

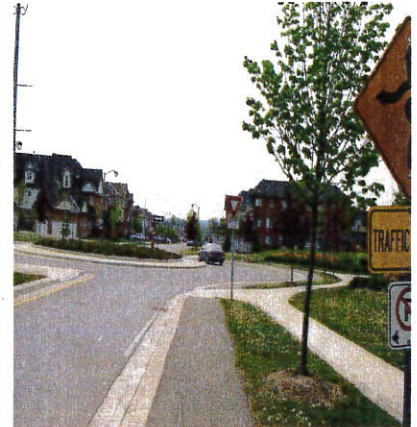
Millford Development Ltd. Proposed Condominium Development, Eagle Street, Newmarket

Project No. 10-024

FINAL

M a r c h 2 0 1 1

Traffic Impact Study



10-024

March 2011

Ms. Angela Orsi
Millford Development Ltd.
c/o Peter E. Allen & Associates
704 Gagnon Place
Newmarket, ON L3X 1V8

**Re: Eagle Street Proposed Condominium Development
Traffic Impact Study - Final**

Dear Ms. Orsi:

Attached is our Traffic Impact Study for the Eagle Street proposed condominium development in Newmarket, Final Report for your submission application.

Should you have any questions, please feel free to contact me in the office.

Yours truly,

GENIVAR Consultants LP



Sharon Sterling, MCIP, RPP
Director, Traffic Management



Anil Seegobin, P.Eng
Traffic Engineer



cc: Mr. John de Valence, OAA MRAIC, PDA Architects, john.devalence@pda-architects.ca
Mr. Andrew Ip, P.Eng, Principal, Masongsong Associates Engineering Limited,
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Transmittal Letter

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1. Introduction

GENIVAR Consultants LP has been retained to complete a Traffic Impact Study for a residential development located at the northeast quadrant of Yonge Street and Eagle Street in the town of Newmarket. The site location is shown in Figure 1. The proposed development consists of 38 townhouses and a condominium building with 154 units. Access to and from the site is proposed at the north side of Eagle Street.

This report includes the following:

- a review of the existing adjacent roadway network
- an estimate of the traffic generated by the site and distributed and assigned to the boundary roads
- an assessment of future background and future total traffic conditions at the intersections and site driveways
- a review of site accesses to ensure efficient traffic operations
- a review of the layout of internal roadways
- site plan and roadway improvement recommendations
- a review of site parking requirements with consideration for future transit use

Information used in this Traffic Impact Study includes:

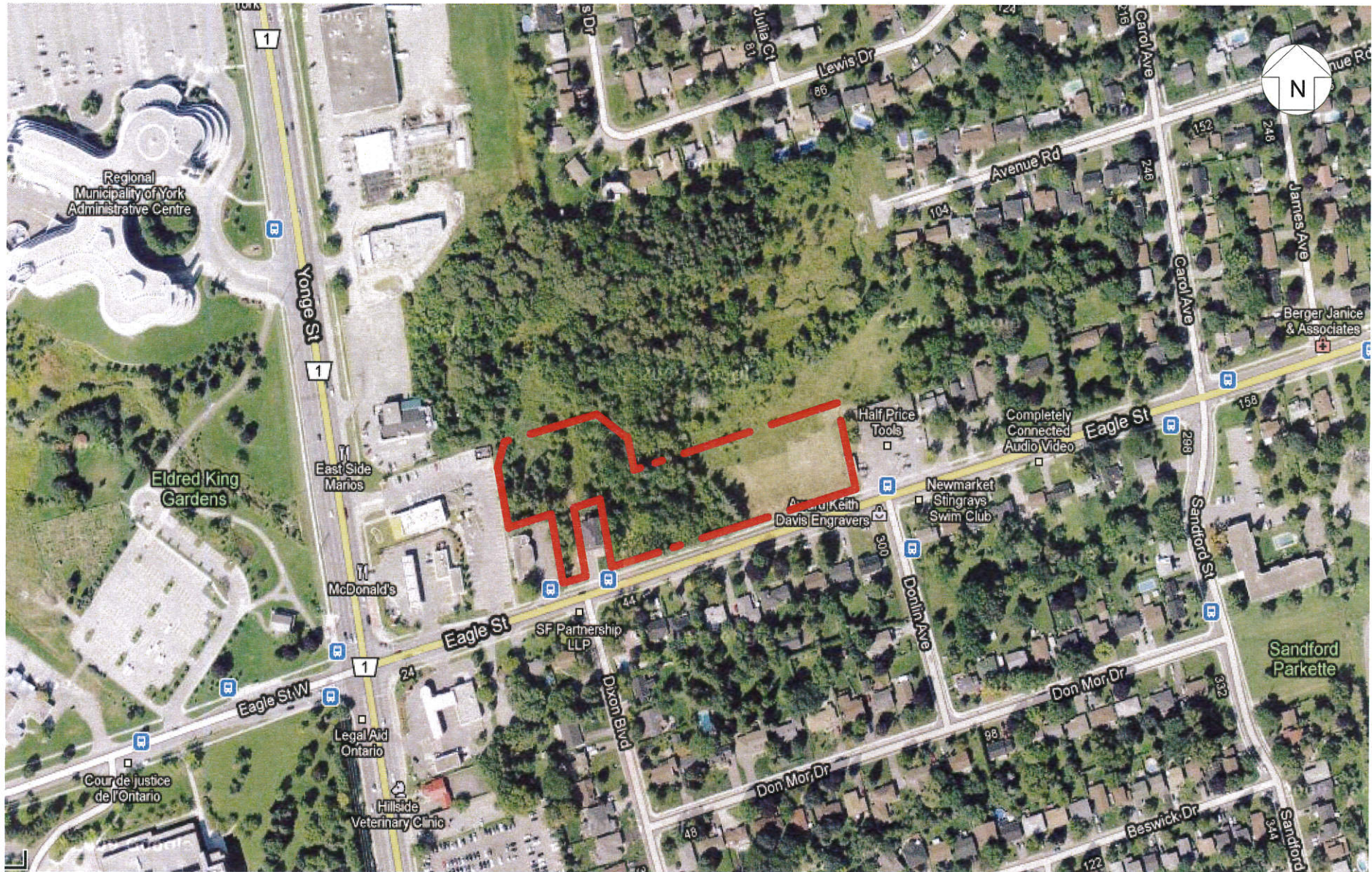
- North Yonge Street Corridor Class Environmental Assessment, August 2008
- Town of Newmarket Site Plan Approval Process Manual and Development Standards Checklist document
- Town of Newmarket Engineering Design Standards and Criteria
- Town of Newmarket Comprehensive Zoning By-law, 3rd Draft, May 2010
- Town of Newmarket Official Plan, 2006
- York Region Access Guidelines for Regional Roads, 2007
- York Region Transit website
- York Region Average Annual Daily Traffic volumes at Yonge Street near Eagle Street, 2004 to 2009
- site plan and site statistics prepared by PDA Architects, May 2010
- turning movement count, Yonge Street and Eagle Street, York Region, Wednesday February 11, 2009
- turning movement count, Eagle Street and Sandford Street/Carol Avenue, Town of Newmarket, Wednesday October 14, 2009

- turning movement counts at Eagle Street and Dixon Boulevard and at Eagle Street and Donlin Avenue, GENIVAR, Thursday May 27, 2010
- signal timing plans for Yonge Street and Eagle Street and for Eagle Street and Sandford Street/Carol Avenue, York Region
- gap and queue survey at Eagle Street between Dixon Boulevard and Donlin Avenue, GENIVAR, Thursday May 27 and Wednesday June 2, 2010
- plan and profile drawings, Eagle Street from Yonge Street to Sandford Street/Carol Avenue, York Region, P-1017-028-005, P-1017-028-006, P-1017-028-007
- 2006 Transportation Tomorrow Survey (TTS) data
- Geometric Design Guide for Canadian Roads, 1999 Edition, Transportation Association of Canada (TAC)
- Trip Generation, 8th Edition, Institute of Transportation Engineers (ITE)
- recorded observations and photographs from a site visit completed by GENIVAR staff, May 27, 2010

Intersection capacity and queuing analyses were completed using Synchro 7.0 and SimTraffic 7.0 software.

Prior to commencing the analysis for this project, GENIVAR staff contacted transportation staff at the Town of Newmarket and York Region and submitted the Terms of Reference outlining the proposed study methodology and assumptions. The assumptions and methodology used in the report reflect comments received from Town and Region staff. The Terms of Reference for the study and Town of Newmarket comments are provided in Appendix A.

GENIVAR has worked with Town staff, John de Valence, PDA Architects and Peter E. Allen, Peter E. Allen & Associates, Planning Consultants, in developing the transportation proposals and their design incorporated in this report.



Source: Google Maps

 Site

Not to Scale

Figure 1
 Site Location
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



2. Existing Land Use and Proposed Development

2.1 Existing Site

The site is located at the north side of Eagle Street, roughly between Dixon Boulevard and Donlin Avenue. The site is currently vacant.

2.1.1 Adjacent Land Uses

The study area includes Eagle Street, extending from Yonge Street to Sandford Street/Carol Avenue.

At the intersection of Yonge Street and Eagle Street, there is an ESSO service station at the northeast corner, a Petro Canada service station at the southeast corner, Ontario Court House, Judicial District of York at the southwest quadrant and Doane House Hospice and Eldred King Gardens at the northwest quadrant.

The remaining land uses at Eagle Street between Yonge Street and Sandford Street/Carol Avenue are mainly residential single family dwellings.

2.2 Proposed Land Use

The proposed development consists of two parcels: Parcel A and Parcel B. Parcel A is a condominium building with 154 units. Parcel B contains 38 townhouse units. Parcel A and Parcel B combined contain 192 units.

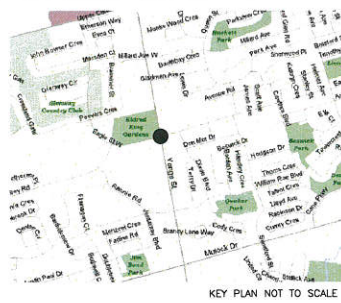
The proposed site plan is provided in Figure 2. The proposed development is expected to be completed in one phase, within a five-year horizon period.

2.2.1 Site Access

Access to the site is proposed to be provided by two driveways, described as follows:

- a full-moves driveway located approximately 58 metres east of Dixon Boulevard (measured from centreline to centreline), with a 9.0 metre curb radii and a 7.5 metre width
- a right-in/right-out driveway located approximately 19.0 metres west of Donlin Avenue (measured from centreline to centreline), with an 8.0 inbound curb radius, a 12.0 metre outbound curb radius, a 4.0 metre entrance width and a 6.0 metre exit width

A detailed review of the site accesses is provided in Section 6, Site Plan Review.



SURVEY INFORMATION:

SURVEY INFORMATION IS TAKEN FROM A COMPILED PLAN OF SURVEY ENTITLED: PART OF LOTS 2 AND 3 REGISTERED PLAN 49 TOWN OF NEWMARKET REGIONAL MUNICIPALITY OF YORK PREPARED BY: YOUNG & YOUNG SURVEYING INC., OLS 2 HOLLAND DRIVE, UNIT 5 BOLTON, ON L7E 1E1 DATED: JUNE 2010

PROPERTY AREA:

VALLEY LANDS	28 477 SM (306,526 SF)
BUFFER ZONE	2 114 SM (22,755 SF)
NET DEVELOPMENT AREA	19 742 SM (212,503 SF)
PROPOSED ROAD WIDENING	589 SM (6,340 SF)
TOTAL PROPERTY AREA	50 922 SM (548,124 SF)

PROJECT INFORMATION:

PARCEL A:

PROPOSED UNITS: 154
 NET LOT AREA: 8,152.30 SM (87,750 SF; 2.01 AC)
 PROPOSED DENSITY: 189 UNITS/HECTARE
 GROSS FLOOR AREA: 1,805.34 SM (19,432 SF)
 GROUND FLOOR AREA PER LEVEL: 1,362.18 SM (14,662 SF)
 PROPOSED FLOORS: 12
 TOTAL G.F.A.: 16,789.32 SM (180,719 SF)
 PROPOSED FLOOR SPACE INDEX: 2.06

CONDO UNIT TYPE SCHEDULE	# OF UNITS
GROUND FLOOR	0
FLOORS 2-12 (TYP. 14 UNITS/FLOOR)	
8 X 1BR UNITS	88
6 X 2BR UNITS	66
TOTAL NUMBER OF UNITS	154

PARKING:

VISITOR PARKING REQUIRED: 0.25 X NUMBER OF UNITS= 39 SPACES
 VISITOR PARKING PROVIDED: 39 SPACES
 RESIDENT PARKING REQUIRED: 1.5 SPACES/UNIT= 231 SPACES
 RESIDENT PARKING PROVIDED: 231 SPACES TOTAL (2 LEVELS UNDERGROUND GARAGE: 218 SPACES; ON GRADE: 11 SPACES)

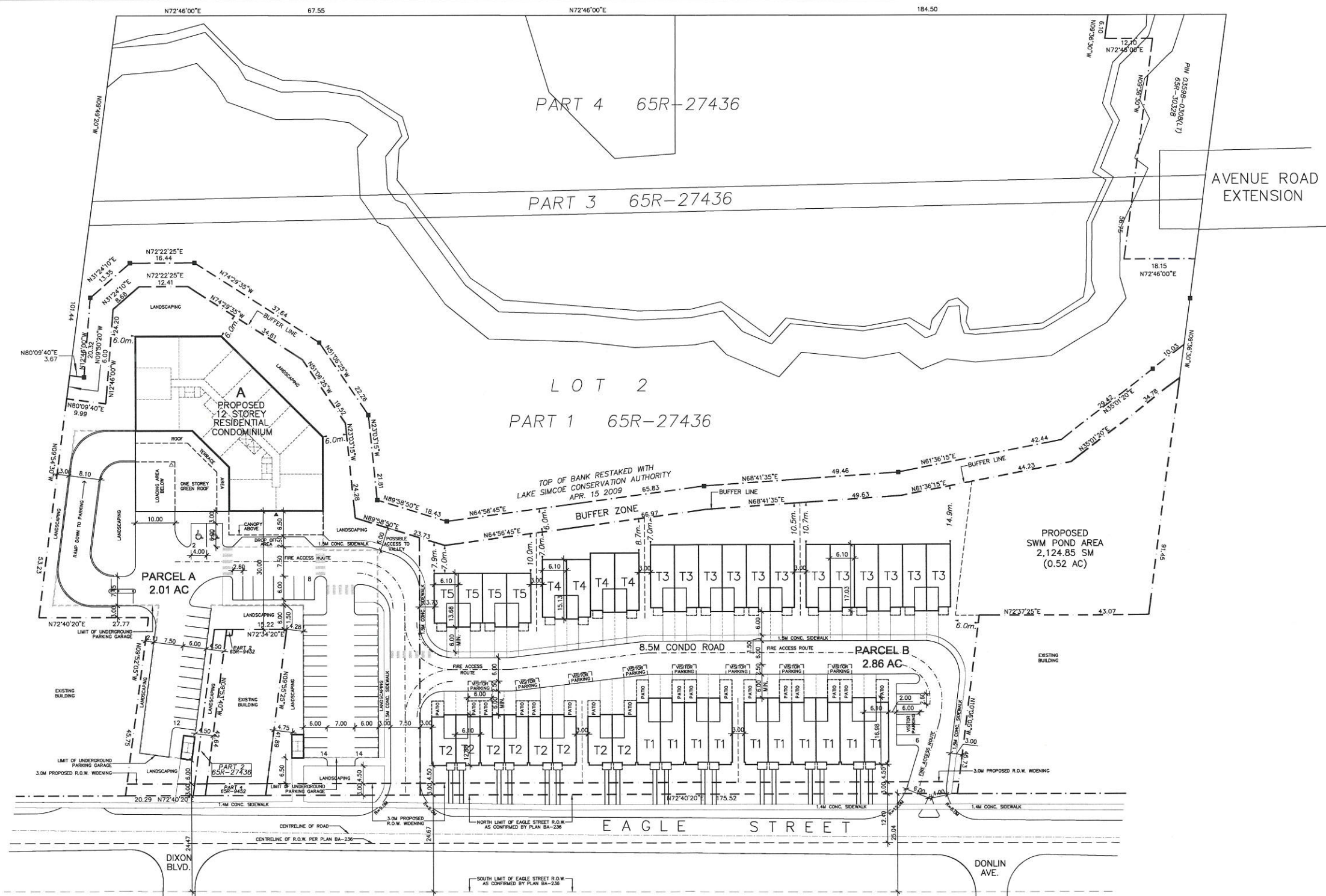
PARCEL B:

PROPOSED TOWNHOUSES: 38
 NET LOT AREA: 11,591.28 SM (124,767 SF; 2.86 AC)
 PROPOSED DENSITY: 33 UNITS/HECTARE

UNIT TYPE	PROPOSED UNIT SIZE	# OF UNITS
T1	148.65-157.93 SM (1,600-1,700 SF)	10
T2	111.48 SM (1,200 SF)	8
T3	157.93-167.22 SM (1,700-1,800 SF)	12
T4	139.35-148.65 SM (1,500-1,600 SF)	4
T5	120.77-130.06 SM (1,300-1,400 SF)	4
TOTAL NUMBER OF UNITS		38

PARKING:

VISITOR PARKING REQUIRED: 0.25 X NUMBER OF UNITS= 10 SPACES
 VISITOR PARKING PROVIDED: 14 SPACES
 RESIDENT PARKING REQUIRED: 2 SPACES/UNIT= 76 SPACES
 RESIDENT PARKING PROVIDED: 2 SPACES/UNIT= 76 SPACES



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NO.	REVISIONS:	ISSUED:
1	REVISED	AUG 12/10

NOTE: This drawing is the property of the Architect and may not be reproduced or used without the expressed consent of the Architect. The contractor is to verify all dimensions and conditions on the project and to report any discrepancies to the Architect prior to commencing work. These drawings are not to be used for construction purposes unless indicated as "ready for construction".

CLIENT:
MILLFORD DEVELOPMENTS

PROJECT:
PROPOSED CONDOMINIUM DEVELOPMENT NEWMARKET, ON

SHEET TITLE:
**SITE PLAN
 FIGURE 2**

PROJECT NO. 2524	DATE: SEE REV.
SCALE: 1:500	DRAWN: RS
CHECKED: JdeV	SHEET NO: SP1
FILE NO. 2524	

3. Transportation Network

3.1 Roads

The boundary roads in the vicinity of the site are Yonge Street, Eagle Street, Dixon Boulevard, Donlin Avenue, Sandford Street and Carol Avenue. The roadways are described as follows:

Yonge Street is an arterial roadway operated under the jurisdiction of the Regional Municipality of York. Within the study area, Yonge Street consists of four general purpose lanes with a centre left-turn lane. Yonge Street has a posted speed limit of 60 km/h.

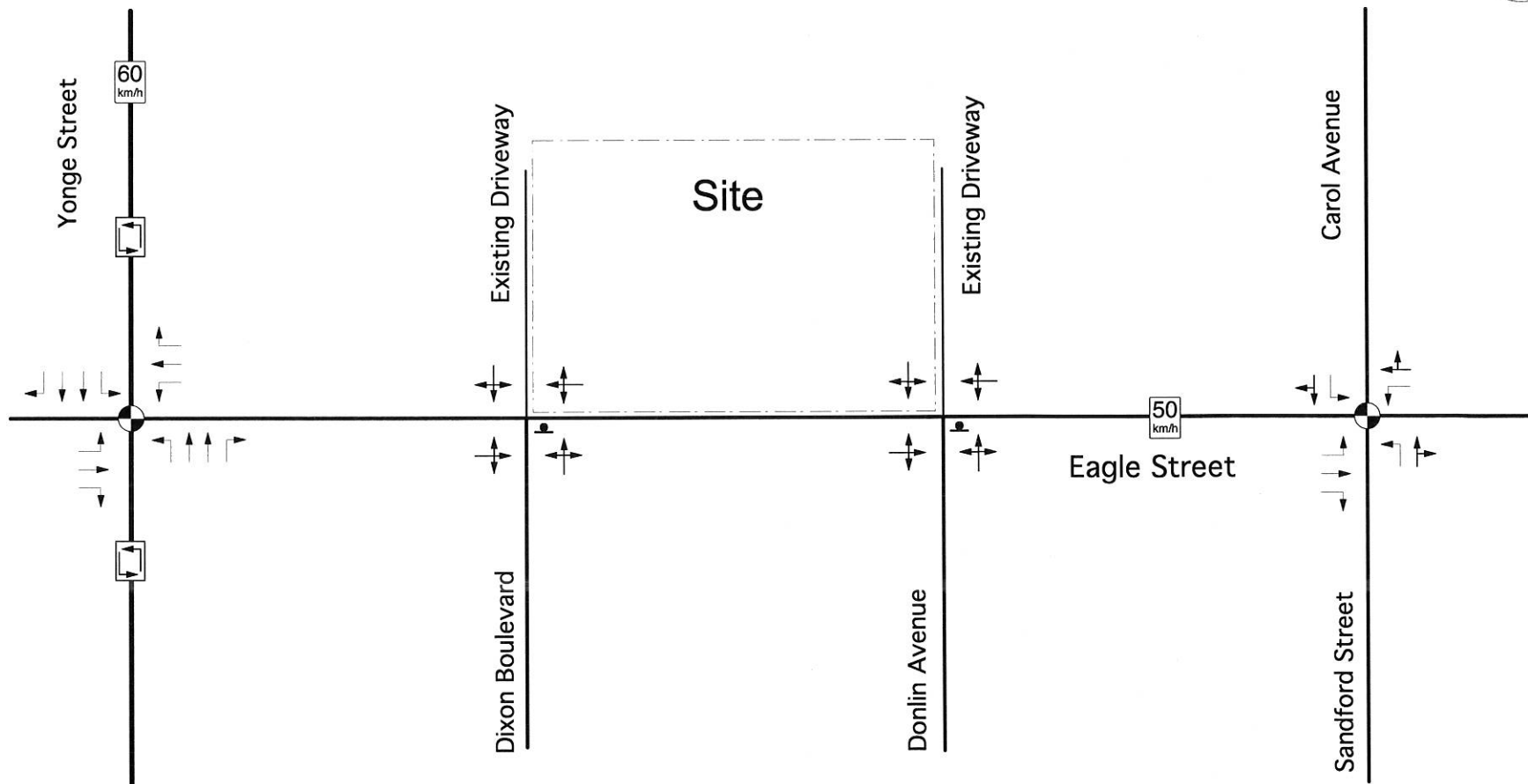
Eagle Street is a primary collector roadway whose ownership was recently transferred from the Regional Municipality of York to the Town of Newmarket. Eagle Street is a two-lane roadway, with an approximately 24-metre right-of-way and has a posted speed limit of 50 km/h.

Dixon Boulevard is a north-south, two-lane local roadway with a posted speed limit of 50 km/h. Dixon Boulevard forms a stop-controlled intersection with Eagle Street.

Donlin Avenue is a north-south, two-lane local roadway with a posted speed limit of 50 km/h. Dixon Boulevard forms a stop-controlled intersection with Eagle Street. No parking signs are posted on Donlin Avenue.

Sandford Street and Carol Avenue are two-lane local roadways with a posted speed limit of 50 km/h. Eagle Street forms a signalized intersection with Sandford Street/Carol Avenue.

Roadway characteristics for the study area are provided in Figure 3.



Legend	
Site	Posted Speed Limit
Traffic Signal	Centre Left Turn Lane
Stop Sign	Lane Configuration

Not to Scale

Figure 3
Study Area Roadway Characteristics
Proposed Condominium Development, Eagle Street, Traffic Impact Study



3.2 Transit Service

The study area is served by both York Region Transit and VIVA services.

3.2.1 York Region Transit

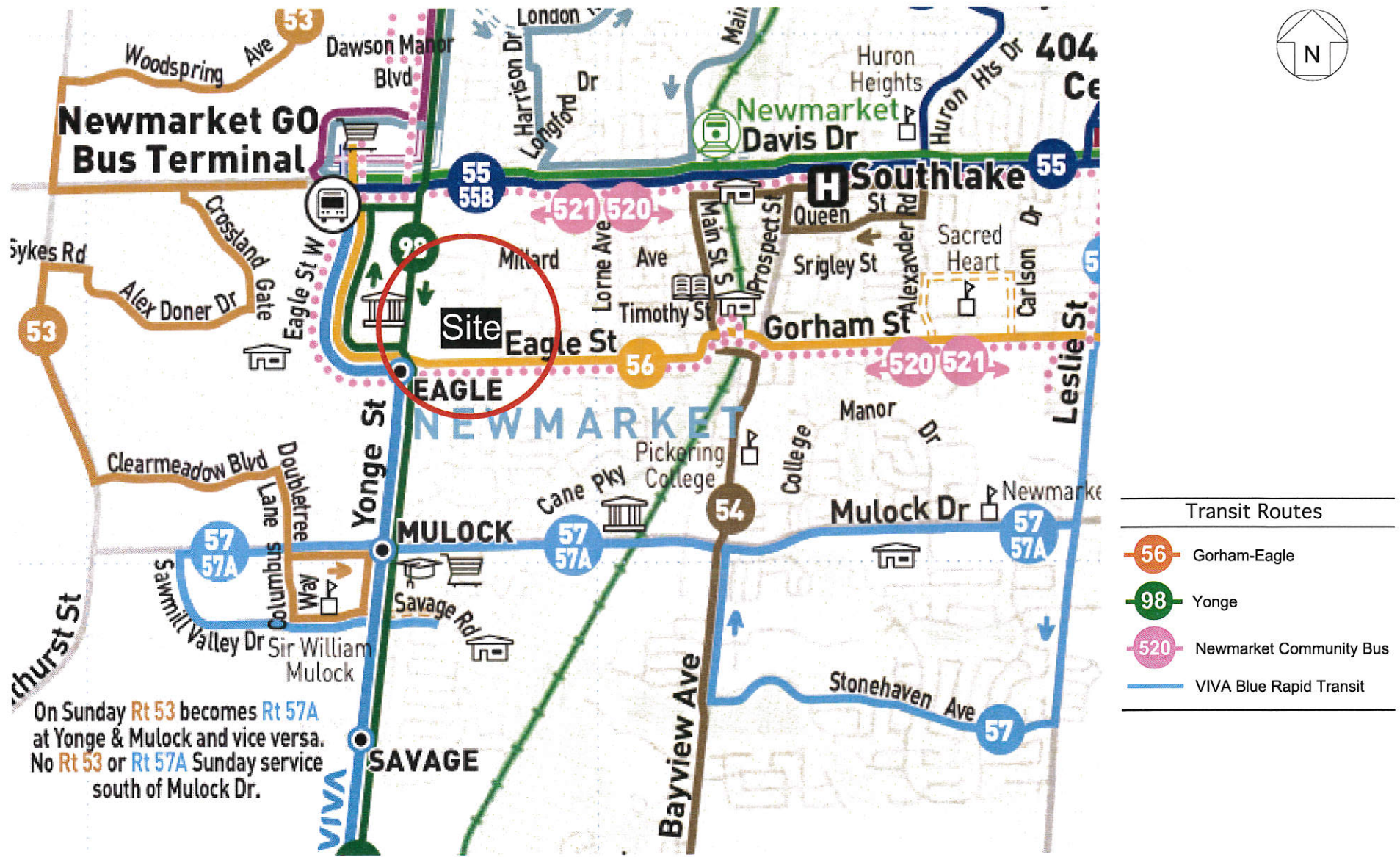
York Region Transit service routes in the study area are described as follows:

- Route 56 runs from the Newmarket GO Bus terminal to the 404 Town Centre, passing the study area at Eagle Street between Yonge Street and Sandford Street/Carol Avenue. The service frequency is generally every half-hour during peak periods.
- Route 98 operates between the Upper Yonge Place to the intersection of Yonge Street and Green Lane, passing the study area at the intersection of Eagle Street and Yonge Street. The service frequency is generally every half-hour.
- Route 520/521 is a community bus that operates between Yonge Street and Green Lane and Leslie Street and Gorham Street, passing the study area at Eagle Street between Yonge Street and Sandford Street/Carol Avenue. The service frequency is generally every hour and service ends at 4:00pm.

3.2.2 VIVA

In addition to these York Region Transit services, York Region has been operating VIVA rapid transit services along Yonge Street since 2005. The VIVA Blue route travels along Yonge Street from Finch Station in the city of Toronto northward to the Newmarket terminal at Eagle Street and Davis Drive. The headway of the VIVA Blue route within the study area is 10 minutes during the weekday AM and PM peak periods and 15 minutes in the off-peak periods.

Figure 4 shows current York Region Transit/VIVA service currently operating within the study area.



Source: York Region Transit website

Site

Not to Scale

Figure 4
 Study Area Transit Service
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



3.3 Traffic Volumes

Intersection turning movement counts for the intersections within the study area were obtained from the sources shown in Table 1.

Table 1 – Source of Intersection Turning Movement Counts

Eagle Street Intersection at:	Count Date and Times	Source
Yonge Street	Wednesday February 11, 2009 7:00-9:00 a.m., 11:00 a.m.-2:00 p.m., 3:00-6:00 p.m.	York Region
Dixon Street	Thursday May 27, 2010 6:30-9:30 a.m., 4:30-6:30 p.m.	GENIVAR
Donlin Avenue	Thursday May 27, 2010 6:30-9:30 a.m., 4:30-6:30 p.m.	GENIVAR
Sandford Street/Carol Avenue	Wednesday October 14, 2009 7:00-9:00 a.m., 11:00 a.m.-2:00 p.m., 3:00-6:00 p.m.	Town of Newmarket

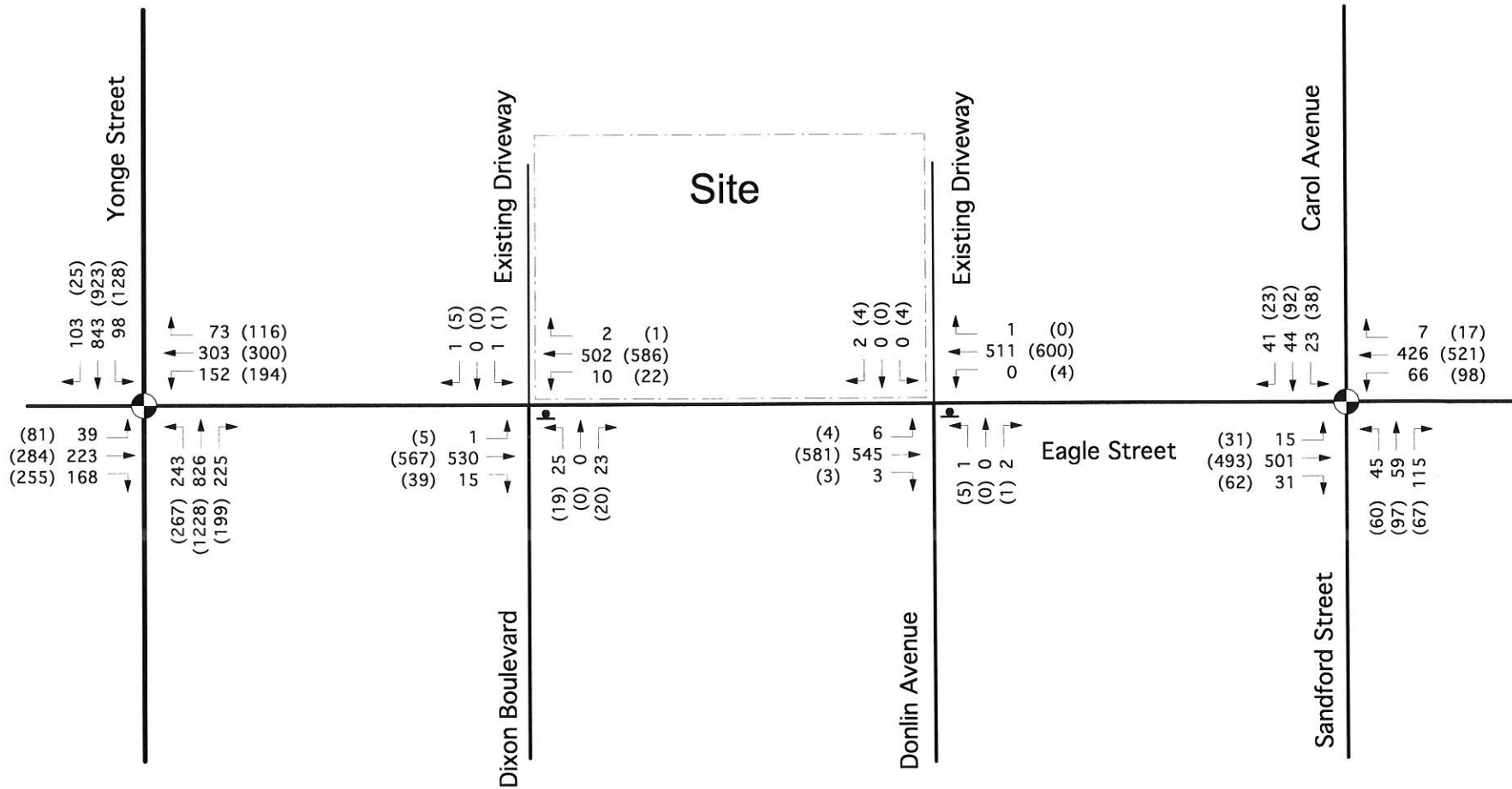
The weekday AM and PM peak hours determined from the intersection turning movement counts and assessed in this study are summarized in Table 2.

Table 2 – Peak Hours Obtained from Intersection Turning Movement Counts

Eagle Street Intersection at	Weekday Peak Hour	
	AM	PM
Yonge Street	8:00 to 9:00	4:30 to 5:30
Dixon Street	7:45 to 8:45	4:30 to 5:30
Donlin Avenue	8:00 to 9:00	4:30 to 5:30
Sandford Street/Carol Avenue	8:00 to 9:00	4:30 to 5:30

As a worst-case scenario, the hours at which each intersection peaked were assessed in this study. For consistency, eastbound and westbound traffic volumes at Eagle Street were balanced between Yonge Street and Sandford Street/Carol Avenue (increased where appropriate).

Existing peak hour traffic volumes at the boundary roads during the roadway weekday AM and PM peak hours are shown in Figure 5. Detailed intersection turning movement count summaries and signal timing plans are provided in Appendix B.



Existing Traffic Signal



Stop Sign

xx (xx) Weekday AM (PM) Peak Hour

Not to Scale

Figure 5
 Existing Traffic Volumes, Weekday AM and PM Peak Hours
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



3.4 Intersection Capacity and Queuing Analyses, Existing Conditions

Intersection capacity analyses for existing 2010 traffic conditions were completed for the boundary road intersections to determine the existing level of service (LOS) during the roadway weekday AM and PM peak hours. Intersection capacity and queuing analyses were completed using Synchro 7 and SimTraffic 7 software. The overall degree of saturation, level of service and queuing for the intersections analyzed are presented in Table 3, Table 4 and Table 5. Detailed calculations are included in Appendix C and level of service definitions are provided in Appendix D.

Table 3 – 2010 Existing Traffic Conditions – Signalized Intersections

Intersection	AM Peak Hour			PM Peak Hour			
	Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Yonge Street and Eagle Street		0.75	29	C	0.87	41	D
Eastbound Left		0.26	44	D	0.48	50	D
Eastbound Through		0.74	56	E	0.84	67	E
Eastbound Right		0.14	42	D	0.40	48	D
Westbound Left		0.63	39	D	1.12	149	F
Westbound Through		0.62	39	D	0.62	44	D
Westbound Right		0.08	31	C	0.15	36	D
Northbound Left		0.77	26	C	0.85	39	D
Northbound Through		0.53	23	C	0.74	29	C
Northbound Right		0.19	18	B	0.19	19	B
Southbound Left		0.34	17	B	0.67	30	C
Southbound Through		0.61	28	C	0.64	31	C
Southbound Right		0.08	20	B	0.02	21	C
Eagle Street at Carol Avenue/Sandford Street		0.46	10	A	0.51	10	B
Eastbound Left		0.03	4	A	0.08	5	A
Eastbound Through		0.49	6	A	0.48	6	A
Eastbound Right		0.03	4	A	0.05	4	A
Westbound Left		0.17	6	A	0.22	6	A
Westbound Through-Right		0.43	7	A	0.52	8	A
Northbound Left		0.25	21	C	0.34	22	C
Northbound Through-Right		0.32	21	C	0.46	22	C
Southbound Left		0.14	20	C	0.22	21	C
Southbound Through-Right		0.21	21	C	0.37	21	C

Table 4 – 2010 Existing Traffic Conditions – Unsignalized Intersections

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec.)	LOS	Delay (sec.)	LOS
Eagle Street at Dixon Boulevard	1	A	2	B
Eastbound Left/Through/Right	0	A	0	A
Westbound Left/Through/Right	0	A	1	A
Northbound Left/Through/Right	24	C	32	D
Southbound Left/Through/Right	21	C	17	C
Eagle Street at Donlin Avenue	0	A	0	A
Eastbound Left/Through/Right	0	A	0	A
Westbound Left/Through/Right	0	A	0	A
Northbound Left/Through/Right	16	C	21	C
Southbound Left/Through/Right	12	B	18	C

Results of the capacity analyses indicate that the study area intersections are currently operating at a good to acceptable overall level of service and delay during the weekday AM and PM peak hours.

The westbound left-turn movement at the intersection of Yonge Street and Eagle Street operates over capacity during the PM peak hour. This movement cannot be improved (under a volume-to-capacity ratio of under 1.0) by signal timing adjustments at the intersection.

Table 5 – 2010 Existing Traffic Conditions – Queue Lengths

Intersection Movement	Available Storage (m)	95th Percentile Queues	
		AM Peak Hour	PM Peak Hour
Yonge Street at Eagle Street			
Eastbound Left	52	23	60
Eastbound Right	42	45	64
Westbound Left	40	64	100
Westbound Right	38	39	64
Northbound Left	55	53	98
Northbound Right	55	26	80
Southbound Left	59	57	67
Eagle Street at Carol Avenue/Sandford Street			
Eastbound Left	50	5	9
Eastbound Right	16	9	21
Westbound Left	20	35	35
Northbound Left	45	18	19
Southbound Left	30	10	18

Note: The value reported in the Synchro analysis as the 95 percentile is an adjusted value that is calculated by taking the average queue and adding a standard deviation of 1.67. This results in a value that is higher than the 95 percentile and a value that is not necessarily ever observed. Therefore, the value reported as the 95 percentile must be used with caution, since it may result in significant over-design, if applied as reported.

Results of the vehicle queuing analyses are as follows:

- At Yonge Street and Eagle Street during the AM peak hour, the westbound left-turn and northbound left-turn queue lengths exceed available storage lengths. However, queue length survey results provided in the next section indicate that westbound left turn vehicle queues do not block the proposed locations of the site driveways and the northbound left turn movement is unrelated to traffic at the site.
- At Yonge Street and Eagle Street during the PM peak hour, all turning movement queue lengths exceed available storage lengths. However, as indicated in the following section, vehicle queues at the Yonge Street intersection do not have an impact on the proposed locations of the site driveways.
- At Eagle Street and Carol Avenue/Sandford Street during the AM peak hour, the westbound left-turn queue lengths exceed available storage lengths. During the PM peak hour, the eastbound right-turn and westbound left-turn queue lengths exceed available storage lengths provided. However, site traffic generated by the proposed development would not impact these turning movements.

3.4.1 Queue Length Surveys

In addition to analyzing peak hour intersection queue lengths using Synchro and SimTraffic 7.0 software, GENIVAR commissioned intersection queue surveys on Thursday May 27, 2010, at

Yonge Street and Eagle Street to determine whether existing queues could block the proposed site driveway locations.

Vehicle queues during the AM peak hour for westbound left-turn movements at Yonge Street and Eagle Street did not extend beyond Dixon Boulevard. During the AM peak hour, there were no vehicle queues for westbound left-turn traffic at Eagle Street and Dixon Boulevard.

PM peak hour the queue length surveys for westbound left-turn movements at Yonge Street and Eagle Street and for westbound left-turn movements at Eagle Street and Dixon Boulevard indicated that vehicle queues extended east of Dixon Boulevard three times for less than seven seconds per occurrence. The maximum vehicle queue length for the westbound left turns at Yonge Street and Eagle Street was recorded to be one vehicle in length, measured from a point east of the Yonge Street and Dixon Boulevard intersection. The vehicle queue summary is provided in Appendix G.

In summary, the site driveways are not expected to be blocked by westbound left-turn traffic at the intersections of Yonge Street and Eagle Street and at Eagle Street and Dixon Boulevard during the weekday AM and PM peak hours.

4. Development Traffic

4.1 Traffic Generation

Trip generation estimates for the site during the weekday AM and PM peak hours are generally determined by the Institute of Transportation Engineers (ITE) Trip Generation Manuals, 8th Edition. ITE rates for condominiums/townhomes (ITE Land Use Code 230) for the weekday AM peak hour is 0.44 trips per unit and for the weekday PM peak hour is 0.52 trips per unit.

Based on discussions with the Town of Newmarket, the ITE trip generation rates for townhouses are considered to be low, and given the nature of the townhouses and area context, it is expected that the auto ownership would be higher.

A review of the 2006 Transportation Tomorrow Survey data (provided in Appendix E) was used to determine trips made from comparable municipalities to Newmarket (Richmond Hill and Markham) per number of townhouse units within the municipality. Based on the review, a more conservative trip rate for the proposed development was obtained of 0.88 and 0.87 trips per unit during the weekday AM and PM peak hours, respectively. The directional distribution for site trips was obtained from ITE Land Use Code 230, Residential Condominiums/Townhomes. The results are summarized in Table 6.

Table 6 – Estimated Trip Generation, Weekday AM and PM Peak Hours

Land Use	Units	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Condominium/ Townhouse	192	17%	83%	100%	67%	33%	100%
	Rate	0.15	0.73	0.88	0.58	0.29	0.87
	Trips	29	140	169	112	55	167

Source: 2006 Transportation Tomorrow Survey Information.

The proposed development is expected to generate 169 trips (29 inbound trips and 140 outbound trips) during the weekday AM peak hour and 167 trips (112 inbound trips and 55 outbound trips) during the weekday PM peak hour.

4.2 Trip Distribution and Assignment

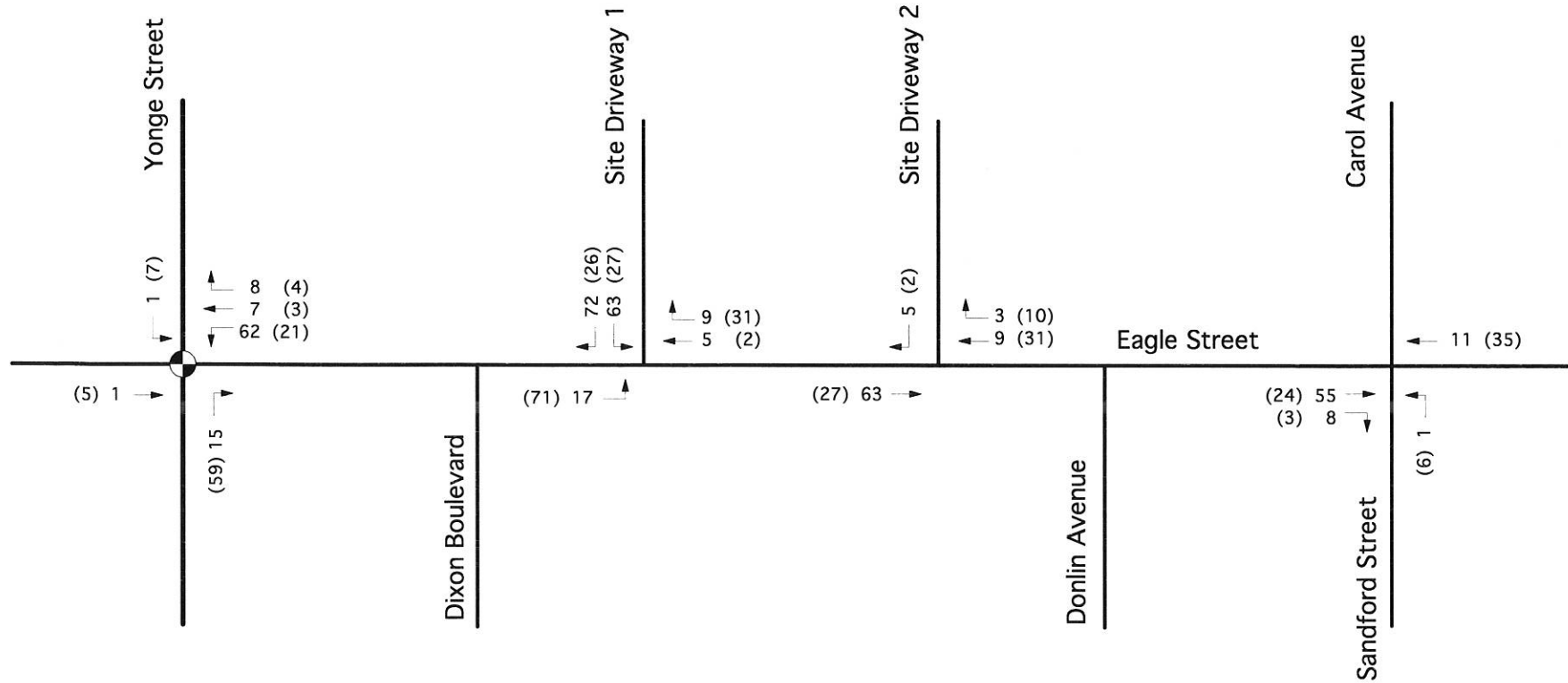
Site traffic distribution for the proposed development is based on information provided by 2006 TTS data for travel to and from the Town of Newmarket, as summarized in Table 7 and detailed information is provided in Appendix E.

Table 7 – Estimated Site Trip Distribution

Location	Percent Trips	Direction
Hamilton	0	Hwy 404 to Hwy 401
Halton	1	Hwy 404 to Hwy 401
Peel	3	Hwy 404 to Hwy 401
Toronto	26	Hwy 404 to DVP
Durham	1	East on Leslie Street to Vivian Road
Georgina	1	North on Yonge Street
East Gwillimbury	1	North on Leslie Street
Newmarket	34	Local Roads
Aurora	8	South on Yonge Street and Leslie Street
Richmond Hill	5	South on Yonge Street and Leslie Street
Whitchurch-Stouffville	2	South on Leslie Street to Vivian Road
Markham	9	South on Leslie Street to Vivian Road
Vaughan	7	South on Yonge Street
King	2	South on Yonge Street
Total	100	

Source: 2006 Transportation Tomorrow Survey Information.

Based on the site traffic distribution obtained from Table 7, peak hour site traffic volumes were assigned to the boundary roadways, as illustrated in Figure 6.



 Existing Traffic Signal

 Stop Sign

xx (xx) Weekday AM (PM) Peak Hour

Not to Scale

Figure 6
Site Traffic Assignment, Weekday AM and PM Peak Hours
Proposed Condominium Development, Eagle Street, Traffic Impact Study



5. Future Traffic Conditions

5.1 Future Background Traffic Conditions

The future background traffic is estimated to be the current traffic volumes added to annual growth in through traffic on the boundary roads and added to planned developments or developments under construction within the immediate study area. Future background traffic growth is assessed for a five-year horizon period from the base year.

5.1.1 Annual Traffic Growth Rate

Eagle Street

Future background traffic volume growth at Yonge Street in the study area was estimated based on a comparison of the 2009 traffic count at Yonge Street and Eagle Street and the 2010 traffic count at Eagle Street and Dixon Boulevard for eastbound and westbound volumes during the PM peak hour, as provided in Table 8.

Table 8 – Annual Traffic Volume Growth Rate

Location	Year	Eastbound	Westbound	Both Directions
Yonge Street and Eagle Street	2009	549	577	1126
Eagle Street and Dixon Boulevard	2010	558	596	1154
Exponential Growth Rate from 2009 to 2010				2.5%

Based on the review, a 2.5 percent annual growth rate was applied to eastbound and westbound through traffic volumes at Eagle Street in the study area for a five-year horizon period.

Yonge Street

Future background traffic volume growth at Yonge Street in the study area was estimated based on a comparison of Annual Average Daily Traffic (AADT) counts provided by York Region. The traffic volume comparison is shown in Table 9 and source data is provided in Appendix F.

Table 9 – Annual Traffic Volume Growth Rate

Year	Yonge Street				Yonge Street			
	North of Mullock Drive	South of Mullock Drive	Both Directions	Growth Rate	North of Davis Drive	South of Davis Drive	Both Directions	Growth Rate
2004	31,041	0	n/a		0	0	n/a	
2005	0	0	0		0	33,781	n/a	
2006	36,551	31,268	67,819		37,534	32,814	70,348	
2007	37,625	34,035	71,660	5.7%	39,489	34,472	73,961	5.1%
2008	36,625	30,988	67,613	-5.6%	37,724	31,387	69,111	-6.6%
2009	40,922	30,913	71,835	6.2%	41,521	35,370	76,891	11.3%
Exponential Growth Rate from 2006 to 2009				1.9%				
Average of Both Directions								2.5%

Source: AADT Counts provided by York Region

Additionally, the North Yonge Street Corridor Environmental Assessment, IBI Group, August 2008, was reviewed to determine future traffic growth. Future land use projections were determined by land use (population and employment) forecasts supplied by York Region as part of the Travel Demand Forecasting Model. Based on the York Region Transportation Demand Model, volumes on Yonge Street between Green Lane and Mullock Drive are projected to increase by at least 2 to 3 percent per annum until 2021, assuming current travel behaviour and the current transit infrastructure¹.

Based on the review, a 2.5 percent annual growth rate was applied to northbound and southbound through traffic volumes at Yonge Street in the study area for a five-year horizon period.

5.1.2 Other Area Developments

Based on discussions with Town of Newmarket Planning staff, there is one planned development of significance within the study area, which is a 400-unit residential condominium proposal at the northeast corner of Yonge Street and Millard Avenue. The site trips generated by the development (passing through the study area along the Yonge Street corridor) is accounted for in the future land use projections provided by York Region, resulting in the 2.5 percent per annum growth rate applied to the Yonge Street corridor (baseline conditions).

A map of development applications in the study area and related correspondence with Planning staff are provided in Appendix F.

¹ North Yonge Street Corridor Public Transit and Associated Road Improvements Environmental Assessment, Chapter 4, Section 4.2.2, page 4-1.

5.1.3 Planned Roadway and Transit Improvements

Eagle Street Improvements

Based on correspondence with the Town of Newmarket, there are no roadway improvements scheduled at Eagle Street within the study area.

Yonge Street Corridor Improvements

Roadway and transit improvements in the Yonge Street corridor are based on a review of the North Yonge Street Corridor Environmental Assessment, IBI Group, August 2008.

Based on the review, the preferred alternative within the study area includes improvements to enhance the capacity of Yonge Street, which could include widening from the existing four through lanes and centre left-turn lane to six through lanes and a centre left-turn lane, and/or various intersection improvements to enhance the capacity and movements within the corridor. These improvements would be implemented in conjunction with transit improvements.

The study findings demonstrate that increased through lane capacity by up to 50 percent (i.e. four to six lanes), would significantly improve traffic operations and safety on Yonge Street. Improvements to the Yonge Street capacity is the preferred transportation solution since it addresses both local and through traffic capacity, operations and safety between Mulock Drive and Green Lane. The potential widening in 2011 is to be determined as part of the EA study².

The preferred initial response to immediate and medium-term conditions for transit improvements at Yonge Street between Mulock Drive and Green Lane include rapid transit operating in mixed traffic curb high occupancy vehicle (HOV) lanes in conjunction with the widening of Yonge Street to six lanes.

The technically preferred design for long-term conditions (at such time as ridership in this section warrants dedicated lanes and transit reliability in mixed traffic is degraded) includes the widening of Yonge Street from Mulock Drive and Green Lane to accommodate rapid transit operating in a dedicated median rapidway.

Yonge Street Corridor Auto Trip Reduction

The introduction of rapid transit service along Yonge Street, integrated with other transit systems serving the area, will contribute to a reduction in traffic volumes along Yonge Street and surrounding streets. The North Yonge Street Corridor Environmental Assessment findings indicate that auto volume forecast 2021 volumes north of Eagle Street are expected to decrease from approximately 2,125 to 1,625 (by 24 percent) during the AM and PM peak hours with the implementation of full bus rapid transit.³

As a worst-case scenario, a transit trip reduction factor was not applied to the estimated future background traffic growth and site generated traffic in the study area for auto use. The roadway improvements (planned widening to six travel lanes at Yonge Street) are assumed in this study

² North Yonge Street Corridor Public Transit and Associated Road Improvements Transit Class Environmental Assessment, IBI Group, August 2008, Section 3.2, page 32

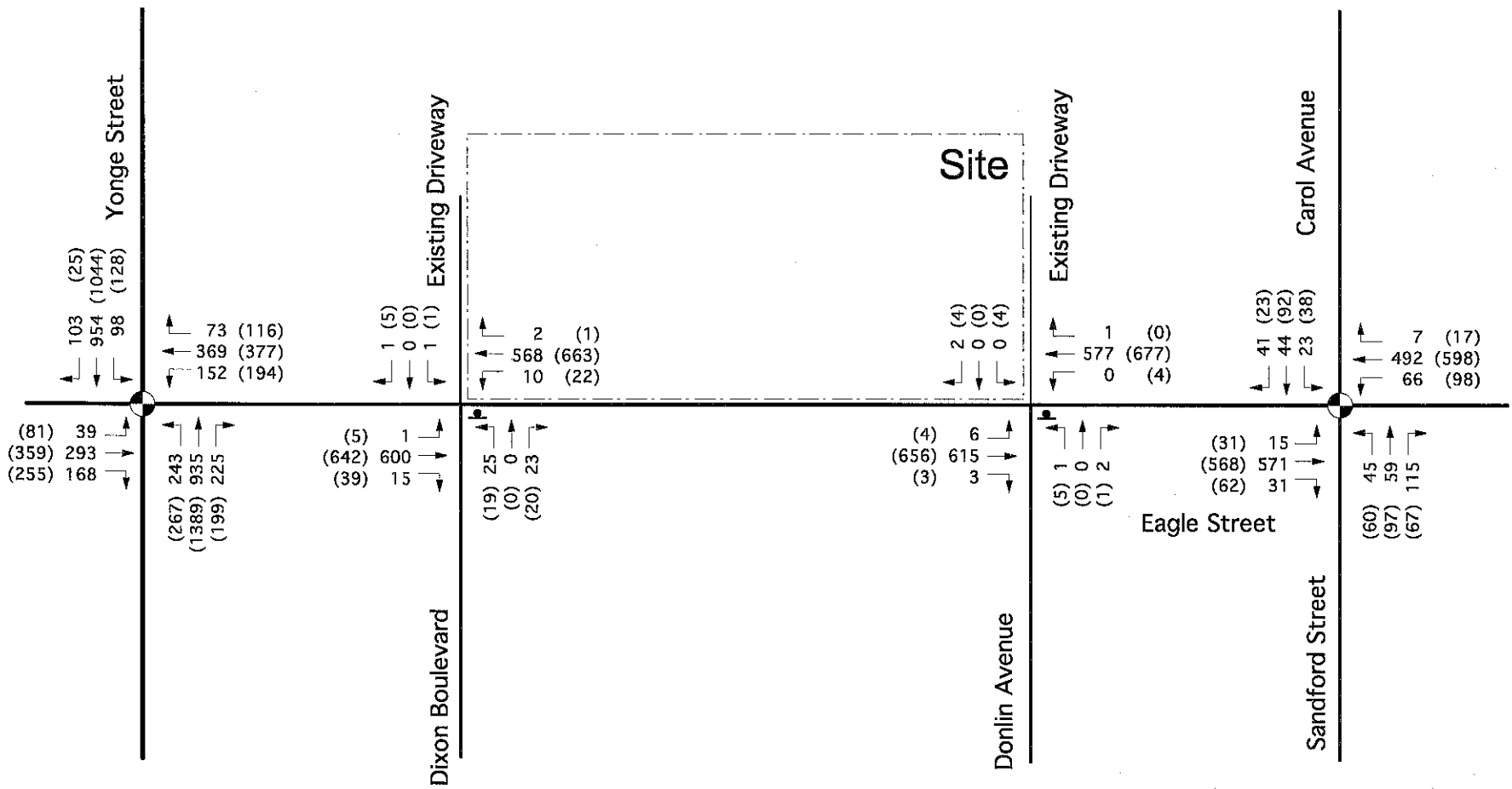
³ North Yonge Street Corridor Public Transit and Associated Road Improvements Transit Class Environmental Assessment, IBI Group, August 2008, Pages 62 and 63, Exhibits 5.2 and 5.3

to not be in place for 2015 traffic conditions. 2015 future background traffic volumes for the study area are presented in Figure 7.

5.1.4 Intersection Capacity and Queuing Analysis, Future Background Traffic Conditions

Intersection capacity analyses for 2015 background traffic conditions were completed for the boundary road intersections to determine the future level of service (LOS) during the roadway weekday AM and PM peak hours. Intersection capacity and queuing analyses were completed using Synchro 7 and SimTraffic 7 software.

The overall degree of saturation, level of service and queuing for the intersections analyzed are presented in Table 10, Table 11 and Table 12. Detailed calculations are included in Appendix C and level of service definitions are provided in Appendix D.



Existing Traffic Signal

Stop Sign

xx (xx) Weekday AM (PM) Peak Hour

Not to Scale

Figure 7
 2015 Background Traffic Volumes, Weekday AM and PM Peak Hours
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



Table 10 – 2015 Future Background Traffic Conditions – Signalized Intersections

Intersection Movement	AM Peak Hour			PM Peak Hour		
	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Yonge Street at Eagle Street	0.85	36	D	0.93	50	D
Eastbound Left	0.27	43	D	0.47	39	D
Eastbound Through	0.84	63	E	0.94	70	E
Eastbound Right	0.24	42	D	0.37	37	D
Westbound Left	0.68	41	D	1.08	121	F
Westbound Through	0.69	40	D	0.67	34	C
Westbound Right	0.09	30	C	0.13	26	C
Northbound Left	0.88	51	C	0.95	71	E
Northbound Through	0.63	27	D	0.97	48	D
Northbound Right	0.21	21	C	0.21	20	B
Southbound Left	0.42	21	C	0.80	49	D
Southbound Through	0.75	35	D	0.93	47	D
Southbound Right	0.09	23	C	0.02	23	C
Eagle Street at Carol Avenue/Sandford Street	0.51	10	B	0.57	11	B
Eastbound Left	0.03	4	A	0.09	5	A
Eastbound Through	0.56	7	A	0.55	7	A
Eastbound Right	0.03	4	A	0.06	4	A
Westbound Left	0.19	6	A	0.25	7	A
Westbound Through-Right	0.50	8	A	0.59	9	A
Northbound Left	0.25	21	C	0.34	22	C
Northbound Through-Right	0.32	21	C	0.46	21	C
Southbound Left	0.14	20	C	0.22	21	C
Southbound Through-Right	0.21	21	C	0.38	22	C

Table 11 – 2015 Future Background Traffic Conditions – Unsignalized Intersections

Intersection Movement	AM Peak Hour		PM Peak Hour	
	Delay (sec.)	LOS	Delay (sec.)	LOS
Eagle Street at Dixon Boulevard/ Existing Driveway	2	A	2	B
Eastbound Left/Through/Right	0	A	0	A
Westbound Left/Through/Right	0	A	1	A
Northbound Left/Through/Right	32	D	49	E
Southbound Left/Through/Right	26	D	22	C
Eagle Street at Donlin Avenue/ Existing Driveway	0	A	0	A
Eastbound Left/Through/Right	0	A	0	A
Westbound Left/Through/Right	0	A	0	A
Northbound Left/Through/Right	17	C	24	C
Southbound Left/Through/Right	12	B	19	C

Recommended improvements under future background traffic conditions at the intersection of Eagle Street and Yonge Street during the weekday AM peak hour include maintaining the 130 second cycle length from existing conditions, but increasing the westbound left and through movements and northbound left movement slightly (by one second) to improve the overall volume-to-capacity ratio. For the weekday PM peak hour, the cycle length was reduced from 130 seconds to 110 seconds, as compared to existing conditions. The proposed cycle length adjustment would not affect intersection operations at upstream and downstream intersections along Yonge Street as they are not coordinated with the intersection of Yonge Street and Eagle Street.

Results of the capacity analyses indicate that the intersections continue to operate at an acceptable level of service and delay similar to existing conditions.

Similar to existing conditions, during the weekday PM peak hour, the westbound left-turn movement is over capacity. However, the recommended signal timing adjustments improved the volume-to-capacity ratio of the turning movement to operate better than in existing conditions.

Table 12 – 2015 Future Background Traffic Conditions – Queue Lengths

Intersection Movement	Available Storage (m)	95th Percentile Queues	
		AM Peak Hour	PM Peak Hour
Eagle Street at Yonge Street			
Eastbound Left	52	21	49
Eastbound Right	42	67	69
Westbound Left	40	59	81
Westbound Right	38	56	68
Northbound Left	55	73	87
Northbound Right	55	68	76
Southbound Left	59	48	53
Eagle Street at Carol Avenue/Sandford Street			
Eastbound Left	50	8	15
Eastbound Right	16	21	12
Westbound Left	20	22	40
Northbound Left	45	13	32
Southbound Left	30	12	17

Note: The value reported in the Synchro analysis as the 95 percentile is an adjusted value that is calculated by taking the average queue and adding a standard deviation of 1.67. This results in a value that is higher than the 95 percentile and a value that is not necessarily ever observed. Therefore, the value reported as the 95 percentile must be used with caution, since it may result in significant over-design, if applied as reported.

Results of the vehicle queuing analyses are as follows:

- At the intersection of Yonge Street and Eagle Street during the peak hours, the eastbound right-turn, westbound left-turn, westbound right-turn, northbound left-turn and northbound right-turn vehicle queue lengths exceed available storage lengths. However, these queue length deficiencies are the result of background traffic volume increases and not related to site traffic.
- At the intersection of Eagle Street and Carol Avenue/Sandford Street during the weekday AM peak hour, the eastbound right-turn and westbound left-turn queues exceed available storage lengths. During the weekday PM peak hour, the westbound left-turn queues exceed available storage. However, these queue length deficiencies are the result of background traffic volume increases and not related to site traffic.
- Future baseline conditions were assumed for the intersection of Yonge Street and Eagle Street, meaning increased growth in auto traffic without improvements such as widening Yonge Street in conjunction with improving transit infrastructure. The results of the analysis indicate that the planned improvements recommended in the North Yonge Street Corridor Environmental Assessment study will have a positive effect on maintaining a good level of service and delay at the Yonge Street. The York Region potential improvements include:
 - rapid transit operating in mixed traffic curb high occupancy vehicle lanes in conjunction with the widening of Yonge Street to six lanes in the short to intermediate term

- rapid transit operating in a dedicated median rapidway in the long-term

In summary, increased traffic volumes at the intersection of Yonge Street and Eagle Street, mainly in the northbound and southbound direction in the weekday PM peak hour is a result of background traffic volumes in the Yonge Street corridor. Overall, the intersection operates at an acceptable level of service under future background traffic conditions.

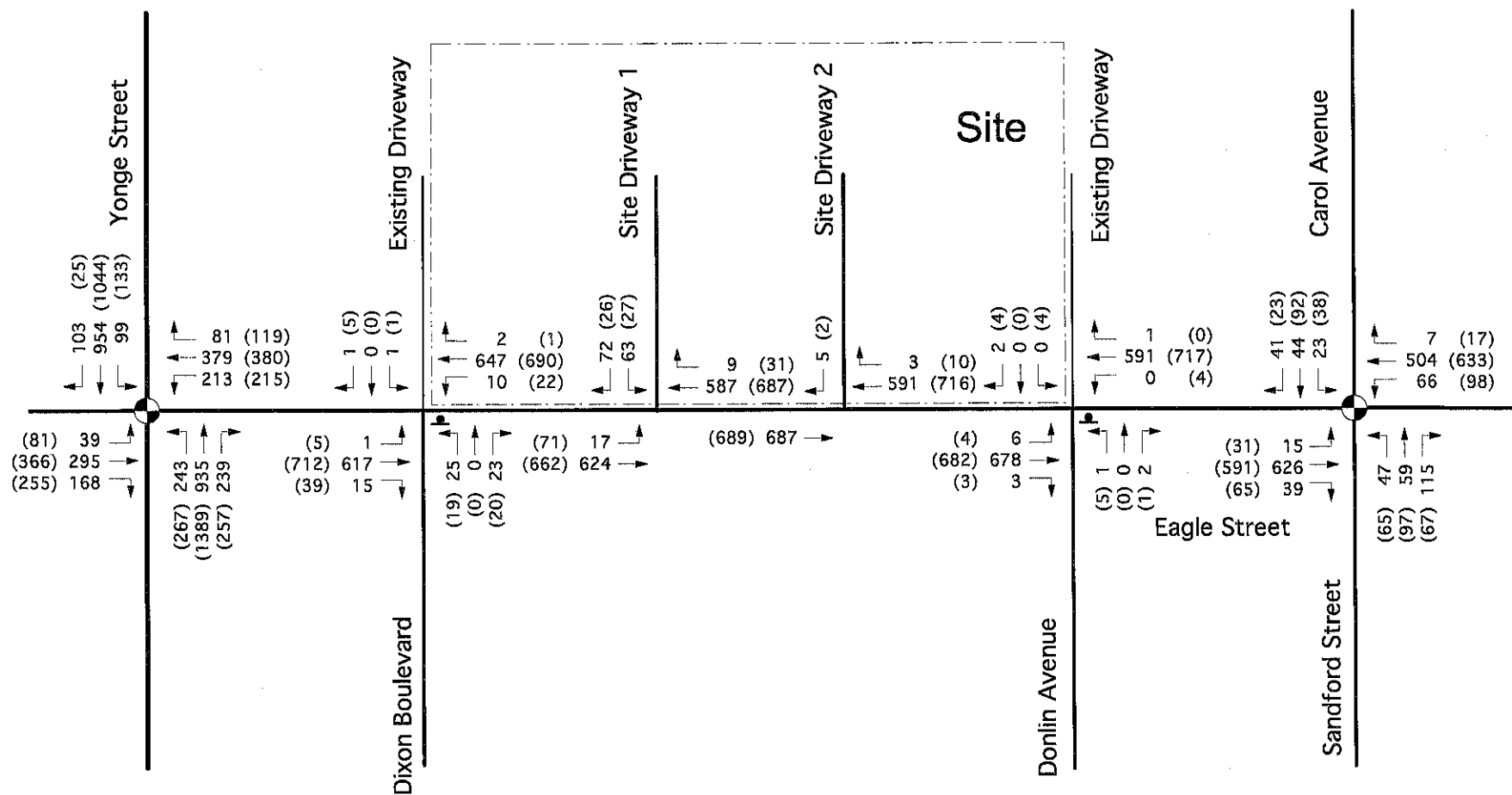
5.2 Future Total Traffic Conditions

Future total traffic conditions include the addition of 2015 future background traffic volumes to the estimated site traffic volumes in the study area during the peak hours, as presented in Figure 8.

5.2.1 Intersection Capacity and Queuing Analysis, Future Total Traffic Conditions

Intersection capacity analyses for 2015 total traffic conditions were completed for the boundary road intersections to determine the future level of service (LOS) during the roadway weekday AM and PM peak hours. Intersection capacity and queuing analyses were completed using Synchro 7 and SimTraffic 7 software.

The overall degree of saturation, level of service and queuing for the intersections analyzed are presented in Table 13, Table 14 and Table 15. Detailed calculations are included in Appendix C and level of service definitions are provided in Appendix D.



Existing Traffic Signal
 Stop Sign
 xx (xx) Weekday AM (PM) Peak Hour
 Not to Scale

Figure 8
 2015 Total Traffic Volumes, Weekday AM and PM Peak Hours
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



Table 13 – 2015 Future Total Traffic Conditions – Signalized Intersections

Intersection	AM Peak Hour			PM Peak Hour			
	Movement	V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Yonge Street and Eagle Street		0.84	39	D	0.97	53	D
Eastbound Left	0.27	43	D	0.47	39	D	
Eastbound Through	0.84	64	E	0.95	72	E	
Eastbound Right	0.24	42	D	0.37	37	D	
Westbound Left	0.94	79	E	1.22	168	F	
Westbound Through	0.70	40	D	0.67	34	C	
Westbound Right	0.10	30	C	0.13	26	C	
Northbound Left	0.88	52	D	0.95	72	E	
Northbound Through	0.64	28	C	0.98	48	D	
Northbound Right	0.23	21	C	0.27	21	C	
Southbound Left	0.43	21	C	0.84	56	E	
Southbound Through	0.75	36	D	0.93	48	D	
Southbound Right	0.09	24	C	0.02	23	C	
Eagle Street at Carol Avenue/Sandford Street		0.55	10	B	0.59	11	B
Eastbound Left	0.03	4	A	0.10	5	A	
Eastbound Through	0.61	8	A	0.57	7	A	
Eastbound Right	0.04	4	A	0.06	5	A	
Westbound Left	0.21	6	A	0.27	7	A	
Westbound Through-Right	0.50	8	A	0.63	10	A	
Northbound Left	0.25	21	C	0.37	22	C	
Northbound Through-Right	0.32	21	C	0.46	22	C	
Southbound Left	0.14	20	C	0.22	21	C	
Southbound Through-Right	0.21	21	C	0.38	22	C	

Table 14 – 2015 Future Total Traffic Conditions – Unsignalized Intersections

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec.)	LOS	Delay (sec.)	LOS
Eagle Street at Dixon Boulevard/ Existing Driveway	2	A	2	B
Eastbound Left/Through/Right	0	A	0	A
Westbound Left/Through/Right	0	A	1	A
Northbound Left/Through/Right	39	E	66	F
Southbound Left/Through/Right	30	D	25	C
Eagle Street at Donlin Avenue/ Existing Driveway	0	A	0	A
Eastbound Left/Through/Right	0	A	0	A
Westbound Left/Through/Right	0	A	0	A
Northbound Left/Through/Right	18	C	28	D
Southbound Left/Through/Right	12	B	22	C
Eagle Street at Site Driveway 1	3	B	2	E
Eastbound Through/Left	1	A	2	A
Westbound Through/Right	0	A	0	A
Southbound Left/Right	34	D	23	C
Eagle Street at Site Driveway 2	0	A	0	A
Westbound Through/Right	0	A	0	A
Southbound Right	12	B	14	B

Results of the capacity analyses indicate that the intersections continue to operate at an acceptable level of service and delay, similar to future background conditions.

The site driveways are expected to operate at an acceptable level of service and delay during the weekday AM and PM peak hours.

During the weekday PM peak hour, the westbound left-turn movement is expected to be over capacity. However, with the proposed signal timing improvements introduced under future background traffic conditions, the turning movement operates similar to the existing situation under future total traffic conditions.

Table 15 – 2015 Future Total Traffic Conditions – Queue Lengths

Intersection Movement	Available Storage (m)	95th Percentile Queues	
		AM Peak Hour	PM Peak Hour
Eagle Street at Yonge Street			
Eastbound Left	52	45	45
Eastbound Right	42	68	68
Westbound Left	40	84	94
Westbound Right	38	41	50
Northbound Left	55	56	99
Northbound Right	55	67	81
Southbound Left	59	52	78
Eagle Street at Carol Avenue/Sandford Street			
Eastbound Left	50	6	9
Eastbound Right	16	19	33
Westbound Left	20	24	31
Northbound Left	45	19	20
Southbound Left	30	18	24
Eagle Street at Site Driveway 1			
Eastbound Left/Through	50	13	37
Southbound Left/Right	30	20	21
Eagle Street at Site Driveway 2			
Southbound Right	20	0	0

Note: The value reported in the Synchro analysis as the 95 percentile is an adjusted value that is calculated by taking the average queue and adding a standard deviation of 1.67. This results in a value that is higher than the 95 percentile and a value that is not necessarily ever observed. Therefore, the value reported as the 95 percentile must be used with caution, since it may result in significant over-design, if applied as reported.

Results of the vehicle queuing analyses are as follows:

- At the intersection of Yonge Street and Eagle Street during the peak hours, the eastbound right-turn, westbound left-turn, westbound right-turn, northbound left-turn and northbound right-turn vehicle queue lengths exceed available storage lengths. During the weekday PM peak hour, the southbound left-turn queues exceed available storage. However, only the westbound turning movement are related to site traffic and the results indicate that the proposed site driveways would not be blocked by vehicle queues at the intersection.
- At the intersection of Eagle Street and Carol Avenue/Sandford Street during the weekday AM peak hour, the eastbound right-turn and westbound left-turn queues exceed available storage. During the weekday PM peak hour, the westbound left-turn queues exceed available storage. However, only the westbound turning movement are related to site traffic and the results indicate that the proposed site driveways would not be blocked by vehicle queues at the intersection.

As previously noted, future baseline conditions were assumed for the intersection of Yonge Street and Eagle Street, meaning increased growth in auto traffic without improvements such as widening Yonge Street in conjunction with improving transit infrastructure. Planned improvements recommended in the North Yonge Street Corridor Environmental Assessment study could improve the level of service and delay along the Yonge Street corridor under future conditions.

In summary, increased traffic volumes at the intersection of Yonge Street and Eagle Street, mainly in the northbound and southbound direction in the weekday PM peak hour is the result of background traffic volumes in the Yonge Street corridor. Overall, the intersection operates at an acceptable level of service and delay, below an overall volume to capacity ratio of 1.0 during the weekday PM peak hour.

6. Site Plan Review

6.1 Site Access Assessment

6.1.1 Spacing

The proposed driveway spacing (measured from centreline to centreline) is as follows:

- Driveway 1 at Eagle Street is located approximately 58 metres east of Dixon Boulevard
- Driveway 2 at Eagle Street is located approximately 19 metres west of Donlin Avenue

According to TAC guidelines for driveway spacing on local and collector roadways (Section 3.2.9.8 and Figure 3.2.9.3), spacing between an intersection and a full-moves driveway should provide for a 2.0-metre tangent length between curb returns. The proposed full moves driveways (Driveway 1) meets this requirement.

According to York Region Access Guidelines, proposed driveways should be outside the influence area of the Regional Road intersections (Yonge Street and Eagle Street), and assuming that Eagle Street is a commercial commuter roadway, a proposed minor access should be located at least 70 metres from the Regional intersection (YR Access Guidelines, page 14). All proposed driveway locations meet this requirement as the nearest access (Driveway 1) is located approximately 150 metres east of Yonge Street.

According to the Town of Newmarket Comprehensive Zoning By-law, Section 5.5, the minimum distance between a driveway and intersection for street lines measured along the street line intersected by such driveway should be 15 metres. As Driveway 2 does not meet this requirement, Driveway 2 is proposed as a right-in/right-out configuration to minimize turning conflicts with Donlin Avenue.

6.1.2 Right-in, Right Out Access Design

The design of Driveway 2, the right-in, right-out driveway, is based on a review of York Region Access guidelines and a review of TAC guidelines, specifically TAC Figure 3.2.9.1. The driveway width of the outbound radii were designed to accommodate a moving truck (an HSU vehicle) and a fire truck. The design was further refined by PDA Architects and consists of an 8m inbound radius and 12m outbound radius. The inbound lane width is 4m and the outbound lane width is 6m for the site driveway.

6.1.3 Sight Distance Review

Horizontal turning sight distances for the proposed driveways on Eagle Street were reviewed based on a design speed of 70 km/h. The desired turning sight distance of 275 metres is used, as identified in Table 1.2.5.6 of the TAC manual.

The sight distance availability for Driveways 1 and 2 were compared to the required value from the TAC manual and the results are summarized in Table 16.

Table 16 – Approximate Horizontal Turning Sight Distance

Driveway #	Direction	Actual Sight Distance	Required Sight Distance
1	Right turn (looking east)	>275 m	275 m
	Left turn (looking west)		
2	Right turn (looking east)	>275 m	275 m
	Left turn (looking west)		

Vertical Stopping Sight Distances (SSD) for proposed driveways on Eagle Street were reviewed. Based on a design speed of 70 km/h, the desired stopping sight distance ranges from 99.1 to 110.8 metres on Sag Vertical Curves, as identified in Table 2.1.3.4 of the TAC Manual. For the sight distance investigation, the stopping sight distance is measured based on an eye height of 1.05 metres to the object height of 0.38 metres.

The sight distance availability for Driveways 2 and 3 were compared to the required value from the TAC Manual and the results are summarized in Table 17.

Table 17 – Approximate Vertical Stopping Sight Distance

Driveway #	Direction	Actual Sight Distance	Required Sight Distance
1	Looking East	>111 m	99.1 - 110.8 m
	Looking West		
2	Looking East	>111 m	99.1 - 110.8 m
	Looking West		

In summary, the proposed driveways meet minimum horizontal and vertical sight distance requirements.

6.1.4 Driveway Gap Analysis

6.1.4.1 Existing Traffic Conditions at Site Driveway

Gap analyses were completed at the site driveways on Eagle Street for vehicles making left-turns to enter the site and for vehicles making left-turns to exit the site to determine if sufficient gaps will be available at the proposed driveway location(s).

Field surveys were completed by GENIVAR on Thursday May 27, 2010, at the proposed location of the site driveway (Eagle Street between Dixon Boulevard and Donlin Avenue) during the weekday peak periods. The results were analyzed using the ITE Traffic Engineering

Handbook, 5th Edition (pg. 124, Table 4-18) methodology for determining critical gaps (the time required for the first vehicle to accept a gap in roadway traffic) and follow-up times (the time required for the second vehicle to accept a gap in roadway traffic). The gap survey data is provided in Appendix G and the results of the analysis are presented in Table 18.

At the proposed location for a site driveway at Eagle Street, a southbound left turn is available when both eastbound and westbound lanes are clear at Eagle Street and an eastbound left turn is available with the westbound lane is clear on Eagle Street.

Table 18 – Critical Gaps and Follow-up Times at Eagle Street and Site Driveway – Existing Traffic Volumes

Time Period		Eastbound Left-turn from Eagle Street	Southbound Left- turn from Site Driveway
AM Peak Hour	Capacity	634	157
	Site Traffic	17	63
	Residual	617	94
PM Peak Hour	Capacity	501	59
	Site Traffic	71	27
	Residual	430	32

Results of the analysis indicate that if the site were developed today, traffic entering and exiting at the site driveway(s) are expected to have sufficient available gaps in roadway traffic during the weekday AM and PM peak hours.

6.1.4.2 Future Traffic Conditions at Site Driveways

A comparison of existing through roadway volumes and future through and future left-turn roadway volumes entering the site at the site driveway indicate approximately a 12.5 percent increase (2.5 percent per annum) in traffic volumes on Eagle Street with the site in operation by 2015. The results of the analysis for future conditions are shown in Table 19.

Table 19 – Critical Gaps and Follow-up Times at Eagle Street and Site Driveway – Future Traffic Volumes

Time Period		Eastbound Left-turn from Eagle Street	Southbound Left- turn from Site Driveway
AM Peak Hour	Capacity	555	137
	Site Traffic	17	63
	Residual	538	74
PM Peak Hour	Capacity	438	52
	Site Traffic	71	27
	Residual	367	25

Results of the gap analyses under future traffic conditions indicate that all movements entering and exiting the site driveway(s) are expected to have sufficient available gaps during the weekday AM and PM peak hours with the increase in traffic volumes estimated on Eagle Street.

6.2 On-site Parking

6.2.1 Parking Space Dimensions

On-site visitor parking spaces are provided with a stall length of 6.0 metres and a width of 2.60 metres, as per Section 5.2.2 (page 45) of the Town of Newmarket Zoning By-law, May 2010.

6.2.2 Parking Requirements and Supply

As per Section 5.3.1 (page 46) of the Town of Newmarket Zoning By-law, May 2010, requirements for residential tenant at the condominium building is 1.5 spaces per unit, requirements for residential tenant parking at the townhomes is 2.0 spaces per unit, and requirements for residential visitor parking is 0.25 spaces per unit. The overall parking requirement for the site containing 154 condominium units and 38 townhouse units is 356 parking spaces. The site parking requirements and supply are shown in Table 20.

Table 20 – Parking Requirements and Supply

Type of Parking	Units	Parking Requirement		Parking Provided (spaces)
		Rate (spaces/unit)	Requirement (spaces)	
Condominium - Tenant	154	1.5	231	231
Condominium - Visitor		0.25	39	39
Townhouse - Tenant	38	2.0	76	76
Townhouse - Visitor		0.25	10	14
Total	192		356	360

6.2.3 Site Parking Demands Based on Local Data

A review of the 2006 Transportation Tomorrow Survey (TTS) information on auto ownership for the planning district, in which the subject site is located, indicates the following trends:

- For townhomes, 3 percent do not own a vehicle, 47 percent own one vehicle, 42 percent own two vehicles, and 8 percent own three or more vehicles.
- For apartments (including condominiums), 13 percent do not own a vehicle, 73 percent own one vehicle, 14 percent own two vehicles, and 0 percent own three or more vehicles.

Applying these statistics to the proposed development results in a parking demand for 214 spaces for residential tenant/owner uses (or a parking rate of 1.12 spaces per unit). The results are summarized in Table 21.

As previously mentioned, applying the Newmarket by-law rate of 0.25 parking spaces per unit results in a visitor parking requirement of 49 spaces. As a result, the overall parking demand at the site is expected to be 263 parking spaces.

In summary, the proposed parking supply of 360 spaces meets Newmarket zoning by-law requirement of 356 spaces, of which 307 spaces are required for residents and 49 spaces are required for visitors. Based on the TTS review for local characteristics within the Town, the site parking demands could be as low as 263 parking spaces, of which 214 spaces would be for residents and 49 spaces would be for visitors.

Table 21 – Review of Anticipated Vehicle Ownership at the Site

Dwelling Type and Vehicle Ownership	Units	Newmarket 2006 TTS Data		
		TTS Auto Ownership, Newmarket (Planning District 27)		
		Townhomes	Condominium	Total
Condominium				
Private Road	154			
Town House				
Private Road	38			
Total units	192			
% units without vehicle =		3%	13%	
units without a vehicle =		1	20	
units with a vehicle =		37	134	
% units with 1 vehicle =		47%	73%	
% units with 2 vehicles =		42%	14%	
% units with 3+ vehicles =		8%	0%	
units with a vehicle:				
1-vehicle units =		18	112	
2-vehicle units =		32	43	
3+-vehicle units =		9	0	
Total parking=		59	155	214
Parking ratio =				1.12

Source: 2006 Transportation Tomorrow Survey data

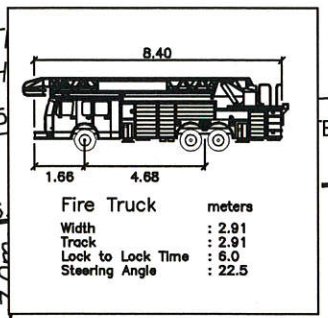
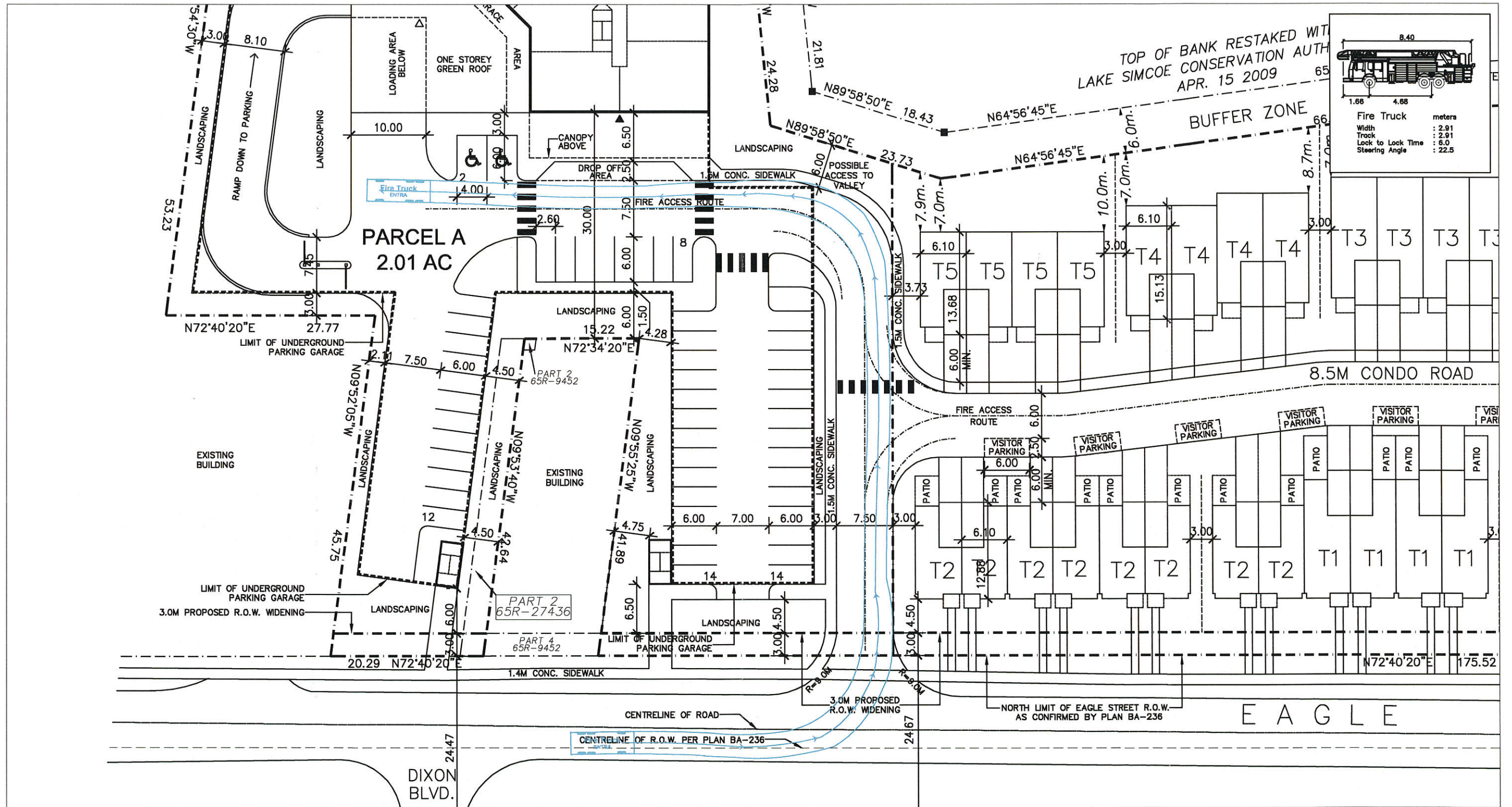
6.3 Internal Plan Review

The proposed internal roadways and site accesses were reviewed using AutoTURN 6.0 vehicle turning template software, as provided in Figure 9 through Figure 14.

Turning templates reviewed include:

- fire truck site access and egress and on-site circulation within the designated fire route
- TAC heavy single unit vehicle (moving truck) accessing and egressing the loading area to and from Eagle Street
- garbage truck accessing and egressing the loading area to and from Eagle Street

Results of the turning template review indicate that the site provides for the safe and efficient circulation of vehicles expected to use the site.

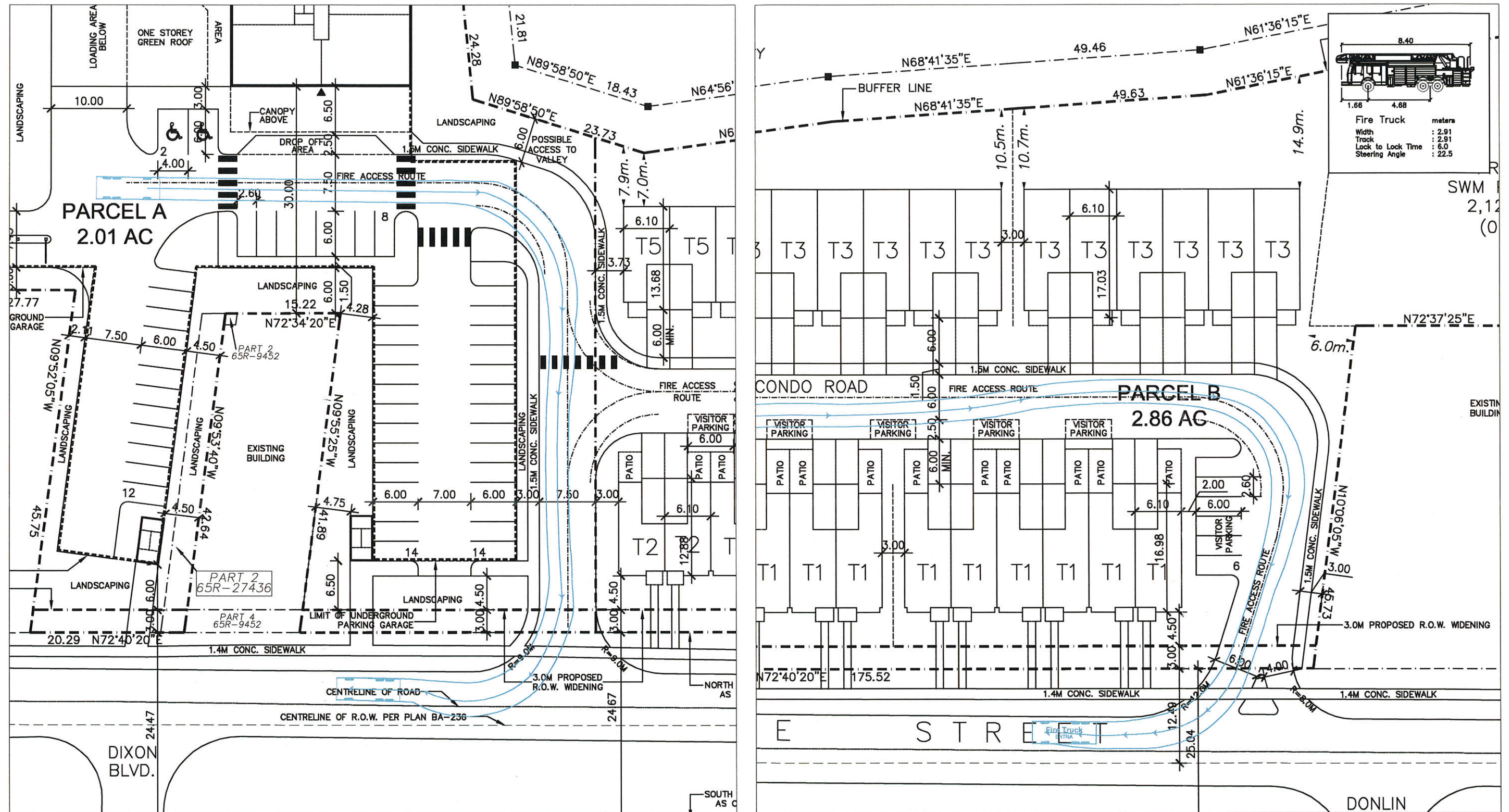


Source: PDA Architects, August 12, 2010

Scale: 1:500

Figure 9
 Vehicle Turning Template Review of Fire Truck Entering Site and Circulating On-site
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



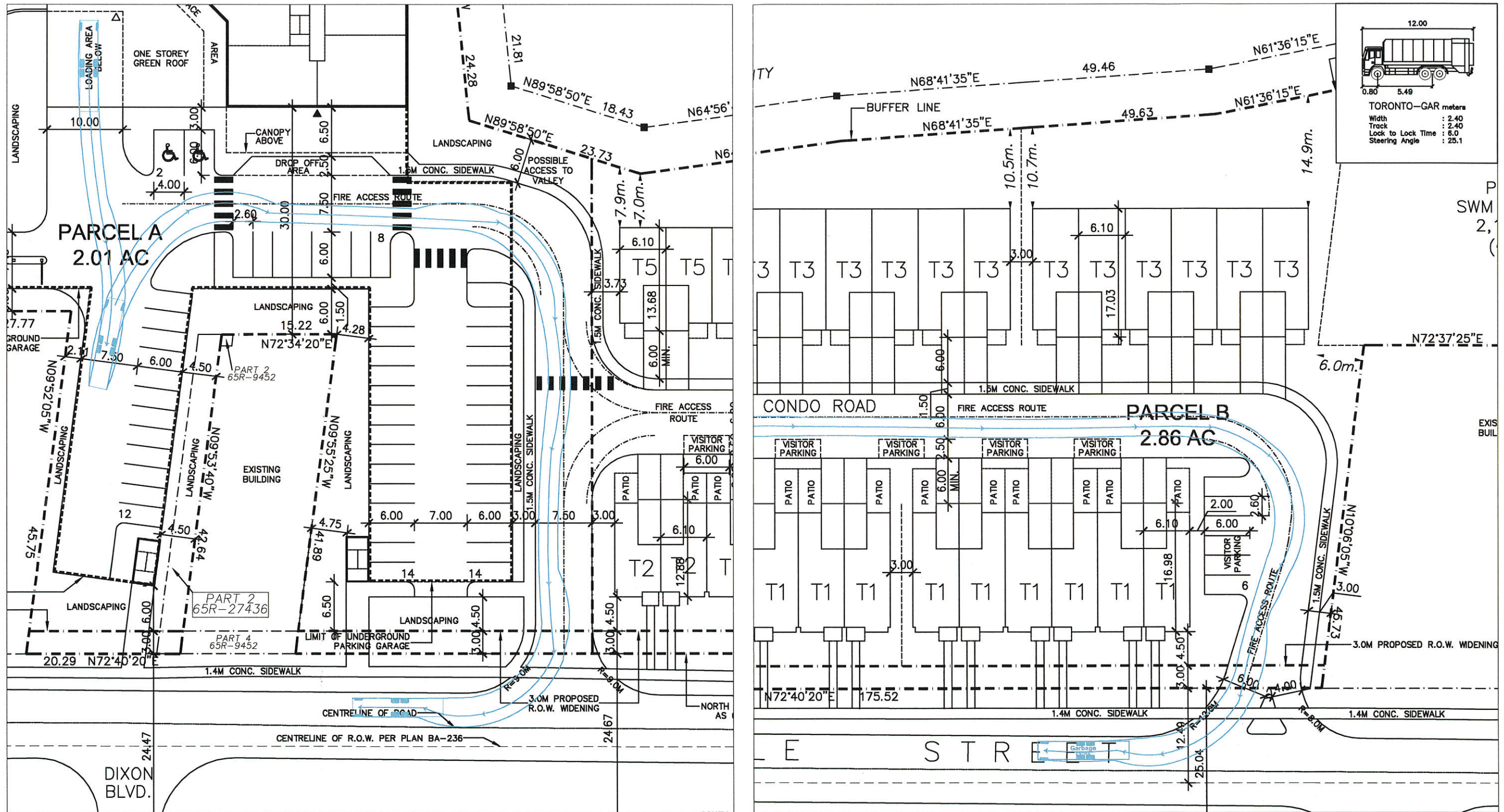


Source: PDA Architects, August 12, 2010

Scale: 1:1000

Figure 10
 Vehicle Turning Template Review of Fire Truck Exiting Site
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



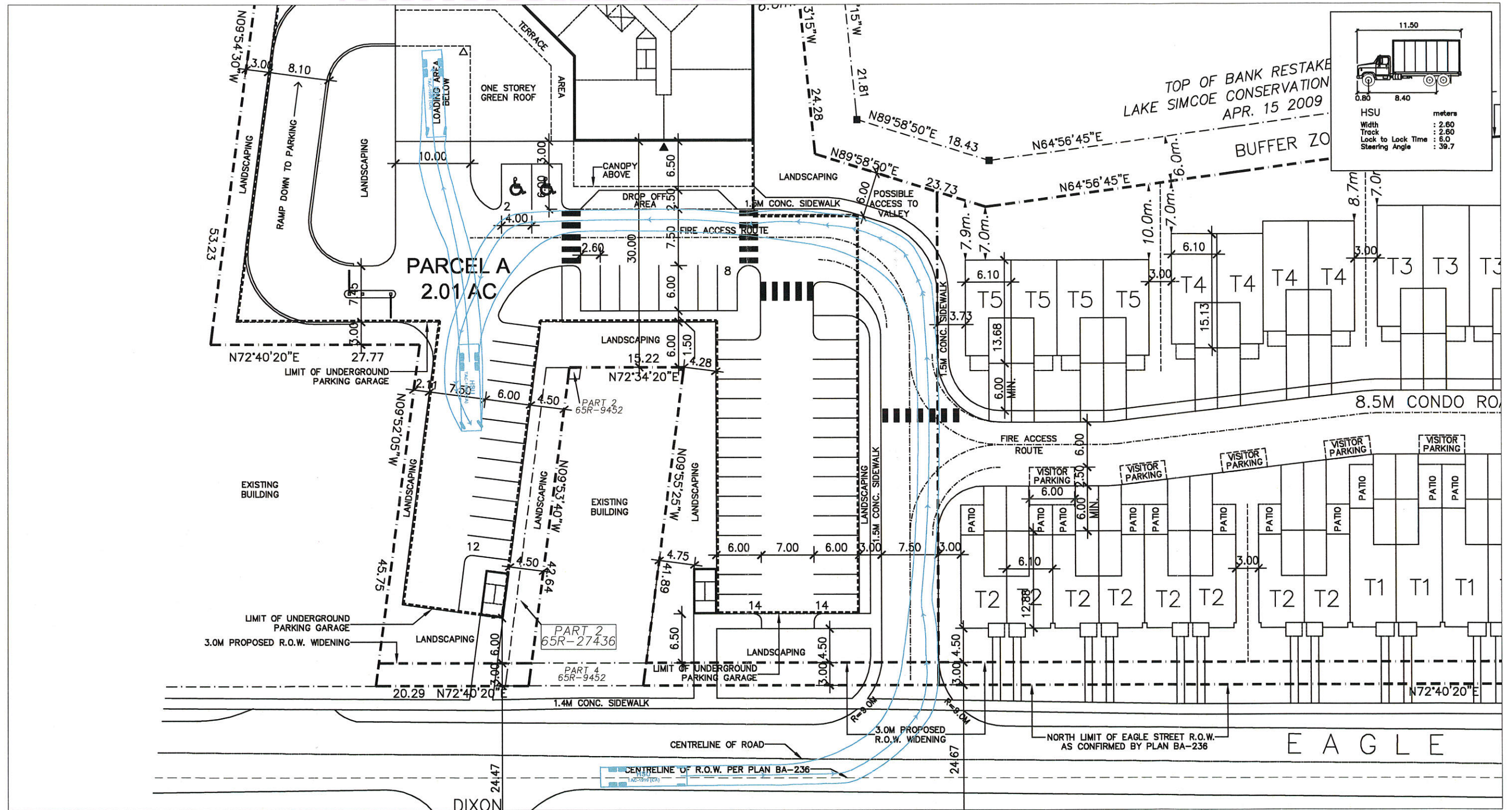


Source: PDA Architects, August 12, 2010

Scale:1:500

Figure 12
 Vehicle Turning Template Review of Garbage Truck Egressing Loading Area and Exiting Site
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



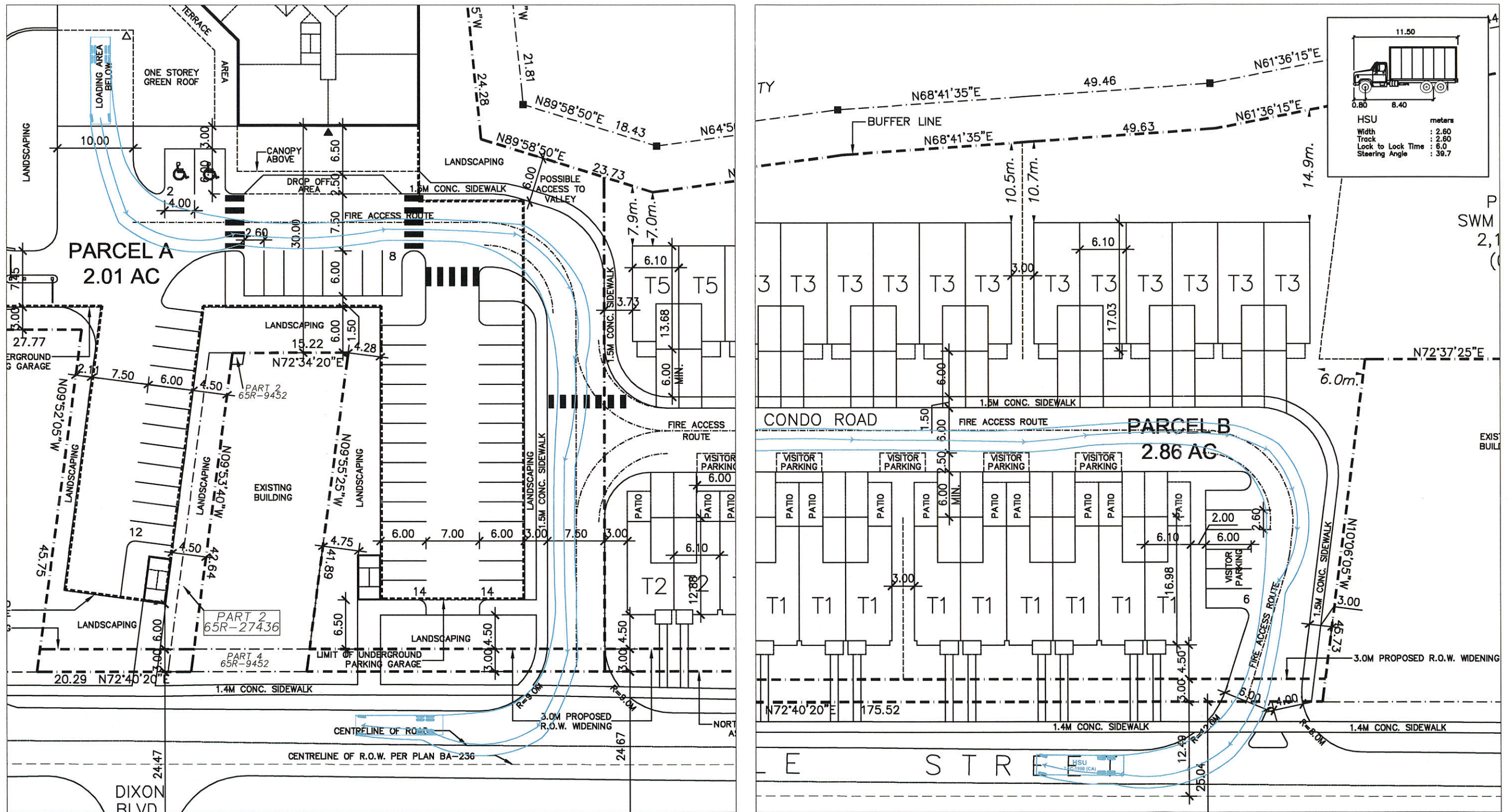


Source: PDA Architects, August 12, 2010

Scale:1:500

Figure 13
 Vehicle Turning Template Review of Heavy Single Unit Vehicle Entering Site and Accessing Loading Area
 Proposed Condominium Development, Eagle Street, Traffic Impact Study





Source: PDA Architects, August 12, 2010

Scale: 1:500

Figure 14
 Vehicle Turning Template Review of Heavy Single Unit Vehicle Egressing Loading Area and Exiting Site
 Proposed Condominium Development, Eagle Street, Traffic Impact Study



7. Summary and Conclusions

7.1 Summary

The Traffic Impact Study for the proposed condominium development at Eagle Street in the Town of Newmarket is summarized as follows:

- The proposed development consists of two parcels: Parcel A and Parcel B. Parcel A is a condominium building with 154 units. Parcel B contains 38 townhouse units. Parcel A and Parcel B combined contains 192 units.
- Results of the existing capacity analyses indicate that the study area intersections are currently operating at a good level of service and delay during the weekday AM and PM peak hours.
- The proposed development is expected to generate 169 trips (29 inbound trips and 140 outbound trips) during the weekday AM peak hour and 167 trips (112 inbound trips and 55 outbound trips) during the weekday PM peak hour. Site trips were distributed and assigned to the boundary roadways based on TTS data and local area travel patterns.
- A 2.5 percent annual growth rate was applied to through traffic volumes at Yonge Street in the study area for a 5-year horizon period based on a review of the North Yonge Street Corridor EA and a review of historic AADT counts. Similarly, a 2.5 percent annual growth rate is applied to through traffic volumes at Eagle Street for a 5-year horizon period to determine future background traffic growth.
- There is one planned area development of significance included in the analysis of background traffic volumes, which is a 400-unit residential condominium proposal at the northeast corner of Yonge Street and Millard Avenue.
- There are no roadway improvements scheduled at Eagle Street within the study area.
- Transit improvements in the Yonge Street corridor were outlined in the North Yonge Street Corridor Environmental Assessment, IBI Group, August 2008. The preferred initial response to immediate and medium-term conditions for transit improvements at Yonge Street between Mulock Drive and Green Lane include rapid transit operating in mixed traffic curb high occupancy vehicle lanes in conjunction with the widening of Yonge Street to six lanes. The traffic assessment assumes a worst-case scenario with no transit improvements.
- Results of the future background traffic capacity analyses indicate that the study area intersections continue to operate at an acceptable level of service (Yonge Street and Eagle Street operates below a volume-to-capacity ratio of 1.0). Similar to existing conditions, during the weekday PM peak hour, the westbound left turn movement is over capacity. However, with the proposed signal timing improvements, the intersection movement is expected to continue to operate similar to the existing situation under future background and total traffic conditions.

- Results of the total traffic capacity analyses indicate that the intersections continue to operate at an acceptable level of service and delay, similar to future background conditions. Site traffic has minimal impact on the overall operations of the study area intersections.
- The site driveways are expected to operate with good levels of service and delay, meet spacing and sight-distance requirements and are expected to operate with sufficient gaps to allow for site traffic to enter and exit.
- The site parking supply meets the parking requirements, as provided by the Town of Newmarket draft zoning by-law. A review of Transportation Tomorrow Survey data for the area indicates that site parking demands could be lower than the Newmarket by-law requirement.
- The site plan provides for the safe and efficient circulation of fire trucks, heavy single-unit trucks, garbage trucks and passenger vehicles.

7.2 Conclusions

The Traffic Impact Study conclusions are as follows:

- Under future background traffic conditions at the intersection of Eagle Street and Yonge Street, during the weekday AM peak hour, the westbound left and through movements and northbound left movement were increased slightly (by one second) to improve the overall volume-to-capacity ratio of the intersection.
- Under future background traffic conditions at the intersection of Eagle Street and Yonge Street, during the weekday PM peak hour, the cycle length was decreased from 130 seconds to 110 seconds to improve the overall volume-to-capacity ratio of the intersection. The proposed cycle length adjustment would not affect the operation of upstream and downstream intersections along Yonge Street as they are not coordinated with Eagle Street and Yonge Street.
- Increased traffic volumes at the intersection of Yonge Street and Eagle Street is mainly the result of increased background traffic, as site traffic volumes have a minimal impact on intersection operations. Overall, the intersections are expected to continue to operate at an acceptable level of service (below capacity) in the short-term (five-year horizon). Planned improvements to transit in the Yonge Street corridor would further improve intersection operations in the long-term.

10-024rep11-02-24Final.docx

Appendices

- A. Terms of Reference
- B. Turning Movement Counts and Signal Timing Plans
- C. Intersection Capacity Analysis
- D. Level of Service Definitions
- E. Transportation Tomorrow Survey Data
- F. Background Traffic Information
- G. Intersection Queue and Gap Survey Data

Appendix A

Terms of Reference



10-024

May 28, 2010

Mr. M. Kryzanowski
Town of Newmarket
395 Mulock Drive, P.O. Box 328, STN Main
Newmarket, ON L3X 1V8

**Re: Traffic Impact Study Assumptions – Residential Development – Eagle Street,
Town of Newmarket**

Dear Mr. Kryzanowski:

GENIVAR has been retained to complete a Traffic Impact Study (TIS) and Parking Review for a proposed residential subdivision located on Eagle Street, east of Yonge Street, in the town of Newmarket.

This letter outlines the key assumptions, parameters and methodologies for The Traffic Impact Study of the proposed development. Please review and provide comments and additional information/data where indicated.

Proposed Land Uses

The proposed development will contain two development parcels:

- Parcel A will consist of a 10-storey condominium building with approximately 141 residential dwelling units and 259 parking spaces
- Parcel B will consist of 41 townhouses and 14 visitor parking spaces

Site Access

The proposed development provides three accesses on Eagle Street. The site will be interconnected by an internal street.

The site is currently undeveloped and is surrounded by existing residential developments.

Study Area

Our study area will encompass the proposed site driveways and the intersections of:

- Yonge Street and Eagle Street
- Eagle Street and Dixon Boulevard
- Eagle Street and Donlin Avenue
- Eagle Street and Carol Avenue/Sandford Street

Study Guidelines

GENIVAR will conduct the TIS based on the following guidelines and by-laws:

- Transportation Impact Study Guidelines for Development Applications, York Region, August 2007
- York Region Official Plan, December 2009
- Town of Newmarket Official Plan, October 2006
- Comprehensive Zoning By-law, 3rd Draft, Town of Newmarket, May 2010

Analysis Period

GENIVAR will analyze weekday AM and PM peak hours.

Study Horizons

Based on the proposed development sizes, it is estimated that the generated peak hour total site trips will be less than 500. Also, it is anticipated that this development will be implemented once approval is granted. Therefore, as recommended in the Region's TIS Guidelines for Development Applications, the five-year horizon for this project will be assessed, which is 2015.

Traffic Counts

GENIVAR will use traffic counts completed within the last two years, as shown in Table 1.

Table 1 – Traffic Counts Sources

Intersection	Date	Source
Yonge Street and Eagle Street	February 2009	York Region
Eagle Street and Carol Avenue/Sandford Street	To be provided	Town of Newmarket
Eagle Street and Dixon Boulevard	May 2010	GENIVAR
Eagle Street and Donlin Avenue	May 2010	GENIVAR

Action: Please provide the turning movement counts at the intersection of Eagle Street and Carol Avenue/Sandford Street, as confirmed via email that the Town has less than two-year old turning movement counts.

GENIVAR has commissioned weekday turning movement counts at the unsignalized intersection of Eagle Street at Dixon Boulevard and Donlin Avenue. The counts were completed on Thursday, May 27, 2010.

Trip Generation

Site generated trips will be determined based on fitted curve equations for Residential Condominium/Townhouse for the retail building provided by the Institute of Transportation Engineers (ITE) Trip Generation, 8th Edition. The following ITE land use codes will be applied:

- Condominium units: ITE Land Use Code 230 – Residential Condominium/Townhouse
- Townhouse units: ITE Land Use Code 230 – Residential Condominium/Townhouse

Pass-by Trips/Diverted Link Trips

No pass-by trips or diverted link trips will be accounted for in the AM and PM peak hour site trips generated by the proposed residential development.

Trip Distribution and Assignment

GENIVAR will distribute and assign site trips based on 2006 Transportation Tomorrow Survey (TTS) data for home-based trips and based on local travel patterns for the Town of Newmarket.

Background Traffic Growth Rate

GENIVAR will review historical Average Annual Daily Traffic (AADT) volume counts (minimum of the past three years) on Yonge Street and Eagle Street to determine suitable background traffic growth rates related to through trips.

Area Developments

Action: Please indicate whether there are any other approved and planned improvements within the immediate study area within the next five years to be included in our assessment.

Roadway and Transit Improvements

Action: Please indicate whether there are any roadway, intersection and/or transit improvements within the study area scheduled within the next five years

Synchro Settings

GENIVAR will input parameters based on the Region's TIS Guidelines and signal timing data being collected from the Region. In the absence of the available parameters, GENIVAR will use the default Synchro 7.0 settings. The key parameters to be used are as follows:

- 0.92 peak hour factor (PHF)
- 1900 vphpl ideal saturated flow rate
- zero lost time adjustment

Site Access Review

The site access review will be conducted based on the Town's May 2010 Comprehensive Zoning By-law (3rd Draft) and Geometric Design Guide for Canadian Roads, published by the Transportation Association of Canada (TAC). The review will include the following:

- The driver sight distances, site access spacing, configuration and dimensions at the locations where the site accesses intersect the boundary roadways to ensure efficient traffic operations and conformance with Town and Region standards.
- Discussion with Town staff indicated that the Town required a gap and queuing analysis completed for the driveways to assess the operations of the multiple access in a

relatively short distance. A gap survey and a queue survey were conducted on May 27, 2010, for the following locations:

- gap survey for southbound left-turn from the site and eastbound left-turn into the site
- queuing study of westbound left-turn queue on Eagle Street at Yonge Street, Dixon Boulevard and Donlin Avenue, and westbound left-turn queue on Eagle Street between Dixon Boulevard and Donlin Avenue
- based on the gap and queuing survey, the study will determine if the proposed site access locations are acceptable and do not result in conflicts with left-turning vehicles, and, if turning lanes are required, determine recommended storage and taper length required to safely accommodate traffic to be generated from the proposed development

Action: Please advise/provide the standards/guidelines to be used to assess the driveway access and intersection spacing.

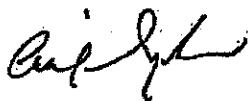
Site Plan Assessment

GENIVAR will conduct a review of the proposed site plan, including the site driveway, site parking, and on-site circulation based on the Town's by-laws, assess the operation of passenger vehicles and service vehicles (fire and garbage) and the accessibility of parking spaces using AutoTURN 6.0 vehicle turning template software.

We would appreciate if you could provide your comments on the above key assumptions and methodologies and requested data/information detailed in this letter by Wednesday, June 2, 2010. If you have any questions, please feel free to contact me or Sharon Sterling, the Project Manager.

Yours truly,

GENIVAR Consultants LP



Anil Seegobin, P.Eng
Traffic Analyst

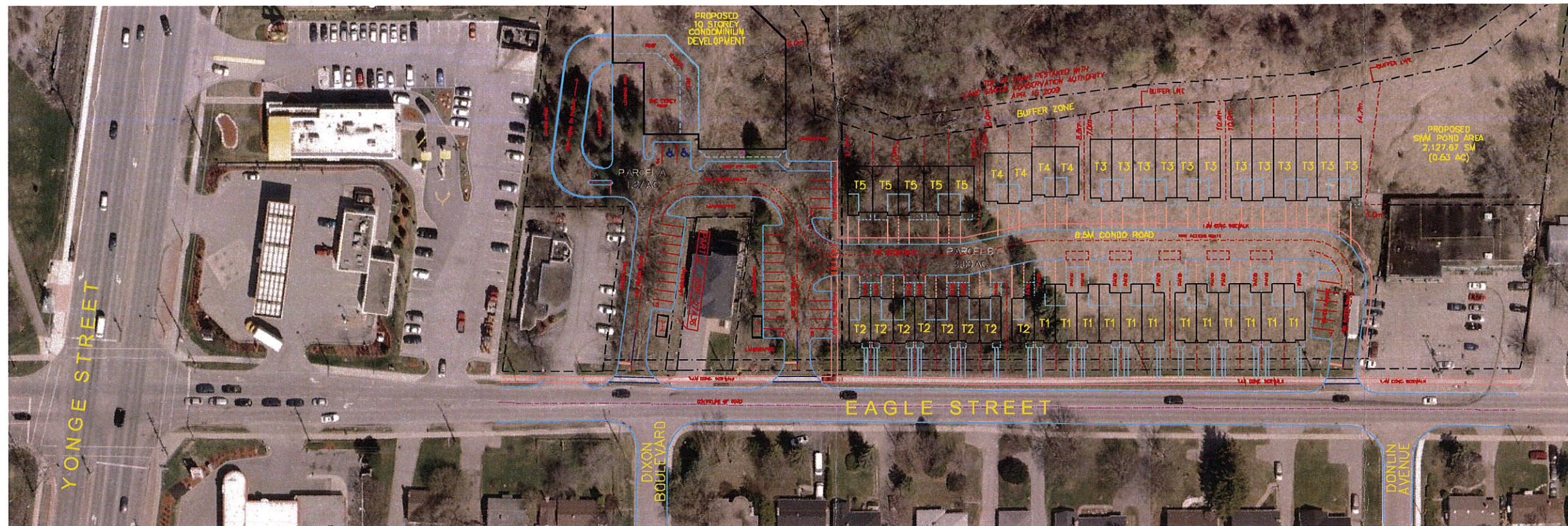
Attachment – Exhibit 1 – Proposed Site Plan and Context

cc: Carl Smith, York Region
Peter Allen, Peter E. Allen & Associates

TY/hf

10-024let10-05-26AnalysisAssumption.docx

Exhibit 1 - Proposed Site Plan and Context



Subject: RE: Terms of Reference - Eagle Street - Trip Rates
Date: Tuesday, June 8, 2010 4:06 PM
From: Kryzanowski, Mark <mkryzanowski@newmarket.ca>
To: ENTRA Consultants <anil.seegobin@genivar.com>
Cc: Sharon Sterling <Sharon.Sterling@genivar.com>

Anil,

There seems to be some mis-communication between yourself and Sharon OR maybe I am missing something. I have a voice message from Sharon that is stating the townhouse rate was to be used for the condo towers.

Whoever is the project manager for this project, I would appreciate one (1) email with the proposed rates one more time, for clarity, for my sake.

I must apologize that I am not as responsive on this, but I am in the middle of the second last Council cycle prior to election.

Thank you.

Mark Kryzanowski
Senior Transportation Coordinator
Engineering Services
Town of Newmarket
905-953-5300 extension 2508

From: Anil Seegobin [mailto:Anil.Seegobin@genivar.com]
Sent: Tuesday, June 08, 2010 3:21 PM
To: Kryzanowski, Mark
Subject: Re: Terms of Reference - Eagle Street - Trip Rates

Thanks. If you could respond to my previous email (also below) about the trip rates that would be helpful as well.

The average for Richmond Hill and Markham works out to 0.38 AM and 0.44 PM trips per apartment style unit. Condos are included as apartment style units. Please confirm that this approach is OK for generating trips for the condo building.

Thanks,

Anil

On 08/06/10 2:29 PM, "Kryzanowski, Mark" <mkryzanowski@newmarket.ca> wrote:
Anil,

No planned road improvements in the next 5 years on Eagle from Yonge to Carol.

Mark Kryzanowski
Senior Transportation Coordinator
Engineering Services
Town of Newmarket
905-953-5300 extension 2508

From: Anil Seegobin [mailto:Anil.Seegobin@genivar.com]
Sent: Tuesday, June 08, 2010 10:58 AM
To: Kryzanowski, Mark
Cc: Sharon Sterling; Thomas You
Subject: FW: Terms of Reference - Eagle Street

Hi Mark,

Could you please also confirm whether any road improvements are planned at Eagle Street from Yonge Street to Carol Avenue within the timeframe of the study (the next five years)? If drawings are available, please provide.

We will coordinate with York Region for info on transit improvements and for roadway improvements at Yonge Street (and review the North Yonge Street EA as requested).

Thanks,
Anil

----- Forwarded Message

From: ENTRA Consultants <anil.seegobin@genivar.com>
Date: Tue, 08 Jun 2010 10:21:47 -0400
To: "Kryzanowski, Mark" <mkryzanowski@newmarket.ca>
Cc: Thomas You <Thomas.You@genivar.com>, Sharon Sterling <Sharon.Sterling@genivar.com>

Conversation: Terms of Reference - Eagle Street

Subject: Re: Terms of Reference - Eagle Street

Good morning Mark,

Further to Sharon's email, we've completed the trip generation review as requested:

Please see attached. A comparison of Richmond Hill and Markham trips per apartment unit yields an AM trip rate of 0.38 and a PM trip rate of 0.44.

Note that the proposed development is a condominium building and not an apartment building. ITE rates for a condo/townhouse (land use code 230) are slightly higher at AM 0.44 and PM 0.49. Please indicate whether you agree with using the rates generated by the TTS review for the condominium building.

To complete the traffic study, we would also like to request the following:

1. A contact person at the Town (name, email, phone) to provide historic traffic counts (ATR or AADT) at Eagle Street, east of Yonge Street for the past five years.
2. A contact person at the Town to provide information on area background developments (and the associated traffic impact studies if the development is significant).

Thank you for your continued assistance.



Anil Seegobin, P.Eng | Traffic Engineer
GENIVAR | Constructive People
2800 Fourteenth Avenue, Suite 210
Markham, ON L3R 0E4
(905) 946-8900 | www.GENIVAR.com
Anil.Seegobin@genivar.com

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On 04/06/10 2:01 PM, "Kryzanowski, Mark" <mkryzanowski@newmarket.ca> wrote:
Sharon,

Thank you for the information. I feel that this method is a good alternative for the ITE rates for townhouses. The rate is more what have seen from some of the larger townhouse blocks. However, this method illustrates the potential flaw for apartment rates. I am not sure what TTS classifies as an 'apartment', but a significant number of apartment buildings in the town are either senior's apartments or retirement complexes. Peak hour and total trips generation for these are typically low, and significant enough to possibly skew the results.

I might suggest a similar exercise be undertaken for Richmond Hill and Markham as comparison. These two municipalities have similar transportation infrastructure and a little better transit service. These two rates may be reflective of the future trip rate for the apartment buildings in Newmarket. If they are reasonably comparable, then we can go with your rates proposed.

Mark Kryzanowski
Senior Transportation Coordinator
Engineering Services
Town of Newmarket
905-953-5300 extension 2508

From: Sharon Sterling [mailto:Sharon.Sterling@genivar.com]
Sent: Friday, June 04, 2010 11:36 AM
To: Kryzanowski, Mark

Cc: Thomas You; Anil Seegobin; Aida Rifdi
Subject: Re: Terms of Reference - Eagle Street

Hi Mark

Thanks for your comments on our proposed TRF. Regarding the trips rate I understand your concerns. We do have in-house rate but I am concerned that they are an over representation of a much more Urban environment and transit plays a much bigger role so I think you might have the same or similar concerns as you do with the ITE rates.

As you know proxy surveys can be very useful, but site and characteristic of the development has comparable and there is the issue of access when the site or property is own by a third party.

Therefore, we decided to develop local trip rates using the 2006 TTS data for Newmarket. I hope we can agree on this approach, the resulting trips rates are significantly higher than ITE rates.

Methodology

- retrieve the total number of dwelling in Newmarket by type (House, Apartment and Townhouse)
- retrieve the total number of trips originating from dwelling units in Newmarket by type (House, Apartment and Townhouse)
- trips were retrieve for the AM and PM peak period,
- mode of travel auto
- used the number of trips and number of dwellings to generate trips per dwelling type

Results

- House: 1.05/unit AM Peak; 1.17/unit PM Peak
- **Townhouse: 0.88/unit AM Peak; 0.87/unit PM Peak**
- Apartment : 0.25/unit AM Peak; 0.38/unit PM Peak

Recommendation:

- Use the townhouse trip rate for the site (including high-rise condo and

Townhouses)

- **Townhouse: 0.88/unit AM Peak; 0.87/unit PM Peak**
- **use ITE Townhouse percentage for the directional Distribution**
 - AM 17% inbound, 83% outbound
 - PM 67% inbound , 33% outbound

The corresponding rate in ITE (Code 230) is 0.44/unit in the AM peak and 0.52/unit in the PM peak.

The proposed rates are 100% higher in the AM and 65% in the PM.

The summary page is attached.

Mark, please indicate if you can support the proposed rates?

Site Assignment:

- assignment based on 2006 TTS and local travel pattern

I have also attached our propose site trip assignment, if you have any comments.

Thanks
Sharon



Sharon Sterling | Director, Traffic Management
GENIVAR | Constructive People
2800 Fourteenth Avenue, Suite 210
Markham, ON L3R 0E4
(905) 946-8900 | www.GENIVAR.com

Sharon.Sterling@genivar.com



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From: Heather Ferren <heather.ferren@genivar.com>
Date: Mon, 31 May 2010 16:35:17 -0400
To: Sharon Sterling <sharon.sterling@genivar.com>, Anil Seegobin <anil.Seegobin@genivar.com>
Subject: FW: Terms of Reference - Eagle Street



Heather Ferren | Administrator
GENIVAR | Constructive People
2800 Fourteenth Avenue, Suite 210
Markham, ON L3R 0E4
(905) 946-8900 | www.GENIVAR.com
Heather.Ferren@genivar.com

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From: "Kryzanowski, Mark" <mkryzanowski@newmarket.ca>
Date: Mon, 31 May 2010 16:33:49 -0400
To: Heather Ferren <heather.Ferren@genivar.com>
Cc: "Taylor, Duayne" <dtaylor@newmarket.ca>, "O'Brien, Michelle" <mobrien@newmarket.ca>, "Ruggle, Dave" <druggle@newmarket.ca>
Subject: Terms of Reference - Eagle Street

Heather, can you please forward this to Sharon and/or Anil, I do not have their email address.

I have reviewed the Terms of Reference dated May 28, 2010, and offer the following comments.

1. Traffic Counts. Please find attached is the traffic count for Eagle/Caro/Sandford. Please submit \$80.00 (\$76.19 + 3.81 GST) to the Town.
2. Trip generation. While ITE generation rates are industry standards, the Town would prefer any proxy or in-house rates. Generally, the trip generation rates for Townhouses appear to be low, and given the nature of the townhouse, it is expected that the auto ownership would be higher.
3. Background Traffic Growth Rates. York Region has conducted an EA for the VIVANext project on Yonge Street and Davis Drive. All traffic information should conform to this. For actually developments within the 5 year timeframe, I would defer this question to Planning.
4. Roadways and Transit – See above comment regarding VIVANext.
5. Site Access Review. There are standards within the zoning by-law related to access locations and size. The Town uses TAC and/or York Regions access guidelines to determine safety of access driveways.
6. The remaining contents are acceptable.

It should be noted that the traffic counts were undertaken using traffic cameras on sizeable tri-pods within the Town's boulevards. These types of traffic counting equipment would require a Road Occupancy permit. In the future, please ensure that a Road Occupancy permit is applied for, or Town forces will remove the counting equipment.

Let me know if you have any questions.

Mark Kryzanowski
Senior Transportation Coordinator
Engineering Services
Community Services Commission
Town of Newmarket
395 Mulock Drive
Newmarket, ON L3Y 4X7
Tel: 905-953-5300 press 2, extension 2508
Fax: 905-953-5138
Email: mkryzanowski@newmarket.ca
www.newmarket.ca <<http://www.newmarket.ca>>

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Anil Seegobin, P.Eng | Traffic Engineer
GENIVAR | Constructive People
2800 Fourteenth Avenue, Suite 210
Markham, ON L3R 0E4

2006 Derived TTS Trip Rates by Dwelling Type for Town of Newmarket

Dwelling Type	Total Units	AM		PM	
		Origin Trips	Rate	Origin Trips	Rate
House	19,578	20,497	1.05	22,968	1.17
Townhouse	2,510	2,206	0.88	2,185	0.87
Apartment	3,012	747	0.25	1,145	0.38

- Source: 1. The origin trips made by auto in the Town of Newmarket were derived from the 2006 TTS.
 2. The start time of trips were made during the two-hour periods in the AM (7:00-9:00) and in the PM (16:00-18:00).
 3. The total number of households and their distribution by dwelling type were as per the TTS report for the Town of Newmarket.

USER : Sharon Sterling - Entra Consultants
 DATE : Jun 3 2010 (11:03:11)
 DATA : 2006 TTS Vers 1.0 Trips
 FILTER 1 : mode_prime => Auto driver
 FILTER 2 : start_time => 700-900
 FILTER 3 : dwell_type => House, Apartment, Townhouse
 FILTER 4 : pd_hhld => Newmarket
 ROW : pd_hhld
 COLUMN : dwell_type

,House,Apartment,Townhouse
 Newmarket,20497,747,2206

USER : Sharon Sterling - Entra Consultants
 DATE : Jun 3 2010 (11:03:11)
 DATA : 2006 TTS Vers 1.0 Trips
 FILTER 1 : mode_prime => Auto driver
 FILTER 2 : start_time => 1600-1800
 FILTER 3 : dwell_type => House, Apartment, Townhouse
 FILTER 4 : pd_hhld => Newmarket
 ROW : pd_hhld
 COLUMN : dwell_type

,House,Apartment,Townhouse
 Newmarket,22968,1145,2185

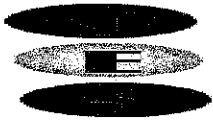
Derived 2006 TTS Trip Rates for Apartments

Dwelling Type	Total Units	AM		PM	
		Origin Trips	Rate	Origin Trips	Rate
Newmarket	3,012	747	0.25	1,145	0.38
Markham	6,948	2,680	0.39	2,941	0.42
Richmond Hill	6,630	2,441	0.37	3,025	0.46
Average for Markham and Richmond Hill	13,578	5,121	0.38	5,966	0.44

- Source: 1. The origin trips made by mode of auto were derived from the 2006 TTS.
 2. The start time of trips were made during the two-hour periods in the AM (7:00-9:00) and in the PM (16:00-18:00).
 3. The total number of households and their distribution by dwelling type were as per the TTS summary report.

Appendix B

Turning Movement Counts and Signal Timing Plans

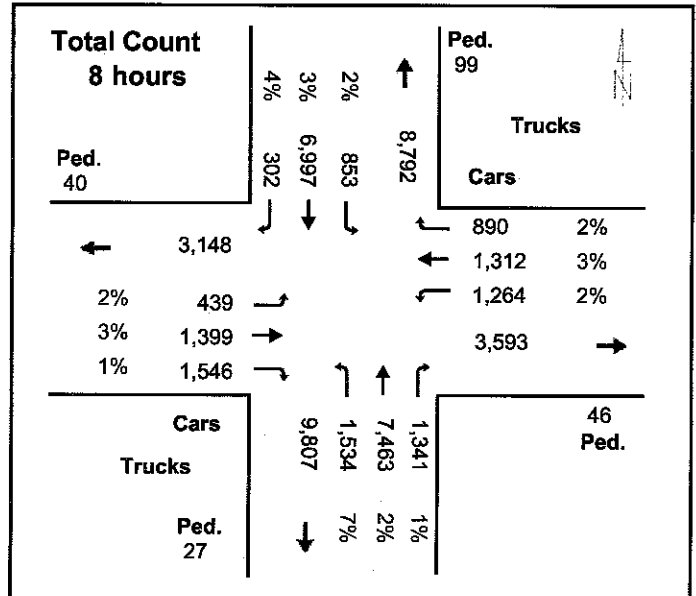
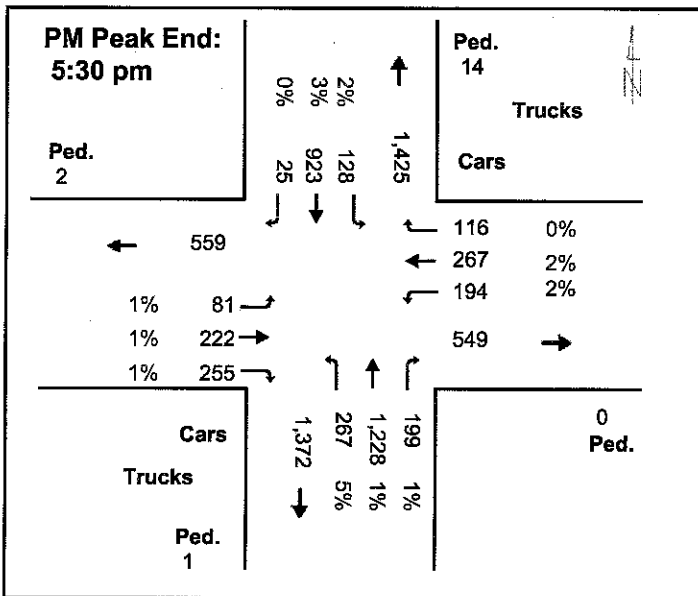
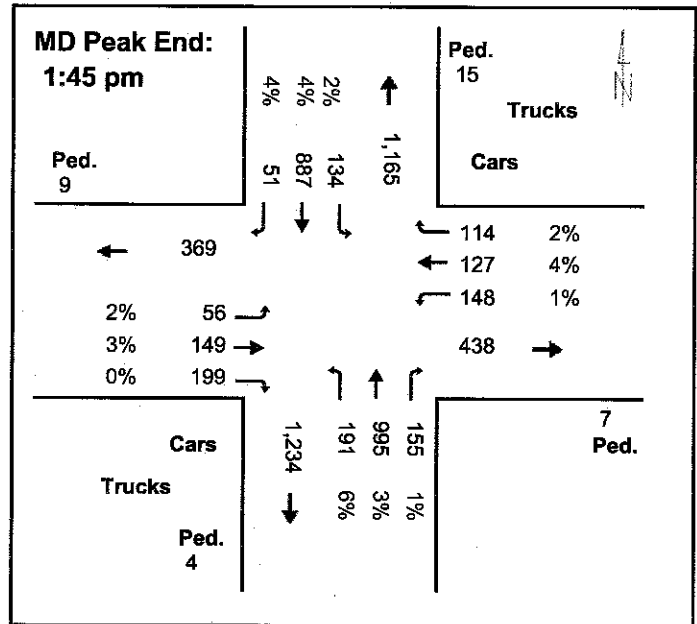
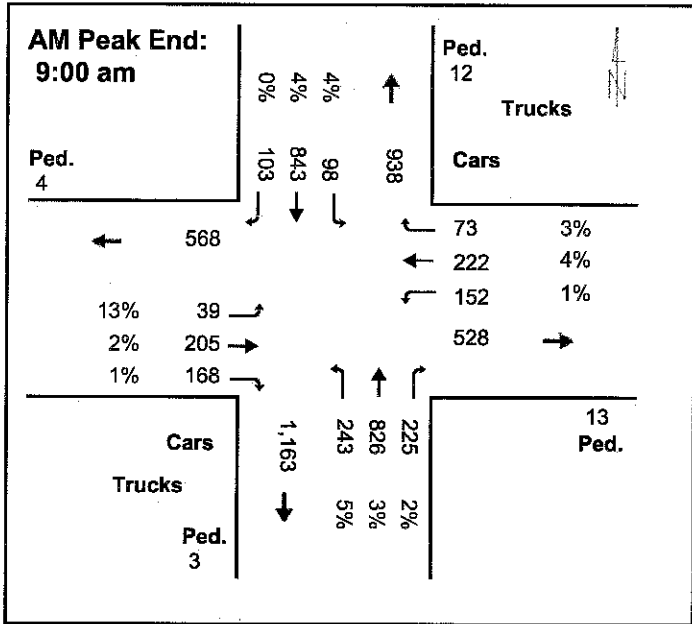


Eagle St @ Yonge St Newmarket

Intersection ID:960

Count Day:Wednesday

Count Date: 11-Feb-2009

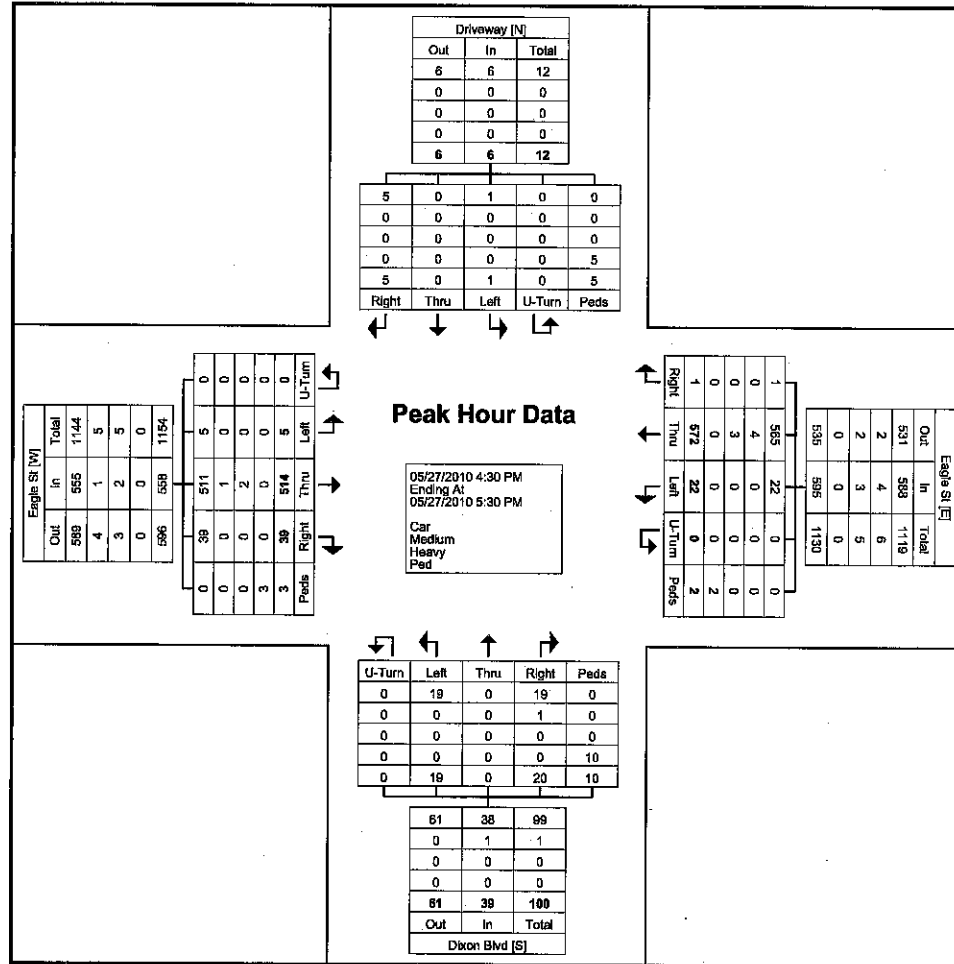




Horizon Data Services Ltd.
318 Simonston Boulevard

Thornhill, Ontario, Canada L3T4T5
(416) 436-3166 irie.one@rogers.com

Count Name: Dixon Blvd & Eagle St
Site Code:
Start Date: 05/27/2010
Page No: 7



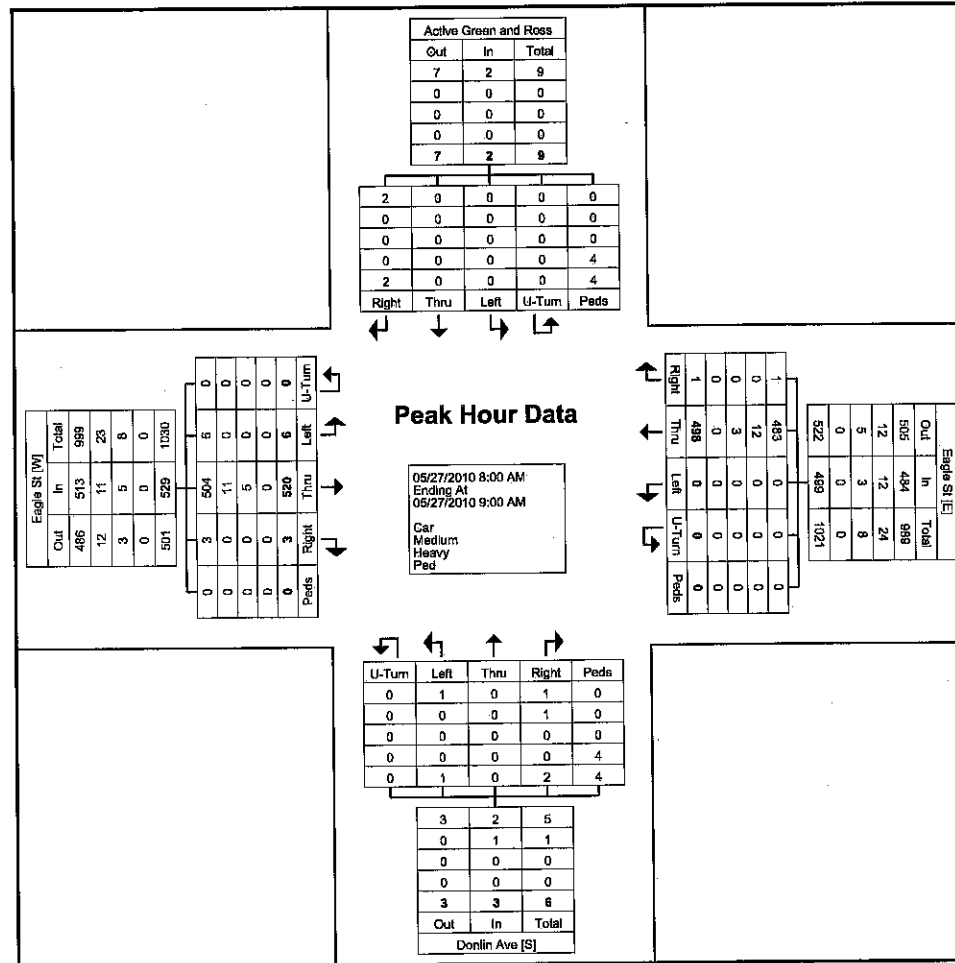
Turning Movement Peak Hour Data Plot (4:30 PM)



Horizon Data Services Ltd.
318 Simonston Boulevard

Thornhill, Ontario, Canada L3T4T5
(416) 436-3166 irie.one@rogers.com

Count Name: Eagle St & Donlin Ave
Site Code:
Start Date: 05/27/2010
Page No: 5



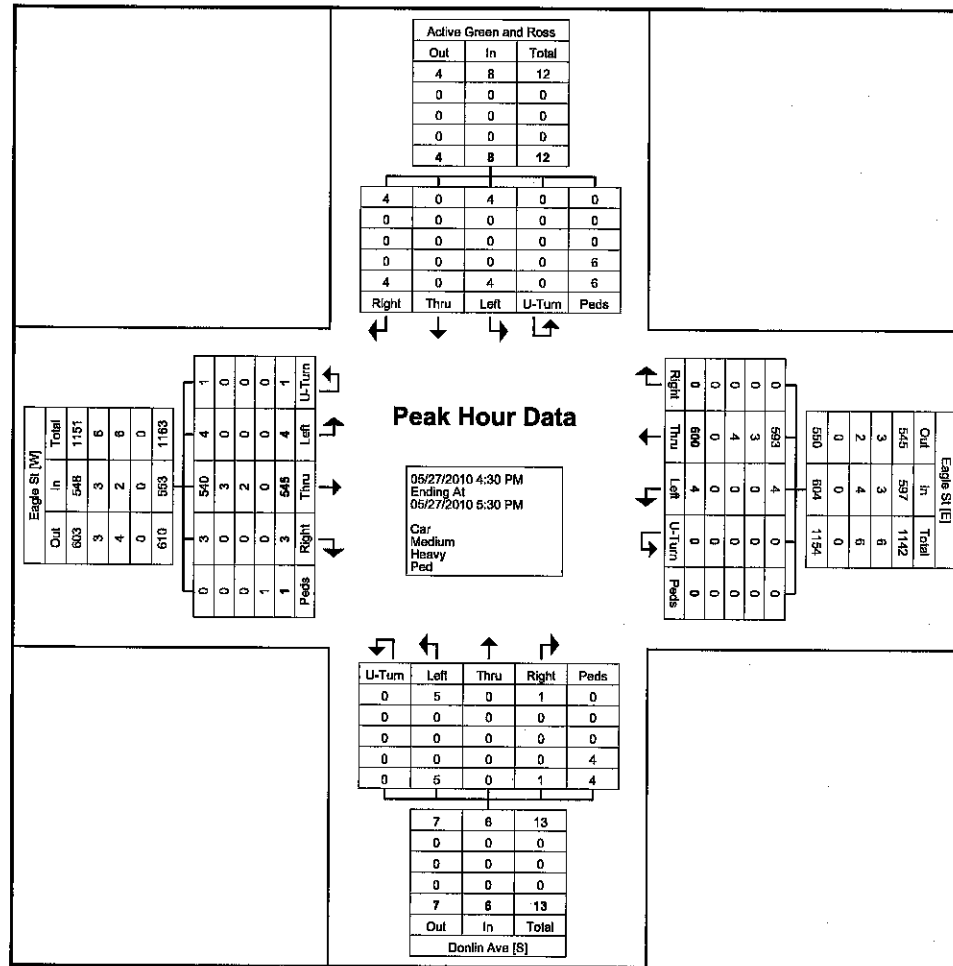
Turning Movement Peak Hour Data Plot (8:00 AM)



Horizon Data Services Ltd.
318 Simonston Boulevard

Thornhill, Ontario, Canada L3T4T5
(416) 436-3166 iria.one@rogers.com

Count Name: Eagle St & Donlin Ave
Site Code:
Start Date: 05/27/2010
Page No: 7



Turning Movement Peak Hour Data Plot (4:30 PM)

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 9:00:00

One Hour Peak

From: 8:00:00

To: 9:00:00

Municipality: Newmarket
Site #: 0900600039
Intersection: Eagle & Carol
TFR File #: 4
Count date: 14-Oct-09

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Eagle runs W/E

North Leg Total: 189
 North Entering: 108
 North Peds: 4
 Peds Cross: 2

Heavys	0	0	1	1
Trucks	0	0	0	0
Cars	41	44	22	107
Totals	41	44	23	

Heavys	0
Trucks	1
Cars	80
Totals	81

East Leg Total: 1115
 East Entering: 499
 East Peds: 5
 Peds Cross: 2

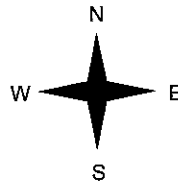
Heavys	Trucks	Cars	Totals
12	8	492	512



Cars	Trucks	Heavys	Totals
7	0	0	7
408	7	11	426
58	3	5	66
473	10	16	



Eagle



Heavys	Trucks	Cars	Totals
0	0	15	15
6	6	466	478
1	1	29	31
7	7	510	



Eagle



Peds Cross: 2
 West Peds: 1
 West Entering: 524
 West Leg Total: 1036

Cars	131	Cars	43	58	110	211
Trucks	4	Trucks	1	1	3	5
Heavys	6	Heavys	1	0	2	3
Totals	141	Totals	45	59	115	



Carol



Cars	Trucks	Heavys	Totals
598	9	9	616

Peds Cross: 2
 South Peds: 5
 South Entering: 219
 South Leg Total: 360

Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 16:30:00

To: 17:30:00

Municipality: Newmarket
Site #: 0900600039
Intersection: Eagle & Carol
TFR File #: 4
Count date: 14-Oct-09

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Eagle runs W/E

North Leg Total: 298
 North Entering: 153
 North Peds: 4
 Peds Cross: 2

Heavys	0	0	0	0
Trucks	0	0	1	1
Cars	23	92	37	152
Totals	23	92	38	



Heavys 0
 Trucks 0
 Cars 145
 Totals 145

East Leg Total: 1230
 East Entering: 632
 East Peds: 7
 Peds Cross: 2

Heavys	Trucks	Cars	Totals
2	3	595	600



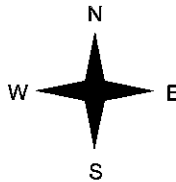
Carol



Cars	Trucks	Heavys	Totals
17	0	0	17
512	3	2	517
97	0	1	98
626	3	3	



Eagle



Eagle



Heavys	Trucks	Cars	Totals
0	0	31	31
3	3	487	493
0	0	62	62
3	3	580	



Carol



Cars	Trucks	Heavys	Totals
591	4	3	598

Peds Cross: 2
 West Peds: 1
 West Entering: 586
 West Leg Total: 1186

Cars	251
Trucks	0
Heavys	1
Totals	252



Cars	60	97	67	224
Trucks	0	0	0	0
Heavys	0	0	0	0
Totals	60	97	67	

Peds Cross: 2
 South Peds: 7
 South Entering: 224
 South Leg Total: 476

Comments

Regional Municipality of York
 Centralized Traffic Control System
 Timing Pattern Summary Report - Intersection



Intersection Name : Yonge St. - Eagle St.

<u>Pattern Name</u>	<u>Mode</u>	<u>Cycle</u>	<u>Splits (sec)</u>	<u>offset</u>	<u>Max Green</u>	<u>Omits</u>	<u>Yeh. Recall</u>	<u>Fed. Omits</u>	<u>Fed. Recalls</u>	<u>Spec. O/P</u>
AM Peak	TBC	130	20 59 14 37 14 65 00 51	61	111111111	NNNNNNNN	XXXXXXXXXX	NNNN	NNNN	*****
AM Weekend	TBC	130	20 59 14 37 14 65 00 51	60	111111111	NNNNNNNN	XXXXXXXXXX	NNNN	NNNN	*****
Free Plan	Free	0	00 00 00 00 00 00 00	0	111111111	NNNNNNNN	XXXXXXXXXX	NNNN	NNNN	*****
Off Peak	TBC	120	23 46 14 37 14 55 00 51	82	111111111	NNNNNNNN	XXXXXXXXXX	NNNN	NNNN	*****
PM Peak	TBC	140	25 65 12 38 14 76 00 50	83	111111111	NNNNNNNN	XXXXXXXXXX	NNNN	NNNN	*****
PM Weekend	TBC	140	25 65 12 38 14 76 00 50	118	111111111	NNNNNNNN	XXXXXXXXXX	NNNN	NNNN	*****

Not Returned To Manual Operation

28-Oct-2009

**Regional Municipality of York
Centralized Traffic Control System
Controller Scheduler Summary Report - Intersection**



Intersection Name : Yonge St. - Eagle St.

Weekly Plan : Yonge at Eagle St

Time of Day	Timing Pattern	MON	TUE	WED	THU	FRI	SAT	SUN
06:00	AM Peak	X	X	X	X	X	-	-
08:00	AM Weekend	-	-	-	-	-	X	X
09:00	Off Peak	X	X	X	X	X	-	-
10:00	PM Weekend	-	-	-	-	-	X	X
15:30	PM Peak	X	X	X	X	X	-	-
19:00	AM Weekend	-	-	-	-	-	X	X
19:30	Off Peak	X	X	X	X	X	-	-
23:59	Free Plan	X	X	X	X	X	X	X

Annual Calendar: Yonge at Eagle St

Default Weekly Schedule : Yonge at Eagle St

Date _____ **Schedule (If blank, use the default weekly schedule)** _____



INTERSECTION NAME: **Yonge St. (YR 1) & Eagle Street**
 PROGRAMMED BY: T. Hanrahan
 CONTROLLER SERIAL #: _____

CTCS #: _____
 ADDRESS: 33
 SECURITY CODE: 1000
 PROGRAM DATE: May 1, 2001
 INSTALLATION DATE: May 1, 2001

MEMORY/RECALL/CNA (MM-2-2-1)

	1	2	3	4	5	6	7	8
MEMORY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
EXT RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
MAX RECALL	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
PED RECALL	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
CNA I	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
CNA II	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
FL WALK	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SOFT RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
WALK REST	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
COND PED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
FWTPCL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

- | | |
|-------------------|-------------------|
| 1 - N/B Left Turn | 5 - S/B Left Turn |
| 2 - Southbound | 6 - Northbound |
| 3 - W/B Left Turn | 7 - not used |
| 4 - Eastbound | 8 - Westbound |

PHASE TIMINGS (MM-2-2-2)

	1	2	3	4	5	6	7	8
MIN GREEN	7	30	7	10	7	30	0	10
PASSAGE	3.0	0	3.0	3.0	3.0	0	0	3.0
YELLOW	3.0	5.0	3.0	5.0	3.0	5.0	0	5.0
RED	1.0	2.0	1.0	2.0	1.0	2.0	0	2.0
MAX I	720	30/5	207	402	207	30/5	0	4020
MAX II	20	30	20	40	20	30	0	40
WALK	0	7	0	7	0	7	0	7
PED CLEAR	0	128	0	118	0	125	0	125
S/A	0	0	0	0	0	0	0	0
TBR	0	0	0	0	0	0	0	0
TTR	0	0	0	0	0	0	0	0
MIN GAP	0	0	0	0	0	0	0	0
MAX VI	0	0	0	0	0	0	0	0
MAX EXT	0	0	0	0	0	0	0	0
AUTO MAX	0	0	0	0	0	0	0	0
AMR	0	0	0	0	0	0	0	0

Range: 0-9.9 or 127 except max times and auto max which are 0-255 secs.

PHASES USED (MM-2-2-3-1)

PHASE	1	2	3	4	5	6	7	8
ON/OFF	ON	ON	ON	ON	ON	ON	Off	ON

SEQUENCE (MM-2-2-3-2)

2	1=Sequential, 2= Dual Ring, 3-7= Spec, 8=Lead/Lag
---	---

LEAD/LAG MODES (MM-2-2-3-2-PGDN...only if Seq = Lead/Lag)

PAIRS	1 AND 2	3 AND 4	5 AND 6	7 AND 8
CODE				

Codes: 1 = No Reversal, 2 = Always Reverse, 3 = Rev. by CSO or Clock

LEAD/LAG BARRIERS (MM-2-2-3-2-PGDN-PGDN...only if lead/lag)

LEAD/LAG BARRIERS ARE:	ON/OFF
------------------------	--------

On = Barriers after each ring 1 and 2 phase pair in a vertical column

SPECIAL INCOMPATIBILITIES (MM-2-2-3-3)

PHASE	1	2	3	4	5	6	7	8
INCOMPAT PH 1-8								
INCOMPAT PH 1-8								

INITIALIZE / FLASH (MM-2-2-4)

1 = RED, 2 = YEL., 3 = GRN

	INITIALIZE	ENTER FL	EXIT FL
RING 1 PHASE	2	2	2
RING 2 PHASE	6	6	6
INTERVAL	2	1	2

NOTE: Enter flash interval is permanently set to 1 (RED)

POWER-UP RESTART TIMINGS (MM-2-2-4-PGDN)

MINIMUM FLASH	(0-9.9 or 127 SECONDS)
1ST ALL RED AFTER FLASH	(0-9.9 or 127 SECONDS)

NOTE: Blanks = 0, OFF, or controller default values

Handwritten notes:
 220
 30/5
 207



INTERSECTION NAME: **Eagle St. (YR 5) & Carol / Sandford**

PROGRAMMED BY: **D. Rumble**

CONTROLLER SERIAL #: _____

CTCS #: _____

ADDRESS: _____

SECURITY CODE: _____

PROGRAM DATE: _____

INSTALLATION DATE: _____

532

2

1000

Oct 29, 2001

Oct 29, 2001

MEMORY/RECALL/CNA (MM-2-2-1)

	1	2	3	4	5	6	7	8
MEMORY	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
EXT RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
MAX RECALL	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
PED RECALL	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
CNA I	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
CNA II	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
FL WALK	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SOFT RECALL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
WALK REST	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
COND PED	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
FWTPCL	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

- | | |
|----------------|----------------|
| 1 - Not Used | 5 - Not Used |
| 2 - Westbound | 6 - Eastbound |
| 3 - Not Used | 7 - Not Used |
| 4 - Southbound | 8 - Northbound |

PHASE TIMINGS (MM-2-2-2)

	1	2	3	4	5	6	7	8
MIN GREEN	0	30	0	10	0	30	0	10
PASSAGE	0	0	0	3.0	0	0	0	3.0
YELLOW	0	5.0	0	4.0	0	5.0	0	4.0
RED	0	2.0	0	2.0	0	2.0	0	2.0
MAX I	0	40	0	19	0	40	0	19
MAX II	0	50	0	50	0	50	0	50
WALK	0	7	0	7	0	7	0	7
PED CLEAR	0	13/6	0	8/2	0	13/6	0	8/2
S/A	0	0	0	0	0	0	0	0
TBR	0	0	0	0	0	0	0	0
TTR	0	0	0	0	0	0	0	0
MIN GAP	0	0	0	0	0	0	0	0
MAX VI	0	0	0	0	0	0	0	0
MAX EXT	0	0	0	0	0	0	0	0
AUTO MAX	0	0	0	0	0	0	0	0
AMR	0	0	0	0	0	0	0	0

*Revised
5/12/02*

Range: 0-9.9 or 127 except max times and auto max which are 0-255 secs.

PHASES USED (MM-2-2-3-1)

PHASE	1	2	3	4	5	6	7	8
ON/OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON

SEQUENCE (MM-2-2-3-2)

2	1=Sequential, 2= Dual Ring, 3-7= Spec, 8=Lead/Lag
----------	---

LEAD/LAG MODES (MM-2-2-3-2-PGDN....only if Seq = Lead/Lag)

PAIRS	1 AND 2	3 AND 4	5 AND 6	7 AND 8
CODE				

Codes: 1 = No Reversal, 2 = Always Reverse, 3 = Rev. by CSO or Clock

LEAD/LAG BARRIERS (MM-2-2-3-2-PGDN-PGDN....only if lead/lag)

LEAD/LAG BARRIERS ARE:		ON/OFF
------------------------	--	--------

On = Barriers after each ring 1 and 2 phase pair in a vertical column

SPECIAL INCOMPATIBILITIES (MM-2-2-3-3)

PHASE	1	2	3	4	5	6	7	8
INCOMPAT PH 1-8								
INCOMPAT PH 1-8								

INITIALIZE / FLASH (MM-2-2-4)

1 = RED, 2 = YEL., 3 = GRN

	INITIALIZE	ENTER FL	EXIT FL
RING 1 PHASE	2	2	2
RING 2 PHASE	6	6	6
INTERVAL	2	1	2

NOTE: Enter flash interval is permanently set to 1 (RED)

POWER-UP RESTART TIMINGS (MM-2-2-4-PGDN)

MINIMUM FLASH	(0-9.9 or 127 SECONDS)
1ST ALL RED AFTER FLASH	(0-9.9 or 127 SECONDS)

NOTE: Blanks = 0, OFF, or controller default values

Appendix C

Intersection Capacity Analysis

Existing

HCM Signalized Intersection Capacity Analysis
1: Eagle Street & Yonge Street

<Existing> AM Peak Hour
6/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗	↙	↑↑	↗	↙	↑↑	↗
Volume (vph)	39	223	168	152	303	73	243	826	225	98	843	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.3
Total Lost time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.93	1.00	1.00	0.97
Fipb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1525	1842	1524	1726	1807	1502	1604	3466	1464	1616	3433	1472
Flt Permitted	0.56	1.00	1.00	0.31	1.00	1.00	0.19	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	902	1842	1524	563	1807	1502	326	3466	1464	444	3433	1472
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	242	183	165	329	79	264	898	245	107	916	112
RTOR Reduction (vph)	0	0	147	0	0	42	0	0	109	0	0	63
Lane Group Flow (vph)	42	242	36	165	329	37	264	898	136	107	916	49
Confl. Peds. (#/hr)	12		3	3		12	4		13	13		4
Heavy Vehicles (%)	13%	2%	1%	1%	4%	3%	5%	3%	2%	4%	4%	0%
Bus Blockages (#/hr)	0	0	5	0	0	0	0	0	0	0	0	6
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	21.2	21.2	21.2	35.1	35.1	35.1	71.0	58.4	58.4	61.4	52.8	52.8
Effective Green, g (s)	21.2	21.2	21.2	35.1	35.1	35.1	71.0	58.4	58.4	61.4	52.8	52.8
Actuated g/C Ratio	0.18	0.18	0.18	0.29	0.29	0.29	0.59	0.49	0.49	0.51	0.44	0.44
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	325	269	260	528	439	344	1685	712	311	1509	647
v/s Ratio Prot		c0.13		0.05	c0.18		c0.09	0.26		0.02	0.27	
v/s Ratio Perm	0.05		0.02	0.13		0.02	c0.36		0.09	0.15		0.03
v/c Ratio	0.26	0.74	0.14	0.63	0.62	0.08	0.77	0.53	0.19	0.34	0.61	0.08
Uniform Delay, d1	42.7	46.9	41.7	34.0	36.8	30.8	15.9	21.4	17.5	15.8	25.7	19.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	8.9	0.2	5.0	2.3	0.1	9.8	1.2	0.6	0.7	1.8	0.2
Delay (s)	43.6	55.8	41.9	39.0	39.1	30.9	25.8	22.6	18.1	16.5	27.5	19.7
Level of Service	D	E	D	D	D	C	C	C	B	B	C	B
Approach Delay (s)		49.3			37.9			22.4			25.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 2: Eagle Street & Dixon/Existing Driveway

<Existing> AM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	530	15	10	502	2	25	0	23	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	576	16	11	546	2	27	0	25	1	0	1
Pedestrians		2						4			4	
Lane Width (m)		4.3						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		151										
pX, platoon unblocked				0.87			0.87	0.87	0.87	0.87	0.87	
vC, conflicting volume	552			596			1162	1164	588	1184	1171	553
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552			462			1112	1114	453	1137	1122	553
tC, single (s)	4.1			4.2			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			83	100	95	99	100	100
cM capacity (veh/h)	1025			918			160	179	514	147	177	534

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	593	559	52	2
Volume Left	1	11	27	1
Volume Right	16	2	25	1
cSH	1025	918	239	230
Volume to Capacity	0.00	0.01	0.22	0.01
Queue Length 95th (m)	0.0	0.3	6.2	0.2
Control Delay (s)	0.0	0.3	24.3	20.8
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.3	24.3	20.8
Approach LOS			C	C

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization		44.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Eagle Street & Donlin/Existing Driveway

<Existing> AM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	6	545	3	0	511	1	1	0	2	0	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	592	3	0	555	1	1	0	2	0	0	2
Pedestrians								4			4	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		358			211							
pX, platoon unblocked	0.91			0.91			0.95	0.95	0.91	0.95	0.95	0.91
vC, conflicting volume	561			600			1169	1172	598	1169	1173	560
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	463			507			933	936	506	933	937	462
tC, single (s)	4.1			4.1			7.1	6.5	6.7	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.8	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	100
cM capacity (veh/h)	1001			965			232	251	436	232	251	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	557	3	2
Volume Left	7	0	1	0
Volume Right	3	1	2	2
cSH	1001	965	337	545
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (m)	0.1	0.0	0.2	0.1
Control Delay (s)	0.2	0.0	15.8	11.6
Lane LOS	A		C	B
Approach Delay (s)	0.2	0.0	15.8	11.6
Approach LOS			C	B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		43.7%	ICU Level of Service
Analysis Period (min)		15	A

HCM Signalized Intersection Capacity Analysis
 4: Eagle Street & Carol Avenue/Sandford Street

<Existing> AM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	
Volume (vph)	15	501	31	66	426	7	45	59	115	23	44	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	3.5	3.5	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1779	1824	1365	1588	1802		1713	1694		1701	1724	
Flt Permitted	0.48	1.00	1.00	0.43	1.00		0.70	1.00		0.64	1.00	
Satd. Flow (perm)	907	1824	1365	717	1802		1256	1694		1144	1724	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	545	34	72	463	8	49	64	125	25	48	45
RTOR Reduction (vph)	0	0	11	0	1	0	0	106	0	0	38	0
Lane Group Flow (vph)	16	545	23	72	470	0	49	83	0	25	55	0
Confl. Peds. (#/hr)	4		5	5		4	1		5	5		1
Heavy Vehicles (%)	0%	3%	6%	12%	4%	0%	4%	2%	4%	4%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		6			2			8				4
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	33.1	33.1	33.1	33.1	33.1		8.4	8.4		8.4	8.4	
Effective Green, g (s)	33.1	33.1	33.1	33.1	33.1		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.15	0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	551	1108	829	435	1094		194	261		176	266	
v/s Ratio Prot		c0.30			0.26			c0.05			0.03	
v/s Ratio Perm	0.02		0.02	0.10			0.04			0.02		
v/c Ratio	0.03	0.49	0.03	0.17	0.43		0.25	0.32		0.14	0.21	
Uniform Delay, d1	4.3	6.0	4.3	4.7	5.7		20.3	20.5		19.9	20.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.3	0.0	0.8	1.2		0.7	0.7		0.4	0.4	
Delay (s)	4.3	6.3	4.3	5.5	6.9		21.0	21.2		20.3	20.5	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		6.2			6.7			21.2			20.5	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: Eagle Street & Yonge Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	18.1	66.0	41.4	57.1	85.0	35.5	48.0	287.2	181.6	22.8	53.8	81.0
Average Queue (m)	9.3	44.5	20.2	33.1	58.7	11.8	30.8	128.5	88.6	12.8	22.2	62.5
95th Queue (m)	23.0	72.7	44.7	64.0	96.6	38.5	52.5	343.4	240.6	25.9	57.4	91.7
Link Distance (m)		232.6			132.4			331.9	331.9			298.3
Upstream Blk Time (%)								1	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (m)	52.0		42.0	40.0		38.0	55.0			55.0	59.0	
Storage Blk Time (%)		13	1	9	25		0	2	5			8
Queuing Penalty (veh)		26	2	32	56		1	5	11			8

Intersection: 1: Eagle Street & Yonge Street

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	87.2	11.5
Average Queue (m)	69.0	5.7
95th Queue (m)	93.7	12.5
Link Distance (m)	298.3	298.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Eagle Street & Dixon/Existing Driveway

Movement	EB	WB	NB
Directions Served	LTR	LTR	LR
Maximum Queue (m)	3.2	6.2	15.5
Average Queue (m)	0.6	2.6	7.9
95th Queue (m)	5.8	12.9	17.9
Link Distance (m)	132.4	195.8	178.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Eagle Street & Donlin/Existing Driveway

Movement	EB	NB
Directions Served	LTR	LR
Maximum Queue (m)	8.6	6.1
Average Queue (m)	1.7	1.2
95th Queue (m)	8.5	7.1
Link Distance (m)	195.8	122.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Eagle Street & Carol Avenue/Sandford Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (m)	3.5	65.0	6.8	24.2	50.1	13.9	31.4	8.0	18.2
Average Queue (m)	1.4	32.3	3.0	14.7	28.9	8.6	18.4	3.0	11.5
95th Queue (m)	5.4	68.2	9.2	34.5	57.5	17.5	34.0	10.1	22.5
Link Distance (m)		194.0			178.0		60.6		158.9
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	50.0		16.0	20.0		45.0		30.0	
Storage Blk Time (%)		12		8	9		0		0
Queuing Penalty (veh)		5		33	6		0		0

Network Summary

Network wide Queuing Penalty: 186

HCM Signalized Intersection Capacity Analysis
1: Eagle Street & Yonge Street

<Existing> PM Peak Hour
6/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑↑	↗	↖	↑↑	↗
Volume (vph)	81	284	255	194	300	116	267	1228	199	128	923	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.3
Total Lost time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1701	1860	1528	1710	1842	1537	1604	3535	1581	1685	3500	1438
Flt Permitted	0.51	1.00	1.00	0.21	1.00	1.00	0.16	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	921	1860	1528	381	1842	1537	273	3535	1581	202	3500	1438
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	309	277	211	326	126	290	1335	216	139	1003	27
RTOR Reduction (vph)	0	0	155	0	0	61	0	0	63	0	0	14
Lane Group Flow (vph)	88	309	122	211	326	65	290	1335	153	139	1003	13
Confl. Peds. (#/hr)	14		1	2		14	2					2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	0%	5%	1%	1%	0%	2%	3%
Bus Blockages (#/hr)	0	0	5	0	0	0	0	0	0	0	0	6
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	26.9	26.9	26.9	38.9	38.9	38.9	82.5	69.1	69.1	70.0	60.6	60.6
Effective Green, g (s)	26.9	26.9	26.9	38.9	38.9	38.9	82.5	69.1	69.1	70.0	60.6	60.6
Actuated g/C Ratio	0.20	0.20	0.20	0.29	0.29	0.29	0.61	0.51	0.51	0.52	0.45	0.45
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	183	370	304	188	529	442	342	1804	807	207	1566	644
v/s Ratio Prot		0.17		c0.07	0.18		c0.11	0.38		0.05	0.29	
v/s Ratio Perm	0.10		0.08	c0.26		0.04	c0.40		0.10	0.30		0.01
v/c Ratio	0.48	0.84	0.40	1.12	0.62	0.15	0.85	0.74	0.19	0.67	0.64	0.02
Uniform Delay, d1	48.1	52.1	47.2	46.3	41.8	35.9	21.6	26.1	18.0	21.6	29.0	20.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	14.9	0.9	102.3	2.1	0.2	17.4	2.8	0.5	8.3	2.0	0.1
Delay (s)	50.1	67.1	48.1	148.6	43.9	36.1	39.0	28.9	18.5	29.8	31.0	20.9
Level of Service	D	E	D	F	D	D	D	C	B	C	C	C
Approach Delay (s)		57.1			75.7			29.2			30.6	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM Average Control Delay	41.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	135.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c - Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 2: Eagle Street & Dixon/Existing Driveway

<Existing> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	5	567	39	22	586	1	19	0	20	1	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	616	42	24	637	1	21	0	22	1	0	5
Pedestrians		3			2			10			5	
Lane Width (m)		4.3			4.3			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		151										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	643			669			1352	1349	650	1362	1370	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			472			1317	1314	448	1330	1339	646
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			80	100	96	99	100	99
cM capacity (veh/h)	947			882			104	123	484	99	119	472

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	664	662	42	7
Volume Left	5	24	21	1
Volume Right	42	1	22	5
cSH	947	882	174	289
Volume to Capacity	0.01	0.03	0.24	0.02
Queue Length 95th (m)	0.1	0.6	7.0	0.5
Control Delay (s)	0.2	0.7	32.3	17.7
Lane LOS	A	A	D	C
Approach Delay (s)	0.2	0.7	32.3	17.7
Approach LOS			D	C

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		58.0%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Eagle Street & Donlin/Existing Driveway

<Existing> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	581	3	4	600	0	5	0	1	4	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	632	3	4	652	0	5	0	1	4	0	4
Pedestrians		1						4			6	
Lane Width (m)		4.3						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		358			211							
pX, platoon unblocked	0.83			0.86			0.90	0.90	0.86	0.90	0.90	0.83
vC, conflicting volume	658			639			1312	1313	637	1310	1314	659
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	483			501			944	945	499	942	947	484
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	100	98	100	99
cM capacity (veh/h)	898			922			213	232	494	215	232	483

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	639	657	7	9
Volume Left	4	4	5	4
Volume Right	3	0	1	4
cSH	898	922	235	298
Volume to Capacity	0.00	0.00	0.03	0.03
Queue Length 95th (m)	0.1	0.1	0.6	0.7
Control Delay (s)	0.1	0.1	20.7	17.5
Lane LOS	A	A	C	C
Approach Delay (s)	0.1	0.1	20.7	17.5
Approach LOS			C	C

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		44.6%	ICU Level of Service
Analysis Period (min)		15	A

HCM Signalized Intersection Capacity Analysis
 4: Eagle Street & Carol Avenue/Sandford Street

<Existing> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↗		↙	↗		↙	↗	
Volume (vph)	31	493	62	98	521	17	60	97	67	38	92	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	3.5	3.5	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.94		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1780	1860	1442	1758	1851		1713	1785		1711	1814	
Flt Permitted	0.40	1.00	1.00	0.43	1.00		0.68	1.00		0.64	1.00	
Satd. Flow (perm)	748	1860	1442	803	1851		1220	1785		1162	1814	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	536	67	107	566	18	65	105	73	41	100	25
RTOR Reduction (vph)	0	0	21	0	2	0	0	49	0	0	18	0
Lane Group Flow (vph)	34	536	46	107	582	0	65	129	0	41	107	0
Confl. Peds. (#/hr)	4		7	7		4	1		7	7		1
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	4%	2%	4%	3%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		6			2			8				4
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	33.1	33.1	33.1	33.1	33.1		8.6	8.6		8.6	8.6	
Effective Green, g (s)	33.1	33.1	33.1	33.1	33.1		8.6	8.6		8.6	8.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.16	0.16		0.16	0.16	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	453	1126	873	486	1120		192	281		183	285	
v/s Ratio Prot		0.29			c0.31			c0.07				0.06
v/s Ratio Perm	0.05		0.03	0.13			0.05			0.04		
v/c Ratio	0.08	0.48	0.05	0.22	0.52		0.34	0.46		0.22	0.38	
Uniform Delay, d1	4.5	6.0	4.4	4.9	6.2		20.5	20.9		20.1	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3	0.0	1.0	1.7		1.1	1.2		0.6	0.8	
Delay (s)	4.5	6.3	4.4	6.0	8.0		21.6	22.1		20.8	21.5	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		6.0			7.6			22.0			21.3	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: Eagle Street & Yonge Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	40.0	126.3	60.0	79.0	110.4	63.9	87.2	336.5	335.6	74.9	61.1	138.3
Average Queue (m)	27.6	75.8	30.3	58.6	74.1	25.9	57.2	191.6	163.4	32.9	33.8	77.3
95th Queue (m)	59.8	155.2	63.6	100.4	131.8	63.6	97.9	389.8	330.6	80.1	67.4	164.2
Link Distance (m)		232.6			132.4			331.9	331.9			298.3
Upstream Blk Time (%)					1			1	0			0
Queuing Penalty (veh)					7			0	0			0
Storage Bay Dist (m)	52.0		42.0	40.0		38.0	55.0			55.0	59.0	
Storage Blk Time (%)	9	29	5	35	31	0	11	18	21		4	9
Queuing Penalty (veh)	46	98	17	145	96	0	67	47	43		19	12

Intersection: 1: Eagle Street & Yonge Street

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	95.0	6.9
Average Queue (m)	73.3	2.2
95th Queue (m)	111.0	8.3
Link Distance (m)	298.3	298.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Eagle Street & Dixon/Existing Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LR	LR
Maximum Queue (m)	7.1	31.7	14.0	3.3
Average Queue (m)	2.0	9.6	7.5	0.7
95th Queue (m)	11.7	39.4	16.9	4.3
Link Distance (m)	132.4	195.8	178.3	109.1
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Eagle Street & Donlin/Existing Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LR	LR
Maximum Queue (m)	12.6	4.6	6.6	5.3
Average Queue (m)	3.7	0.9	1.3	1.3
95th Queue (m)	19.3	8.3	6.3	6.3
Link Distance (m)	195.8	194.0	122.2	103.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Eagle Street & Carol Avenue/Sandford Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (m)	7.2	54.7	17.4	25.5	52.2	15.4	32.4	15.0	24.7
Average Queue (m)	3.0	32.0	5.4	17.6	31.2	8.6	19.3	9.1	15.9
95th Queue (m)	8.6	64.8	21.0	34.6	63.7	19.3	38.9	18.4	29.2
Link Distance (m)		194.0			178.0		60.6		158.9
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	50.0		16.0	20.0		45.0		30.0	
Storage Blk Time (%)		10	0	7	12		1		1
Queuing Penalty (veh)		9	0	36	11		0		0

Network Summary

Network wide Queuing Penalty: 653

Background

HCM Signalized Intersection Capacity Analysis
1: Eagle Street & Yonge Street

<Background> AM Peak Hour

6/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	293	168	152	369	73	243	935	225	98	954	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.3
Total Lost time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.93	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1527	1842	1523	1727	1807	1501	1604	3466	1461	1618	3433	1471
Flt Permitted	0.47	1.00	1.00	0.22	1.00	1.00	0.13	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	759	1842	1523	395	1807	1501	215	3466	1461	347	3433	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	318	183	165	401	79	264	1016	245	107	1037	112
RTOR Reduction (vph)	0	0	107	0	0	34	0	0	100	0	0	61
Lane Group Flow (vph)	42	318	76	165	401	45	264	1016	145	107	1037	51
Confl. Peds. (#/hr)	12		3	3		12	4		13	13		4
Heavy Vehicles (%)	13%	2%	1%	1%	4%	3%	5%	3%	2%	4%	4%	0%
Bus Blockages (#/hr)	0	0	5	0	0	0	0	0	0	0	0	6
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	25.6	25.6	25.6	40.2	40.2	40.2	70.5	57.7	57.7	59.2	50.4	50.4
Effective Green, g (s)	25.6	25.6	25.6	40.2	40.2	40.2	70.5	57.7	57.7	59.2	50.4	50.4
Actuated g/C Ratio	0.21	0.21	0.21	0.32	0.32	0.32	0.57	0.46	0.46	0.47	0.40	0.40
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	378	313	241	583	484	301	1604	676	254	1388	595
v/s Ratio Prot		c0.17		0.06	c0.22		c0.11	0.29		0.03	0.30	
v/s Ratio Perm	0.06		0.05	0.16		0.03	c0.38		0.10	0.17		0.03
v/c Ratio	0.27	0.84	0.24	0.68	0.69	0.09	0.88	0.63	0.21	0.42	0.75	0.09
Uniform Delay, d1	41.7	47.6	41.4	33.2	36.8	29.5	26.8	25.5	20.0	19.4	31.7	22.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	15.4	0.4	7.8	3.4	0.1	23.7	1.9	0.7	1.1	3.7	0.3
Delay (s)	42.6	63.0	41.8	41.1	40.2	29.6	50.5	27.4	20.7	20.6	35.4	23.2
Level of Service	D	E	D	D	D	C	D	C	C	C	D	C
Approach Delay (s)		54.3			39.1			30.3			33.1	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	124.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 2: Eagle Street & Dixon/Existing Driveway

<Background> AM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	600	15	10	568	2	25	0	23	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	652	16	11	617	2	27	0	25	1	0	1
Pedestrians		2						4			4	
Lane Width (m)		4.3						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		151										
pX, platoon unblocked				0.82			0.82	0.82	0.82	0.82	0.82	
vC, conflicting volume	624			672			1310	1312	664	1332	1319	624
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	624			491			1268	1271	482	1295	1279	624
tC, single (s)	4.1			4.2			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			77	100	95	99	100	100
cM capacity (veh/h)	964			844			118	136	467	107	135	486

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	670	630	52	2
Volume Left	1	11	27	1
Volume Right	16	2	25	1
cSH	964	844	183	176
Volume to Capacity	0.00	0.01	0.28	0.01
Queue Length 95th (m)	0.0	0.3	8.5	0.3
Control Delay (s)	0.0	0.3	32.3	25.8
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.3	32.3	25.8
Approach LOS			D	D

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		48.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Eagle Street & Donlin/Existing Driveway

<Background> AM Peak Hour
 6/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	6	615	3	0	577	1	1	0	2	0	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	668	3	0	627	1	1	0	2	0	0	2
Pedestrians								4			4	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		358			211							
pX, platoon unblocked	0.85			0.85			0.93	0.93	0.85	0.93	0.93	0.85
vC, conflicting volume	632			676			1317	1319	674	1317	1320	632
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	483			533			945	947	531	945	949	482
tC, single (s)	4.1			4.1			7.1	6.5	6.7	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.8	3.5	4.0	3.3
p0 queue free %	99			100			100	100	99	100	100	100
cM capacity (veh/h)	927			888			222	240	395	221	240	500

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	678	628	3	2
Volume Left	7	0	1	0
Volume Right	3	1	2	2
cSH	927	888	313	500
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (m)	0.2	0.0	0.2	0.1
Control Delay (s)	0.2	0.0	16.6	12.2
Lane LOS	A		C	B
Approach Delay (s)	0.2	0.0	16.6	12.2
Approach LOS			C	B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		47.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
4: Eagle Street & Carol Avenue/Sandford Street

<Background> AM Peak Hour

6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑		↖	↑		↖	↑	↗
Volume (vph)	15	571	31	66	492	7	45	59	115	23	44	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	3.5	3.5	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Fr	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	0.93	
Fl	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1780	1824	1365	1589	1803		1713	1694		1701	1724	
Fl Permitted	0.43	1.00	1.00	0.37	1.00		0.70	1.00		0.64	1.00	
Satd. Flow (perm)	806	1824	1365	625	1803		1256	1694		1144	1724	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	621	34	72	535	8	49	64	125	25	48	45
RTOR Reduction (vph)	0	0	9	0	1	0	0	106	0	0	38	0
Lane Group Flow (vph)	16	621	25	72	542	0	49	83	0	25	55	0
Confl. Peds. (#/hr)	4		5	5		4	1		5	5		1
Heavy Vehicles (%)	0%	3%	6%	12%	4%	0%	4%	2%	4%	4%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		6			2			8				4
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	33.1	33.1	33.1	33.1	33.1		8.4	8.4		8.4	8.4	
Effective Green, g (s)	33.1	33.1	33.1	33.1	33.1		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.15	0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	490	1108	829	380	1095		194	261		176	266	
v/s Ratio Prot		c0.34			0.30			c0.05			0.03	
v/s Ratio Perm	0.02		0.02	0.12			0.04			0.02		
v/c Ratio	0.03	0.56	0.03	0.19	0.50		0.25	0.32		0.14	0.21	
Uniform Delay, d1	4.3	6.4	4.3	4.7	6.0		20.3	20.5		19.9	20.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.7	0.0	1.1	1.6		0.7	0.7		0.4	0.4	
Delay (s)	4.3	7.0	4.3	5.9	7.6		21.0	21.2		20.3	20.5	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		6.8			7.4			21.2			20.5	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: Eagle Street & Yonge Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	18.8	96.3	64.2	48.6	95.4	46.3	66.0	285.7	237.4	56.5	40.2	111.9
Average Queue (m)	9.6	65.0	28.0	28.3	72.7	21.2	40.9	140.6	115.4	24.5	18.9	77.8
95th Queue (m)	20.7	108.4	67.0	59.4	119.3	56.2	73.3	345.4	278.4	67.6	48.2	123.9
Link Distance (m)		232.6			132.4			331.9	331.9			298.3
Upstream Blk Time (%)					1			1	0			
Queuing Penalty (veh)					7			0	0			
Storage Bay Dist (m)	52.0		42.0	40.0		38.0	55.0			55.0	59.0	
Storage Blk Time (%)		26	0	8	29		4	8	11			15
Queuing Penalty (veh)		54	1	36	65		20	20	24			14

Intersection: 1: Eagle Street & Yonge Street

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	119.3	11.5
Average Queue (m)	84.5	7.8
95th Queue (m)	131.5	15.6
Link Distance (m)	298.3	298.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Eagle Street & Dixon/Existing Driveway

Movement	WB	NB	SB
Directions Served	LTR	LR	LR
Maximum Queue (m)	26.0	13.7	1.6
Average Queue (m)	9.2	8.4	0.3
95th Queue (m)	38.7	17.0	3.0
Link Distance (m)	195.8	178.3	109.1
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Eagle Street & Donlin/Existing Driveway

Movement	EB	NB	SB
Directions Served	LTR	LR	LR
Maximum Queue (m)	3.5	4.8	5.4
Average Queue (m)	0.7	1.8	1.1
95th Queue (m)	4.6	7.2	6.0
Link Distance (m)	195.8	122.2	103.0
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Eagle Street & Carol Avenue/Sandford Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (m)	7.2	69.8	17.0	19.0	62.6	10.2	25.1	10.9	23.4
Average Queue (m)	2.6	38.4	6.2	9.5	33.8	6.9	17.0	4.0	12.5
95th Queue (m)	8.2	81.7	21.4	21.9	70.7	13.2	32.4	12.1	24.3
Link Distance (m)		194.0			178.0		60.6		158.9
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	50.0		16.0	20.0		45.0		30.0	
Storage Blk Time (%)		12	0	4	11				0
Queuing Penalty (veh)		5	2	19	7				0

Network Summary

Network wide Queuing Penalty: 274

HCM Signalized Intersection Capacity Analysis
1: Eagle Street & Yonge Street

<Background> PM Peak Hour
6/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑↑	↗	↖	↑↑	↗
Volume (vph)	81	359	255	194	377	116	267	1389	199	128	1044	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.3
Total Lost time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	1860	1529	1710	1842	1545	1604	3535	1581	1685	3500	1440
Flt Permitted	0.47	1.00	1.00	0.15	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	841	1860	1529	268	1842	1545	159	3535	1581	185	3500	1440
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	390	277	211	410	126	290	1510	216	139	1135	27
RTOR Reduction (vph)	0	0	152	0	0	61	0	0	73	0	0	16
Lane Group Flow (vph)	88	390	125	211	410	65	290	1510	143	139	1135	11
Confl. Peds. (#/hr)	14		1	2		14	2					2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	0%	5%	1%	1%	0%	2%	3%
Bus Blockages (#/hr)	0	0	5	0	0	0	0	0	0	0	0	6
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	24.5	24.5	24.5	36.5	36.5	36.5	59.0	48.0	48.0	45.4	38.4	38.4
Effective Green, g (s)	24.5	24.5	24.5	36.5	36.5	36.5	59.0	48.0	48.0	45.4	38.4	38.4
Actuated g/C Ratio	0.22	0.22	0.22	0.33	0.33	0.33	0.54	0.44	0.44	0.41	0.35	0.35
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	188	416	342	195	614	515	305	1550	693	173	1227	505
v/s Ratio Prot		0.21		c0.08	0.22		c0.14	c0.43		0.05	0.32	
v/s Ratio Perm	0.10		0.08	c0.28		0.04	0.37		0.09	0.28		0.01
v/c Ratio	0.47	0.94	0.37	1.08	0.67	0.13	0.95	0.97	0.21	0.80	0.93	0.02
Uniform Delay, d1	36.9	41.7	35.9	32.5	31.3	25.4	32.5	30.1	19.0	25.8	34.2	23.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	28.6	0.7	88.0	2.8	0.1	38.4	17.5	0.7	23.0	13.1	0.1
Delay (s)	38.7	70.3	36.6	120.5	34.1	25.5	70.9	47.6	19.7	48.8	47.2	23.3
Level of Service	D	E	D	F	C	C	E	D	B	D	D	C
Approach Delay (s)		54.3			57.0			48.0			46.9	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 2: Eagle Street & Dixon/Existing Driveway

<Background> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	5	642	39	22	663	1	19	0	20	1	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	698	42	24	721	1	21	0	22	1	0	5
Pedestrians		3			2			10			5	
Lane Width (m)		4.3			4.3			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		151										
pX, platoon unblocked				0.76			0.76	0.76	0.76	0.76	0.76	
vC, conflicting volume	727			750			1517	1514	731	1528	1535	729
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	727			515			1523	1519	490	1536	1546	729
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			70	100	95	98	100	99
cM capacity (veh/h)	882			801			70	87	431	66	84	423

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	746	746	42	7
Volume Left	5	24	21	1
Volume Right	42	1	22	5
cSH	882	801	123	223
Volume to Capacity	0.01	0.03	0.35	0.03
Queue Length 95th (m)	0.1	0.7	10.6	0.7
Control Delay (s)	0.2	0.8	49.1	21.6
Lane LOS	A	A	E	C
Approach Delay (s)	0.2	0.8	49.1	21.6
Approach LOS			E	C

Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization		62.3%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Eagle Street & Donlin/Existing Driveway

<Background> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	656	3	4	677	0	5	0	1	4	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	713	3	4	736	0	5	0	1	4	0	4
Pedestrians		1						4			6	
Lane Width (m)		4.3						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		358			211							
pX, platoon unblocked	0.76			0.83			0.85	0.85	0.83	0.85	0.85	0.76
vC, conflicting volume	742			720			1477	1478	719	1475	1480	743
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			555			1008	1009	553	1006	1011	503
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			97	100	100	98	100	99
cM capacity (veh/h)	811			843			182	201	441	184	201	432

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	721	740	7	9
Volume Left	4	4	5	4
Volume Right	3	0	1	4
cSH	811	843	201	258
Volume to Capacity	0.01	0.01	0.03	0.03
Queue Length 95th (m)	0.1	0.1	0.8	0.8
Control Delay (s)	0.1	0.1	23.5	19.4
Lane LOS	A	A	C	C
Approach Delay (s)	0.1	0.1	23.5	19.4
Approach LOS			C	C

Intersection Summary

Average Delay	0.4
Intersection Capacity Utilization	48.7%
Analysis Period (min)	15
ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis
 4: Eagle Street & Carol Avenue/Sandford Street

<Background> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↗		↖	↗	
Volume (vph)	31	568	62	98	598	17	60	97	67	38	92	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	3.5	3.5	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.94		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1781	1860	1442	1759	1852		1713	1785		1711	1814	
Flt Permitted	0.34	1.00	1.00	0.38	1.00		0.68	1.00		0.64	1.00	
Satd. Flow (perm)	637	1860	1442	695	1852		1220	1785		1162	1814	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	617	67	107	650	18	65	105	73	41	100	25
RTOR Reduction (vph)	0	0	19	0	2	0	0	49	0	0	18	0
Lane Group Flow (vph)	34	617	48	107	666	0	65	129	0	41	107	0
Confl. Peds. (#/hr)	4		7	7		4	1		7	7		1
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	4%	2%	4%	3%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		6			2			8				4
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	33.1	33.1	33.1	33.1	33.1		8.6	8.6		8.6	8.6	
Effective Green, g (s)	33.1	33.1	33.1	33.1	33.1		8.6	8.6		8.6	8.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.16	0.16		0.16	0.16	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	385	1126	873	421	1121		192	281		183	285	
v/s Ratio Prot		0.33			c0.36			c0.07			0.06	
v/s Ratio Perm	0.05		0.03	0.15			0.05			0.04		
v/c Ratio	0.09	0.55	0.06	0.25	0.59		0.34	0.46		0.22	0.38	
Uniform Delay, d1	4.5	6.4	4.4	5.0	6.7		20.5	20.9		20.1	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.5	0.0	1.5	2.3		1.1	1.2		0.6	0.8	
Delay (s)	4.6	6.9	4.4	6.5	9.0		21.6	22.1		20.8	21.5	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		6.6			8.6			22.0			21.3	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: Eagle Street & Yonge Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SE	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	40.1	102.8	61.8	75.0	100.3	55.8	77.6	336.5	312.3	66.0	40.5	224.1
Average Queue (m)	23.3	72.0	35.9	46.5	74.9	30.3	52.2	242.7	166.2	30.0	25.9	108.7
95th Queue (m)	49.3	113.3	69.0	80.5	116.8	68.4	87.5	425.7	316.3	76.4	52.5	232.5
Link Distance (m)		232.6			132.4			331.9	331.9			298.3
Upstream Blk Time (%)					0			2	1			0
Queuing Penalty (veh)					3			0	0			0
Storage Bay Dist (m)	52.0		42.0	40.0		38.0	55.0			55.0	59.0	
Storage Blk Time (%)	1	35	2	22	32	0	6	26	30			20
Queuing Penalty (veh)	3	118	9	110	98	0	45	69	59			25

Intersection: 1: Eagle Street & Yonge Street

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	123.5	7.3
Average Queue (m)	91.2	2.3
95th Queue (m)	132.0	8.4
Link Distance (m)	298.3	298.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Eagle Street & Dixon/Existing Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LR	LR
Maximum Queue (m)	9.6	28.0	10.4	3.3
Average Queue (m)	1.9	9.9	5.4	0.7
95th Queue (m)	15.4	33.7	13.2	4.4
Link Distance (m)	132.4	195.8	178.3	109.1
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Eagle Street & Donlin/Existing Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LR	LR
Maximum Queue (m)	8.7	13.8	8.4	7.0
Average Queue (m)	1.7	3.1	2.0	2.7
95th Queue (m)	11.5	19.0	8.0	9.2
Link Distance (m)	195.8	194.0	122.2	103.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Eagle Street & Carol Avenue/Sandford Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (m)	12.2	78.4	9.9	36.8	86.7	25.3	31.6	14.9	19.7
Average Queue (m)	5.6	47.3	5.0	19.2	52.2	12.6	19.4	8.6	14.1
95th Queue (m)	15.0	94.9	12.3	39.7	92.3	31.6	42.4	17.2	22.3
Link Distance (m)		194.0			178.0		60.6		158.9
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	50.0		16.0	20.0		45.0		30.0	
Storage Blk Time (%)		12	0	4	18	0	1		0
Queuing Penalty (veh)		12	1	23	18	0	0		0

Network Summary

Network wide Queuing Penalty: 592

Total

HCM Signalized Intersection Capacity Analysis
1: Eagle Street & Yonge Street

<2015 Total> AM Peak Hour
6/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑↑	↗	↖	↑↑	↗
Volume (vph)	39	294	168	212	376	80	243	935	239	99	954	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.3
Total Lost time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.93	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1527	1842	1523	1727	1807	1501	1604	3466	1461	1618	3433	1471
Flt Permitted	0.46	1.00	1.00	0.21	1.00	1.00	0.13	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	747	1842	1523	390	1807	1501	212	3466	1461	345	3433	1471
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	320	183	230	409	87	264	1016	260	108	1037	112
RTOR Reduction (vph)	0	0	106	0	0	36	0	0	106	0	0	61
Lane Group Flow (vph)	42	320	77	230	409	51	264	1016	154	108	1037	51
Confl. Peds. (#/hr)	12		3	3		12	4		13	13		4
Heavy Vehicles (%)	13%	2%	1%	1%	4%	3%	5%	3%	2%	4%	4%	0%
Bus Blockages (#/hr)	0	0	5	0	0	0	0	0	0	0	0	6
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	25.8	25.8	25.8	40.8	40.8	40.8	70.5	57.7	57.7	59.1	50.3	50.3
Effective Green, g (s)	25.8	25.8	25.8	40.8	40.8	40.8	70.5	57.7	57.7	59.1	50.3	50.3
Actuated g/C Ratio	0.21	0.21	0.21	0.33	0.33	0.33	0.56	0.46	0.46	0.47	0.40	0.40
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	154	379	314	244	588	489	299	1596	673	252	1378	591
v/s Ratio Prot		0.17		c0.08	0.23		c0.11	0.29		0.03	0.30	
v/s Ratio Perm	0.06		0.05	c0.22		0.03	c0.38		0.11	0.17		0.03
v/c Ratio	0.27	0.84	0.24	0.94	0.70	0.10	0.88	0.64	0.23	0.43	0.75	0.09
Uniform Delay, d1	41.9	47.8	41.6	37.2	36.8	29.5	27.5	25.8	20.4	19.8	32.2	23.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	15.7	0.4	41.8	3.6	0.1	24.9	2.0	0.8	1.2	3.8	0.3
Delay (s)	42.8	63.5	42.0	79.0	40.4	29.6	52.4	27.8	21.2	20.9	36.0	23.5
Level of Service	D	E	D	E	D	C	D	C	C	C	D	C
Approach Delay (s)		54.7			51.3			30.9			33.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	38.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	125.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c - Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 2: Eagle Street & Dixon/Existing Driveway

<2015 Total> AM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	1	616	15	10	641	2	25	0	23	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	670	16	11	697	2	27	0	25	1	0	1
Pedestrians		2						4			4	
Lane Width (m)		4.3						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		151										
pX, platoon unblocked				0.82			0.82	0.82	0.82	0.82	0.82	
vC, conflicting volume	703			690			1407	1409	682	1428	1416	704
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	703			510			1386	1388	500	1413	1397	704
tC, single (s)	4.1			4.2			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			72	100	94	99	100	100
cM capacity (veh/h)	901			828			97	115	454	88	114	438

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	687	710	52	2
Volume Left	1	11	27	1
Volume Right	16	2	25	1
cSH	901	828	156	147
Volume to Capacity	0.00	0.01	0.33	0.01
Queue Length 95th (m)	0.0	0.3	10.4	0.3
Control Delay (s)	0.0	0.4	39.3	29.8
Lane LOS	A	A	E	D
Approach Delay (s)	0.0	0.4	39.3	29.8
Approach LOS			E	D

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Eagle Street & Donlin/Existing Driveway

<2015 Total> AM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	6	674	3	0	588	1	1	0	2	0	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	733	3	0	639	1	1	0	2	0	0	2
Pedestrians								4			4	
Lane Width (m)								3.7			3.7	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		358			211							
pX, platoon unblocked	0.84			0.86			0.92	0.92	0.86	0.92	0.92	0.84
vC, conflicting volume	644			740			1393	1396	738	1393	1397	644
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	487			611			1029	1031	610	1029	1033	486
tC, single (s)	4.1			4.1			7.1	6.5	6.7	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.8	3.5	4.0	3.3
p0 queue free %	99			100			99	100	99	100	100	100
cM capacity (veh/h)	915			833			193	212	356	192	212	493

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	742	640	3	2
Volume Left	7	0	1	0
Volume Right	3	1	2	2
cSH	915	833	277	493
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (m)	0.2	0.0	0.3	0.1
Control Delay (s)	0.2	0.0	18.1	12.3
Lane LOS	A		C	B
Approach Delay (s)	0.2	0.0	18.1	12.3
Approach LOS			C	B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		50.4%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 4: Eagle Street & Carol Avenue/Sandford Street

<2015 Total> AM Peak Hour

6/14/2010



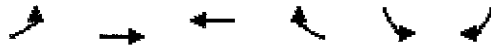
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	
Volume (vph)	15	624	38	66	501	7	45	59	115	23	44	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	3.5	3.5	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.90		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1780	1824	1365	1589	1803		1713	1694		1701	1724	
Flt Permitted	0.42	1.00	1.00	0.33	1.00		0.70	1.00		0.64	1.00	
Satd. Flow (perm)	792	1824	1365	559	1803		1256	1694		1144	1724	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	678	41	72	545	8	49	64	125	25	48	45
RTOR Reduction (vph)	0	0	10	0	1	0	0	106	0	0	38	0
Lane Group Flow (vph)	16	678	31	72	552	0	49	83	0	25	55	0
Confl. Peds. (#/hr)	4		5	5		4	1		5	5		1
Heavy Vehicles (%)	0%	3%	6%	12%	4%	0%	4%	2%	4%	4%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		6			2			8				4
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	33.1	33.1	33.1	33.1	33.1		8.4	8.4		8.4	8.4	
Effective Green, g (s)	33.1	33.1	33.1	33.1	33.1		8.4	8.4		8.4	8.4	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.15	0.15		0.15	0.15	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	481	1108	829	340	1095		194	261		176	266	
v/s Ratio Prot		c0.37			0.31			c0.05			0.03	
v/s Ratio Perm	0.02		0.02	0.13			0.04			0.02		
v/c Ratio	0.03	0.61	0.04	0.21	0.50		0.25	0.32		0.14	0.21	
Uniform Delay, d1	4.3	6.7	4.3	4.8	6.1		20.3	20.5		19.9	20.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.0	0.0	1.4	1.7		0.7	0.7		0.4	0.4	
Delay (s)	4.3	7.7	4.3	6.2	7.7		21.0	21.2		20.3	20.5	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		7.4			7.5			21.2			20.5	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 5: Eagle Street & Site Driveway 1

<2015 Total AM Peak Hour
 6/28/2010



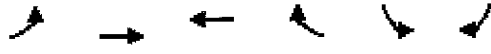
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Volume (veh/h)	16	624	584	8	60	69
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	678	635	9	65	75
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		195	374			
pX, platoon unblocked	0.95				0.86	0.95
vC, conflicting volume	643				1352	639
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	599				1201	595
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				62	84
cM capacity (veh/h)	930				173	480

Direction Lane #	EB 1	WB 1	SB 1
Volume Total	696	643	140
Volume Left	17	0	65
Volume Right	0	9	75
cSH	930	1700	263
Volume to Capacity	0.02	0.38	0.53
Queue Length 95th (m)	0.4	0.0	22.0
Control Delay (s)	0.5	0.0	33.4
Lane LOS	A		D
Approach Delay (s)	0.5	0.0	33.4
Approach LOS			D

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization		59.9%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 6: Eagle Street & Site Driveway 2

<2015 Total AM Peak Hour
 6/28/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Volume (veh/h)	0	684	588	3	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	743	639	3	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		320	249			
pX, platoon unblocked	0.86				0.92	0.86
vC, conflicting volume	642				1384	641
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	505				1037	503
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	922				236	490

Direction Lane #	EB 1	WB 1	SB 1
Volume Total	743	642	4
Volume Left	0	0	0
Volume Right	0	3	4
cSH	1700	1700	490
Volume to Capacity	0.44	0.38	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	12.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	12.4
Approach LOS			B

Intersection Summary		
Average Delay		0.0
Intersection Capacity Utilization	41.1%	ICU Level of Service A
Analysis Period (min)		15

Intersection: 1: Eagle Street & Yonge Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	39.8	109.5	56.6	78.7	110.1	37.0	49.5	189.1	146.7	63.6	36.1	232.1
Average Queue (m)	16.5	74.1	30.9	47.7	71.8	14.2	35.9	86.3	81.6	25.2	20.6	107.1
95th Queue (m)	44.8	127.1	67.5	83.9	119.0	40.9	56.4	211.2	172.9	67.3	51.9	232.5
Link Distance (m)		232.6			132.4			331.9	331.9			298.3
Upstream Blk Time (%)					0			0	0			0
Queuing Penalty (veh)					1			0	0			0
Storage Bay Dist (m)	52.0		42.0	40.0		38.0	55.0			55.0	59.0	
Storage Blk Time (%)		33	0	15	24		1	10	14			16
Queuing Penalty (veh)		68	2	70	71		3	25	34			16

Intersection: 1: Eagle Street & Yonge Street

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	239.4	70.7
Average Queue (m)	111.2	21.0
95th Queue (m)	235.4	116.4
Link Distance (m)	298.3	298.3
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Eagle Street & Dixon/Existing Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LR	LR
Maximum Queue (m)	7.0	6.8	14.3	3.4
Average Queue (m)	1.4	1.4	10.2	1.0
95th Queue (m)	12.7	7.6	17.8	5.3
Link Distance (m)	132.4	35.4	178.3	109.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Eagle Street & Donlin/Existing Driveway

Movement	EB	NB
Directions Served	LTR	LR
Maximum Queue (m)	7.0	3.1
Average Queue (m)	1.7	0.8
95th Queue (m)	8.4	4.5
Link Distance (m)	150.1	122.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Eagle Street & Carol Avenue/Sandford Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (m)	4.8	75.3	15.6	21.3	61.6	16.3	30.5	14.8	19.7
Average Queue (m)	1.4	42.8	3.5	14.0	34.1	8.7	16.7	6.4	12.1
95th Queue (m)	6.4	81.2	19.1	24.4	66.4	19.2	31.8	17.7	22.5
Link Distance (m)		194.0			178.0		60.6		158.9
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	50.0		16.0	20.0		45.0		30.0	
Storage Blk Time (%)		16	0	5	12		0		0
Queuing Penalty (veh)		8	1	26	8		0		0

Intersection: 5: Eagle Street & Site Driveway

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	18.4	25.8
Average Queue (m)	4.0	14.9
95th Queue (m)	17.9	29.8
Link Distance (m)	35.4	92.8
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	2	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 336

Intersection: 5: Eagle Street & Site Driveway 1

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	14.9	16.9
Average Queue (m)	3.0	13.6
95th Queue (m)	12.8	19.6
Link Distance (m)	35.4	92.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Eagle Street & Site Driveway 2

Movement	EB	SB
Directions Served		
Maximum Queue (m)		
Average Queue (m)		
95th Queue (m)		
Link Distance (m)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

HCM Signalized Intersection Capacity Analysis
1: Eagle Street & Yonge Street

<2015 Total> PM Peak Hour
6/14/2010

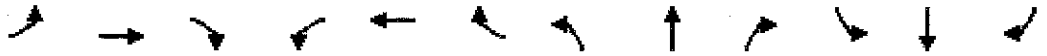


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑↑	↗	↖	↑↑	↗
Volume (vph)	81	364	255	215	380	119	267	1389	256	133	1044	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.5	3.3	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.3
Total Lost time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1708	1860	1529	1710	1842	1545	1604	3535	1581	1685	3500	1440
Flt Permitted	0.46	1.00	1.00	0.14	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	832	1860	1529	256	1842	1545	159	3535	1581	185	3500	1440
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	396	277	234	413	129	290	1510	278	145	1135	27
RTOR Reduction (vph)	0	0	150	0	0	61	0	0	94	0	0	16
Lane Group Flow (vph)	88	396	127	234	413	68	290	1510	184	145	1135	11
Confl. Peds. (#/hr)	14		1	2		14	2					2
Heavy Vehicles (%)	1%	1%	1%	2%	2%	0%	5%	1%	1%	0%	2%	3%
Bus Blockages (#/hr)	0	0	5	0	0	0	0	0	0	0	0	6
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	24.7	24.7	24.7	36.7	36.7	36.7	59.0	48.0	48.0	45.4	38.4	38.4
Effective Green, g (s)	24.7	24.7	24.7	36.7	36.7	36.7	59.0	48.0	48.0	45.4	38.4	38.4
Actuated g/C Ratio	0.23	0.23	0.23	0.33	0.33	0.33	0.54	0.44	0.44	0.41	0.35	0.35
Clearance Time (s)	7.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	187	419	344	192	616	517	304	1547	692	172	1225	504
v/s Ratio Prot		0.21		c0.09	0.22		c0.14	c0.43		0.05	0.32	
v/s Ratio Perm	0.11		0.08	c0.32		0.04	0.37		0.12	0.30		0.01
v/c Ratio	0.47	0.95	0.37	1.22	0.67	0.13	0.95	0.98	0.27	0.84	0.93	0.02
Uniform Delay, d1	36.8	41.8	35.9	32.3	31.3	25.4	32.6	30.3	19.6	26.0	34.3	23.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	30.1	0.7	136.2	2.9	0.1	39.1	17.9	0.9	29.5	13.2	0.1
Delay (s)	38.7	72.0	36.6	168.4	34.2	25.5	71.7	48.1	20.6	55.5	47.5	23.4
Level of Service	D	E	D	F	C	C	E	D	C	E	D	C
Approach Delay (s)		55.2			73.2			47.7			47.9	
Approach LOS		E			E			D			D	

Intersection Summary		
HCM Average Control Delay	53.0	HCM Level of Service
HCM Volume to Capacity ratio	0.97	D
Actuated Cycle Length (s)	109.7	Sum of lost time (s)
Intersection Capacity Utilization	95.2%	8.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		F

HCM Unsignalized Intersection Capacity Analysis
 2: Eagle Street & Dixon/Existing Driveway

<2015 Total> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	5	709	39	22	689	1	19	0	20	1	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	771	42	24	749	1	21	0	22	1	0	5
Pedestrians		3			2			10			5	
Lane Width (m)		4.3			4.3			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		151										
pX, platoon unblocked				0.75			0.75	0.75	0.75	0.75	0.75	
vC, conflicting volume	755			823			1618	1616	804	1629	1636	757
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	755			603			1657	1653	578	1671	1680	757
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			63	100	94	98	100	99
cM capacity (veh/h)	861			737			56	71	381	52	69	408

Direction Lane #	EB	WB	NB	SB
Volume Total	818	774	42	7
Volume Left	5	24	21	1
Volume Right	42	1	22	5
cSH	861	737	99	191
Volume to Capacity	0.01	0.03	0.43	0.03
Queue Length 95th (m)	0.1	0.8	13.6	0.8
Control Delay (s)	0.2	0.9	66.0	24.5
Lane LOS	A	A	F	C
Approach Delay (s)	0.2	0.9	66.0	24.5
Approach LOS			F	C

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		63.9%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Eagle Street & Donlin/Existing Driveway

<2015 Total> PM Peak Hour
 6/14/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	682	3	4	715	0	5	0	1	4	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	741	3	4	777	0	5	0	1	4	0	4
Pedestrians		1						4			6	
Lane Width (m)		4.3						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		358			211							
pX, platoon unblocked	0.73			0.84			0.81	0.81	0.84	0.81	0.81	0.73
vC, conflicting volume	783			749			1547	1548	747	1545	1549	784
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516			608			1118	1119	606	1115	1121	518
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			96	100	100	97	100	99
cM capacity (veh/h)	768			823			146	165	420	148	165	407

Direction Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	749	782	7	9
Volume Left	4	4	5	4
Volume Right	3	0	1	4
cSH	768	823	164	217
Volume to Capacity	0.01	0.01	0.04	0.04
Queue Length 95th (m)	0.1	0.1	0.9	0.9
Control Delay (s)	0.2	0.1	27.9	22.3
Lane LOS	A	A	D	C
Approach Delay (s)	0.2	0.1	27.9	22.3
Approach LOS			D	C

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		50.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 4: Eagle Street & Carol Avenue/Sandford Street

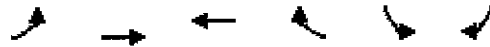
<2015 Total> PM Peak Hour
 6/14/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗		↖	↗		↖	↗	
Volume (vph)	31	591	65	98	631	17	65	97	67	38	92	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.0	3.5	3.5	3.5	3.5	4.0	4.0	3.5	3.5	3.5
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.94		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1781	1860	1442	1760	1852		1713	1785		1711	1814	
Flt Permitted	0.31	1.00	1.00	0.36	1.00		0.68	1.00		0.64	1.00	
Satd. Flow (perm)	590	1860	1442	663	1852		1220	1785		1162	1814	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	642	71	107	686	18	71	105	73	41	100	25
RTOR Reduction (vph)	0	0	19	0	2	0	0	49	0	0	18	0
Lane Group Flow (vph)	34	642	52	107	702	0	71	129	0	41	107	0
Conf. Peds. (#/hr)	4		7	7		4	1		7	7		1
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	4%	2%	4%	3%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	33.1	33.1	33.1	33.1	33.1		8.6	8.6		8.6	8.6	
Effective Green, g (s)	33.1	33.1	33.1	33.1	33.1		8.6	8.6		8.6	8.6	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.61		0.16	0.16		0.16	0.16	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	357	1126	873	401	1121		192	281		183	285	
v/s Ratio Prot		0.35			0.38			0.07			0.06	
v/s Ratio Perm	0.06		0.04	0.16			0.06			0.04		
v/c Ratio	0.10	0.57	0.06	0.27	0.63		0.37	0.46		0.22	0.38	
Uniform Delay, d1	4.5	6.5	4.4	5.1	6.9		20.6	20.9		20.1	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.7	0.0	1.6	2.7		1.2	1.2		0.6	0.8	
Delay (s)	4.6	7.2	4.5	6.7	9.5		21.8	22.1		20.8	21.5	
Level of Service	A	A	A	A	A		C	C		C	C	
Approach Delay (s)		6.8			9.2			22.0			21.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 5: Eagle Street & Site Driveway 1

<2015 Total> PM Peak Hour
 6/28/2010



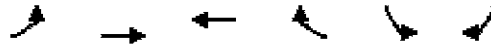
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Volume (veh/h)	68	663	687	29	26	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	721	747	32	28	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		195	374			
pX, platoon unblocked	0.79				0.89	0.79
vC, conflicting volume	778				1631	762
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	589				1120	569
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				85	93
cM capacity (veh/h)	781				184	413

Direction Lane #	EB	WB	SB
Volume Total	795	778	55
Volume Left	74	0	28
Volume Right	0	32	27
cSH	781	1700	252
Volume to Capacity	0.09	0.46	0.22
Queue Length 95th (m)	2.4	0.0	6.2
Control Delay (s)	2.4	0.0	23.2
Lane LOS	A		C
Approach Delay (s)	2.4	0.0	23.2
Approach LOS			C

Intersection Summary		
Average Delay		2.0
Intersection Capacity Utilization	89.9%	ICU Level of Service E
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis
 6: Eagle Street & Site Driveway 2

<2015 Total> PM Peak Hour
 6/28/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Volume (veh/h)	0	689	715	9	0	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	749	777	10	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		323	246			
pX, platoon unblocked	0.74				0.82	0.74
vC, conflicting volume	787				1531	782
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	531				1084	525
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	763				196	407

Direction - Lane #	EB	WB	SB
Volume Total	749	787	1
Volume Left	0	0	0
Volume Right	0	10	1
cSH	1700	1700	407
Volume to Capacity	0.44	0.46	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	13.9
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.9
Approach LOS			B

Intersection Summary		
Average Delay		0.0
Intersection Capacity Utilization	48.2%	ICU Level of Service A
Analysis Period (min)		15

Intersection: 1: Eagle Street & Yonge Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (m)	39.6	167.1	58.0	79.1	83.0	47.9	85.8	336.5	273.8	74.9	67.2	185.1
Average Queue (m)	18.8	117.1	33.5	56.2	55.8	20.7	56.3	235.6	156.8	31.9	38.9	101.8
95th Queue (m)	45.0	225.8	67.7	94.4	96.0	49.6	98.5	427.3	277.6	80.9	77.7	212.3
Link Distance (m)		232.6			132.4			331.9	331.9			298.3
Upstream Blk Time (%)		2						2	0			0
Queuing Penalty (veh)		0						0	0			0
Storage Bay Dist (m)	52.0		42.0	40.0		38.0	55.0			55.0	59.0	
Storage Blk Time (%)		42	2	46	16	0	7	27	33		4	19
Queuing Penalty (veh)		140	10	229	53	0	47	73	84		19	25

Intersection: 1: Eagle Street & Yonge Street

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	162.4	7.7
Average Queue (m)	99.8	2.9
95th Queue (m)	183.2	8.7
Link Distance (m)	298.3	298.3
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Eagle Street & Dixon/Existing Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LR	LR
Maximum Queue (m)	26.1	9.6	11.3	6.2
Average Queue (m)	5.7	2.3	6.0	1.5
95th Queue (m)	29.2	10.1	14.4	7.7
Link Distance (m)	132.4	35.2	178.3	109.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Eagle Street & Donlin/Existing Driveway

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LR	LR
Maximum Queue (m)	3.3	5.8	6.7	8.7
Average Queue (m)	1.0	1.2	1.8	2.1
95th Queue (m)	6.9	10.6	7.3	8.2
Link Distance (m)	149.8	194.0	122.2	102.9
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Eagle Street & Carol Avenue/Sandford Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (m)	7.4	62.6	25.3	29.3	66.7	15.3	30.0	19.0	21.0
Average Queue (m)	3.0	40.9	10.7	15.1	43.1	9.5	18.0	9.9	12.4
95th Queue (m)	8.7	72.6	32.7	31.2	75.1	19.6	35.2	23.5	23.9
Link Distance (m)		194.0			178.0		60.6		158.9
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	50.0		16.0	20.0		45.0		30.0	
Storage Blk Time (%)		15	0	9	18		0	0	0
Queuing Penalty (veh)		15	1	58	18		0	0	0

Intersection: 5: Eagle Street & Site Driveway

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	33.4	11.3
Average Queue (m)	17.8	8.5
95th Queue (m)	37.9	13.6
Link Distance (m)	35.2	86.8
Upstream Blk Time (%)	3	
Queuing Penalty (veh)	20	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 791

Intersection: 5: Eagle Street & Site Driveway 1

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	35.2	9.3	21.3
Average Queue (m)	20.6	1.9	9.7
95th Queue (m)	36.3	8.0	20.9
Link Distance (m)	35.2	115.0	86.8
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	3		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Eagle Street & Site Driveway 2

Movement	EB	WB	SB
Directions Served			
Maximum Queue (m)			
Average Queue (m)			
95th Queue (m)			
Link Distance (m)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 3

Appendix D

Level of Service Definitions

Levels of Service – Highway Capacity Manual

Signalized Intersections

Level of Service	Stopped Delay per Vehicle (sec)	Expected delay to Minor Street traffic from the Major Street
A	< 10	Most vehicles arrive during the green phase and do not stop; traffic progression is extremely favourable.
B	10.1 - 20.0	More vehicles stop than for LOS A; traffic progression is good.
C	20.1 - 35.0	Individual cycle failures may appear and the number of vehicles stopping is significant; traffic progression is fair.
D	35.1 - 55.0	Individual cycle failures are noticeable and many vehicles stop; traffic progression is unfavourable.
E	55.1 - 80.0	Individual cycle failures are frequent; traffic progression is poor; acceptable delay is at its limit.
F	> 80	Many individual cycle failures; arrival flow rate exceeds capacity; delay is unacceptable to most drivers.

Source: Highway Capacity Manual, HCM2000

HIGHWAY LOS Signalized 08-04-07.doc

Levels of Service – Highway Capacity Manual

Unsignalized Intersection

Level of Service	Average Control Delays (s/veh)	Expected delay to Minor Street traffic from the Major Street
A	0 - 10	Little or no delay.
B	> 10 – 15	Short traffic delay.
C	> 15 – 25	Average traffic delay.
D	> 25 – 35	Long traffic delay.
E	> 35 – 50	Very long traffic delay.
F	> 50	Extreme delay encountered with queuing, which may cause severe congestion affecting other traffic movements in the intersection.

source: Highway Capacity Manual, HCM 2000

UNSIGNALIZED LOS 08-04-07.doc

Appendix E

Transportation Tomorrow Survey Data

USER : GENIVAR Consultants
 DATE : Jun 9 2010 (17:24:29)
 DATA : 2006 TTS Vers 1.0 Trips
 FILTER 1 : pd_orig => Newmarket
 FILTER 2 : start_time => 600-900
 ROW : pd_dest
 COLUMN : pd_orig

Origin/Destination	Newmarket
PD 1 of Toronto	1772
PD 2 of Toronto	19
PD 3 of Toronto	307
PD 4 of Toronto	516
PD 5 of Toronto	526
PD 6 of Toronto	114
PD 7 of Toronto	19
PD 8 of Toronto	176
PD 9 of Toronto	214
PD 10 of Toronto	788
PD 11 of Toronto	885
PD 12 of Toronto	461
PD 13 of Toronto	581
PD 14 of Toronto	38
PD 15 of Toronto	40
PD 16 of Toronto	448
Brock	15
Uxbridge	73
Pickering	19
Ajax	58
Whitby	19
Oshawa	99
Clarington	19
Georgina	439
East Gwillimbury	631
Newmarket	24098
Aurora	2284
Richmond Hill	1570
Whitchurch-Stouffville	491
Markham	2460
King	597
Vaughan	1675
Brampton	135
Mississauga	511
Halton Hills	19
Oakville	57
Burlington	41
Hamilton	19
Grimsby	19
St Catharines	20
Waterloo	19
Guelph	19
Orangeville	38
Barrie	365
Innisfil	36
Bradford-W Gwillimbury	339
New Tecumseth	151
Clearview	19
Muskoka	18
Tiny	19
Mono Township	37
External	96

Appendix F

Background Traffic Information

Newmarket	2004	2005	2006	2007	2008	2009
01261750, YONGE STREET (YR 1) S of MULOCK DRIVE (YR 74)	0	0	31,268	34,035	30,988	30,913
01270350, YONGE STREET (YR 1) N of MULOCK DRIVE (YR 74)	31,041	0	36,551	37,625	36,625	40,922
01280750, YONGE STREET (YR 1) S of DAVIS DRIVE (YR 31)	0	33,781	32,814	34,472	31,387	35,370
01300350, YONGE STREET (YR 1) N of DAVIS DRIVE (YR 31)	0	0	37,534	39,489	37,724	41,521
01301650, YONGE STREET (YR 1) S of GREEN LANE (YR 19)	30,805	0	32,854	31,401	29,922	32,957
05250350, EAGLE STREET (YR 5) E of YONGE STREET (YR 1)	10,165	0	0	0	0	0
05251600, EAGLE STREET (YR 5) E of ELLEN STREET	0	9,896	8,643	0	0	0
05281750, GORHAM STREET (YR 5) W of LESLIE STREET (YR 12)	0	7,563	6,995	0	0	0
12261750, LESLIE STREET (YR 12) S of MULOCK DRIVE (YR 74)	0	10,033	11,254	12,328	0	12,967
12270900, LESLIE STREET (YR 12) S of GORHAM STREET (YR 5)	19,004	0	18,828	18,291	18,684	0
12280900, LESLIE STREET (YR 12) S of DAVIS DRIVE (YR 31)	0	0	22,180	21,693	19,733	0
12300350, LESLIE STREET (YR 12) N of DAVIS DRIVE (YR 31)	22,005	21,734	18,698	24,090	0	16,644
12301800, LESLIE STREET (YR 12) S of GREEN LANE (YR 19)	19,925	19,790	19,401	21,477	0	14,926
31240350, HIGHWAY 9 (YR 31) E of BATHURST STREET(YR 38)	0	0	21,802	23,261	21,796	16,932
31241750, HIGHWAY 9 (YR 31) W of YONGE STREET (YR 1)	0	24,384	20,094	25,160	0	17,555
31250300, DAVIS DRIVE (YR 31) E of YONGE STREET (YR 1)	23,537	0	29,387	29,416	29,350	30,674
31251500, DAVIS DRIVE (YR 31) W of MAIN STREET NORTH	0	0	25,773	26,249	24,375	0
31260350, DAVIS DRIVE (YR 31) E of MAIN STREET NORTH	0	32,046	32,644	29,133	0	32,252
31281600, DAVIS DRIVE (YR 31) W of LESLIE STREET (YR 12)	22,406	0	25,155	26,739	23,858	0
31290500, DAVIS DRIVE (YR 31) W of HIGHWAY 404 (EAST RAMP)	0	0	24,903	24,752	22,751	29,556
34261750, BAYVIEW AVENUE (YR 34) S of MULOCK DRIVE (YR 74)	0	30,690	34,451	24,947	0	21,272
34270300, PROSPECT STREET(YR 34) S of GORHAM STREET (YR 5)	13,364	0	14,975	14,343	14,030	0
34280450, PROSPECT STREET(YR 34) N of GORHAM STREET (YR 5)	0	7,748	9,597	10,601	0	11,062
34281325, PROSPECT STREET (YR 34) S of DAVIS DRIVE (YR 31)	0	0	0	8,044	0	8,154
38260350, BATHURST STREET(YR 38) N of ST. JOHN'S SIDEROAD	0	15,693	13,148	16,180	0	14,568
38281950, BATHURST STREET(YR 38) S of HIGHWAY 9	17,005	0	17,129	20,132	0	0
38300350, BATHURST STREET(YR 38) N of HIGHWAY 9	0	0	14,811	16,890	15,190	18,266

Subject: RE: Milford Developments - Eagle Street Traffic Impact Study

Date: Thursday, June 10, 2010 8:48 AM

From: Ruggle, Dave <druggle@newmarket.ca>

To: ENTRA Consultants <anil.seegobin@genivar.com>

Hi Anil,

The secondary plan for Yonge Street and Davis Drive is just underway so there is nothing to provide at this point. In fact, your study will assist in informing the secondary plan study.

The only project of significance in the area is a 400 unit residential condo proposal at the n/e corner of Yonge Street and Millard Avenue.

You should contact Les Chaisson of Central York Fire Service with regard to any questions on fire access. He can be reached at 905-895-9222 or Ext. 3022

Please let me know if you have any questions on the above.

Dave

From: Anil Seegobin [mailto:Anil.Seegobin@genivar.com]

Sent: June 8, 2010 5:13 PM

To: Ruggle, Dave

Subject: Milford Developments - Eagle Street Traffic Impact Study

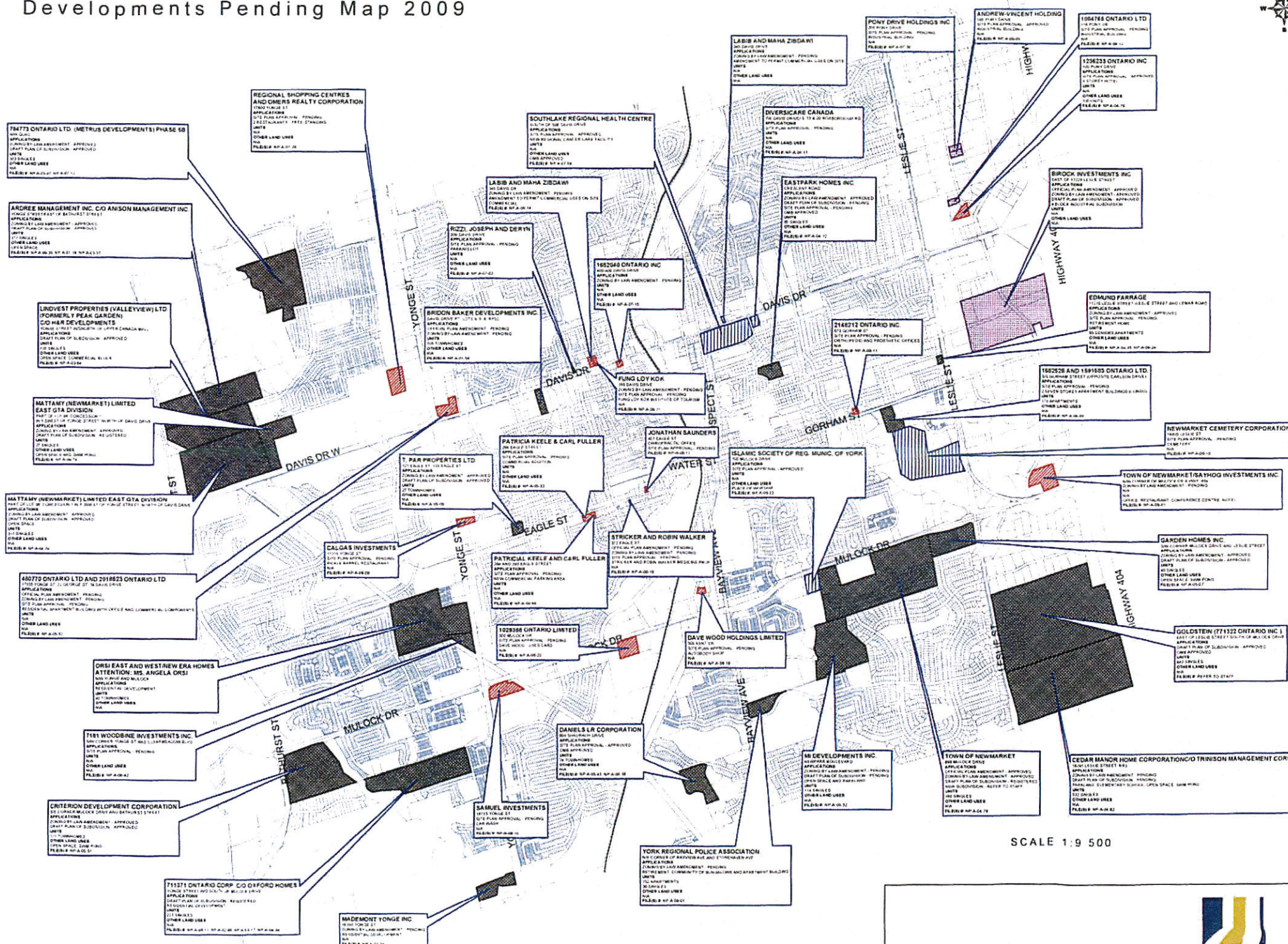
Hi Dave,

GENIVAR has been retained to complete a traffic impact study for a proposed condominium development located at the northeast quadrant of Yonge Street and Eagle Street. We've been corresponding with Mark from Transportation regarding the terms of reference for the study.

Could you please provide the following information/answer the following questions to assist:

1. Status of the parking requirements study being undertaken by the Town which reflects future transit use. If a draft form is available, please provide. Are there new parking requirements being proposed for townhomes and condominiums?
2. A list of development applications (of significance) on file (planned/approved/under construction) within the block bounded by Yonge Street, Davis Drive, Mulock Drive and Bayview Avenue/Prospect Street. Any info about planned developments whose site traffic would affect the intersections of Yonge Street/Eagle Street and Eagle Street/Carol Avenue would be helpful.
3. If only one vehicular access is proposed for the site, would a second fire route access be

Developments Pending Map 2009



SCALE 1:9 500

DATE JANUARY 2009



Appendix G

Intersection Queue and Gap Survey Data

Survey Type: GAP Survey
 Location: Eagle St (Newmarket)
 Date: Thursday, May 27th, 2010 4.9 2
 Time: AM count

Time	EBL Duration	EBL	Critical	Follow up
7:00:27	9			4.1 2.2
7:00:43	8			1 2
7:01:04	5			1 1
7:01:19	48			1 19
7:02:14	27			1 10
7:02:49	9			1 2
7:03:05	2			
7:03:11	17			1 5
7:03:34	59			1 24
7:04:40	36			1 14
7:05:19	15			1 4
7:05:37	22			1 8
7:06:12	11			1 3
7:06:31	32			1 12
7:07:15	23			1 8
7:07:48	19			1 6
7:08:13	12			1 3
7:08:33	17			1 5
7:08:55	49			1 20
7:09:49	20			1 7
7:10:19	25			1 9
7:10:51	6			1
7:10:59	63			1 26
7:12:11	70			1 29
7:13:24	29			1 11
7:14:20	10			1 2
7:14:34	52			1 21
7:15:41	26			1 9
7:16:06	6			1
7:16:16	3			
7:16:39	17			1 5
7:17:01	47			1 19
7:17:55	26			1 9
7:18:31	11			1 3
7:18:47	31			1 12
7:18:47	31			1 12
7:19:22	13			1 4
7:19:41	5			1
7:19:50	41			1 16
7:20:41	43			1 17
7:21:33	7			1 1
7:21:41	20			1 7
7:22:07	14			1 4
7:22:26	19			1 6
7:22:48	15			1 4
7:23:07	15			1 4
7:23:30	35			1 14
7:24:15	5			1
7:24:23	21			1 7
7:24:47	11			1 3
7:25:02	16			1 5
7:25:39	4			
7:25:49	21			1 7
7:26:30	7			1 1
7:26:41	10			1 2
7:26:54	3			
7:27:01	29			1 11
7:27:34	11			1 3
7:27:48	8			1 1
7:28:01	10			1 2
7:28:13	17			1 5
7:28:37	13			1 4
7:28:54	11			1 3
7:29:20	4			
7:29:33	37			1 14
7:30:25	27			1 10
7:31:01	5			1
7:31:28	5			1
7:31:48	29			1 11
7:32:21	7			1 1
7:32:38	22			1 8
7:33:02	26			1 9
7:33:31	7			1 1
7:33:41	6			1
7:33:49	21			1 7
7:34:14	5			1
7:34:31	6			1
7:34:44	22			1 8
7:35:23	10			1 2
7:35:46	19			1 6
7:36:15	8			1 1
7:36:26	5			1
7:36:35	8			1 1
7:36:49	13			1 4
7:37:05	5			1
7:37:15	7			1 1
7:37:27	5			1
7:37:38	29			1 11
7:38:39	30			1 11
7:39:19	30			1 11
7:40:18	10			1 2
7:40:45	17			1 5
7:41:06	11			1 3
7:41:24	8			1 1

Time	EBL & SBL Duration	Critical	Follow up
7:00:28	4		7.1 3.5
7:00:13	4		
7:01:19	12		1 1
7:01:41	12		1 1
7:01:59	5		
7:02:18	10		1
7:02:32	6		
7:02:49	5		
7:03:11	11		1 1
7:03:48	10		1
7:04:08	11		1 1
7:04:47	18		1 3
7:05:19	11		1 1
7:05:49	5		
7:06:18	3		
7:06:31	17		1 2
7:06:53	7		
7:07:15	6		
7:07:25	9		1
7:08:38	14		1 1
7:08:55	3		
7:09:07	34		1 7
7:10:02	4		
7:10:19	3		
7:10:28	12		1 1
7:10:51	3		
7:10:59	29		1 6
7:11:39	2		
7:12:15	9		1
7:12:50	21		1 3
7:13:24	3		
7:13:32	7		
7:13:45	3		
7:14:34	8		1
7:15:01	10		1
7:15:14	9		1
7:15:44	4		
7:15:50	6		
7:16:06	2		
7:16:39	12		1 1
7:17:05	3		
7:17:20	10		1 1
7:17:38	5		
7:17:57	23		1 4
7:18:51	5		
7:19:03	12		1 1
7:19:22	9		1
7:19:41	2		
7:20:05	6		
7:20:18	8		1
7:20:55	5		
7:21:03	8		1
7:21:33	3		
7:21:41	17		1 2
7:22:07	10		1
7:22:26	14		1 1
7:22:55	2		
7:23:07	7		1
7:23:50	5		
7:24:23	16		1 2
7:24:47	2		
7:25:12	3		
7:25:59	8		
7:26:30	3		
7:26:41	7		
7:27:01	12		1 1
7:27:34	7		
7:27:48	3		
7:28:01	7		
7:28:13	13		1 1
7:28:37	4		
7:28:54	3		
7:29:33	5		
7:30:25	24		1 4
7:31:01	2		
7:32:02	12		1 1
7:32:44	6		
7:33:07	7		
7:33:31	4		
7:34:02	5		
7:34:14	3		
7:34:31	3		
7:34:44	7		
7:35:02	2		
7:35:50	6		
7:35:15	5		
7:35:27	2		
7:35:38	5		
7:35:50	6		
7:36:15	5		
7:37:27	2		
7:37:49	6		
7:37:38	5		
7:37:49	6		

Survey Type: GAP Survey
 Location: Eagle St (Newmarket)
 Date: Thursday, May 27th, 2010
 Time: AM count

4.9 2

Time	EBL	EBL	Critical	Follow up
8:33:59	7		4.1	2.2
8:34:43	27		1	1
8:35:41	24		1	10
8:36:33	12		1	9
8:36:52	17		1	3
8:37:23	22		1	5
8:37:50	9		1	8
8:38:11	24		1	2
8:38:50	39		1	9
8:39:51	8		1	15
8:40:20	41		1	1
8:41:07	10		1	16
8:41:32	41		1	2
8:42:49	21		1	16
8:43:48	15		1	7
8:44:23	51		1	4
8:45:27	17		1	21
8:45:54	14		1	5
8:46:30	18		1	4
8:46:53	10		1	6
8:47:15	11		1	2
8:47:20	18		1	3
8:48:13	10		1	6
8:48:32	8		1	2
8:48:50	8		1	1
8:49:25	9		1	1
8:50:06	9		1	2
8:50:20	14		1	2
8:50:40	10		1	4
8:51:10	13		1	2
8:51:21	14		1	4
8:52:17	9		1	4
8:52:29	10		1	2
8:52:48	8		1	2
8:53:39	25		1	1
8:54:13	13		1	9
8:54:36	9		1	4
8:54:50	6		1	2
8:55:11	15		1	1
8:56:09	11		1	4
8:56:53	19		1	3
8:57:31	6		1	6
8:57:43	8		1	1
8:57:54	11		1	1
8:58:17	50		1	3
8:59:58	27		1	20
Max	75	Column Total	102	532
Min	2	Total Critical &		
Avg	18	Follow-up Gaps		634
Count	234			

EBL & SBL	
Time	Duration
Avg	8
Count	186

Follow-up Gaps
 Critical 7.1
 Follow up 3.5
 157

Queue Survey

Eagle St (WB to Yonge)

June 2nd, 2010

Yonge St & Eagle (WBL Queue)

Start	end	Duration	Length beyond Dixon
4:46:50	4:49:16	0:02:26	1
4:51:54	4:51:56	0:00:02	1
4:57:47	4:57:49	0:00:02	1
5:09:29	5:09:32	0:00:03	1
5:20:41	5:21:59	0:01:18	2
5:22:53	5:22:59	0:00:06	1

Dixon & Eagle (WBL Queue) 4B

Start	end	Duration	WBL
4:21:41	4:24:11	0:02:30	1
4:30:07	4:30:08	0:00:01	1
4:37:53	4:37:59	0:00:06	1
4:38:58	4:39:07	0:00:09	1
4:43:51	4:43:58	0:00:07	1
5:16:13	5:16:15	0:00:02	1

