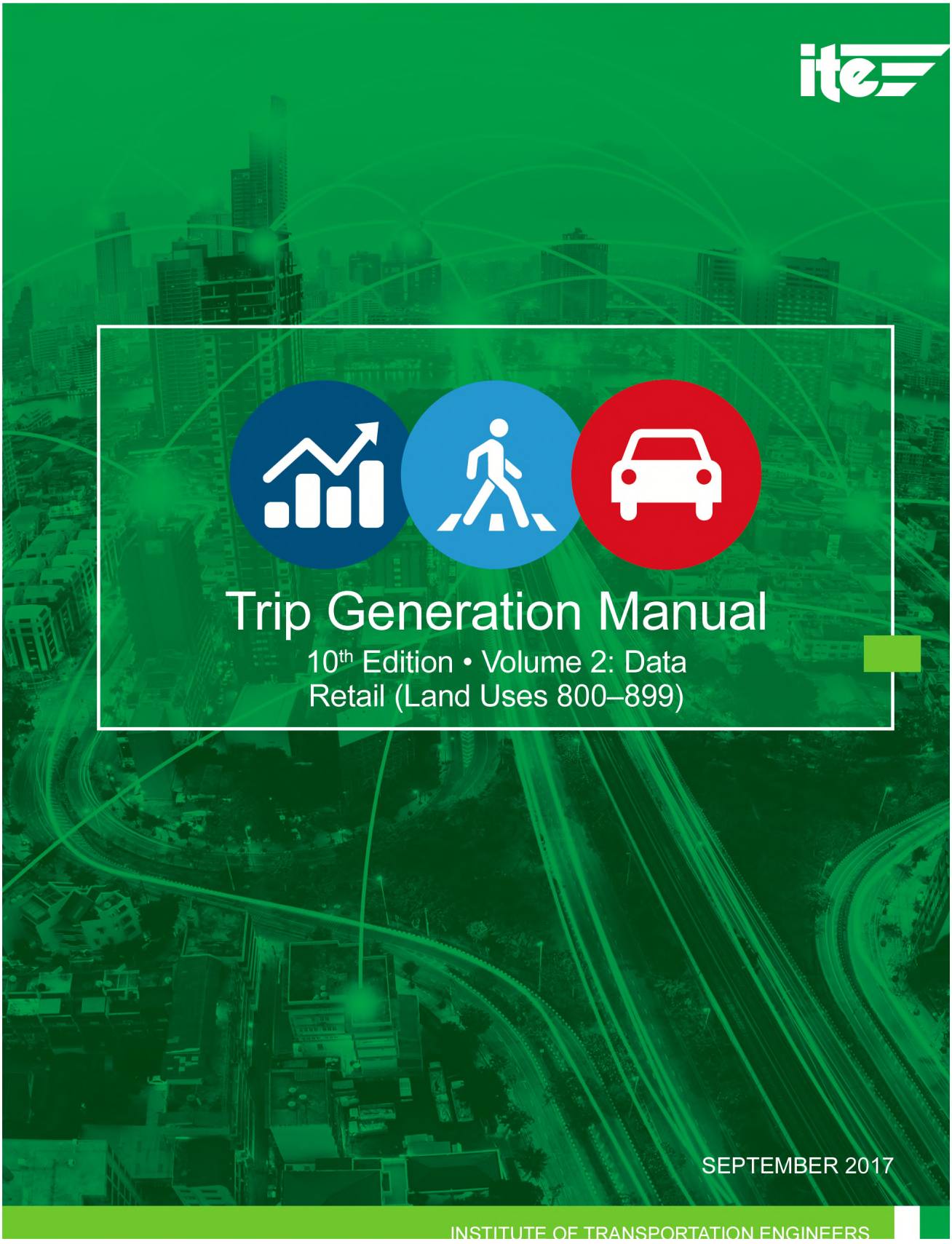
Table 22: 2041 Total Signalized Intersection Operations

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Delay (s)	LOS	v/c ratio	Delay (s)	LOS	v/c ratio
Highway 26 & Cranberry Trail E/Gun Club Road	Overall	19	B	0.85	16	B	0.81
	SBT	25	C	0.93	18	B	0.84
Balsam Street/Harbour Street W & Highway 26	Overall	18	B	0.80	52	D	**1.14**
	EBTR	143	**F**	**1.00**	56	E	**1.00**
	WBL	135	**F**	**1.03**	135	**F**	**1.03**
	NBLT	63	E	**1.08**	63	E	**1.08**
Balsam Street & CT Entrance/Plaza Access	Overall	11	B	0.74	19	B	0.79
	SBTR	12	B	0.81	20	C	0.86
Balsam Street & Old Mountain Road/Commercial Access	Overall	11	B	0.75	19	B	0.83
	SBTR	15	B	0.81	23	C	0.88
First Street & Balsam Street/High Street	Overall	119	**F**	**1.20**	174	**F**	**1.47**
	EBL	34	C	0.46	121	**F**	**1.08**
	EBTR	137	**F**	**1.17**	218	**F**	**1.36**
	WBL	156	**F**	**1.14**	295	**F**	**1.53**
	WBT	46	D	0.68	55	E	0.90
	WBR	31	C	0.83	114	**F**	**1.16**
	NBL	49	D	0.58	79	E	0.90
	NBTR	175	**F**	**1.25**	229	**F**	**1.37**
	SBL	162	**F**	**1.22**	226	**F**	**1.36**
	SBLTR	149	**F**	**1.21**	201	**F**	**1.32**
First Street & Spruce Street	Overall	8	A	0.65	14	B	0.81
	WBTR	5	A	0.55	14	B	0.88
First Street & Cedar Street	Overall	13	B	0.62	14	B	0.77
First Street & Pine Street	Overall	13	B	0.61	27	C	0.96
	EBTR	9	A	0.63	20	C	0.93
	WBTR	10	B	0.64	23	C	0.89
	NBL	41	D	0.60	34	C	0.94
First Street/Huron Street & Hurontario Street	Overall	14	B	0.62	21	C	0.87
	EBTR	5	A	0.60	12	B	0.88
	NBL	50	D	0.81	60	E	0.93
Hume Street/Highway 26 E & Pretty River Parkway	Overall	24	C	0.74	32	C	0.78
	SBL	29	C	0.53	45	D	0.90
	SBTL	29	C	0.52	48	D	0.91
Highway 26 E & Beachwood Road/Sandford Fleming Drive	Overall	20	B	0.70	27	C	0.91
	EBLTR	19	B	0.15	64	E	0.90
	SBL	12	B	0.50	25	C	0.86
Tenth Line & Mountain Road	Overall	257	**F**	**1.80**	533	**F**	**2.68**
	EBLTR	57	E	0.99	56	E	**1.02**
	WBLTR	285	**F**	**1.55**	921	**F**	**2.98**
	NBLTR	207	**F**	**1.36**	358	**F**	**1.68**

Figure 17: 2041 Total Conditions Level of Service



Attachment C
ITE Trip Generation Excerpts



Trip Generation Manual

10th Edition • Volume 2: Data
Retail (Land Uses 800–899)

SEPTEMBER 2017

INSTITUTE OF TRANSPORTATION ENGINEERS

Land Use: 221
Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (Land Use 225), and mid-rise residential with 1st-floor commercial (Land Use 231) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the mid-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.46 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 95.7 percent of the total dwelling units were occupied.

Time-of-day distribution data for this land use are presented in Appendix A. For the eight general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 4:45 and 5:45 p.m., respectively.

For the four dense multi-use urban sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:15 and 5:15 p.m., respectively. For the three center city core sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 6:45 and 7:45 a.m. and 5:00 and 6:00 p.m., respectively.

For the six sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.46 residents per occupied dwelling unit.

For the five sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 95.7 percent of the units were occupied.

The average numbers of person trips per vehicle trip at the five center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 1.84 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.94 during Weekday, AM Peak Hour of Generator
- 2.07 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.59 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 32 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.90 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.90 during Weekday, AM Peak Hour of Generator
- 2.00 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.08 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 13 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.56 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.88 during Weekday, AM Peak Hour of Generator
- 1.70 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.07 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Delaware, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ontario, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, and Wisconsin.

Source Numbers

168, 188, 204, 305, 306, 321, 357, 390, 436, 525, 530, 579, 638, 818, 857, 866, 901, 904, 910, 912, 918, 934, 936, 939, 944, 947, 948, 949, 959, 963, 964, 966, 967, 969, 970

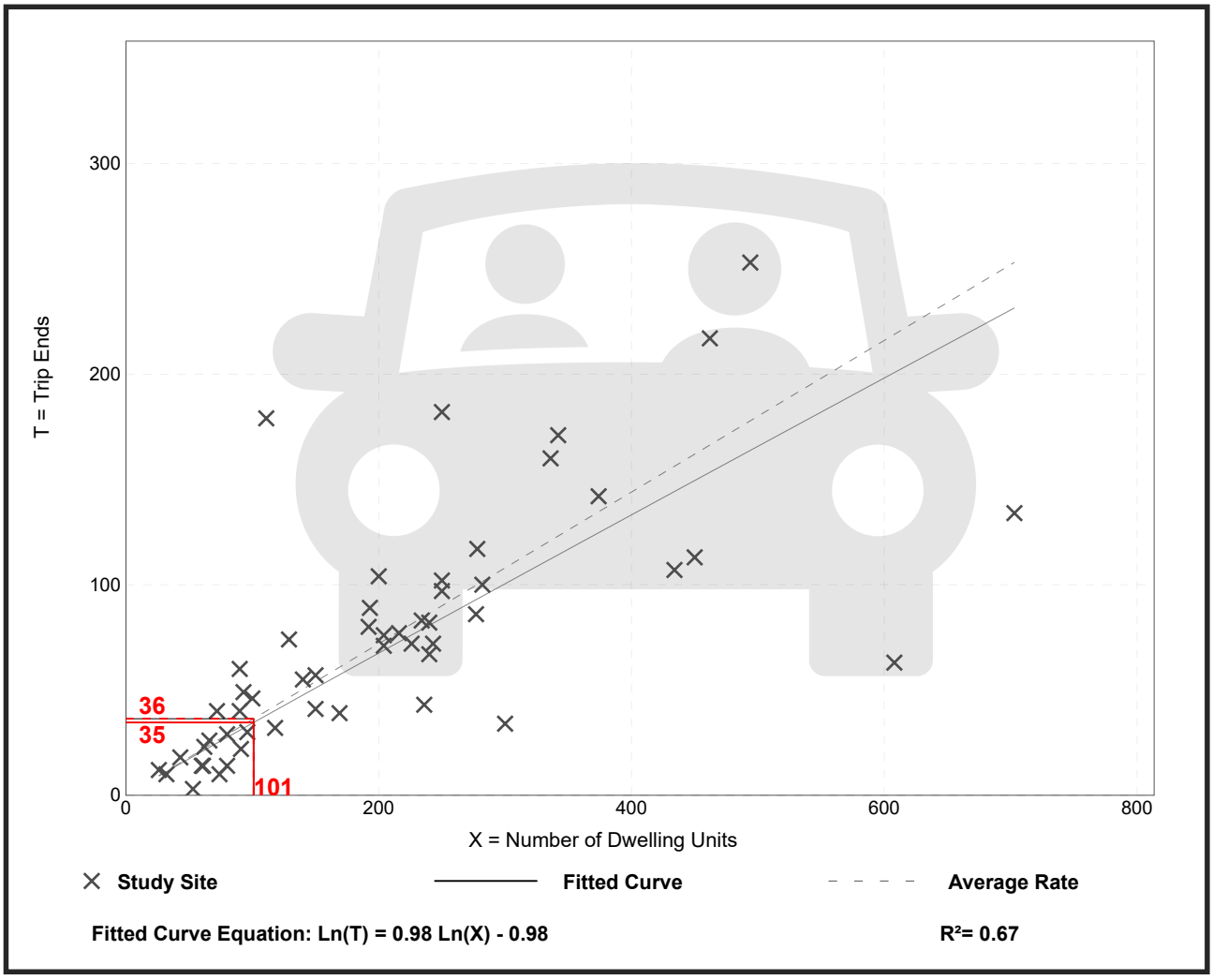
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 53
Avg. Num. of Dwelling Units: 207
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.98 Ln(X) - 0.98

R^2= 0.67

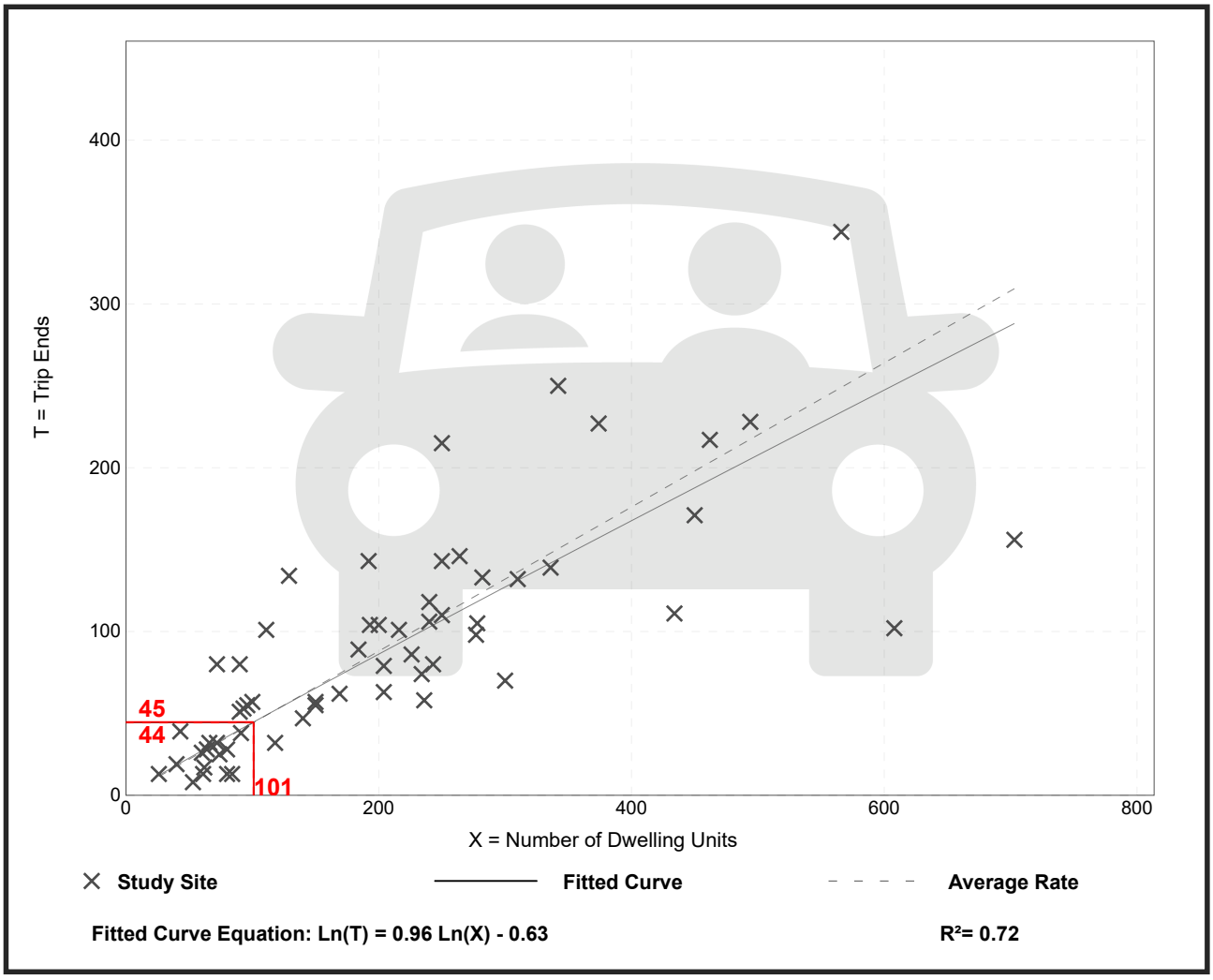
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 60
Avg. Num. of Dwelling Units: 208
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



Multifamily Housing (Mid-Rise)
(221)

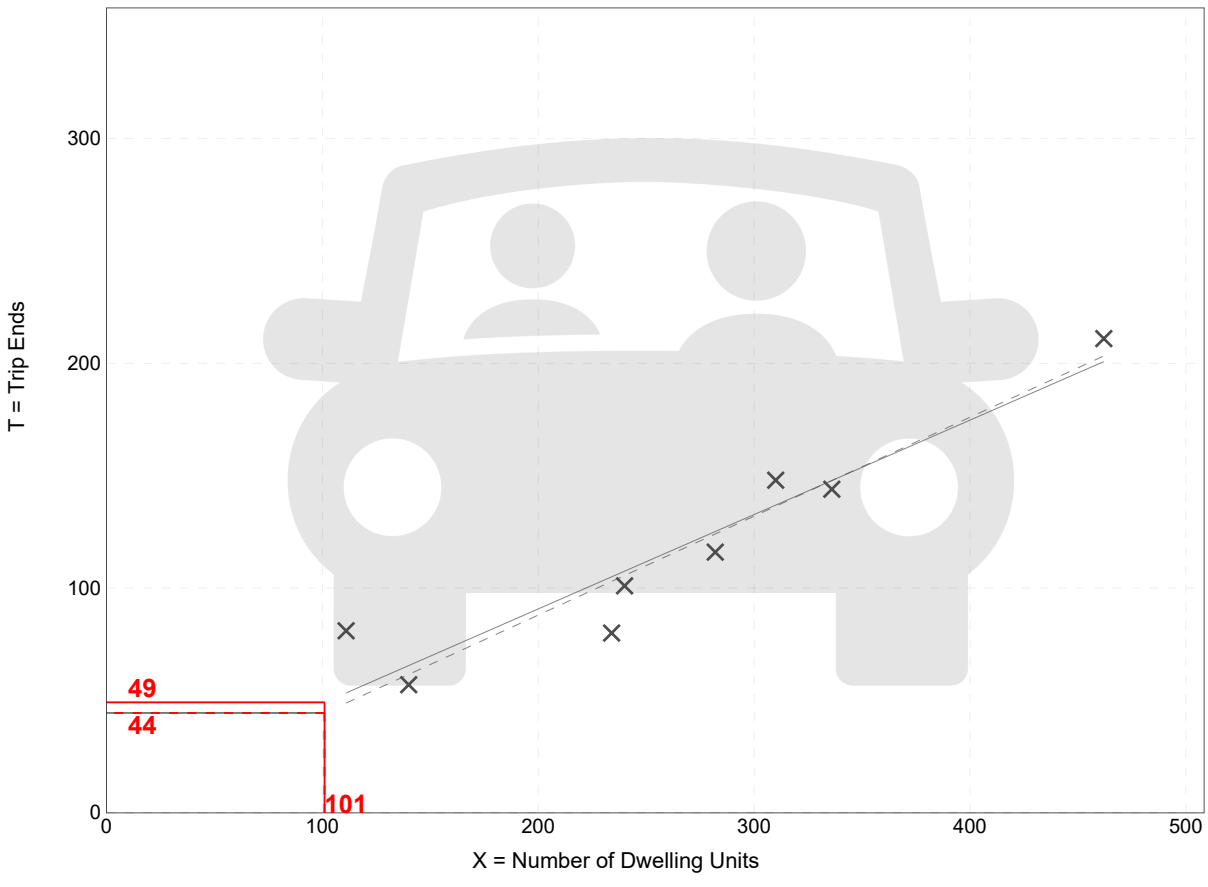
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 8
Avg. Num. of Dwelling Units: 264
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.34 - 0.73	0.08

Data Plot and Equation



Fitted Curve Equation: T = 0.42(X) + 6.73

R^2= 0.89

Land Use: 820
Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

Additional Data

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses).

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

The vehicle trips generated at a shopping center are based upon the total GLA of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area of the building.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:15 and 1:15 p.m., respectively.

The average numbers of person trips per vehicle trip at the 27 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.31 during Weekday, AM Peak Hour of Generator
- 1.43 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Source Numbers

105, 110, 154, 156, 159, 186, 190, 198, 199, 202, 204, 211, 213, 239, 251, 259, 260, 269, 294, 295, 299, 300, 301, 304, 305, 307, 308, 309, 310, 311, 314, 315, 316, 317, 319, 358, 365, 376, 385, 390, 400, 404, 414, 420, 423, 428, 437, 440, 442, 444, 446, 507, 562, 580, 598, 629, 658, 702, 715, 728, 868, 870, 871, 880, 899, 908, 912, 915, 926, 936, 944, 946, 960, 961, 962, 973, 974, 978

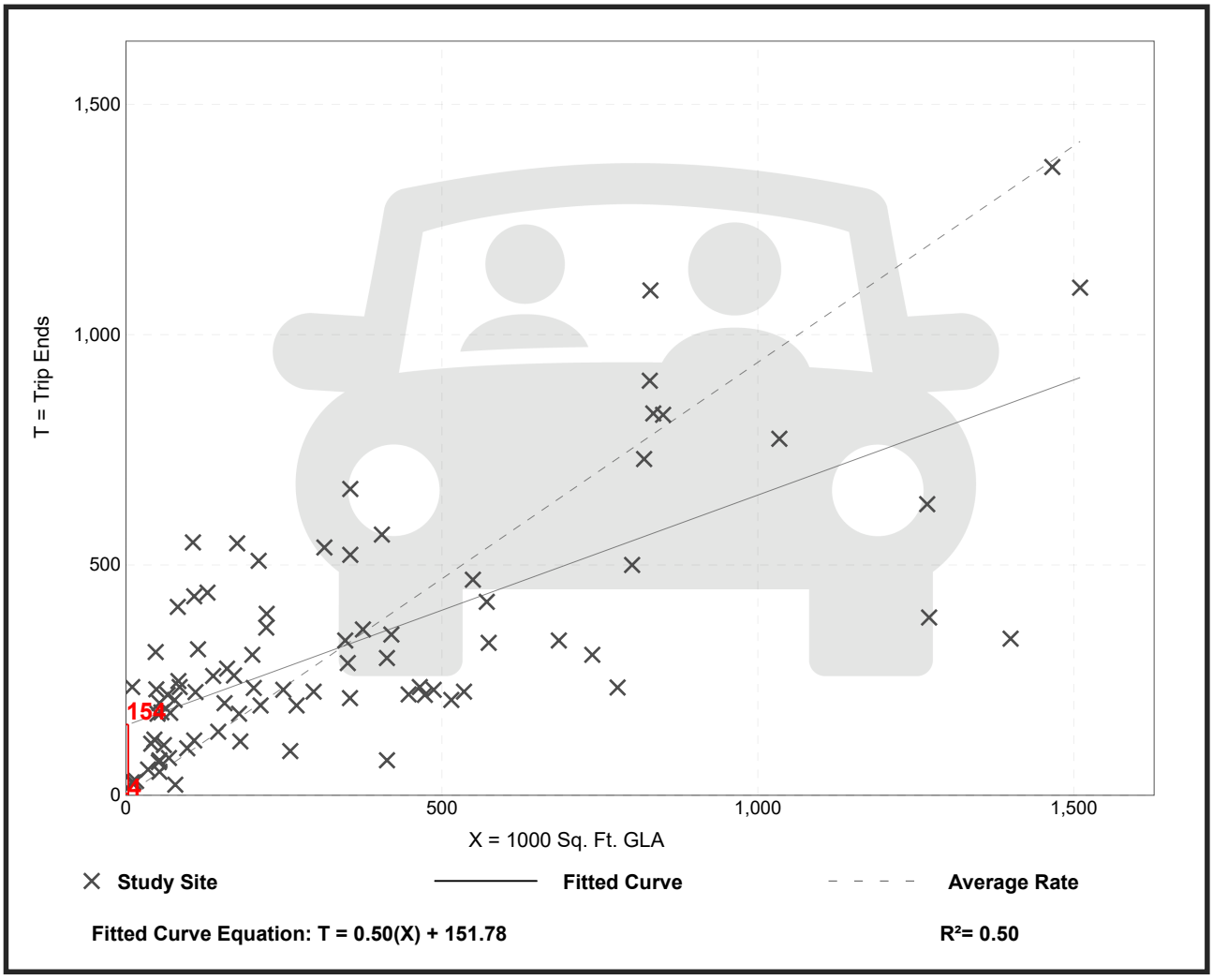
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 84
Avg. 1000 Sq. Ft. GLA: 351
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



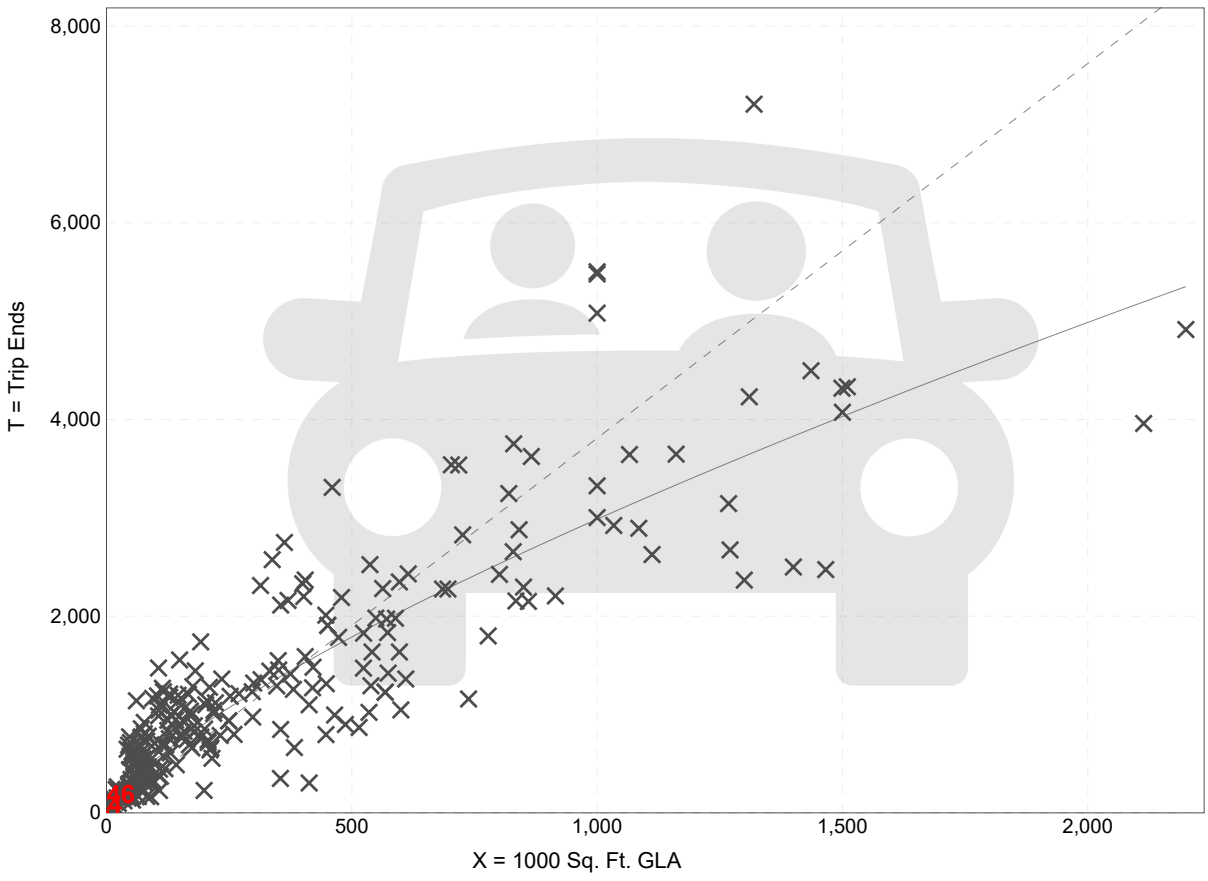
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 261
Avg. 1000 Sq. Ft. GLA: 327
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.74 Ln(X) + 2.89

R^2= 0.82

Shopping Center
(820)

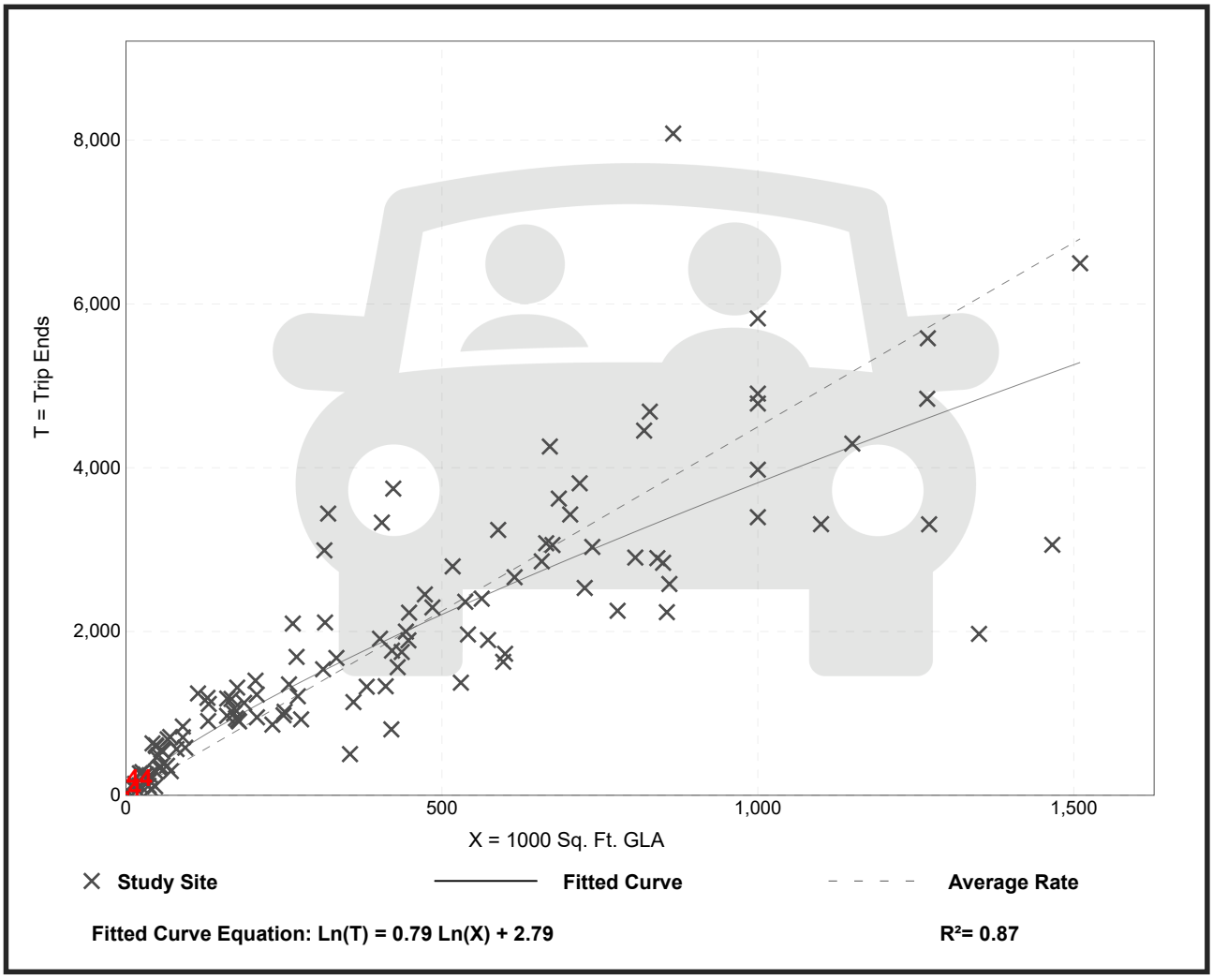
Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 119
Avg. 1000 Sq. Ft. GLA: 416
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.50	1.42 - 15.10	1.88

Data Plot and Equation



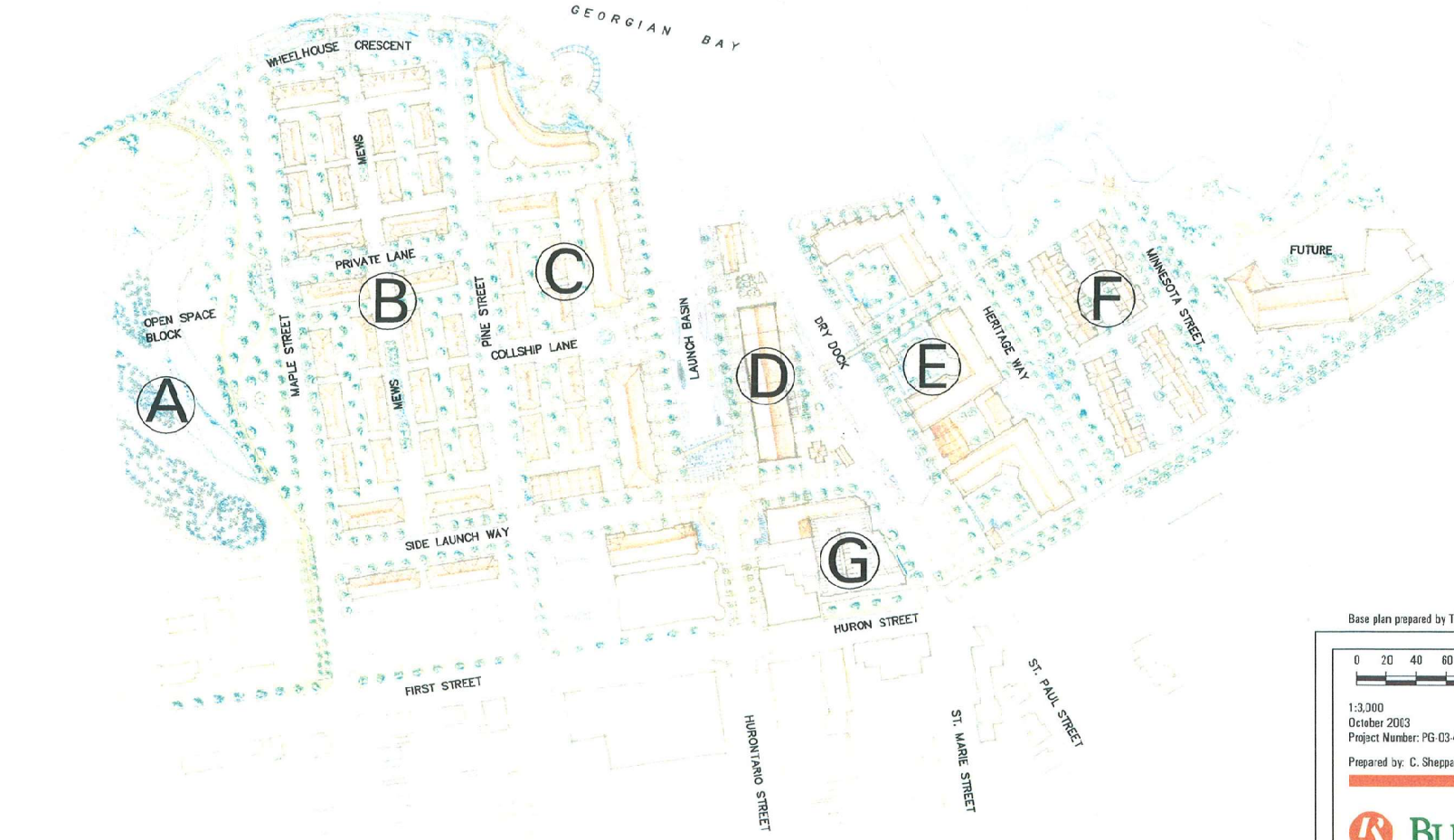
Fitted Curve Equation: Ln(T) = 0.79 Ln(X) + 2.79 **R^2= 0.87**

Attachment D
Burnside TIS (October 2003) Excerpts

FIGURE 2

F.S. COLLINGWOOD DEVELOPMENTS LTD.
THE SHIPYARDS

CONCEPT PLAN



LEGEND

AREA	LAND USE
Ⓐ	±9 acre open space park
Ⓑ	122 condominium townhouses
Ⓒ	37 condominium townhouses 132 mid-rise condominiums 17,400 ft² commercial
Ⓓ	50 mid-rise condominiums 20,200 ft² commercial 4,260 ft² restaurant
Ⓔ	200 mid-rise condominiums
Ⓕ	24 condominium townhouses
Ⓖ	24 mid-rise condominiums 4,000 ft² commercial

Base plan prepared by The MBTW Group

0 20 40 60 80 100 120 140 160 180 200 220 240
Meters

1:3,000
October 2003
Project Number: PG-03-4783.3

Prepared by: C. Sheppard Verified by: H. Centen

BURNSIDE

XREF: PG034783 SHIPYARD SP.JPG PG034783 TRAFFIC STUDY CP.DWG

- First Street – 4% growth per annum (48% over 10 years)
- Hurontario Street – 5% growth per annum (63% growth over 10 years)
- Huron Street – 5% growth per annum (63% growth over 10 years).

Appendix F shows the forecasted background traffic volumes for the intersections within the study area to the year 2013, applying the above noted growth factors.

Based on the peak hour directional traffic obtained in the ATR counts, and applying the above noted growth factors, the forecasted 2013 peak hour traffic volumes on First Street and Huron Street are shown in the following table:

Forecasted Peak Hour Background Traffic - 2013

Street	Peak Hour Traffic
First Street	1,260 vph eastbound 1,480 vph westbound
Total	2,740 vph
Huron Street	1,435 vph eastbound 1,075 vph westbound
Total	2,510 vph

5.3 Trip Generation From The Shipyards Development

Traffic volumes to and from The Shipyards development have been estimated based on the trip rate information contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 6th Edition. This manual presents a tabulation of trip generation rates and orientation (i.e. entering or exiting) for various land uses and is considered as a commonly accepted source for trip generation rates. The weekday p.m. peak hour trips and daily trips generated from the proposed development are shown on the following tables:

Estimated Trip Generation From The Shipyard Development (Weekday p.m. Peak Hour)

Land Use	ITE Code	Trip Generation	In (vph)	Out (vph)	Total (vph)
Residential Condominium/Townhouses	230	183 @ 0.54/unit	65	34	99
High-Rise Residential Condominium/Townhouses	232	406 @0.38/unit	105	49	154
Specialty Retail Center	814	41,600 sq. ft. @ 4.93/1000 sq. ft.	117	88	205
Quality Restaurant	831	4,260 sq. ft. @9.02/1000	24	15	39

Land Use	ITE Code	Trip Generation	In (vph)	Out (vph)	Total (vph)
		sq. ft.			
Total Trip Generation			311	186	497
Fast Food Restaurant*	833	2,500/5 sq.ft. @52.4/1000 sq.ft.	13	13	26

*Note: Starbuck Coffee Shop at corner of Pine Street is included here since it was not open during the period of the manual traffic count; assumes 20% of traffic uses Pine.

Estimated Trip Generation from The Shipyard Development (Weekday Daily Trips)

Land Use	ITE Code	Trip Generation	In (vph)	Out (vph)	Total (vph)
Residential Condominium/Townhouses	230	183 @ 5.86/unit	536	536	1,072
High-Rise Residential Condominium/Townhouses	232	406 @4.18/unit	849	849	1,698
Specialty Retail Center	814	41,600 sq.ft. @ 40.67/1000 sq.ft.	846	846	1,692
Quality Restaurant	831	4,260 sq.ft. @89.95/1000 sq.ft.	192	192	384
Total Trip Generation			2,423	2,423	4,846
Fast Food Restaurant*	833	2,500/5 sq.ft. @716/1000 sq.ft.	179	179	358

*Note: Starbuck Coffee Shop at corner of Pine Street is included here since it was not open during the period of the manual traffic count; assumes 20% of traffic uses Pine.

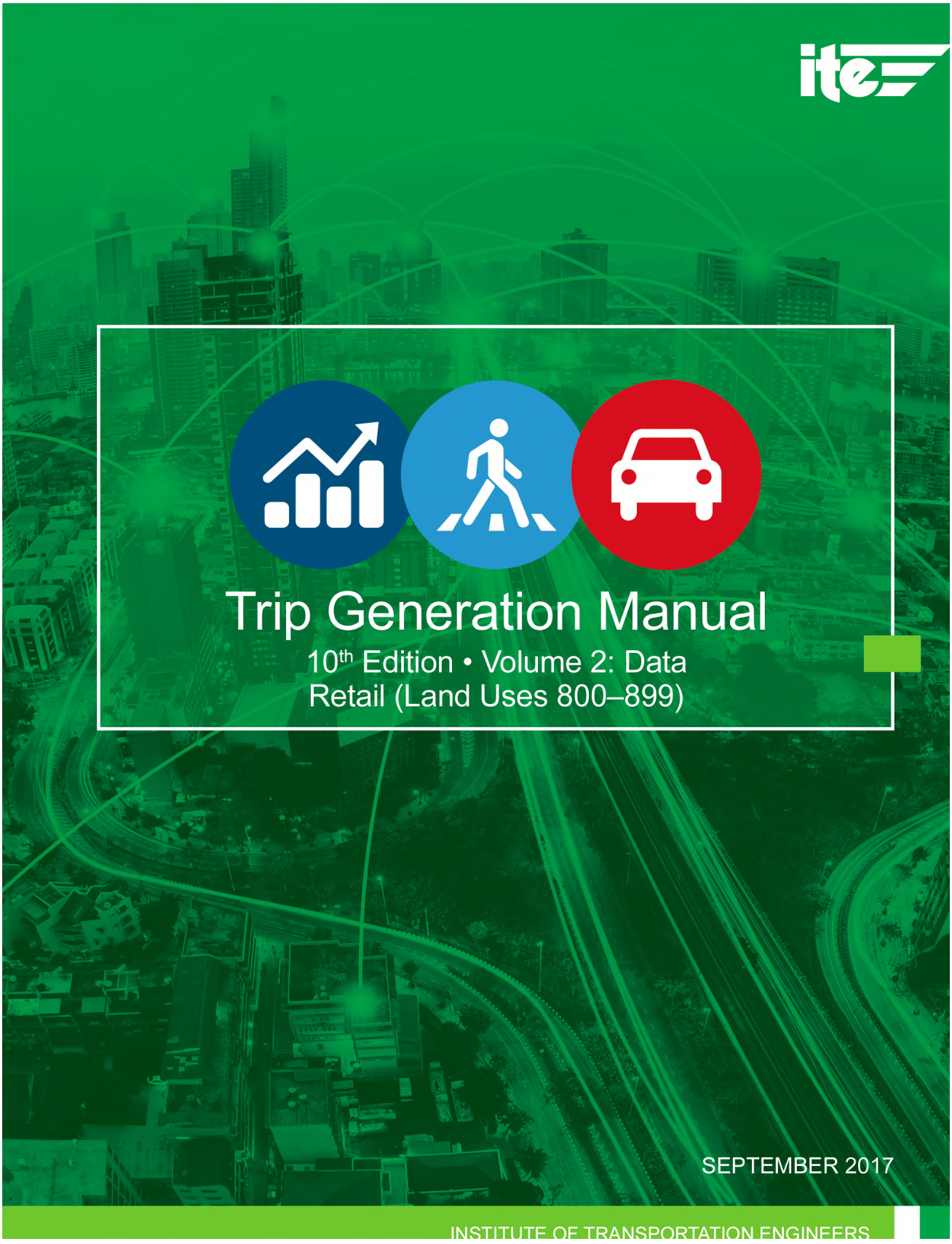
The trip generation for Saturdays was reviewed but found not to differ significantly from weekday trip volumes and therefore Saturday conditions have not been considered separately in this analysis.

As shown in the above tables the total development of The Shipyards is expected to add about 4,846 vehicle trips per day to area roads, with about 497 of those occurring during the peak hour period.

5.4 Directional Distribution of Development Trips

The directional distribution of traffic to and from the proposed development has been based on the following:

Attachment E
ITE Trip Generation for Burnside TIS Excerpts



Trip Generation Manual

10th Edition • Volume 2: Data
Retail (Land Uses 800–899)

SEPTEMBER 2017

INSTITUTE OF TRANSPORTATION ENGINEERS

Land Use: 221
Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (Land Use 225), and mid-rise residential with 1st-floor commercial (Land Use 231) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the mid-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.46 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 95.7 percent of the total dwelling units were occupied.

Time-of-day distribution data for this land use are presented in Appendix A. For the eight general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 4:45 and 5:45 p.m., respectively.

For the four dense multi-use urban sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:15 and 5:15 p.m., respectively. For the three center city core sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 6:45 and 7:45 a.m. and 5:00 and 6:00 p.m., respectively.

For the six sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.46 residents per occupied dwelling unit.

For the five sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 95.7 percent of the units were occupied.

The average numbers of person trips per vehicle trip at the five center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 1.84 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.94 during Weekday, AM Peak Hour of Generator
- 2.07 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.59 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 32 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.90 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.90 during Weekday, AM Peak Hour of Generator
- 2.00 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.08 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 13 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.56 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.88 during Weekday, AM Peak Hour of Generator
- 1.70 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.07 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Delaware, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ontario, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, and Wisconsin.

Source Numbers

168, 188, 204, 305, 306, 321, 357, 390, 436, 525, 530, 579, 638, 818, 857, 866, 901, 904, 910, 912, 918, 934, 936, 939, 944, 947, 948, 949, 959, 963, 964, 966, 967, 969, 970

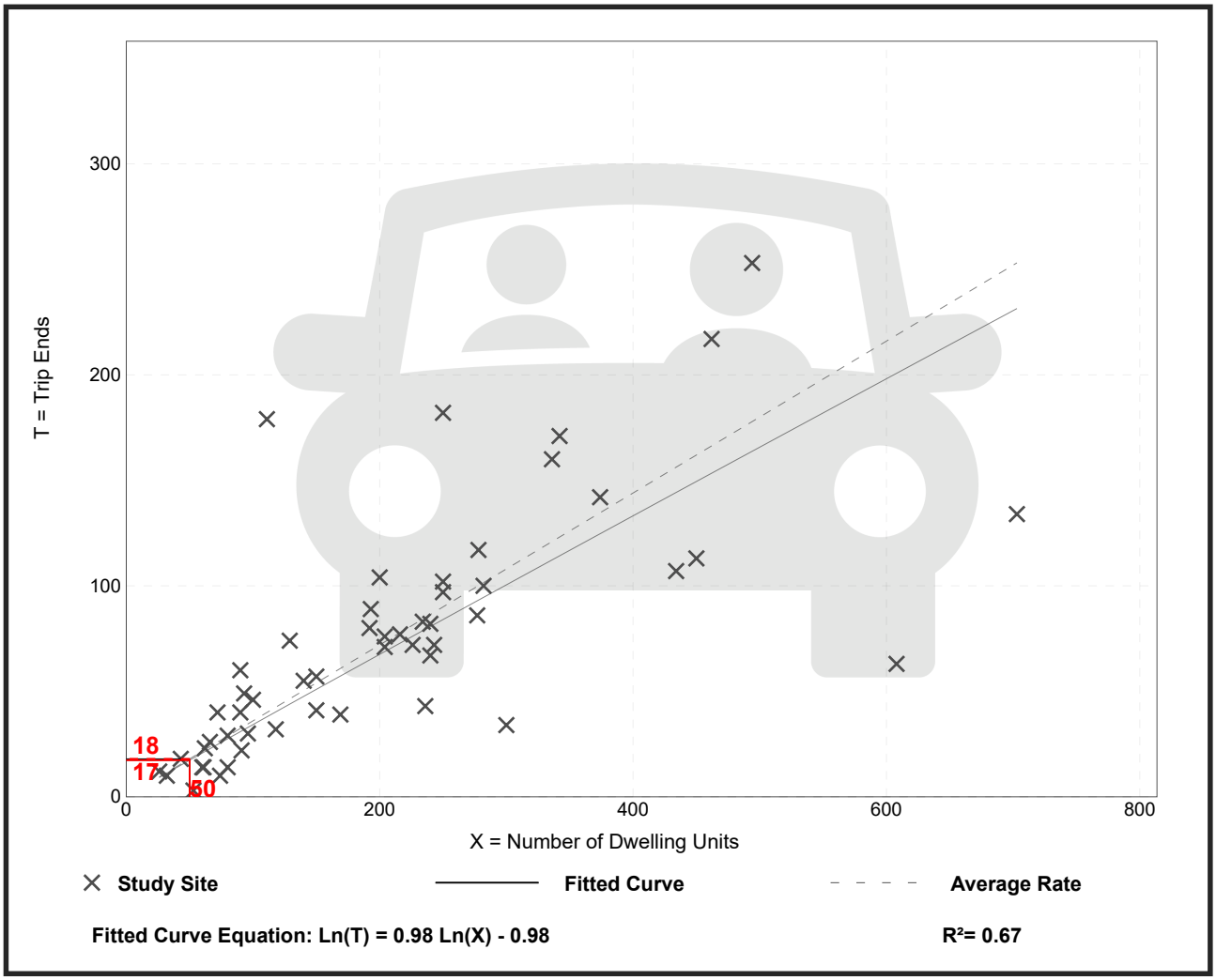
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 53
Avg. Num. of Dwelling Units: 207
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



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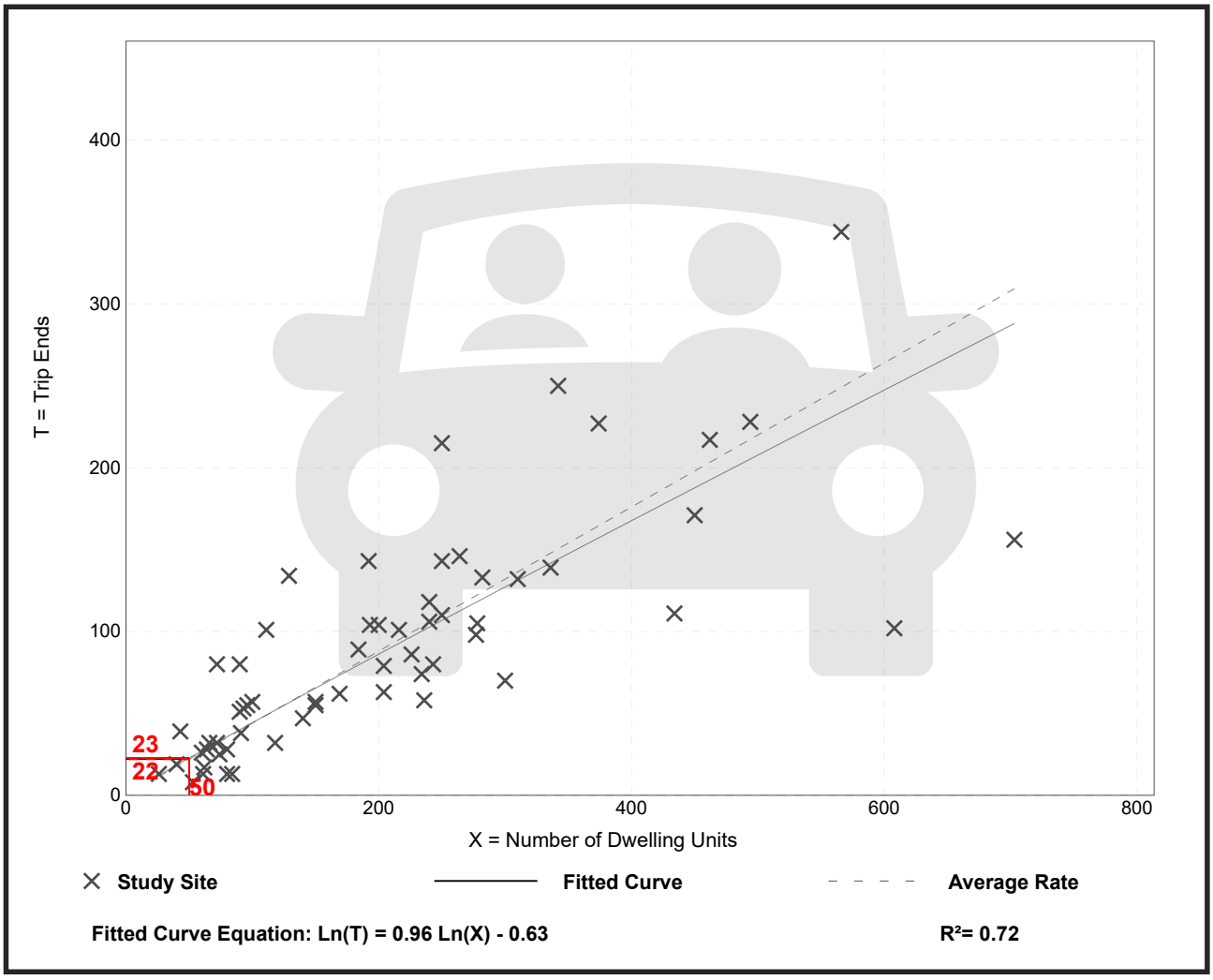
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 60
Avg. Num. of Dwelling Units: 208
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



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Multifamily Housing (Mid-Rise)
(221)

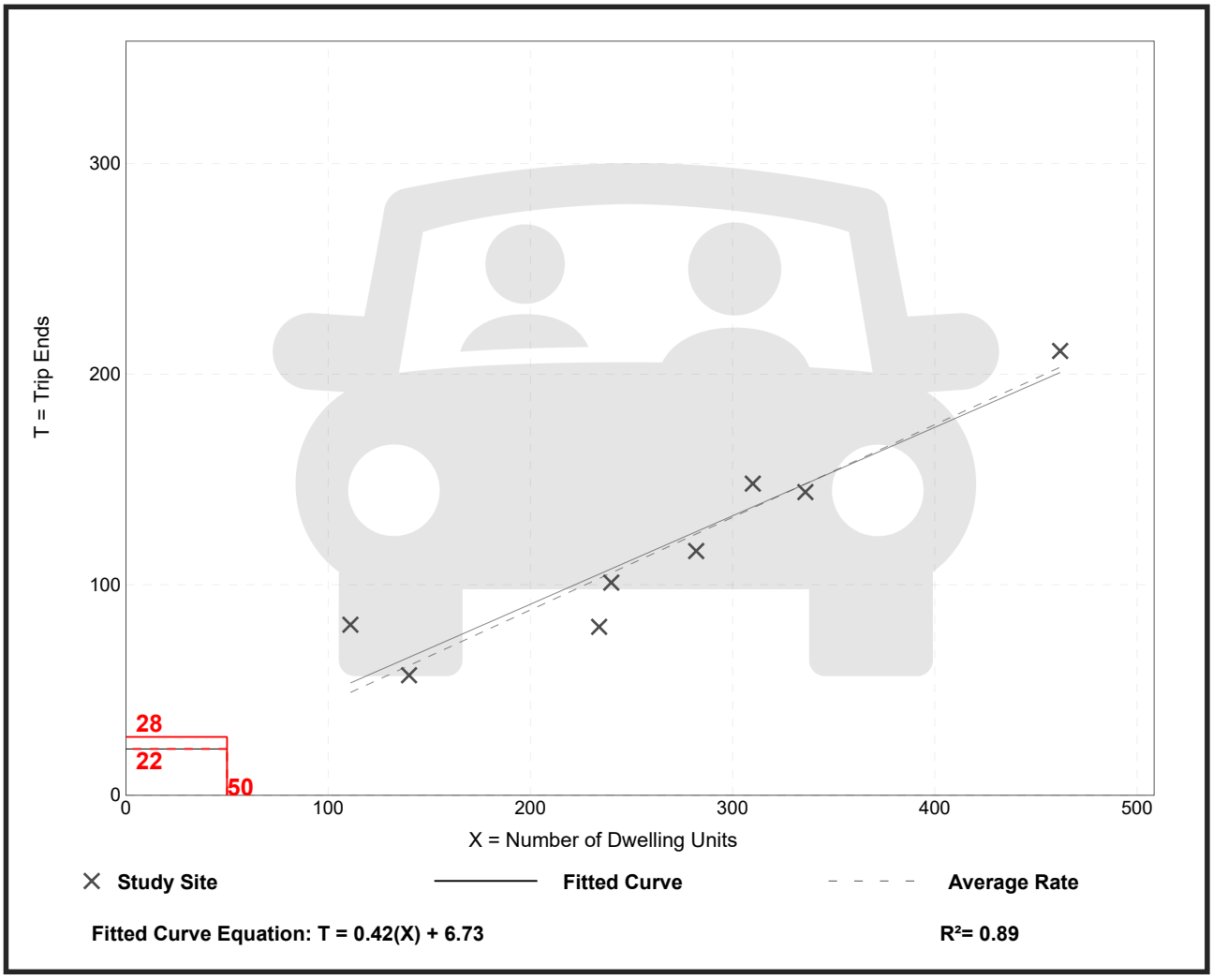
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 8
Avg. Num. of Dwelling Units: 264
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.34 - 0.73	0.08

Data Plot and Equation



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Land Use: 820
Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

Additional Data

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses).

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

The vehicle trips generated at a shopping center are based upon the total GLA of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area of the building.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:15 and 1:15 p.m., respectively.

The average numbers of person trips per vehicle trip at the 27 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.31 during Weekday, AM Peak Hour of Generator
- 1.43 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Source Numbers

105, 110, 154, 156, 159, 186, 190, 198, 199, 202, 204, 211, 213, 239, 251, 259, 260, 269, 294, 295, 299, 300, 301, 304, 305, 307, 308, 309, 310, 311, 314, 315, 316, 317, 319, 358, 365, 376, 385, 390, 400, 404, 414, 420, 423, 428, 437, 440, 442, 444, 446, 507, 562, 580, 598, 629, 658, 702, 715, 728, 868, 870, 871, 880, 899, 908, 912, 915, 926, 936, 944, 946, 960, 961, 962, 973, 974, 978

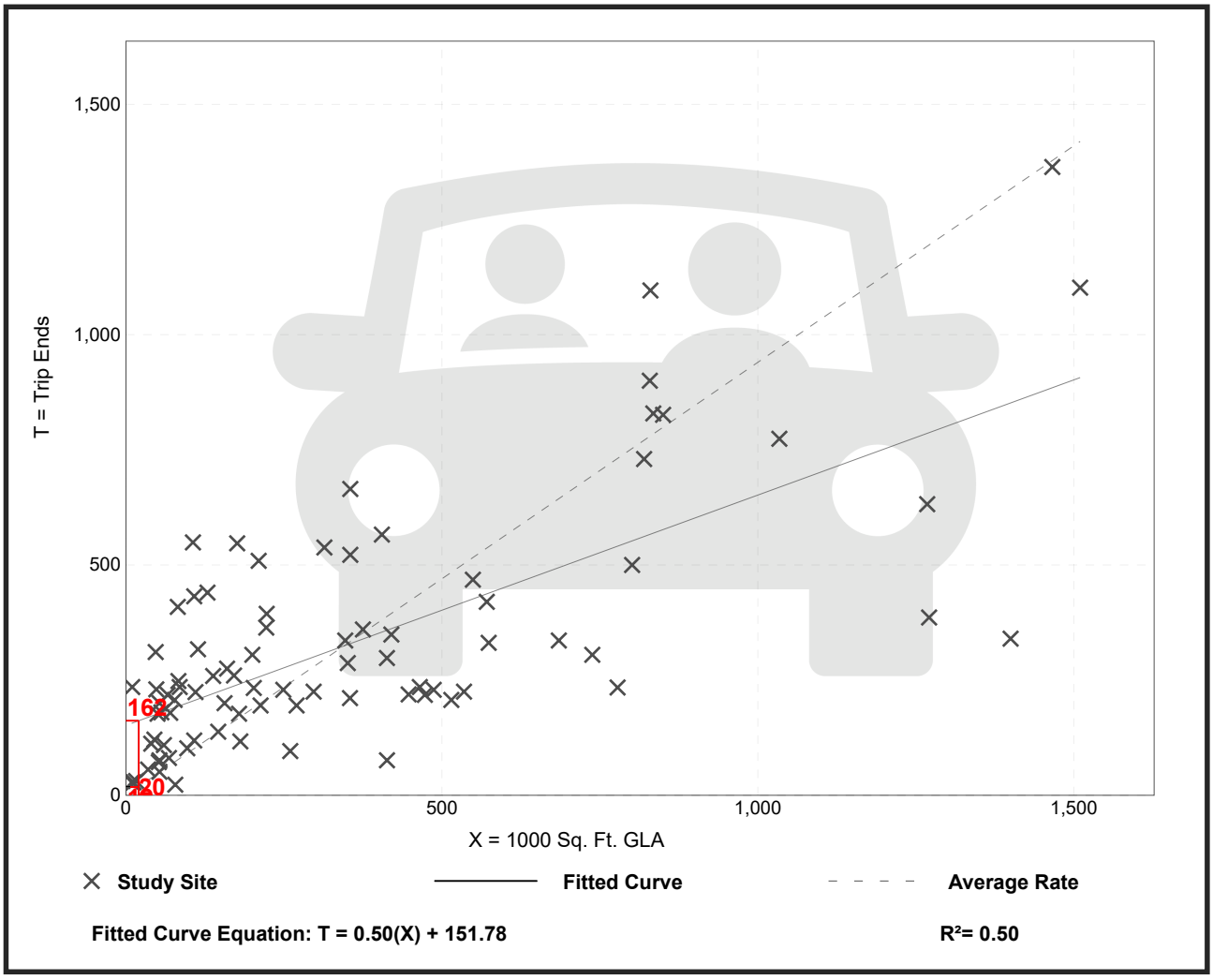
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 84
Avg. 1000 Sq. Ft. GLA: 351
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



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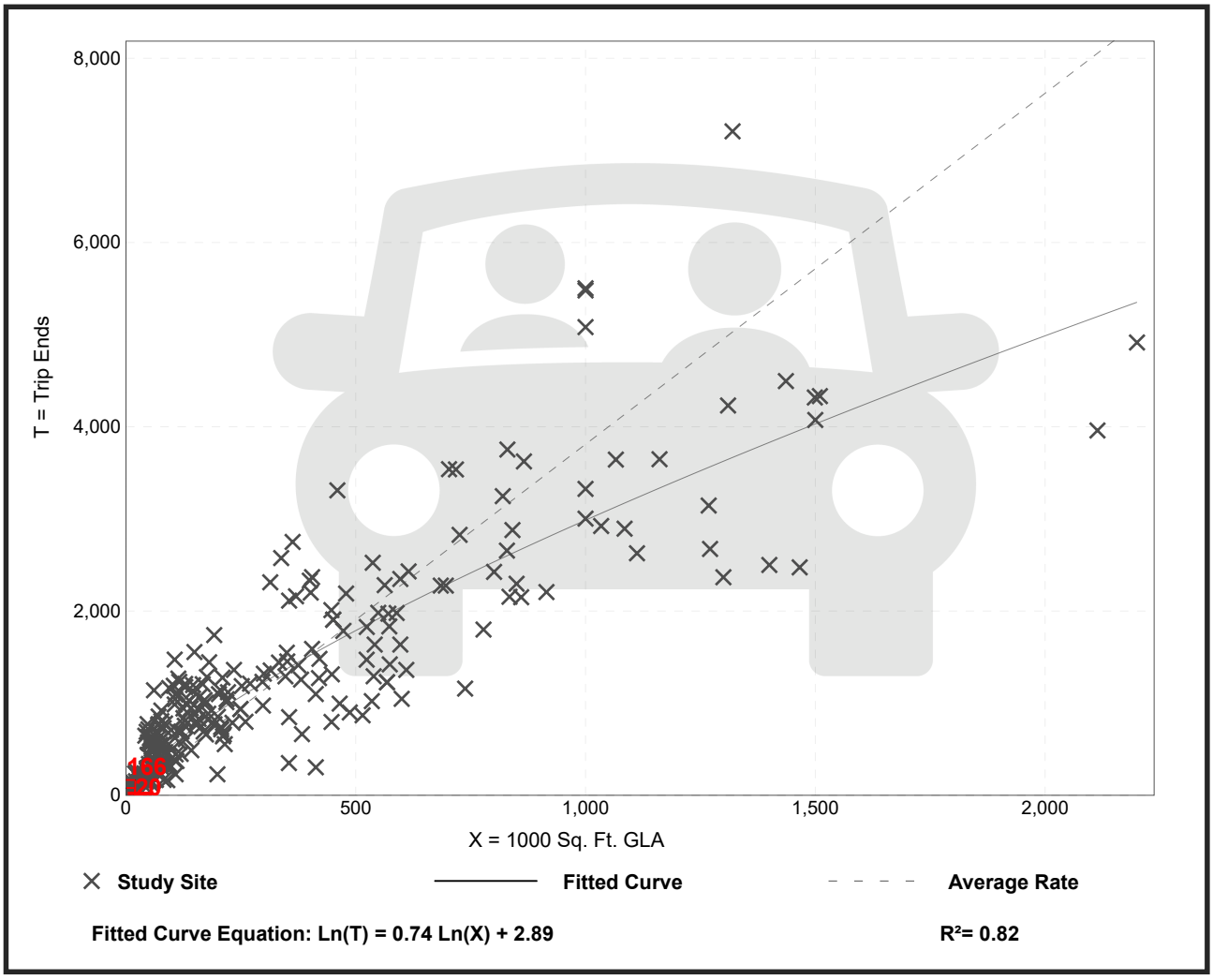
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 261
Avg. 1000 Sq. Ft. GLA: 327
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



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Shopping Center
(820)

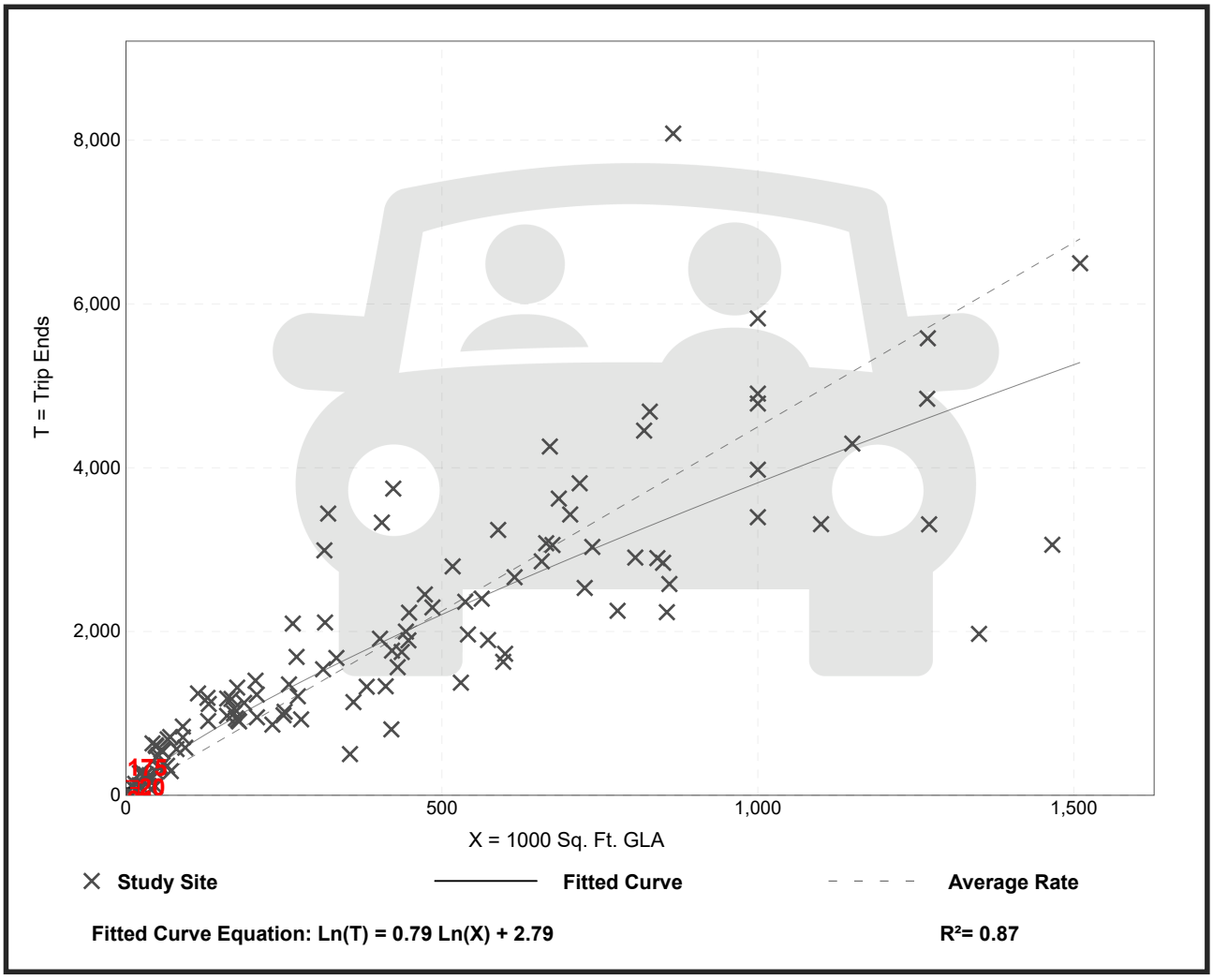
Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 119
Avg. 1000 Sq. Ft. GLA: 416
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.50	1.42 - 15.10	1.88

Data Plot and Equation



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Land Use: 932
High-Turnover (Sit-Down) Restaurant

Description

This land use consists of sit-down, full-service eating establishments with typical duration of stay of approximately one hour. This type of restaurant is usually moderately priced and frequently belongs to a restaurant chain. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not take reservations. Patrons commonly wait to be seated, are served by a waiter/waitress, order from menus and pay for their meal after they eat. Some facilities contained within this land use may also contain a bar area for serving food and alcoholic drinks. Fast casual restaurant (Land Use 930), quality restaurant (Land Use 931), fast-food restaurant without drive-through window (Land Use 933), fast-food restaurant with drive-through window (Land Use 934), and fast-food restaurant with drive-through window and no indoor seating (Land Use 935) are related uses.

Additional Data

Users should exercise caution when applying statistics during the AM peak periods, as the sites contained in the database for this land use may or may not be open for breakfast. In cases where it was confirmed that the sites were not open for breakfast, data for the AM peak hour of the adjacent street traffic were removed from the database.

The outdoor seating area is not included in the overall gross floor area. Therefore, the number of seats may be a more reliable independent variable on which to establish trip generation rates for facilities having significant outdoor seating.

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 38 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:00 and 1:00 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Florida, Georgia, Indiana, Kentucky, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Texas, Vermont, and Wisconsin.

Source Numbers

126, 269, 275, 280, 300, 301, 305, 338, 340, 341, 358, 384, 424, 432, 437, 438, 444, 507, 555, 577, 589, 617, 618, 728, 868, 884, 885, 903, 927, 944, 961, 962, 977

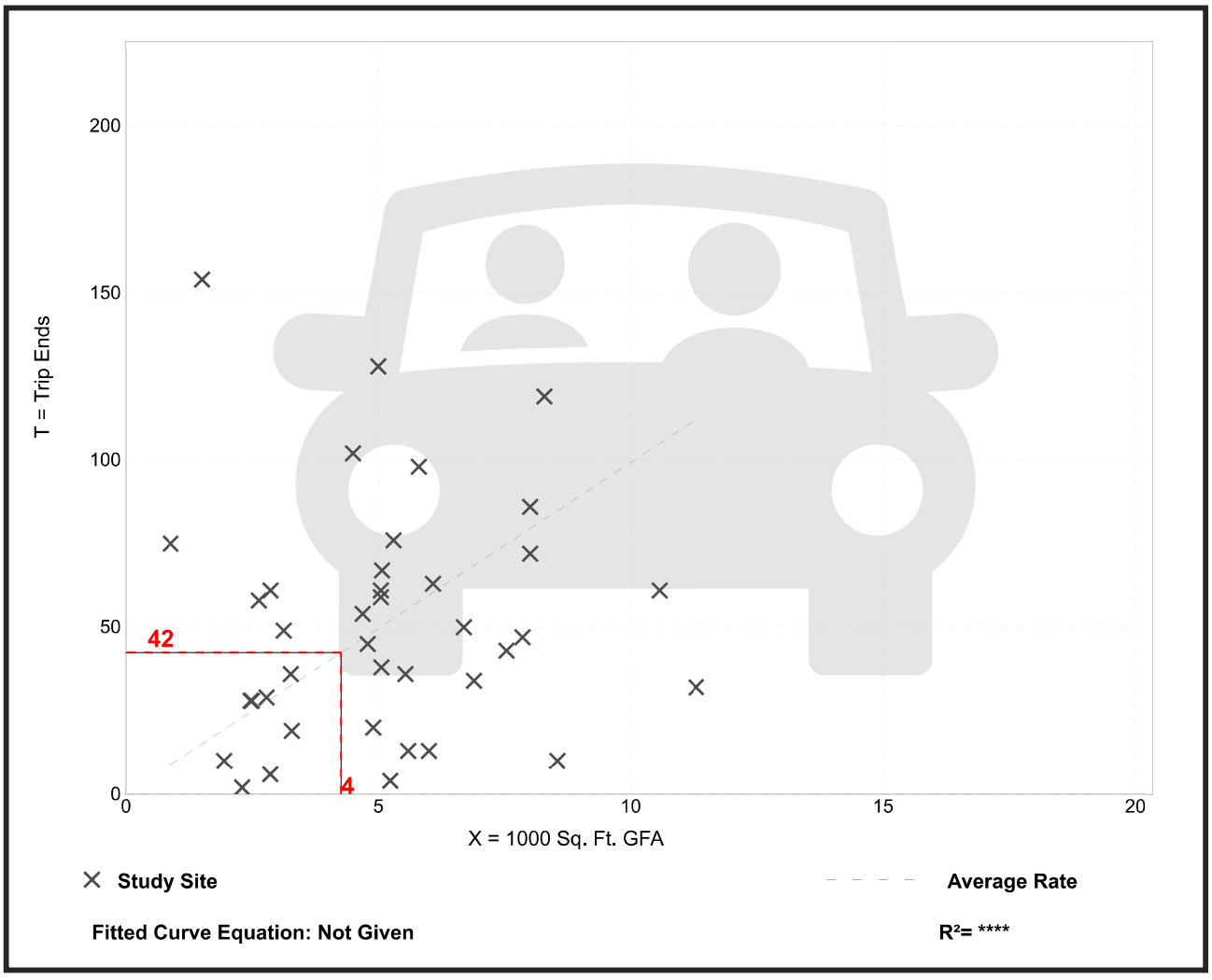
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 39
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.94	0.76 - 102.39	11.33

Data Plot and Equation



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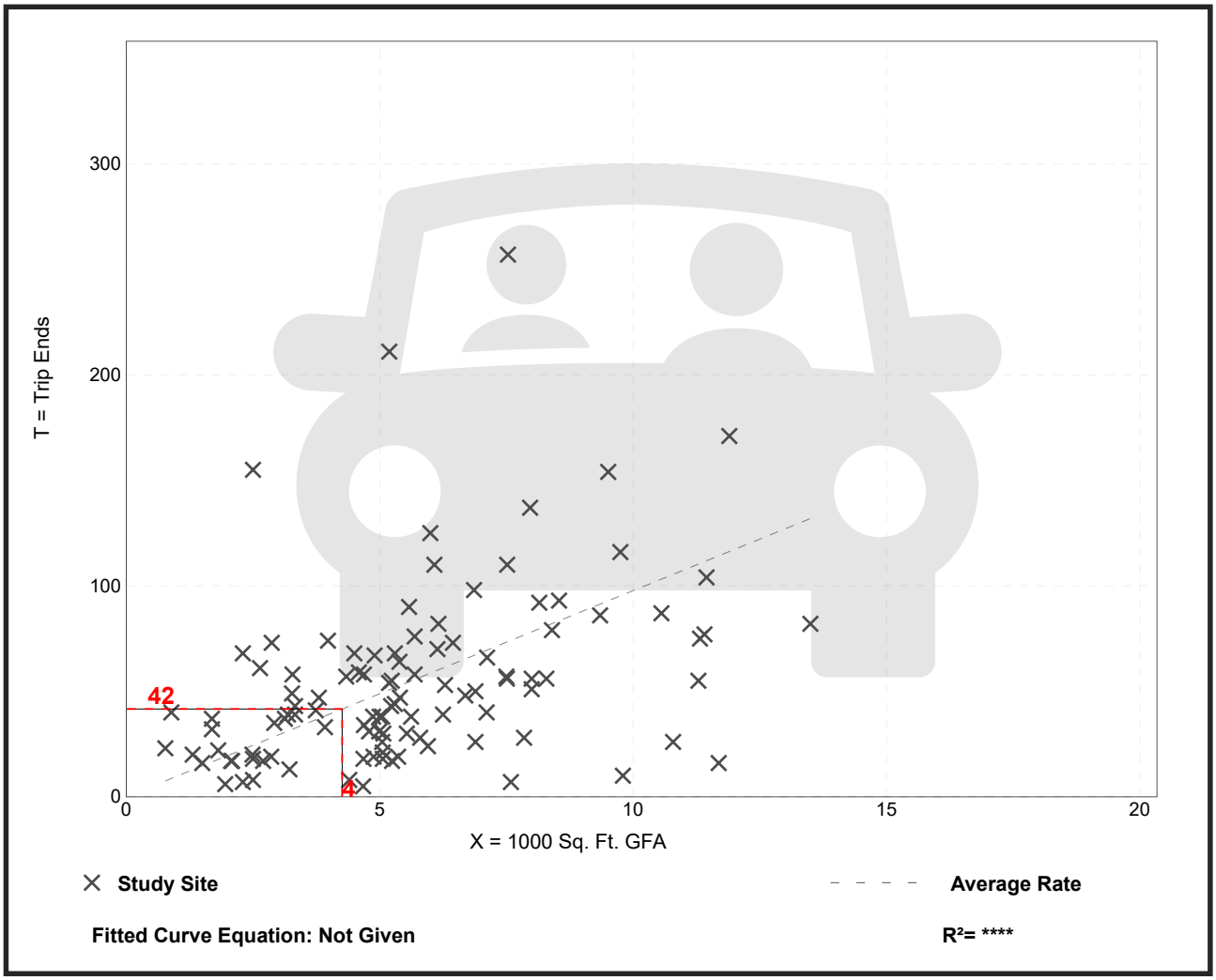
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 107
Avg. 1000 Sq. Ft. GFA: 6
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.77	0.92 - 62.00	7.37

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement ● Institute of Transportation Engineers

High-Turnover (Sit-Down) Restaurant
(932)

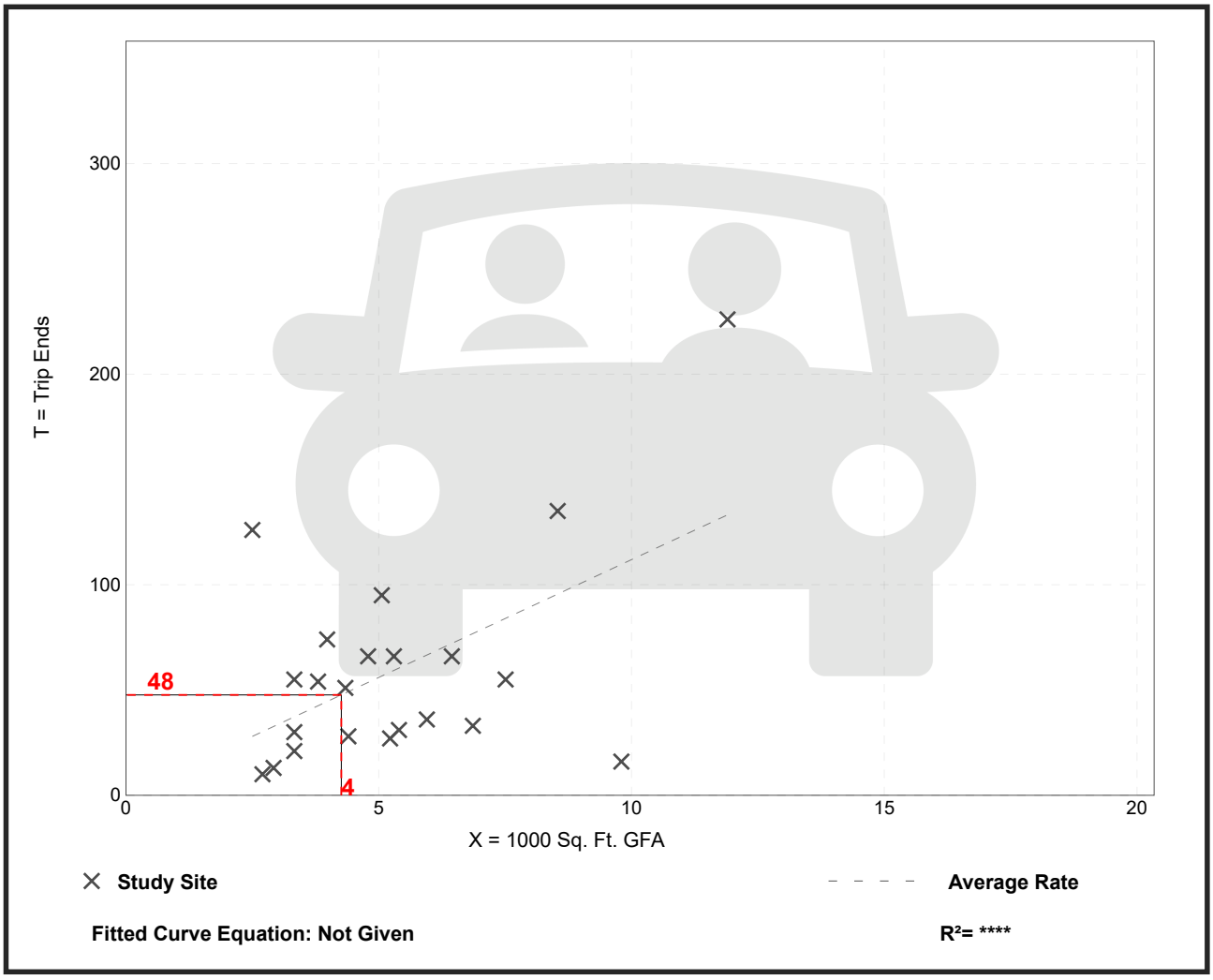
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

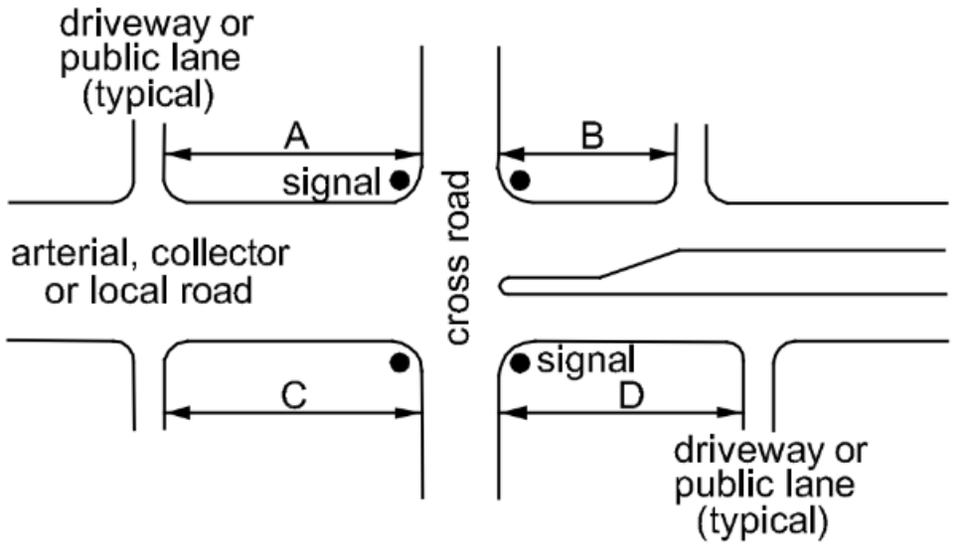
Average Rate	Range of Rates	Standard Deviation
11.19	1.63 - 50.40	8.30

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement ● Institute of Transportation Engineers

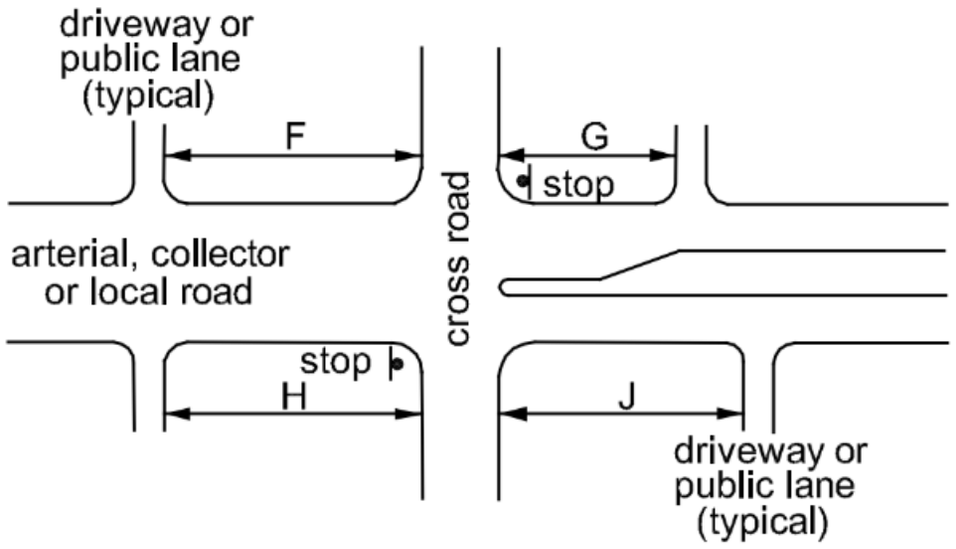
Attachment F
TAC GDGCR Excerpts



item	min. clearance, m		
	arterial	collector [b]	local [d]
A	70 [c]	55	15
B	# [a]	25	15
C	70	55	15
D	70 [c]	55	15

Notes: a. Distance (#) positions driveway or public lane in advance of the left turn storage length (min.) plus bay taper (des.).
b. Lesser values reflect lower volumes and reduces level of service on collectors and locals.
c. Reduced distances feasible if auxiliary lane implemented, see Section 8.5
d. Values based on operating speed of 50km/h, higher values desirable for higher speeds or may be warranted by traffic conditions.

signals at the cross road



item	min. clearance, m		
	arterial	collector [b]	local [b]
F	35	20	15
G	# [a]	25	15
H	25	25	15
J	35	20	15

Notes: a. Distance (#) positions driveway or public lane in advance of the left turn storage length (min.) plus bay taper (des.).
b. Lesser values reflect lower volumes and reduces level of service on collectors and locals.

stop control at the cross road

Figure 8.8.2: Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections

Inadequate corner clearance between accesses and signalized intersections along a major road, such as a major arterial, can create serious operational problems including:

Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

Sight distance design for left turns at divided-highway intersections should consider multiple design vehicles and median width. If the design vehicle used to determine sight distance for a divided-highway intersection is larger than a passenger car, then sight distance for left turns will need to be checked for that selected design vehicle and for smaller design vehicles as well. If the divided-highway median is wide enough to store the design vehicle with a clearance to the through lanes of approximately 1 m at both ends of the vehicle, no separate analysis for the departure sight triangle for left turns is needed on the minor-road approach for the near roadway to the left. In most cases, the departure sight triangle for right turns (case B2) will provide sufficient sight distance for a passenger car to cross the near roadway to reach the median. Possible exceptions are addressed in the discussion of case B3.

Attachment G
Town of Collingwood Design Standards Excerpts

Corporation of the Town of Collingwood

Development Standards

July 2007

ROAD DESIGN STANDARDS							
	Road Classification						
	Local Residential		Collector			Arterial	
Design Element	urban	rural	urban	rural	industrial		
ROW	20	20	26	26	30	26	
Design Speed	50	60	60	70	70	80	
Posted Speed	40	50	50	60	60	60	
	Design Speed (km/h)						
Design Element	40	50	60	70	80	90	100
stopping sight distance (SSD)	45	65	85	110	135	160	185
horizontal curve radius (m)	55	90	130	190	250	340	420
maximum grade (%)							
rural	-	12	6-12	6-12	6-8	6-8	6-7
urban	8-12	8-12	6-12	6-12	6-8	-	-
minimum grade	0.5	0.5	0.5	0.5	0.5	0.5	0.5
vertical curve - minimum 'k'							
crest curve	4	8	15	25	35	50	70
sag curve	8	12	18	25	30	40	45
sag curve (illuminated road)	4	5	8	12	15	20	25
INTERSECTION DESIGN STANDARDS							
	Intersecting Roads						
Design Element	local - local	local - collector	collector - collector	collector - arterial	arterial - arterial		
angle of intersection (degrees)	70-110	70-110	70-110	80-100	80-100		
minimum curb radius (m)	5	7.5	10	15	18		
minimum corner rounding (m)	5	5	-	-	-		
minimum daylight triangle (m)	3 x 3	5 x 5	10 x 10	15 x 15	15 x 15		
minimum grade through intersection (%)							
major road	0.15	0.15	0.15	0.15	0.15		
minor road	0.5	0.5	0.5	0.5	0.5		
maximum grade through intersection (%)							
major road	3	3	3	3	3		
minor road	2	2	2	2	2		
minimum tangent on approach - from centre of intersection (m)							
major road	40	45	45	75	75		
minor road	40	40	45	45	75		
NOTES							
1. Horizontal curves not required for deflections less than 0 degrees 30 minutes							
2. Vertical curves not required for changes in alignment of 0.5% or less							
3. Increase curb radius to 18.0 metres in industrial areas or if high right turning truck volumes							

NO.	REVISION	APR'D	DATE
1	REVISED RURAL COLLECTOR ROAD WIDTH	EDH	APR 07

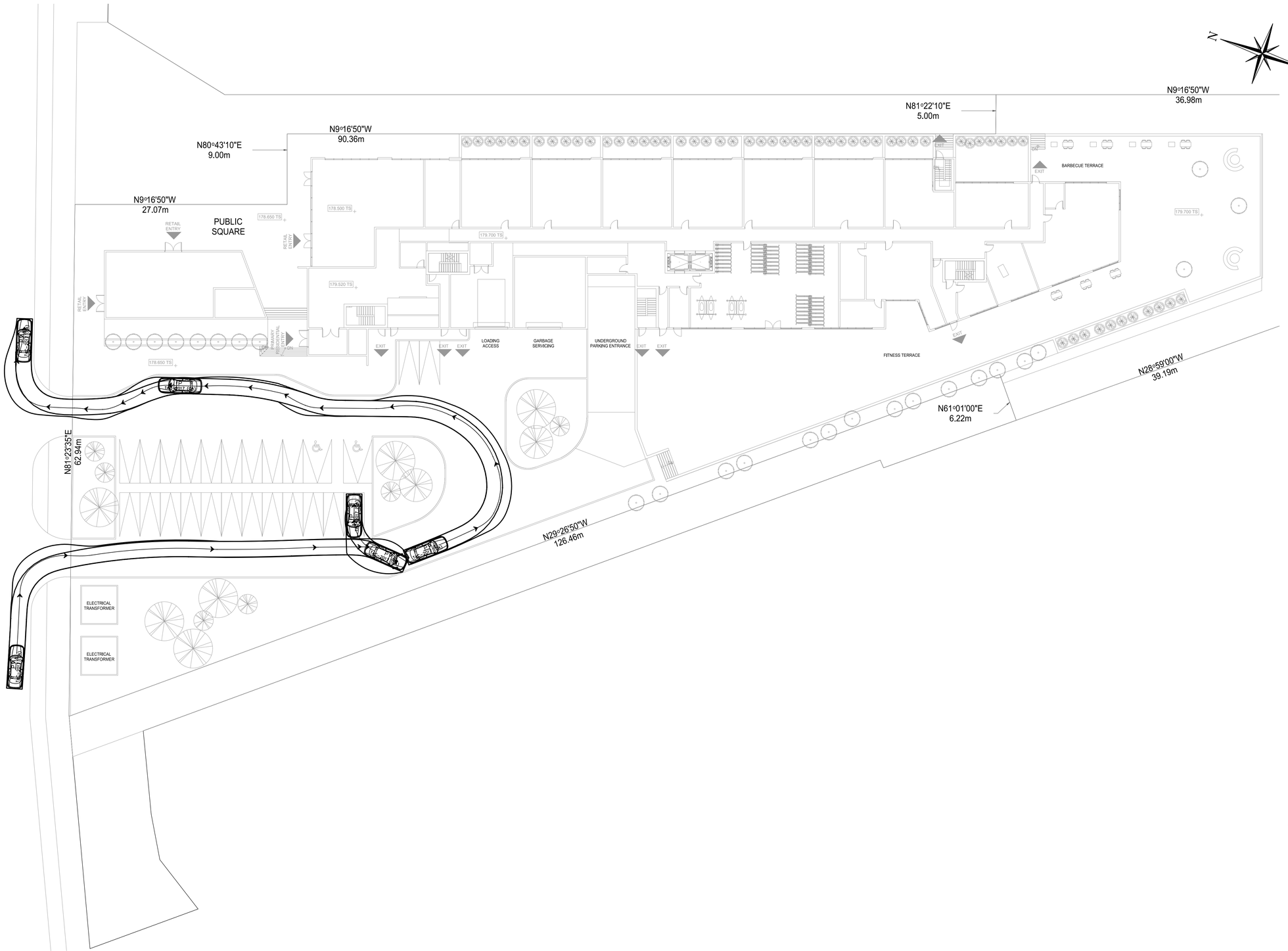
TOWN OF COLLINGWOOD

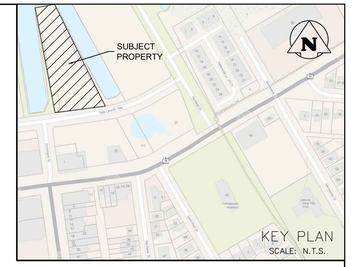
GEOMETRIC DESIGN STANDARDS FOR ROADS

APR'D: EDH	DATE: JUN/03
DRAWN:	SCALE: N/A

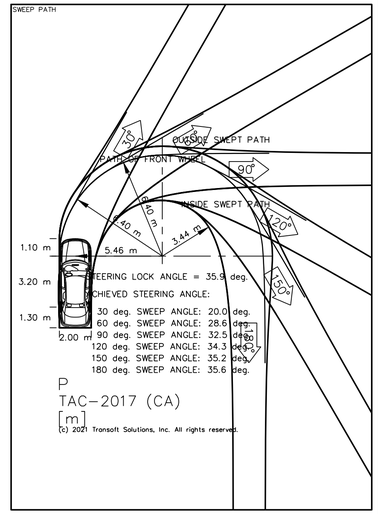
STD. No. 100

Attachment H
Vehicle Manoeuvring Diagrams

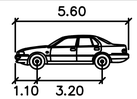




FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION



VEHICLE PROFILE



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR INTERNAL REVIEW	JUL/28/2021
1	ISSUED FOR FIRST SUBMISSION	AUG/18/2021

Project

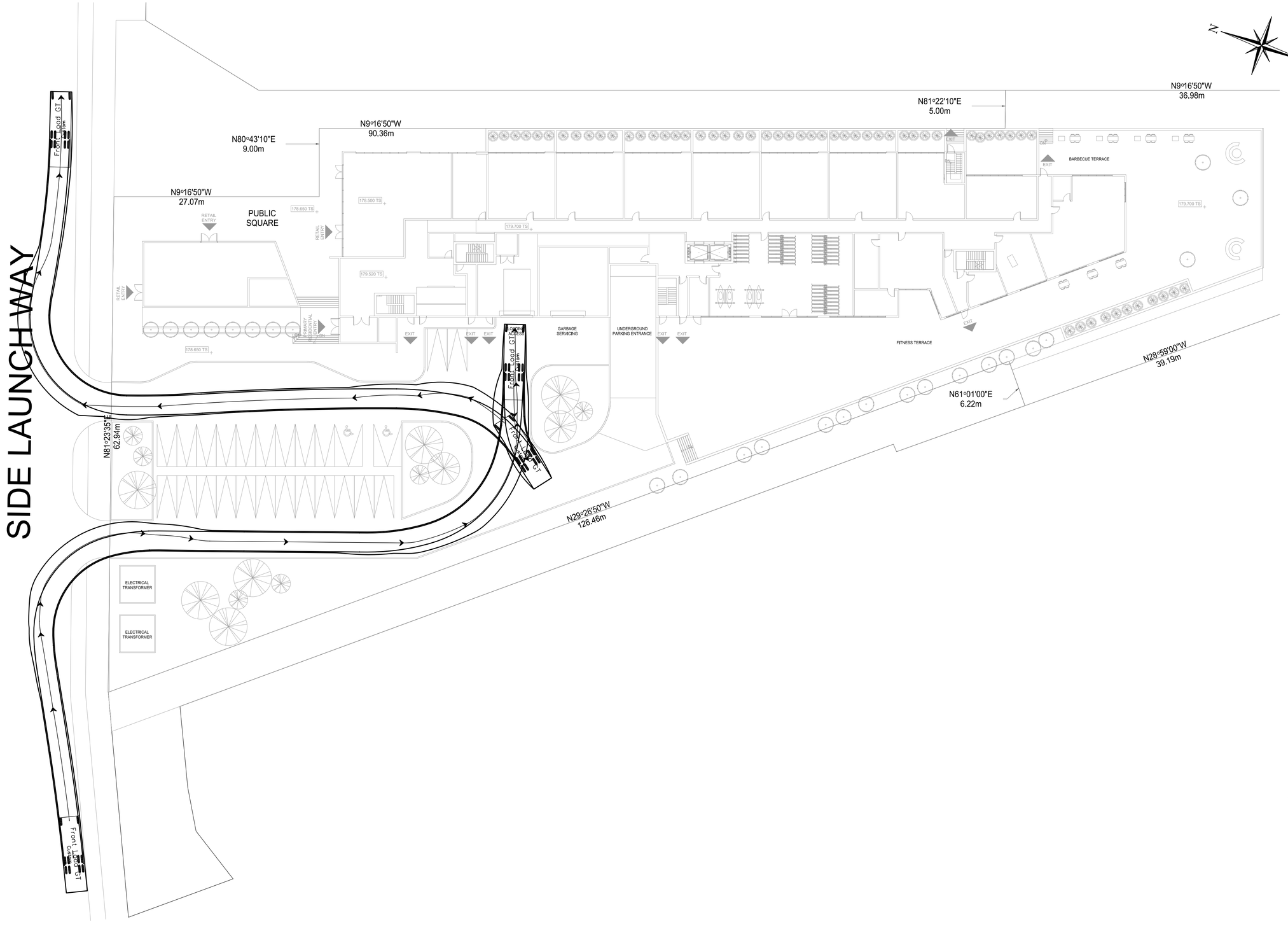
THE SHIPYARD DEVELOPMENT BLOCK 6
TOWN OF COLLINGWOOD

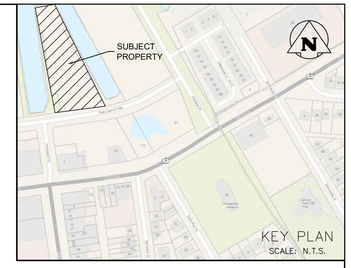
Drawing

PASSENGER CAR
TURNING ANALYSIS

CROZIER CONSULTING ENGINEERS
Admiral Building
1 First Street, Suite 200
Collingwood, ON, L9Y 1A1
705-446-3510 T
705-446-3520 F
www.cfcrozier.ca
info@cfcrozier.ca

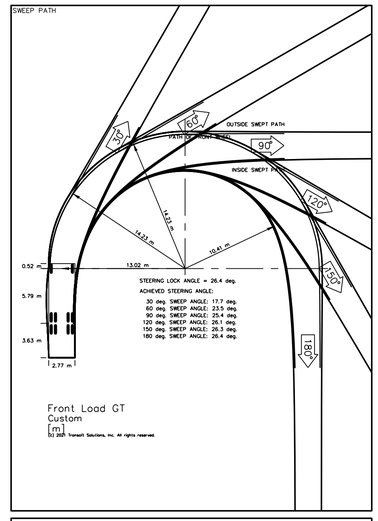
Drawn By	Design By	Project	
S.K.			0103-5778
Check By	Check By	Scale	Drawing
K.H.		1:250	T300





FOR REVIEW

NOT TO BE USED FOR CONSTRUCTION



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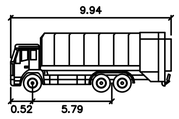

Front Load GT

	meters
Width	: 2.77
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 26.4

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR INTERNAL REVIEW	JUL/28/2021
1	ISSUED FOR FIRST SUBMISSION	AUG/18/2021

Project

THE SHIPYARD DEVELOPMENT BLOCK 6
TOWN OF COLLINGWOOD

Drawing

GARBAGE TRUCK
TURNING ANALYSIS

CROZIER
CONSULTING ENGINEERS
Admiral Building
1 First Street, Suite 200
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705-446-3520 F
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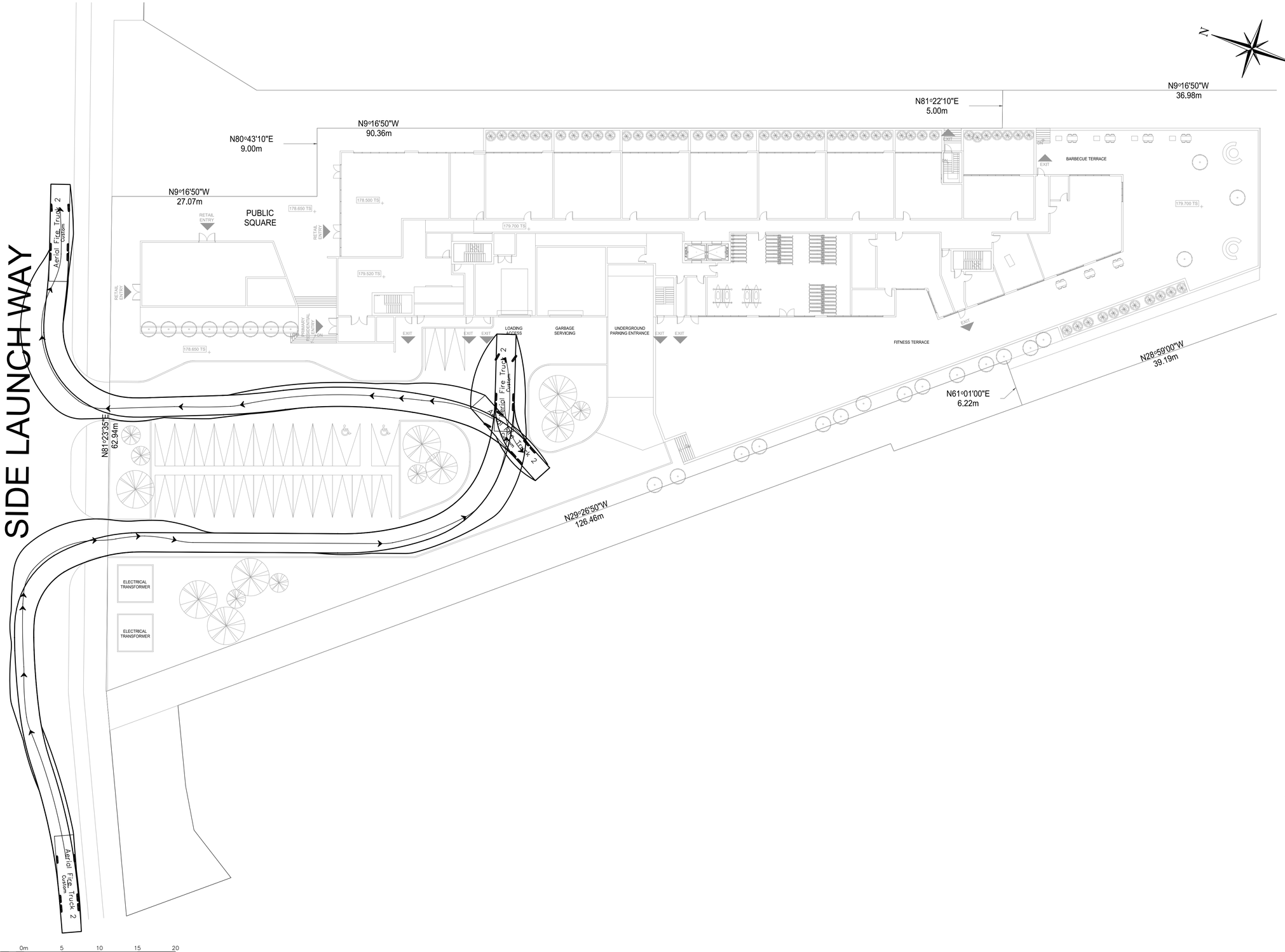
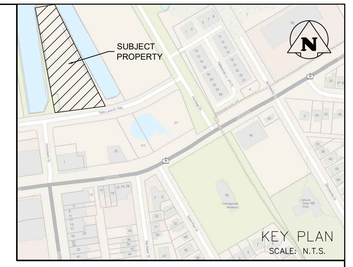
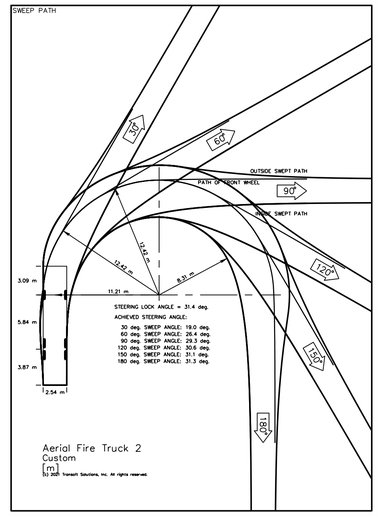
Drawn By	Design By	Project	
S.K.			0103-5778
Check By	Check By	Scale	Drawing
K.H.		1:250	T301

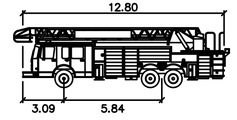




FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION



VEHICLE PROFILE



Aerial Fire Truck 2

	meters
Width	: 2.54
Track	: 2.54
Lock to Lock Time	: 6.0
Steering Angle	: 31.4

No.	ISSUE	DATE: MM/DD/YYYY
0	ISSUED FOR INTERNAL REVIEW	JUL/28/2021
1	ISSUED FOR FIRST SUBMISSION	AUG/18/2021

Project
THE SHIPYARD DEVELOPMENT BLOCK 6
TOWN OF COLLINGWOOD

Drawing
FIRE TRUCK
TURNING ANALYSIS

CROZIER CONSULTING ENGINEERS
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705-446-3520 F
www.cfcrozier.ca
info@cfcrozier.ca

Drawn By	Design By	Project	
S.K.			0103-5778
Check By	Check By	Scale	Drawing
K.H.		1:250	T302

Attachment I
Collingwood Trail Map

Trail Features Signs

1. Keith Family Dairy
2. Collingwood Meat Company
3. Manufacturing History
4. North-west Ward School
5. Collingwood Milling Company
6. Smart Bros. Ltd.
7. Wetlands
8. Birds
9. Water/Fish
10. Historic Swim
11. Walk of History
12. Shipbuilders' park
13. Northwest Mounted Police
14. Area History
15. Earlier Residents
16. Railway Freight Yard
17. Sewer and Water History
18. Central Park
19. Gloria Whelan Parkette
20. Shannon's Bridge
21. Fish Hatchery
22. Harbour Plaque
23. Bryan Manufacturing
24. D.G. Cooper Company Ltd.
25. Story of Collingwood: 'The Setting'
26. 1858–1908
27. 1908–1958
28. 1958–2008
29. Lady Elgin Locomotive
30. Cranberry Golf Clubhouse
31. Smart Bros. Ltd.
32. Crone Bros. Brickworks
33. Glacial Erratic

Legend

- Stone-dusted trail
- Hard-surface trail
- Nature trail
- Designated bicycle lane
- On-road bike route
- Heather Pathway
- Groomed Snowmobile trail

- Birding
- Playground
- Parking
- Fishing
- Labyrinth
- GPS marker
- Arena
- Dog Park
- Fire Station
- Scenic lookout
- Park
- Crosswalk
- Snowshoeing
- Cross country skiing
- Amphitheatre
- Bike Repair Stn.
- Public Washroom
- Tim Hortons
- Centennial Aquatic Centre

Attachment J
Collingwood Transit Map

Wasaga Beach Route 1 West

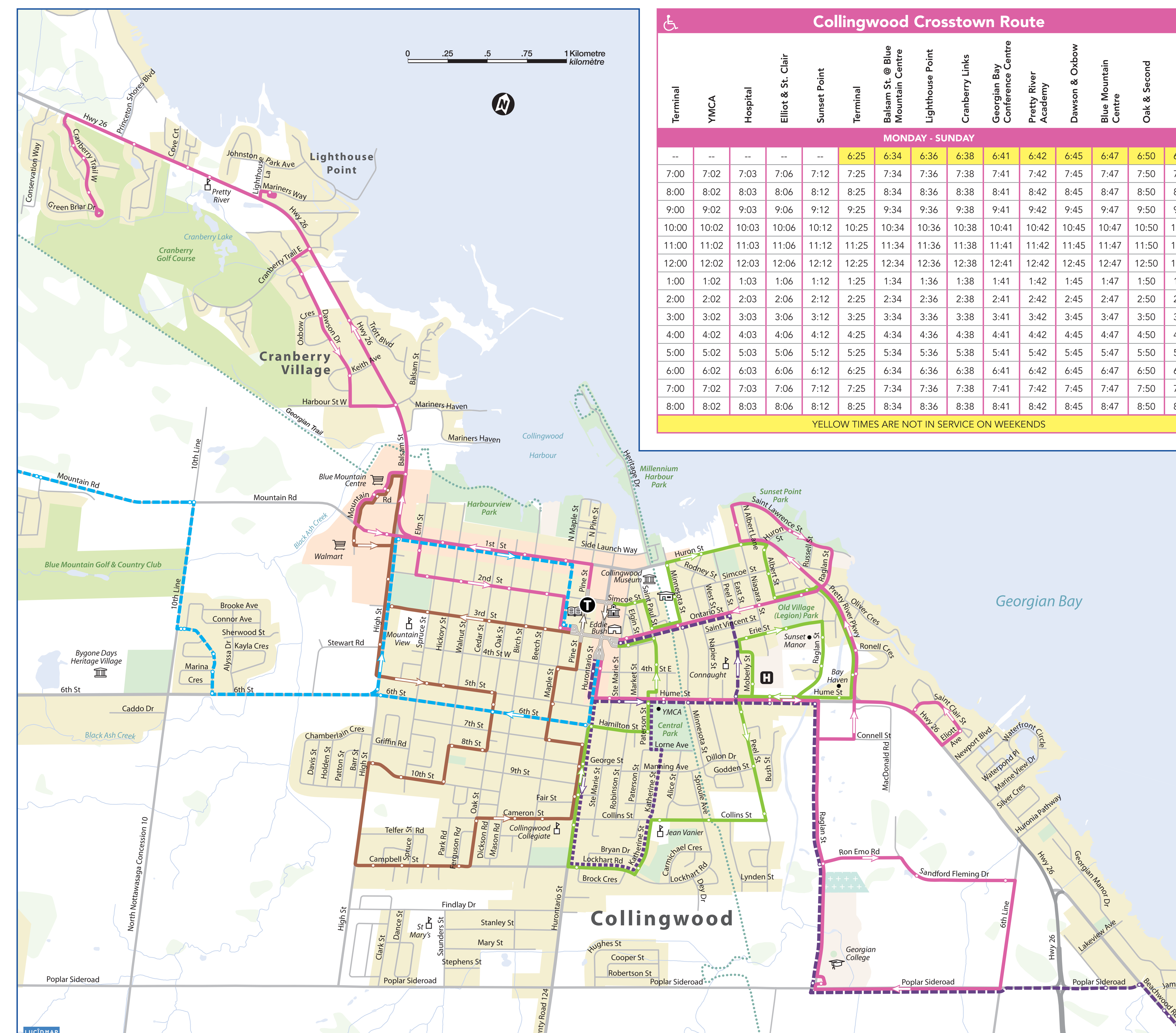
Archer Road	Deerbrook Drive	Wally Drive	Walmart Supercentre (Transfer)	Nancy Island Welcome Centre	18th Street	Riverbend Plaza	Macs Convenience Store	Knox Road West	Meadowlark Boulevard	Real Canadian Superstore (Transfer)	St. Noel Elementary School	Lyons Court
MONDAY - SUNDAY												
7:15	7:20	7:25	7:30	7:35	7:38	7:40	7:41	7:42	7:44	7:45	7:53	8:00
8:45	8:50	8:55	9:00	9:05	9:08	9:10	9:11	9:12	9:14	9:15	9:23	9:30
10:15	10:20	10:25	10:30	10:35	10:38	10:40	10:41	10:42	10:44	10:45	10:53	11:00
11:45	11:50	11:55	12:00	12:05	12:08	12:10	12:11	12:12	12:14	12:15	12:23	12:30
1:15	1:20	1:25	1:30	1:35	1:38	1:40	1:41	1:42	1:44	1:45	1:53	2:00
2:45	2:50	2:55	3:00	3:05	3:08	3:10	3:11	3:12	3:14	3:15	3:23	3:30
4:15	4:20	4:25	4:30	4:35	4:38	4:40	4:41	4:42	4:44	4:45	4:53	5:00
5:45	5:50	5:55	6:00	6:05	6:08	6:10	6:11	6:12	6:14	6:15	6:23	6:30
7:15	7:20	7:25	7:30	7:35	7:38	7:40	7:41	7:42	7:44	7:45	7:53	8:00

Wasaga Beach Route 1 East

Lyons Court	St. Noel Elementary School	Real Canadian Superstore (Transfer)	Meadowlark Boulevard	Sunnidale Road	Mac's Milk (Mosley Street)	Riverbend Plaza	18th Street	Nancy Island Welcome Centre	Walmart Supercentre (Transfer)	Mary Street	Archer Road
MONDAY - SUNDAY											
8:00	8:02	8:05	8:07	8:10	8:11	8:15	8:18	8:20	8:25	8:34	8:45
9:30	9:32	9:35	9:37	9:40	9:41	9:45	9:48	9:50	9:55	10:04	10:15
11:00	11:02	11:05	11:07	11:10	11:11	11:15	11:18	11:20	11:25	11:34	11:45
12:30	12:32	12:35	12:37	12:40	12:41	12:45	12:48	12:50	12:55	1:04	1:15
2:00	2:02	2:05	2:07	2:10	2:11	2:15	2:18	2:20	2:25	2:34	2:45
3:30	3:32	3:35	3:37	3:40	3:41	3:45	3:48	3:50	3:55	4:04	4:15
5:00	5:02	5:05	5:07	5:10	5:11	5:15	5:18	5:20	5:25	5:34	5:45
6:30	6:32	6:35	6:37	6:40	6:41	6:45	6:48	6:50	6:55	7:04	7:15
8:00	8:02	8:05	8:07	8:10	8:11	8:15	8:18	8:20	8:25	8:34	8:45

Legend

- Collingwood Crosstown Route
- Collingwood East Route
- Collingwood West Route
- Collingwood Wasaga Beach Link
- Collingwood Wasaga Beach Link 5-6pm
- Blue Mountain Transit Link
- Wasaga Beach Route 1
- Wasaga Beach Route 2
- Clearview Stayner Route
- Clearview Wasaga Beach Link
- Multiple Routes
- Transit Hub
- Bus Stops
- Arena
- Community Centre
- Hospital
- Library
- Municipal Building
- Museum
- Point of Interest
- School
- Shopping Centre



Collingwood Crosstown Route

Terminal	YMCA	Hospital	Elliot & St. Clair	Sunset Point	Terminal	Balsam St. @ Blue Mountain Centre	Lighthouse Point	Cranberry Links	Georgian Bay Conference Centre	Pretty River Academy	Dawson & Oxbow	Blue Mountain Centre	Oak & Second	Terminal
MONDAY - SUNDAY														
--	--	--	--	--	6:25	6:34	6:36	6:38	6:41	6:42	6:45	6:47	6:50	6:55
7:00	7:02	7:03	7:06	7:12	7:25	7:34	7:36	7:38	7:41	7:42	7:45	7:47	7:50	7:55
8:00	8:02	8:03	8:06	8:12	8:25	8:34	8:36	8:38	8:41	8:42	8:45	8:47	8:50	8:55
9:00	9:02	9:03	9:06	9:12	9:25	9:34	9:36	9:38	9:41	9:42	9:45	9:47	9:50	9:55
10:00	10:02	10:03	10:06	10:12	10:25	10:34	10:36	10:38	10:41	10:42	10:45	10:47	10:50	10:55
11:00	11:02	11:03	11:06	11:12	11:25	11:34	11:36	11:38	11:41	11:42	11:45	11:47	11:50	11:55
12:00	12:02	12:03	12:06	12:12	12:25	12:34	12:36	12:38	12:41	12:42	12:45	12:47	12:50	12:55
1:00	1:02	1:03	1:06	1:12	1:25	1:34	1:36	1:38	1:41	1:42	1:45	1:47	1:50	1:55
2:00	2:02	2:03	2:06	2:12	2:25	2:34	2:36	2:38	2:41	2:42	2:45	2:47	2:50	2:55
3:00	3:02	3:03	3:06	3:12	3:25	3:34	3:36	3:38	3:41	3:42	3:45	3:47	3:50	3:55
4:00	4:02	4:03	4:06	4:12	4:25	4:34	4:36	4:38	4:41	4:42	4:45	4:47	4:50	4:55
5:00	5:02	5:03	5:06	5:12	5:25	5:34	5:36	5:38	5:41	5:42	5:45	5:47	5:50	5:55
6:00	6:02	6:03	6:06	6:12	6:25	6:34	6:36	6:38	6:41	6:42	6:45	6:47	6:50	6:55
7:00	7:02	7:03	7:06	7:12	7:25	7:34	7:36	7:38	7:41	7:42	7:45	7:47	7:50	7:55
8:00	8:02	8:03	8:06	8:12	8:25	8:34	8:36	8:38	8:41	8:42	8:45	8:47	8:50	8:55
YELLOW TIMES ARE NOT IN SERVICE ON WEEKENDS														

SOUTH GEORGIAN BAY REGIONAL TRANSIT

RIDERS GUIDE

Effective January 2019

Blue Mountain - Clearview - Collingwood - Wasaga Beach

collingwood.ca/transit 705.446.1196

Wasaga Beach Route 2 West

Wasaga Stars Arena	Walmart Supercentre	Blueberry Trail	Lauderdale Boulevard	Riverbend Plaza	Rec Plex	Real Canadian Superstore (Transfer)	57th Street	Lorna Dune
MONDAY - SUNDAY								
6:55	7:05	7:08	7:11	7:14	7:18	7:20	7:22	7:25
7:55	8:05	8:08	8:11	8:14	8:18	8:20	8:22	8:25
8:55	9:05	9:08	9:11	9:14	9:18	9:20	9:22	9:25
9:55	10:05	10:08	10:11	10:14	10:18	10:20	10:22	10:25
10:55	11:05	11:08	11:11	11:14	11:18	11:20	11:22	11:25
11:55	12:05	12:08	12:11	12:14	12:18	12:20	12:22	12:25
12:55	1:05	1:08	1:11	1:14	1:18	1:20	1:22	1:25
1:55	2:05	2:08	2:11	2:14	2:18	2:20	2:22	2:25
2:55	3:05	3:08	3:11	3:14	3:18	3:20	3:22	3:25
3:55	4:05	4:08	4:11	4:14	4:18	4:20	4:22	4:25
4:55	5:05	5:08	5:11	5:14	5:18	5:20	5:22	5:25
5:55	6:05	6:08	6:11	6:14	6:18	6:20	6:22	6:25
6:55	7:05	7:08	7:11	7:14	7:18	7:20	7:22	7:25
7:55	8:05	8:08	8:11	8:14	8:18	8:20	8:22	8:25

Wasaga Beach Route 2 East

Lorna Dune	54th Street	Real Canadian Superstore (Transfer)	Rec Plex	Riverbend Plaza	Lauderdale Boulevard	Blueberry Trail	Foodland	Pioneer Gas Station
MONDAY - SUNDAY								
7:30	7:32	7:35	7:38	7:40	7:43	7:46	7:49	7:55
8:30	8:32	8:35	8:38	8:40	8:43	8:46	8:49	8:55
9:30	9:32	9:35	9:38	9:40	9:43	9:46	9:49	9:55
10:30	10:32	10:35	10:38	10:40	10:43	10:46	10:49	10:55
11:30	11:32	11:35	11:38	11:40	11:43	11:46	11:49	11:55
12:30	12:32	12:35	12:38	12:40	12:43	12:46	12:49	12:55
1:30	1:32	1:35	1:38	1:40	1:43	1:46	1:49	1:55
2:30	2:32	2:35	2:38	2:40	2:43	2:46	2:49	2:55
3:30	3:32	3:35	3:38	3:40	3:43	3:46	3:49	3:55
4:30	4:32	4:35	4:38	4:40	4:43	4:46	4:49	4:55
5:30	5:32	5:35	5:38	5:40	5:43	5:46	5:49	5:55
6:30	6:32	6:35	6:38	6:40	6:43	6:46	6:49	6:55
7:30	7:32	7:35	7:38	7:40	7:43	7:46	7:49	7:55
8:30	8:32	8:35	8:38	8:40	8:43	8:46	8:49	8:55

Collingwood West Route

Terminal	Blue Mountain Centre	Wal-Mart	Eighth & Oak	Tenth & High	Oak & Cameron	Collingwood Collegiate	Terminal
MONDAY - FRIDAY							
6:30	6:36	6:38	6:43	6:45	6:49	6:51	6:55
7:00	7:06	7:08	7:13	7:15	7:19	7:21	7:25
7:30	7:36	7:38	7:43	7:45	7:49	7:51	7:55
8:00	8:06	8:08	8:13	8:15	8:19	8:21	8:25
8:30	8:36	8:38	8:43	8:45	8:49	8:51	8:55
9:00	9:36	9:08	9:13	9:15	9:19	9:21	9:25
10:00	10:06	10:08	10:13	10:15	10:19	10:21	10:25
11:00	11:06	11:08	11:13	11:15	11:19	11:21	11:25
12:00	12:06	12:08	12:13	12:15	12:19	12:21	12:25
1:00	1:06	1:08	1:13	1:15	1:19	1:21	1:25
2:00	2:06	2:08	2:13	2:15	2:19	2:21	2:25
2:30	2:36	2:38	2:43	2:45	2:49	2:51	2:55
3:00	3:06	3:08	3:13	3:15	3:19	3:21	3:25
...and every 30 minutes to...							
6:00	6:06	6:08	6:13	6:15	6:19	6:21	6:25
7:00	7:06	7:08	7:13	7:15	7:19	7:21	7:25
8:00	8:06	8:08	8:13	8:15	8:19	8:21	8:25
SATURDAY							
6:30	6:36	6:38	6:43	6:45	6:49	6:51	6:55
7:00	7:06	7:08	7:13	7:15	7:19	7:21	7:25
...and every 30 minutes to...							
11:30	11:36	11:38	11:43	11:45	11:49	11:51	11:55
12:00	12:06	12:08	12:13	12:15	12:19	12:21	12:25
12:30	12:36	12:38	12:43	12:45	12:49	12:51	12:55
1:00	1:06	1:08	1:13	1:15	1:19	1:21	1:25
...and every 30 minutes to...							
6:00	6:06	6:08	6:13	6:15	6:19	6:21	6:25
7:00	7:06	7:08	7:13	7:15	7:19	7:21	7:25
8:00	8:06	8:08	8:13	8:15	8:19	8:21	8:25
SUNDAY							
7:00	7:06	7:08	7:13	7:15	7:19	7:21	7:25
8:00	8:06	8:08	8:13	8:15	8:19	8:21	8:25
...and every 60 minutes to...							
12:00	12:06	12:08	12:13	12:15	12:19	12:21	12:25
1:00	1:06	1:08	1:13	1:15	1:19	1:21	1:25
...and every 60 minutes to...							
7:00	7:06	7:08	7:13	7:15	7:19	7:21	7:25
8:00	8:06	8:08	8:13	8:15	8:19	8:21	8:25

Collingwood East Route

Terminal	Bay Haven	Sunset Manor	Hospital	Jean Vanier	Collingwood Collegiate	YMCA	Ontario & St. Marie	Terminal
MONDAY - FRIDAY								
6:30	6:36	6:38	6:41	6:44	6:47	6:50	6:52	6:55
7:00	7:06	7:08	7:11	7:14	7:17	7:20	7:22	7:25
7:30	7:36	7:38	7:41	7:44	7:47	7:50	7:52	7:55
8:00	8:06	8:08	8:11	8:14	8:17	8:20	8:22	8:25
8:30	8:36	8:38	8:41	8:44	8:47	8:50	8:52	8:55
9:30	9:36	9:38	9:41	9:44	9:47	9:50	9:52	9:55
10:30	10:36	10:38	10:41	10:44	10:47	10:50	10:52	10:55
11:30	11:36	11:38	11:41	11:44	11:47	11:50	11:52	11:55
12:30	12:36	12:38	12:41	12:44	12:47	12:50	12:52	12:55
1:30	1:36	1:38	1:41	1:44	1:47	1:50	1:52	1:55
2:30	2:36	2:38	2:41	2:44	2:47	2:50	2:52	2:55
3:00	3:06	3:08	3:11	3:14	3:17	3:20	3:22	3:25
...and every 30 minutes to...								
6:30	6:36	6:38	6:41	6:44	6:47	6:50	6:52	6:55
7:30	7:36	7:38	7:41	7:44	7:47	7:50	7:52	7:55
8:30	8:36	8:38	8:41	8:44	8:47	8:50	8:52	8:55
SATURDAY								
6:30	6:36	6:38	6:41	6:44	6:47	6:50	6:52	6:55
7:00	7:06	7:08	7:11	7:14	7:17	7:20	7:22	7:25
...and every 30 minutes to...								
11:30	11:36	11:38	11:41	11:44	11:47	11:50	11:52	11:55
12:00	12:06	12:08	12:11	12:14	12:17	12:20	12:22	12:25
12:30	12:36	12:38	12:41	12:44	12:47	12:50	12:52	12:55
1:00	1:06	1:08	1:11	1:14	1:17	1:20	1:22	1:25
...and every 30 minutes to...								
6:30	6:36	6:38	6:41	6:44	6:47	6:50	6:52	6:55
7:30	7:36	7:38	7:41	7:44	7:47	7:50	7:52	7:55
8:30	8:36	8:38	8:41	8:44	8:47	8:50	8:52	8:55
SUNDAY								
7:30	7:36	7:38	7:41	7:44	7:47	7:50	7:52	7:55
8:30	8:36	8:38	8:41	8:44	8:47	8:50	8:52	8:55
...and every 60 minutes to...								
12:30	12:36	12:38	12:41	12:44	12:47	12:50	12:52	12:55
1:30	1:36	1:38	1:41	1:44	1:47	1:50	1:52	1:55
...and every 60 minutes to...								
7:30	7:36	7:38	7:41	7:44	7:47	7:50	7:52	7:55
8:30	8:36	8:38	8:41	8:44	8:47	8:50	8:52	8:55

Collingwood Wasaga Beach Link - Collingwood East to Wasaga Beach

Hurontario Street at TD Bank (Colltrans Stop)	Hurontario Street at Macs (Colltrans Stop)	St. Marie Street and Hume Street (Colltrans Stop)	YMCA on Hume Street (Colltrans Stop)	Hume Street and Minnesota	TSC Hardware Store (Colltrans Stop)	Raglan Street at Ron Emo Drive	Georgian College	Poplar Sideroad at Summerview Avenue	Beachwood and Poplar Sideroad	Hwy 26 and Cook Street off Highway	Relax Inn	Rockdell Restaurant	Fairgrounds Road (Right Turn Lane)	Bluewater Gate Entrance	Krown Rust Control/Penzoil	Wasaga Motel	Lorna Dune	58th Street at Lights	Home Hardware on Mosely (Current Stop)	45th Street at Superstore	Ramblewood Medical Centre (BY REQUEST ONLY)
MONDAY - SUNDAY																					
6:01	6:01	6:02	6:02	6:03	6:04	6:06	6:07	6:10	6:10	6:11	6:12	6:12	6:13	6:13	6:14	6:15	6:17	6:18	6:19	6:20	N/A
7:01	7:01	7:02	7:02	7 :03	7:04	7:06	7:07	7:10	7:10	7:11	7:12	7:12	7:13	7:13	7:14	7:15	7:17	7:18	7:19	7:20	N/A
8:01	8:01	8:02	8:02	8:03	8:04	8:06	8:07	8:10	8:10	8:11	8:12	8:12	8:13	8:13	8:14	8:15	8:17	8:18	8:19	8:20	N/A
9:01	9:01	9:02	9:02	9:03	9:04	9:06	9:07	9:10	9:10	9:11	9:12	9:12	9:13	9:13	9:14	9:15	9:17	9:18	9:19	9:20	N/A
10:01	10:01	10:02	10:02	10:03	10:04	10:06	10:07	10:10	10:10	10:11	10:12	10:12	10:13	10:13	10:14	10:15	10:17	10:18	10:19	10:20	N/A
11:01	11:01	11:02	11:02	11:03	11:04	11:06	11:07	11:10	11:10	11:11	11:12	11:12	11:13	11:13	11:14	11:15	11:17	11:18	11:19	11:20	N/A
12:01	12:01	12:02	12:02	12:03	12:04	12:06	12:07	12:10	12:10	12:11	12:12	12:12	12:13	12:13	12:14	12:15	12:17	12:18	12:19	12:20	N/A
1:01	1:01	1:02	1:02	1:03	1:04	1:06	1:07	1:10	1:10	1:11	1:12	1:12	1:13	1:13	1:14	1:15	1:17	1:18	1:19	1:20	N/A
2:01	2:01	2:02	2:02	2:03	2:04	2:06	2:07	2:10	2:10	2:11	2:12	2:12	2:13	2:13	2:14	2:15	2:17	2:18	2:19	2:20	N/A
3:01	3:01	3:02	3:02	3:03	3:04	3:06	3:07	3:10	3:10	3:11	3:12	3:12	3:13	3:13	3:14	3:15	3:17	3:18	3:19	3:20	N/A
4:01	4:01	4:02	4:02	4:03	4:04	4:06	4:07	4:10	4:10	4:11	4:12	4:12	4:13	4:13	4:14	4:15	4:17	4:18	4:19	4:20	N/A
5:01	5:01	5:02	5:02	5:03	5:04	5:06	5:07	5:10	5:10	5:11	5:12	5:12	5:13	5:13	5:14	5:15	5:17	5:18	5:19	5:20	N/A
6:01	6:01	6:02	6:02	6:03	6:04	6:06	6:07	6:10	6:10	6:11	6:12	6:12	6:13	6:13	6:14	6:15	6:17	6:18	6:19	6:20	N/A
7:01	7:01	7:02	7:02	7:03	7:04	7:06	7:07	7:10	7:10	7:11	7:12	7:12	7:13	7:13	7:14	7:15	7:17	7:18	7:19	7:20	N/A
8:01	8:01	8:02	8:02	8:03	8:04	8:06	8:07	8:10	8:10	8:11	8:12	8:12	8:13	8:13	8:14	8:15	8:17	8:18	8:19	8:20	N/A

Collingwood Wasaga Beach Link - Wasaga Beach West to Collingwood

Mosely Street Tim Hortons (Current Stop)	58th Street at Traffic Signals	Lorna Dune Mini Putt	74th Street on paved shoulder	Marilyn Avenue on paved shoulder	Bluewater Gate at Entrance	Middlebrook Road on side of road	Rockdell Restaurant	Relax Inn	Hwy 26 and King Street off Highway	Wellington Street	Poplar Sideroad at Summerview Avenue	Georgian College	Raglan Street at Ron Emo Drive	Tim Hortons	Collingwood G&M Hospital at Heidelberg Inn	Peel Street across from Hanna Motors	Peel Street and Ontario Street	Ontario Street and Minnesota Street (Colltrans Stop)	Ontario Street and St. Marie Street (Colltrans Stop)
MONDAY - SUNDAY																			
6:31	6:33	6:34	6:36	6:37	6:38	6:38	6:39	6:39	6:40	6:40	6:41	6:44	6:45	6:48	6:48	6:49	6:50	6:51	6:52
7:31	7:33	7:34	7:36	7:37	7:38	7:38	7:39	7:39	7:40	7:40	7:41	7:44	7:45	7:48	7:48	7:49	7:50	7:51	7:52
8:31	8:33	8:34	8:36	8:37	8:38	8:38	8:39	8:39	8:40	8:40	8:41	8:44	8:45	8:48	8:48	8:49	8:50	8:51	8:52
9:31	9:33	9:34	9:36	9:37	9:38	9:38	9:39	9:39	9:40	9:40	9:41	9:44	9:45	9:48	9:48	9:49	9:50	9:51	9:52
10:31	10:33	10:34	10:36	10:37	10:38	10:38	10:39	10:39	10:40	10:40	10:41	10:44	10:45	10:48	10:48	10:49	10:50	10:51	10:52
11:31	11:33	11:34	11:36	11:37	11:38	11:38	11:39	11:39	11:40	11:40	11:41	11:44	11:45	11:48	11:48	11:49	11:50	11:51	11:52
12:31	12:33	12:34	12:36	12:37	12:38	12:38	12:39	12:39	12:40	12:40	12:41	12:44	12:45	12:48	12:48	12:49	12:50	12:51	12:52
1:31	1:33	1:34	1:36	1:37	1:38	1:38	1:39	1:39	1:40	1:40	1:41	1:44	1:45	1:48	1:48	1:49	1:50	1:51	1:52
2:31	2:33	2:34	2:36	2:37	2:38	2:38	2:39	2:39	2:40	2:40	2:41	2:44	2:45	2:48	2:48	2:49	2:50	2:51	2:52
3:31	3:33	3:34	3:36	3:37	3:38	3:38	3:39	3:39	3:40	3:40	3:41	3:44	3:45	3:48	3:48	3:49	3:50	3:51	3:52
4:31	4:33	4:34	4:36	4:37	4:38	4:38	4:39	4:39	4:40	4:40	4:41	4:44	4:45	4:48	4:48	4:49	4:50	4:51	4:52
5:31	5:33	5:34	5:36	5:37	5:38	5:38	5:39	5:39	5:40	5:40	5:41	5:44	5:45	5:48	5:48	5:49	5:50	5:51	5:52
6:31	6:33	6:34	6:36	6:37	6:38	6:38	6:39	6:39	6:40	6:40	6:41	6:44	6:45	6:48	6:48	6:49	6:50	6:51	6:52
7:31	7:33	7:34	7:36	7:37	7:38	7:38	7:39	7:39	7:40	7:40	7:41	7:44	7:45	7:48	7:48	7:49	7:50	7:51	7:52
8:31	8:33	8:34	8:36	8:37	8:38	8:38	8:39	8:39	8:40	8:40	8:41	8:44	8:45	8:48	8:48	8:49	8:50	8:51	8:52

Blue Mountain Transit Link

Collingwood Terminal	Georgian Meadows (Outbound)	Blue Mountain Village	Craigleith	Georgian Meadows (Inbound)
MONDAY - SUNDAY				
7:00	7:06	7:20	7:27	7:37
8:00	8:06	8:20	8:27	8:37
9:00	9:06	9:20	9:27	9:37
10:00	10:06	10:20	10:27	10:37
11:00	11:06	11:20	11:27	11:37
12:00	12:06	12:20	12:27	12:37
1:00	1:06	1:20	1:27	1:37
2:00	2:06	2:20	2:27	2:37
3:00	3:06	3:20	3:27	3:37
4:00	4:06	4:20	4:27	4:37
5:00	5:06	5:20	5:27	5:37
6:00	6:06	6:20	6:27	6:37
7:00	7:06	7:20	7:27	7:37
8:00	8:06	8:20	8:27	8:37
9:00	-	-	-	-

Single fares

Collingwood and Wasaga Beach Transit

Adults:	$2.00
Seniors/Students:	$1.50
Children (5 & under):	Free
Collingwood/Blue Mountains link:	$2.00 (all riders)
Collingwood/Wasaga Beach link:	$2.00 (all riders)
Red Cross Para-Transit:	$2.00 (one-way)
Clearview Transit Adult/Student/Senior	$2.00

Monthly passes

All Transit Routes

Adult:	$40.00
Seniors/Students:	$30.00
Universal pass:	$120.00*

*(valid on Colltrans, Wasaga beach transit and Link bus)

Wasaga Beach Youth Pass	$5.00/mth

Operating Hours

Monday-Friday - WB Link & Colltrans	6:30am - 9:00pm
Monday-Friday - All other routes	7:00am - 9:00pm
Saturday	7:00am - 9:00pm
Sunday	9:00am - 9:00pm

Clearview Transit

Monday-Saturday	6:30am - 8:30pm
Sunday	8:30am - 5:30pm

Red Cross Para-Transit is also available within the Town of Collingwood. Hours are Monday - Friday 7:00am - 5:00pm. Please contact 705-721-3313 x5266 to apply for eligibility or to arrange for service.

Collingwood Accessible Shuttle Service
The Town of Collingwood together with Ace Cabs operates an accessible taxi service available 365 days a year 24 hours a day and can be contacted at 705-445-3300.

Clearview Route

Weir Street	Stayner Collegiate Institute	Fountain Park	Station Park (Library)	Huron Meadows	Byng Public School	Stayner Foodland	Stayner Community Centre	Medical Centre	Brock Street	Coffee Culture	Superior Street	Wasaga Sands Subdivision	Wasaga Beach Superstore	Ramblewood Medical Centre
MONDAY - SATURDAY														
7:39	7:44	7:46	7:47	7:49	7:50	7:52	8:00	8:05	8:07	8:08	8:10	8:16	8:30	8:32
8:39	8:44	8:46	8:47	8:49	8:50	8:52	9:00	9:05	9:07	9:08	9:10	9:16	9:30	9:32
9:39	9:44	9:46	9:47	9:49	9:50	9:52	10:00	10:05	10:07	10:08	10:10	10:16	10:30	10:32
10:39	10:44	10:46	10:47	10:49	10:50	10:52	11:00	11:05	11:07	11:08	11:10	11:16	11:30	11:32
11:39	11:44	11:46	11:47	11:49	11:50	11:52	12:00	12:05	12:07	12:08	12:10	12:16	12:30	12:32
12:39	12:44	12:46	12:47	12:49	12:50	12:52	1:00	1:05	1:07	1:08	1:10	1:16	1:30	1:32
1:39	1:44	1:46	1:47	1:49	1:50	1:52	2:00	2:05	2:07	2:08	2:10	2:16	2:30	2:32
2:39	2:44	2:46	2:47	2:49	2:50	2:52	3:00	3:05	3:07	3:08	3:10	3:16	3:30	3:32
3:39	3:44	3:46	3:47	3:49	3:50	3:52	4:00	4:05	4:07	4:08	4:10	4:16	4:30	4:32
4:39	4:44	4:46	4:47	4:49	4:50	4:52	5:00	5:05	5:07	5:08	5:10	5:16	5:30	5:32
5:39	5:44	5:46	5:47	5:49	5:50	5:52	6:00	6:05	6:07	6:08	6:10	6:16	6:30	6:32
6:39	6:44	6:46	6:47	6:49	6:50	6:52	7:00	7:05	7:07	7:08	7:10	7:16	7:30	7:32
7:39	7:44	7:46	7:47	7:49	7:50	7:52	8:00	8:05	8:07	8:08	8:10	-	-	-
SUNDAY														
9:39	9:44	9:46	9:47	9:49	9:50	9:52	10:00	10:05	10:07	10:08	10:10	10:16	10:30	10:32
10:39	10:44	10:46	10:47	10:49	10:50	10:52	11:00	11:05	11:07	11:08	11:10	11:16	11:30	11:32
11:39	11:44	11:46	11:47	11:49	11:50	11:52	12:00	12:05	12:07	12:08	12:10	12:16	12:30	12:32
12:39	12:44	12:46	12:47	12:49	12:50	12:52	1:00	1:05	1:07	1:08	1:10	1:16	1:30	1:32
1:39	1:44	1:46	1:47	1:49	1:50	1:52	2:00	2:05	2:07	2:08	2:10	2:16	2:30	2:32
2:39	2:44	2:46	2:47	2:49	2:50	2:52	3:00	3:05	3:07	3:08	3:10	3:16	3:30	3:32
3:39	3:44	3:46	3:47	3:49	3:50	3:52	4:00	4:05	4:07	4:08	4:10	4:16	4:30	4:32
4:39	4:44	4:46	4:47	4:49	4:50	4:52	5:00	5:05	5:07	5:08	5:10	-	-	-

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