APPENDIX E

Transportation Mobility Plan Study

BLOCK 27 LANDOWNERS
GROUP INC.

Block 27 Landowners Group Inc.

TRANSPORTATION MOBILITY PLAN UPDATE

Block 27, City of Vaughan

September 2024
20009.04

Disclaimer

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by the Block 27 Landowners Group Inc. to undertake a Transportation Mobility Plan study for the proposed development of Block 27, herein referred to as the "subject lands" in the City of Vaughan. By way of background, LEA previously prepared a Transportation Mobility Plan study, dated July 2022 in support of the initial submission, followed by an updated Transportation Mobility Plan study in January 2024.

Since the January 2024 submission, comments have been received from the Regional Municipality of York (the "Region") and the City of Vaughan (the "City"). This update responds to the transportation-related comments from the review agencies.

The subject lands are located within the Block 27 Secondary Plan area and are bounded by Keele Street to the east, Jane Street to the west, Teston Road to the south, and Kirby Road to the north. The subject lands are predominantly agricultural with some small-scale residential and commercial uses near Teston Road & Jane Street. The TransCanada Pipeline Canadian Mainline crosses the north portion of the Block in an east-west direction, while the CNR Rail Line runs north to south, west of Keele Street. The site location is illustrated in **Figure 1-1**.

Figure 1-1: Subject Lands Location

Source: Google Maps, accessed July 2023

The purpose of this study is to assess the proposed redevelopment from a transportation perspective, determine traffic impacts on the adjacent road network, and identify any required mitigation measures. As per the Block 27 Collector Roads MCEA study, implementation of the full collector road network is required to support development on the Block. As such, this Transportation Mobility Plan assesses the traffic conditions within a single phase to the full build-out year of 2031. In addition, this study will outline Transportation Demand Management (TDM) measures to encourage alternative modes of travel.

2 DEVELOPMENT CONCEPT PLAN

2.1 BLOCK 27 SECONDARY PLAN (2018)

The Block 27 Secondary Plan was adopted by Vaughan Council in September 2018 and approved by York Region Council in June 2019 to support the development of the City's New Community Areas to the year 2031 and beyond. Through the Secondary Plan, Block 27 is designed to be transit-oriented, compact, vibrant, inclusive, healthy, sustainable, and diverse.

The Block 27 Secondary Plan includes a preferred land use plan for the new community area. It includes a mix of uses such as low-rise and mid-rise residential housing, mixed-use designations, as well as a new community hub. The community hub, which is located conceptually at the western limit of the potential Kirby GO Transit Hub Centre will contain of a variety of community facilities such as a community centre, schools, parks, a library, and other community facilities. The new block will be linked by a multi-modal transportation system including off-road multi-use trails, sidewalks, walkways, and cycling facilities. The plan focuses on higher-density residential, commercial, and mixed uses within and surrounding the potential Kirby GO Transit Hub Centre and lower-density residential uses throughout the rest of the block. Several portions of Block 27 have also been designated as natural areas or protected for infrastructure and utilities.

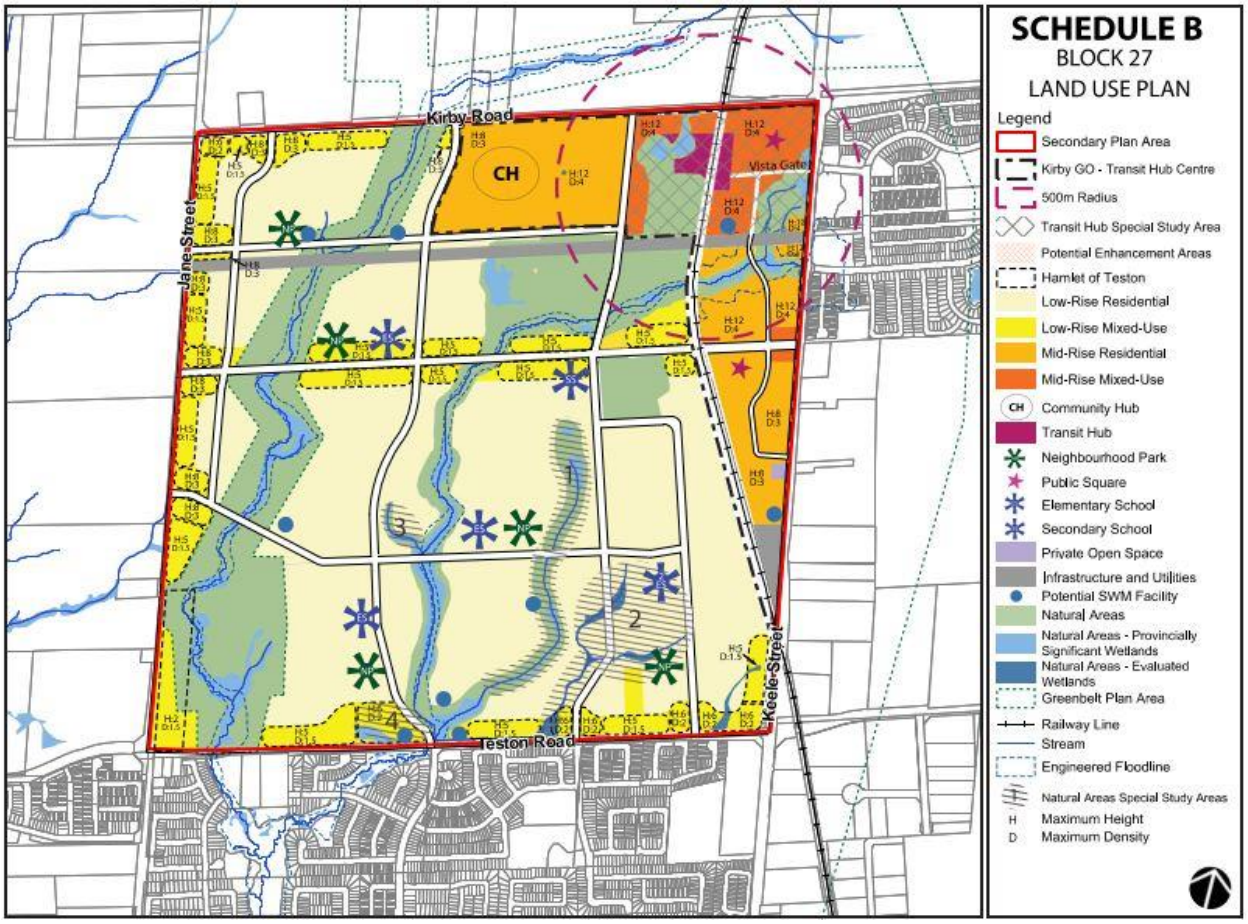
The preferred Secondary Plan land use plan is illustrated in **Figure 2-1**. A description of the proposed land uses is described below.

- The **Low-Rise Residential** designation permits residential buildings that do not exceed 3 storeys (although 4-storey buildings are allowed in a select number of locations). The low-rise residential lands are to be developed as neighbourhoods focused on community facilities such as parks and schools.
- The **Low-Rise Mixed-Use** designation is planned for lands located along arterial roads and the major east-west collector road within Block 27. This designation permits the integration of residential, community, and retail land uses to increase the range of amenities and services within walking distance of the surrounding residential neighbourhoods.
- The **Mid-Rise Residential** designation generally surrounds the potential Kirby GO Transit Hub Centre and will mainly be comprised of mid-rise buildings, providing higher densities to support the Kirby GO Transit Hub. The Mid-Rise Residential designation also encompasses the proposed Block 27 Community Hub.
- The **Mid-Rise Mixed-Use** designation is generally located north of the TransCanada Pipeline, and both east and west of the railway line. The Mid-Rise Mixed-Use lands are to serve as a "community

core" and development within this area will contain a mix of mid-rise residential, retail, community, and institutional uses adjacent to the potential future Kirby GO station.

The Block 27 Secondary Plan indicates that density will be focused on the future Transit Hub Centre, providing supporting transit-oriented development to increase GO rail ridership and reduce the use of personal vehicles. The future transportation network will place a particular emphasis on the mobility requirements of this area, ensuring that vehicle movements are adequately supported without further encouraging auto-dependency, and by providing the supporting transit and active transportation infrastructure to allow future residents and visitors to travel to/from the GO station and other major destinations within Block 27.

Figure 2-1: Block 27 Secondary Plan Land Use Plan



Source: Block 27 Secondary Plan (City of Vaughan, 2018)

2.2 NORTH VAUGHAN AND NEW COMMUNITIES TRANSPORTATION MASTER PLAN (2019)

Initial recommendations for the future transportation network of North Vaughan (including Block 27) were identified in the New Vaughan and New Communities Transportation Master Plan (NVNCTMP). The NVNCTMP was developed in coordination with the Block 27 Secondary Plan to support policies, programs, and infrastructure required to meet existing and future mobility needs within North Vaughan. The

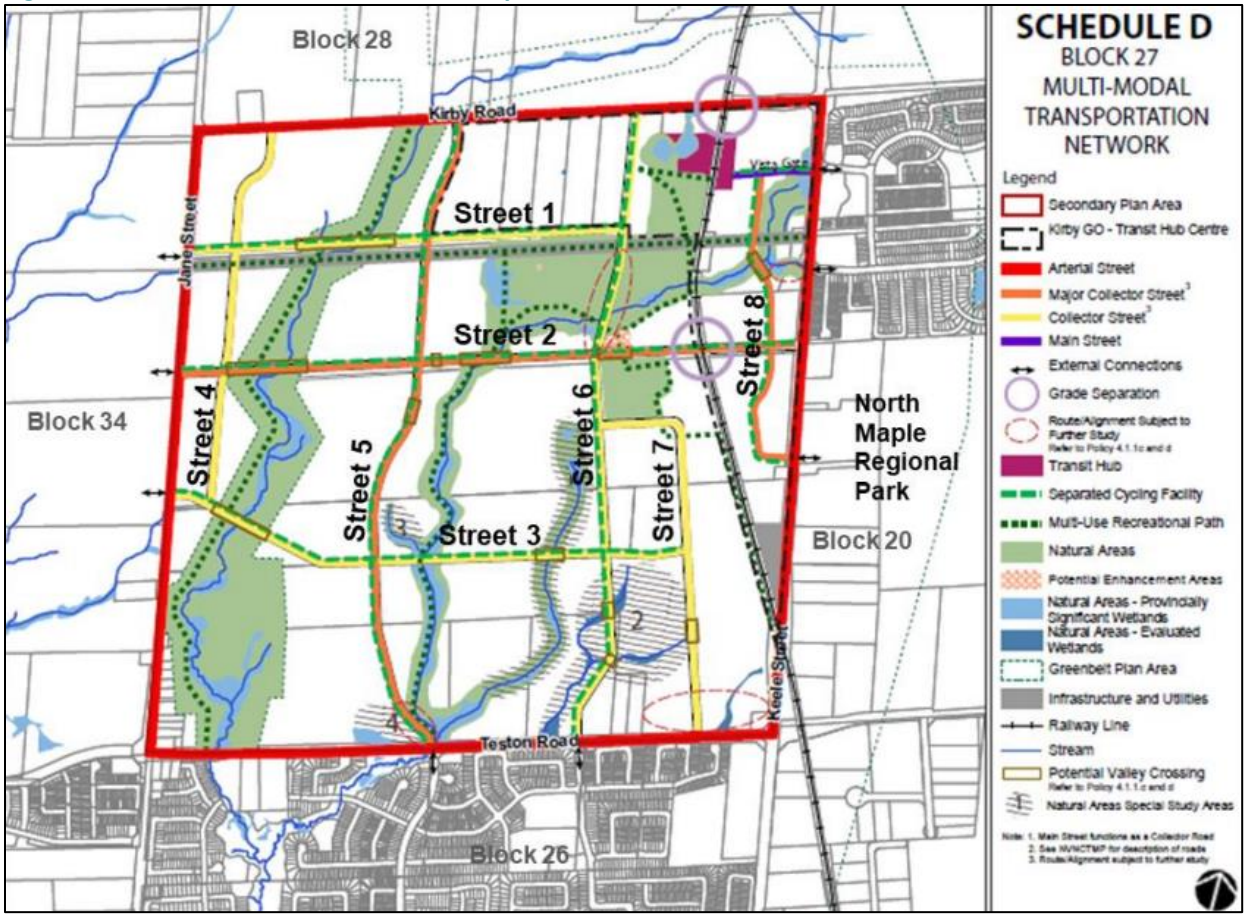
objective of the NVNCTMP is to achieve a sustainable transportation network for residents and businesses while ensuring recommendations address the transportation needs for immediate to future growth.

The preferred transportation solution for Block 27 as identified in the NVNCTMP includes a network of 8 collector roads (3 major collector roads and 5 minor collector roads) as outlined in **Table 2-1** and illustrated in **Figure 2-2**. Recommended external improvements include the widening of Highway 400, a new Kirby GO Station, the introduction of 15-minute rail service along the Barrie GO Corridor, and new roads to enhance connectivity to surrounding neighbourhoods.

Table 2-1: Recommended Block 27 Road Classification (NVNCTMP, 2019)

Road	Recommended Road Classification
Street 1	Minor Collector Road
Street 2	Major Collector Road
Street 3	Minor Collector Road
Street 4	Minor Collector Road
Street 5	Major Collector Road
Street 6	Minor Collector Road
Street 7	Minor Collector Road
Street 8	Major Collector Road

Figure 2-2: Block 27 Recommended Transportation Network



Source: North Vaughan and New Communities Transportation Master Plan (City of Vaughan, 2019)

2.3 BLOCK 27 MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

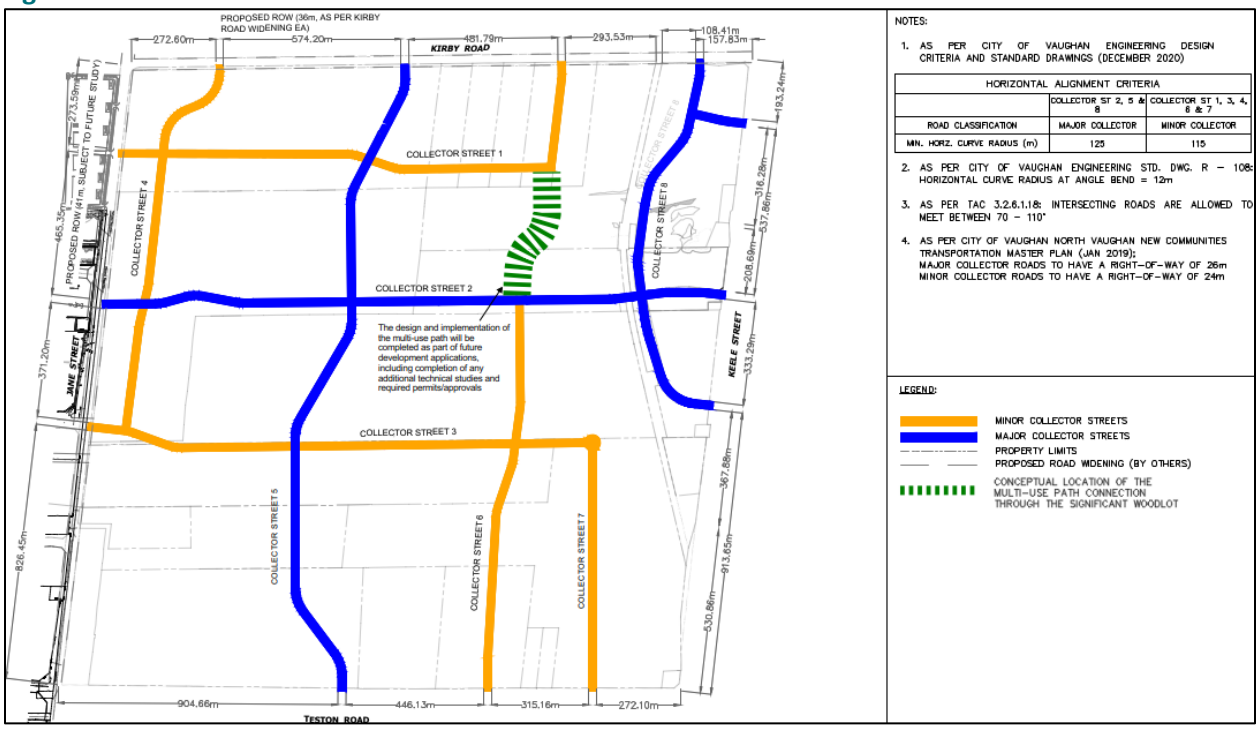
The City of Vaughan, as co-proponents with the Block 27 Landowners Group Inc. is undertaking a Schedule 'C' Municipal Class Environmental Assessment (MCEA) for the development of the Block 27 internal roads (herein referred to as the "Block 27 Collector Roads MCEA"). The MCEA study advances the planning and design process completed as part of the NVNCTMP and Block 27 Secondary Plan and satisfies Phases 3 and 4 of the MCEA process for the minor and major collector roadways within the Block. The purpose of the Block 27 MCEA is to develop, identify, evaluate, and recommend alternative options for the road network within the Block 27 Community Area. This is to support the growth anticipated in Block 27 and to enable the efficient movement of people and goods through the block.

The Block 27 Collector Roads MCEA builds upon the initial work completed as part of the NVNCTMP to identify the preferred road alignment and recommended cross-sections of each collector road within Block 27. As part of the MCEA, the preferred collector road alignments recommended in the NVNCTMP were reviewed and a number of additional alignments were developed for evaluation in light of new existing conditions data collected since the completion of the NVNCTMP to minimize environmental impacts.

Since the January 2024 submission, the Street 6 connection through the woodlot was removed and Street 6 terminates at Street 2 in the recommended road network. The decision to remove the Street 6 connection was determined following discussions with external agencies, Indigenous Communities and the Technical Advisory Committee (TAC) through the EA process.

Figure 2-3 illustrates the recommended road network for Block 27. A layout of the Block 27 collector roads showing alignment with the adjacent Blocks (based on the Block 34E site plan and North Maple Regional Park IFC submission) and intersection spacing distances is included in **Appendix A**. Should significant changes to the Block 27 Collector Roads MCEA be required, the Block Plan concept plan, MESP, and Transportation Mobility Plan study will need to be updated accordingly.

Figure 2-3: Block 27 Collector Road MCEA Recommended Road Network



Source: Block 27 Collector Roads MCEA (LEA, 2024)
Note: Not to scale

2.4 BLOCK 27 DEVELOPMENT PROPOSAL

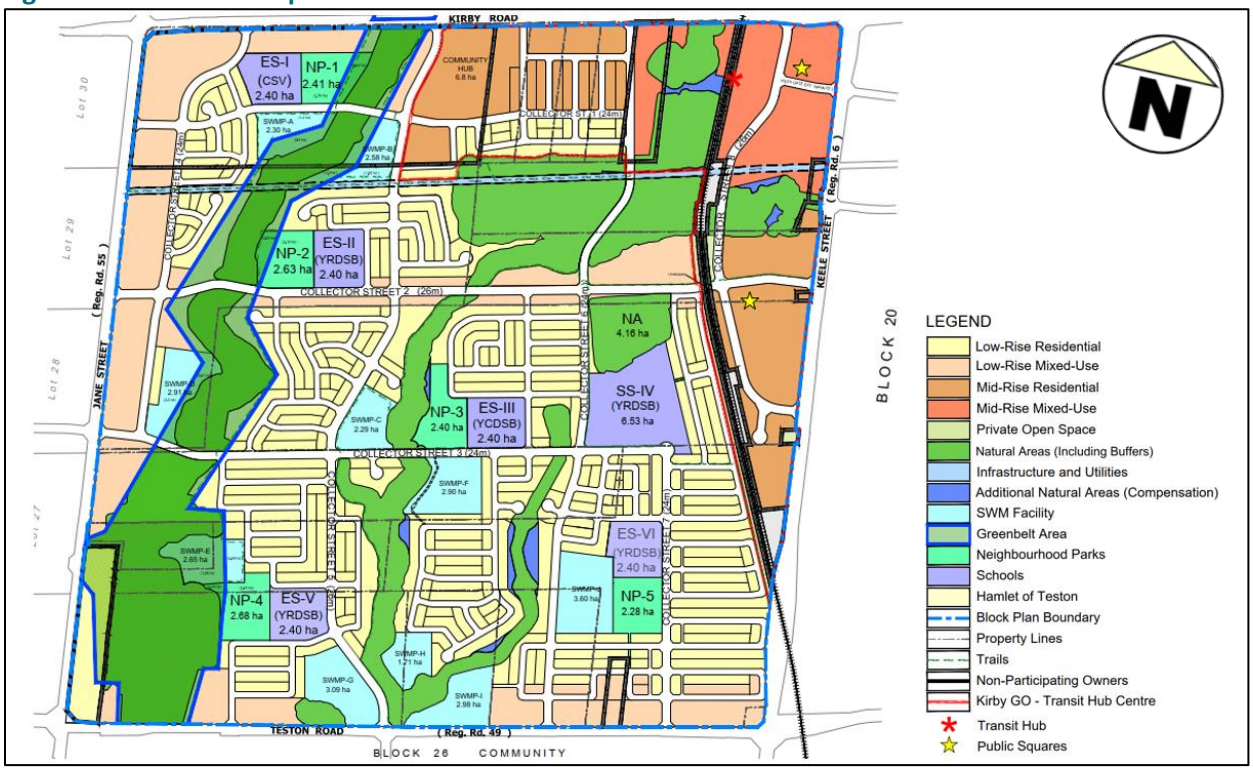
The Block 27 development incorporates the Secondary Plan, Master Environmental Servicing Plan (MESP), and Block 27 Collector Roads MCEA recommendations. A breakdown of the development statistics based on land use and development type is summarized in **Table 2-2**. The Block Plan is illustrated in **Figure 2-4**. It is anticipated that the location of land uses illustrated in the Block Plan may change with the on-going agency and stakeholder consultation. That being said, the overall density proposed within the block is not expected to change.

Table 2-2: Development Site Statistics

Land Use	Units	GFA
Low Rise Residential (LRR)	2,211	-
Low Rise Mixed Use (LRMU)	2,048	-
Mid Rise Residential (MRR)	1,622	-
Mid Rise Mixed Use (MRMU)	1,187	-
Total Residential	**7,067 (1)**	**-**
Total Retail	**-**	**47,568 m^2**
Total Office	**-**	**7,417 m^2**
Total Schools	**-**	**185,300 m^2**

Note: (1) – Total may not add up due to rounding.

Figure 2-4: Block 27 Proposed Block Plan



Source: Bousfields Inc. (September 2023)
Note: Subject to change based on the recommendations of the Block 27 EA

3 EXISTING TRANSPORTATION CONDITIONS

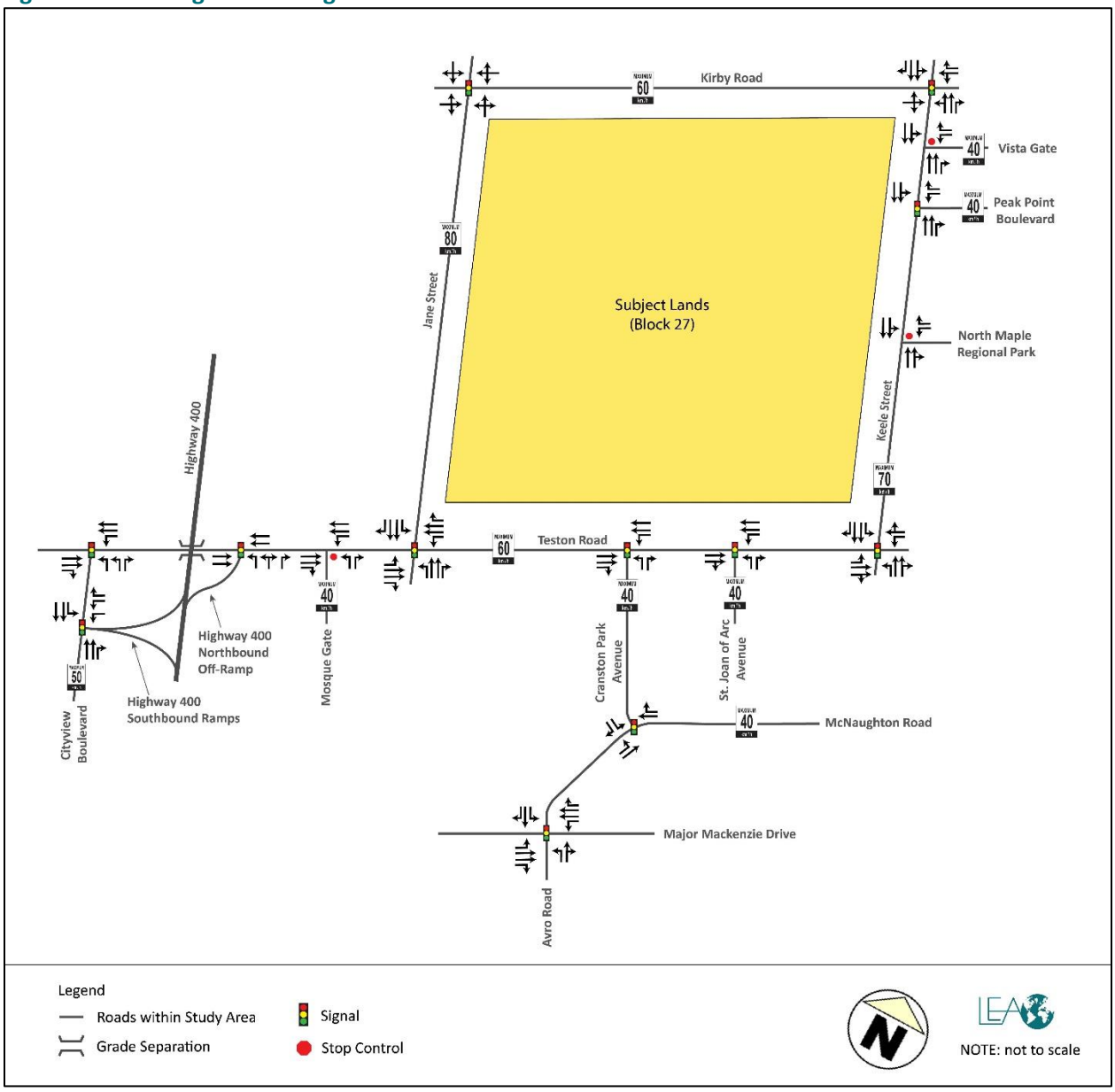
This section identifies and assesses the existing transportation conditions within the subject lands, including the road, transit, cycling, and pedestrian networks. The study area was determined by assessing the size of the proposed development, its anticipated transportation impact, and through consultation with review agency staff. The study includes the following existing intersections:

- Keele Street and Kirby Road (Signalized);
- Keele Street and Vista Gate (Unsignalized);
- Keele Street and Peak Point Boulevard (Signalized);
- Keele Street and North Maple Regional Park (Unsignalized);
- Keele Street and Teston Road (Signalized);
- St. Joan of Arc. Avenue and Teston Road (Signalized);
- Cranston Park Avenue and Teston Road (Signalized);
- Jane Street and Teston Road (Signalized);
- Jane Street and Kirby Road (Signalized);
- Mosque Gate and Teston Road (Signalized);
- Highway 400 Northbound Off-ramps and Teston Road (Signalized);
- Cityview Boulevard and Teston Road (Signalized)
- Cityview Boulevard and Highway 400 Southbound Ramps (Signalized);
- McNaughton Road & Cranston Park Avenue (Signalized); and
- Avro Road/McNaughton Road & Major Makenzie Drive West (Signalized).

3.1 ROAD NETWORK

The following section provides a description and classification of the external roadways surrounding Block 27. The roadways of Jane Street, Teston Road, and Keele Street are under the jurisdiction of York Region, Highway 400 is under the jurisdiction of the Ontario Ministry of Transportation (MTO), and the remaining roadways are under the jurisdiction of the City of Vaughan. **Figure 3-1** illustrates the existing road network and lane configurations for the study area intersections.

Figure 3-1: Existing Lane Configuration



Highway 400 is an existing north-south Provincial 400-series highway located approximately 975 m west of Block 27 and is a major transportation link connecting northern Ontario to southern Ontario. Highway 400 turns into Highway 69 and is part of the Trans-Canada Highway network north of Perry Sound. Provincial highways are maintained by the Ontario Ministry of Transportation.

Highway 413 is a proposed highway and transit corridor running through York, Peel, and Halton Regions. The preferred route for the proposed Highway 413 was announced in August 2020. The corridor is expected to include a 4 to 6-lane, 59-kilometre 400-series highway with connections to Highways 400, 427, 410, 401, and 407 ETR. The highway is proposed to include 11 interchanges with municipal roads.

Jane Street (Regional Road 55) is a north-south major arterial roadway that operates with a 2-lane cross-section (1 lane in each direction), shifting to a 4-lane cross-section (2 lanes in each direction) near its

intersection with Teston Road. Jane Street operates between Bloor Street in the City of Toronto to the south and Edward Street in the Township of King to the north. The posted speed limit of 60 km/hr is observed on Jane Street through the residential/commercial area, which increases to 80 km/hr further north. Jane Street is the western boundary of Block 27.

Keele Street (Regional Road 6) is a north-south major arterial roadway with a 4-lane cross-section (2 lanes in each direction). Keele Street operates between Bloor Street in the City of Toronto to the south and King Street in the Township of King to the north. The posted speed limit of 70 km/hr is observed on Keele Street between Kirby Road and Teston Road. Keele Street is the eastern boundary of Block 27.

Teston Road (Regional Road 49) is an east-west major arterial roadway with a 4-lane cross-section (2 lanes in each direction) with a centre median. Teston Road operates between Bathurst Street in the east to Kipling Avenue in the west. The roadway exhibits a gap between Keele Street and Dufferin Street. The posted speed limit of 60 km/hr is observed on Teston Road between Jane Street and Keele Street. Teston Road is the southern boundary of Block 27.

Kirby Road is an east-west minor arterial roadway with a 2-lane cross-section (1 lane in each direction). Kirby Road operates between Dufferin Street in the east and Albion Vaughan Road in the west. The roadway currently ends at Highway 27, is jogged at Jane Street, and exhibits a missing link between Dufferin Street and Bathurst Street. The posted speed limit of 60 km/hr is observed on Kirby Road between Jane Street and Keele Street. An at-grade signalized railway crossing is located along this stretch of Kirby Road. Kirby Road is the northern boundary of Block 27.

Based on the findings of the Kirby Road Widening EA, elimination of the jog at Jane Street and central realignment of the roadway is recommended to address the delay for drivers and safely accommodate road users. Furthermore, an underpass design (rail over road) was identified as the preferred solution for Kirby Road at the Barrie GO rail corridor crossing to remove rail conflicts between pedestrians/cyclists and mitigate vehicle queueing caused by increased GO Train service.

Cityview Boulevard is a north-south major collector roadway with a 5-lane cross-section (2 lanes in the south direction and 3 lanes in the north direction) between Teston Road and the Highway 400 Southbound Ramps, a 4-lane cross-section (two lanes per direction) between the Highway 400 Southbound Ramps and just south of the intersection with Shelbourne Drive, and a 2-lane cross-section (1 lane per direction) further south. Cityview Boulevard operates between Teston Road in the north and Major Mackenzie Drive in the south. The roadway operates with a posted speed limit of 50 km/hr within the study area.

Cranston Park Avenue is a north-south major collector road connecting to Teston Road that operates with a 2-lane cross-section (1 lane in each direction). Cranston Park Avenue operates between Teston Road in the north and McNaughton Road in the south. The roadway operates with a posted speed limit of 40 km/hr within the study area.

St. Joan of Arc Avenue is a north-south minor collector road connecting to Teston Road that operates with a 2-lane cross-section (1 lane in each direction). St. Joan of Arc Avenue operates between Teston Road in the north and McNaughton Road in the south. The roadway operates with a posted speed limit of 40 km/hr within the study area.

Peak Point Boulevard is a local road connecting to Keele Street that operates in both an east-west and north-south direction with a 2-lane-cross section (1 lane in each direction). Peak Point Boulevard operates between Keele Street in the west and Ravineview Drive in the north. The roadway operates with an assumed speed limit of 50 km/hr within the study area.

Vista Gate is an east-west local road connecting to Keele Street that operates with a 2-lane cross-section (1 lane in each direction). Vista Gate operates between Keele Street in the west and Ravineview Drive in the east. The roadway operates with an assumed speed limit of 50 km/hr within the study area.

Mosque Gate is a north-south local road that operates with a 2-lane cross-section (1 lane per direction) within the study area. Mosque Gate operates between Teston Road in the north and Service Road in the south. The roadway operates with an assumed speed limit of 40 km/hr within the study area.

McNaughton Road is an east-west minor arterial road that operates with a 2-lane cross-section (1 lane per direction) within the study area. McNaughton Road operates between the intersection of Major Mackenzie Drive & Peter Rupert Avenue in the east and Major Mackenzie Drive & Avro Road in the west. The roadway operates with a posted speed limit of 40 km/hr within the study area.

3.2 TRANSIT NETWORK

The City of Vaughan is serviced by York Region Transit (YRT). Public transit services are currently available in select areas where there is demand (i.e., select segments along Jane Street, Kirby Road, Keele Street, and the community located at the southeast corner of Keele Street & Kirby Road). As of September 2023, there are 4 local routes that travel along the bordering arterial roads of Keele Street, Teston Road, and Jane Street as well as the collector road, Cranston Park Avenue, including:

- Route 96 Keele - Yonge
- Route 107 Keele
- Route 26 Maple
- Route 20 Jane

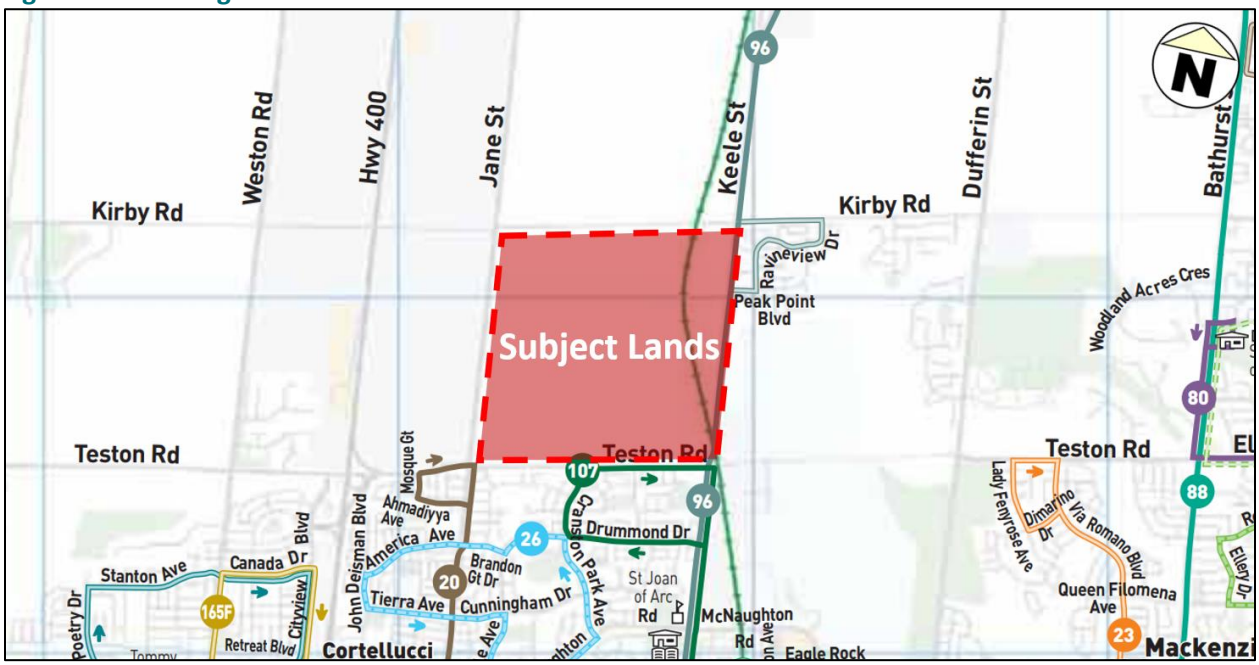
These bus routes operate with headways ranging from 15 to 30 minutes during the morning and afternoon peak hours and will connect the new community area to destinations within the City, including the Vaughan Mills Bus Terminal and the Smart VMC Bus Terminal.

In addition to local transit services, the study area is located in proximity to the following inter-regional GO Transit routes:

- Barrie GO Rail
- GO Transit Route 63

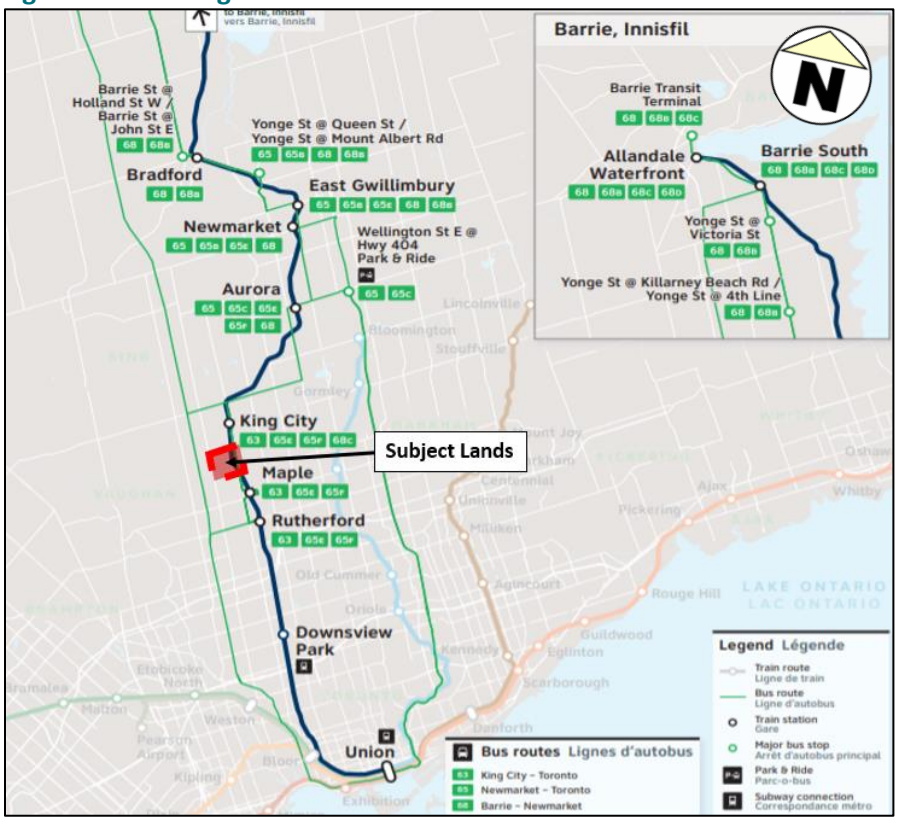
The existing YRT transit routes servicing the area and nearby GO transit routes are described below and illustrated in **Figure 3-2** and **Figure 3-3**, respectively.

Figure 3-2: Existing YRT Transit Network



Source: York Region Transit (September 2023)

Figure 3-3: Existing GO Transit Routes



Source: Metrolinx (2021)

YRT Bus Route 96 – Keele-Yonge is a bus route that generally operates in a north-south direction between Pioneer Village Station in the south and Newmarket Terminal in the north. This bus route operates with approximately 30-minute headways during peak periods.

Access Location: Route 96 is accessible at the intersection of Teston Road & Keele Street, which is located at the southeast corner of the subject lands.

YRT Bus Route 107 – Keele is a bus route that generally operates in a north-south direction between Pioneer Village Station in the south and the area of Cranston Park Avenue and Teston Road in the north. This bus route operates with approximately 15-20-minute headways during peak periods.

Access Location: Route 107 is accessible at the intersection of Keele Street & Teston Road for southbound travel only, which is located south of the subject lands.

YRT Bus Route 26 – Maple is a bus route that generally operates in a north-south direction between the Vaughan Mills Bus Terminal in the south and the area of Jane Street & Brandon Gate Drive in the north. Rush hour service runs along Edgeley Boulevard, extending service to the Smart VMC Bus Terminal. This bus route operates with approximately 30-minute headways during peak periods.

Access Location: Route 26 is accessible at the intersection of America Avenue & Coast Avenue, which is located approximately 1 km (equivalent to a 13-minute walk) from the southwest corner of the subject lands.

YRT Bus Route 20 – Jane is a bus route that generally operates in a north-south direction between Pioneer Village Station in the south and Mosque Gate & Teston Road in the north. This bus route operates with approximately 15-20-minute headways during peak periods.

Access Location: Route 20 is accessible at the intersection of Jane Street & Teston Road for southbound travel, which is located at the southwest corner of the subject site.

GO Route 63 – King is a GO Transit bus route that operates in a north-south direction primarily along Highway 400 and Keele Street from Union GO Station in downtown Toronto to King City GO Station, with connections to Rutherford and Maple transit stations. This route offers a single departure service at 4:55 AM on Mondays to Fridays, in the southbound direction only.

Access Location: Route 63 is accessible at the intersections of Keele Street at Kirby Road, Peak Point Boulevard, and Teston Road which is adjacent to the western boundary of Block 27.

Barrie GO Corridor provides commuter rail service. The Barrie GO line offers two-way commuter rail service to and from Toronto all week with approximately 30-minute headways during peak periods and hourly off-peak service. GO Transit Route 63 supplements train service during early morning and late evening hours.

Access Location: The Barrie GO Line is accessible via Maple GO Station, located northeast of Major Mackenzie Drive & Keele Street, approximately 2.6 km south of the subject lands.

3.2.1 Existing Transit Level of Service

Table 3-1 below summarizes the existing transit level of service (LOS) based on the York Region Mobility Plan Guidelines criteria. The evaluation was conducted based on 3 criteria: access to transit, transit headways, and intersection approach delays. The results further demonstrate that existing transit service is poor and limited to a select number of locations along the boundary roadways.

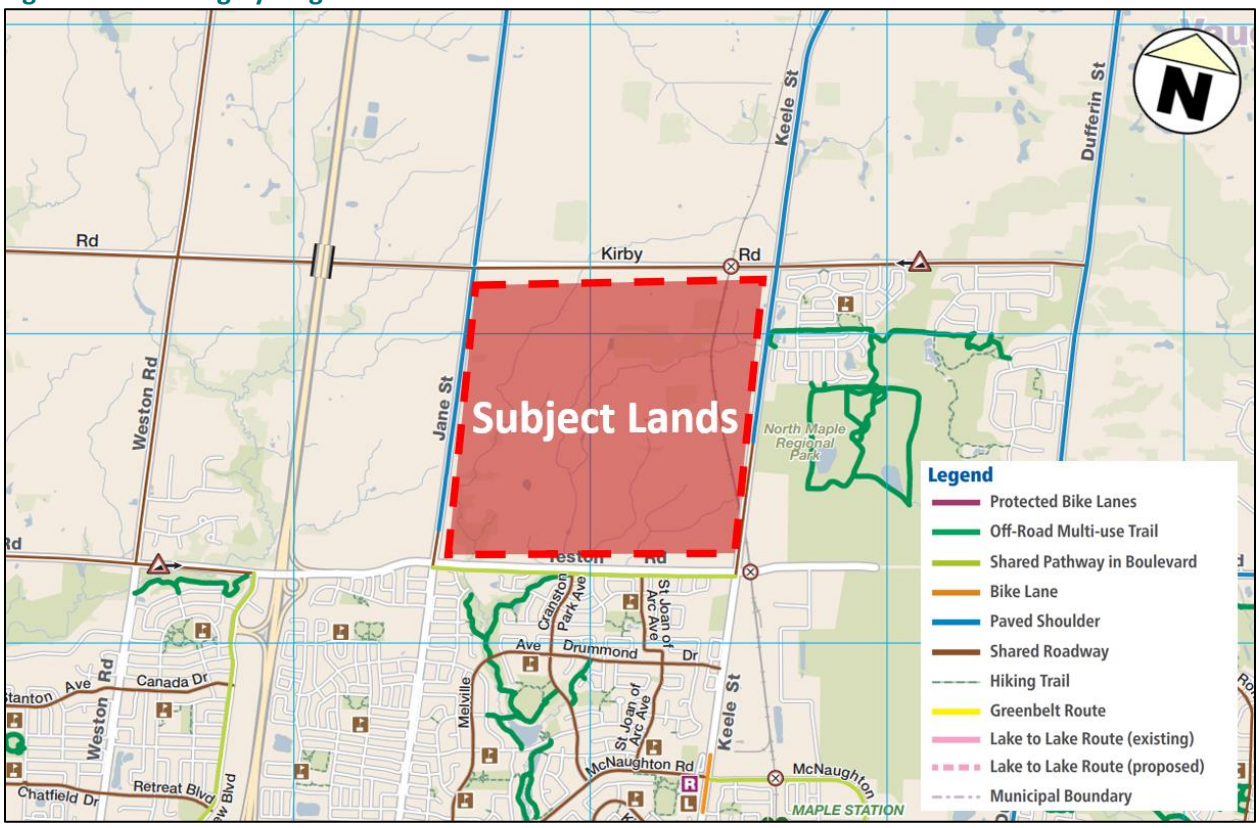
Table 3-1: Existing Transit Level of Service

Transit Stop Location	Direction	Access to Transit Stop	Transit Headways	Intersection Approach
		LOS	LOS	LOS
Jane Street & Teston Road	EB	A	C	D
	WB	A	-	-
	NB	A	-	-
	SB	A	-	-
Jane Street & Kirby Road	EB	F	-	-
	WB	F	-	-
	NB	F	-	-
	SB	F	-	-
Keele Street & Teston Road	EB	A	D	E
	WB	A	-	-
	NB	A	F	C
	SB	A	F	D
Keele Street & Kirby Road	EB	A	-	-
	WB	A	E	D
	NB	A	F	A
	SB	A	F	A

3.3 CYCLING NETWORK

The subject lands are in a neighbourhood with limited access to dedicated cycling infrastructure. Existing cycling infrastructure is provided through paved shoulders along the majority of Jane Street and a little over half of the segment along Keele Street. Shared roadways form the balance of the cycling infrastructure along both segments and along Kirby Road. Multiple shared roadway routes are also provided in the block south of Block 27 along Cranston Park Avenue, St. Joan of Arc Avenue, and Melville Avenue/Drummond Drive. In addition, an in-boulevard multi-use path is provided on the south side of Teston Road. There are also two off-road multi-use trails located near the study area and are accessible at the intersections of Teston Road & Cranston Park Avenue and Keele Street & Peak Point Boulevard. The existing cycling network is illustrated in **Figure 3-4**.

Figure 3-4: Existing Cycling Network



Source: York Region Cycling Map - South Side (York Region, 2021)

3.3.1 Existing Cycling Level of Service

Table 3-2 below summarizes the existing cycling level of service based on the York Region Mobility Plan Guidelines criteria. An evaluation was conducted for both individual road segments and major intersections. Overall, the existing bicycle network is lacking, with generally unfavourable conditions for cyclists along most of the boundary roads and with limited permeability within the subject lands.

Table 3-2: Existing Cycling Level of Service

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Jane Street & Teston Road	EB	Teston Road	F	F
	WB	Teston Road	F	F
	NB	Jane Street	F	F
	SB	Jane Street	F	F
Jane Street & Kirby Road	EB	Kirby Road	F	F
	WB	Kirby Road	F	F
	NB	Jane Street	E	E
	SB	Jane Street	E	E
Keele Street & Teston Road	EB	Teston Road	F	F
	WB	Teston Road	F	F
	NB	Keele Street	F	F
	SB	Keele Street	F	F

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Keele Street & Kirby Road	EB	Kirby Road	F	F
	WB	Kirby Road	F	F
	NB	Keele Street	E	E
	SB	Keele Street	E	E
Keele Street & Vista Gate	EB	Vista Gate	F	F
	WB	Vista Gate	F	F
	NB	Keele Street	E	E
	SB	Keele Street	E	-(1)
Keele Street & Peak Point Boulevard	EB	Peak Point Boulevard	F	F
	WB	Peak Point Boulevard	F	F
	NB	Keele Street	F	F
	SB	Keele Street	F	-(1)
St. Joan of Arc. Avenue & Teston Road	EB	Teston Road	A	E
	WB	Teston Road	F	-(1)
	NB	St. Joan of Arc Avenue	E	E
	SB	St. Joan of Arc Avenue	E	E
Cranston Park Avenue & Teston Road	EB	Teston Road	A	E
	WB	Teston Road	F	-(1)
	NB	Cranston Park Avenue	E	E
	SB	Cranston Park Avenue	E	E
Mosque Gate & Teston Road	EB	Teston Road	F	F
	WB	Teston Road	F	-(1)
	NB	Mosque Gate	F	F
	SB	Mosque Gate	F	F
Highway 400 Northbound Off-ramps & Teston Road	EB	Teston Road	F	F
	WB	Teston Road	F	-(1)
Cityview Boulevard & Teston Road	EB	Teston Road	F	F
	WB	Teston Road	F	-(1)
	NB	Cityview Boulevard	F	F
	SB	Cityview Boulevard	A	F
Cityview Boulevard & Highway 400 Southbound Ramps	NB	Cityview Boulevard	F	F
	SB	Cityview Boulevard	A	-(1)

Note: (1) – Where a T-intersection exists, there is no intersection LOS to calculate for specific movements.

3.4 PEDESTRIAN NETWORK

Pedestrian facilities are limited to the few residential enclaves surrounding Block 27. In the area immediately surrounding the subject lands, the existing pedestrian network consists of sidewalks along both sides of Cranston Park Avenue, St. Joan of Arc Avenue, Mosque Gate, Peak Point Boulevard, Vista Gate, and Cityview Boulevard. While there are no sidewalks on the north side of Teston Road, an in-boulevard multi-use path is provided on the south side. Sidewalks are also provided along Jane Street and

Keele Street, south of Teston Road. However, no sidewalks are available along road segments bordering Block 27 including Kirby Road, Jane Street north of Teston Road, and Keele Street north of Teston Road.

Pedestrian crosswalks are available on all approaches with protected pedestrian phases at all signalized intersections in the study area, except for the Jane Street & Kirby Road intersection and the westbound approach at Teston Road & Cityview Boulevard.

3.4.1 Existing Pedestrian Level of Service

Table 3-3 below summarizes the existing pedestrian level of service based on the York Region Mobility Plan Guidelines criteria. An evaluation was conducted for both individual road segments and major intersections. Overall, the existing pedestrian network is limited, particularly with regards to permeability within the subject lands.

Table 3-3: Existing Pedestrian Level of Service

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
Jane Street & Teston Road	EB	Teston Road	B	B
	WB	Teston Road	F	F
	NB	Jane Street	E	E
	SB	Jane Street	E	E
Jane Street & Kirby Road	EB	Kirby Road	F	F
	WB	Kirby Road	F	F
	NB	Jane Street	E	E
	SB	Jane Street	E	E
Keele Street & Teston Road	EB	Teston Road	F	F
	WB	Teston Road	F	F
	NB	Keele Street	E	E
	SB	Keele Street	E	E
Keele Street & Kirby Road	EB	Kirby Road	F	F
	WB	Kirby Road	F	F
	NB	Keele Street	E	E
	SB	Keele Street	E	E
Keele Street & Vista Gate	EB	Vista Gate	B	F
	WB	Vista Gate	B	F
	NB	Keele Street	E	E
	SB	Keele Street	E	-(1)
Keele Street & Peak Point Boulevard	EB	Peak Point Boulevard	B	B
	WB	Peak Point Boulevard	B	B
	NB	Keele Street	E	E
	SB	Keele Street	E	-(1)
St. Joan of Arc. Avenue & Teston Road	EB	Teston Road	B	B
	WB	Teston Road	F	-(1)
	NB	St. Joan of Arc Avenue	B	B
	SB	St. Joan of Arc Avenue	B	B
Cranston Park Avenue & Teston Road	EB	Teston Road	B	B
	WB	Teston Road	F	-(1)

Intersection	Direction	Segment		Intersection
		Description	LOS	LOS
	NB	Cranston Park Avenue	B	B
	SB	Cranston Park Avenue	B	B
Mosque Gate &Teston Road	EB	Teston Road	B	D
	WB	Teston Road	F	-(1)
	NB	Mosque Gate	B	F
	SB	Mosque Gate	B	F
Highway 400 Northbound Off-ramps & Teston Road	EB	Teston Road	B	B
	WB	Teston Road	F	-(1)
Cityview Boulevard &Teston Road	EB	Teston Road	B	B
	WB	Teston Road	F	-(1)
	NB	Cityview Boulevard	B	B
	SB	Cityview Boulevard	A	F
Cityview Boulevard & Highway 400 Southbound Ramps	NB	Cityview Boulevard	B	B
	SB	Cityview Boulevard	A	-(1)

Note: (1) – Where a T-intersection exists, there is no intersection LOS to calculate for specific movements

3.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data for the intersection capacity analysis. It is understood that the City had concerns regarding the June 2021 traffic counts used in the July 2022 analysis which indicated lower volumes than those conducted pre-pandemic. As such, a new set of traffic counts were collected by LEA Consulting on Wednesday, March 8, 2023, Thursday, March 9, 2023, and Wednesday, March 22, 2023, between 5:30AM and 9:00PM. A COVID adjustment was not applied given that government restrictions have eased, and the traditional in-person work operations have shifted to a hybrid in-person/work-from-home structure. As such, the data collected in 2023 provides an appropriate representation of current traffic patterns.

Heavy vehicle traffic and pedestrian traffic were recorded separately and are included in the capacity analysis. Signal timing plans at the signalized intersections were obtained from the City of Vaughan, York Region, and the Ontario Ministry of Transportation (MTO). A summary of the TMC data collected is provided in **Table 3-4,** with detailed traffic counts and signal timing plans available in **Appendix B**.

Table 3-4: Data Collection Summary

Intersection	Date	Source
Keele St & Kirby Rd	Thursday March 9, 2023	LEA Consulting Ltd.
Keele St & Vista Gate		
Keele St & Peak Point Blvd		
Keele St & North Maple Regional Park		
Keele St & Teston Rd	Wednesday March 22, 2023	
St Joan of Arc Ave & Teston Rd	Thursday March 9, 2023	
Cranston Park Ave & Teston Rd		
Jane St & Teston Rd	Wednesday March 8, 2023	
Jane St & Kirby Rd		
Mosque Gate & Teston Rd		

Intersection	Date	Source
Highway 400 NB Ramps & Teston Rd		
Cityview Blvd & Teston Rd		
Cityview Blvd & Highway 400 SB Ramps		
McNaughton Rd & Cranston Park Ave		
Avro Rd/McNaughton Rd & Major Mackenzie Dr		

3.6 EXISTING MODEL INPUTS

Existing traffic operations were assessed to provide a baseline for future traffic operations. The existing analysis incorporates the most recent signal timing plans for the study intersections obtained from the City of Vaughan, York Region, and the MTO. The applied Peak Hour Factor (PHF) values under existing conditions were calculated based on surveyed counts. Furthermore, model calibration was conducted as per the City of Vaughan TIS Guidelines (February 2022) and York Region Mobility Plan Guidelines as the v/c ratios observed were above 1.00. General adjustments for constrained movements included the following:

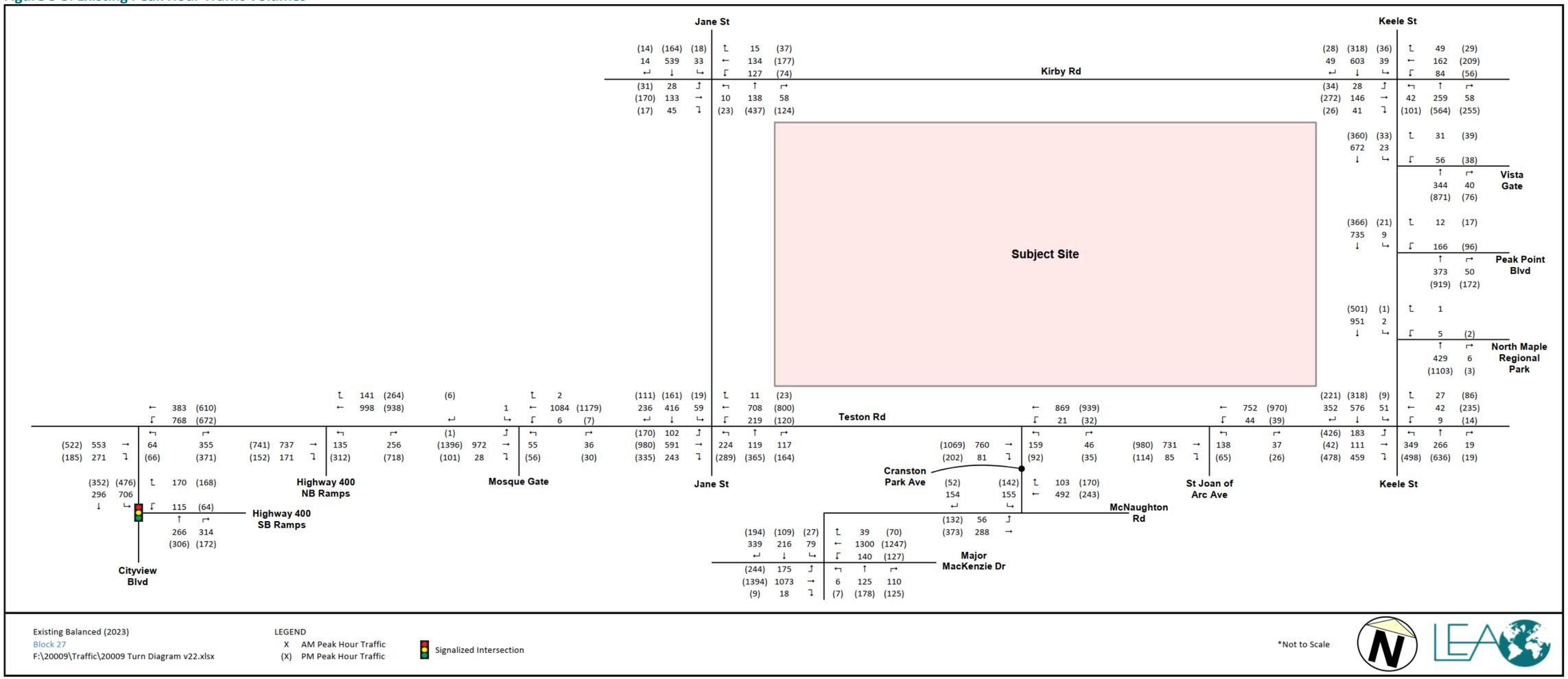
- Keele Street & Teston Road
  - A lost-time adjustment of -1 was applied to the EBL and NBL movements during the PM peak hour.

3.7 EXISTING TRAFFIC VOLUMES

The existing traffic volumes during the weekday AM and PM peak hours are illustrated in **Figure 3-5**.

Balancing of volumes was carried out when adjacent intersections differed by more than 10% and there was no mid-block destination that would provide a reasonable explanation for the difference.

Figure 3-5: Existing Peak Hour Traffic Volumes



4 FUTURE BACKGROUND TRANSPORTATION CONDITIONS

For the analysis of future background traffic conditions, this study considers an 8-year horizon to the full build-out year of 2031. Future background traffic includes the traffic added to the road network from other future developments within the surrounding study area, corridor growth, as well as all planned transportation infrastructure improvements. Future background conditions were used as a baseline for evaluating the impact of the proposed development.

4.1 BACKGROUND DEVELOPMENTS

6 background developments have been identified within the surrounding study area. Detailed information on the background developments included in the analysis was obtained from the City of Vaughan transportation staff and/or the City of Vaughan's PLANit development application inventory. The background developments are summarized in **Table 4-1** with their location illustrated in **Figure 4-1**.

Table 4-1: Background Developments

#	Address	Proposed Development	Source of Traffic Volumes
1	10811 Jane St	159 apartment units, 44 long-term care units, 644 m^2 daycare GFA	TIS (WSP February 2022) (Figure 4-1)
2	2975 Teston Rd	250 apartment units.	TIS (Crozier May 2022) (Figure 9)
3	Block 41	5,576 residential units, Schools with 3,600 students	Transportation Mobility Assessment Study (Poulos & Chung April 2024) (Figure 6.6)
4	Block 34W	Residential Units (623 Mid-Rise, 216 Low-Rise), 13,497 m^2 office GFA, 2,800 m^2 supermarket GFA, 51,370 m^2 shopping centre	LEA (Preliminary Estimates) (July 2024)
5	Block 34E	About 135 hectares of employment and mixed-use lands.	TIS Crozer (May 2021) (Figure 17A, adjusted [(1)])
6	North Maple Regional Park	Walking trails, sports fields	LEA Estimate

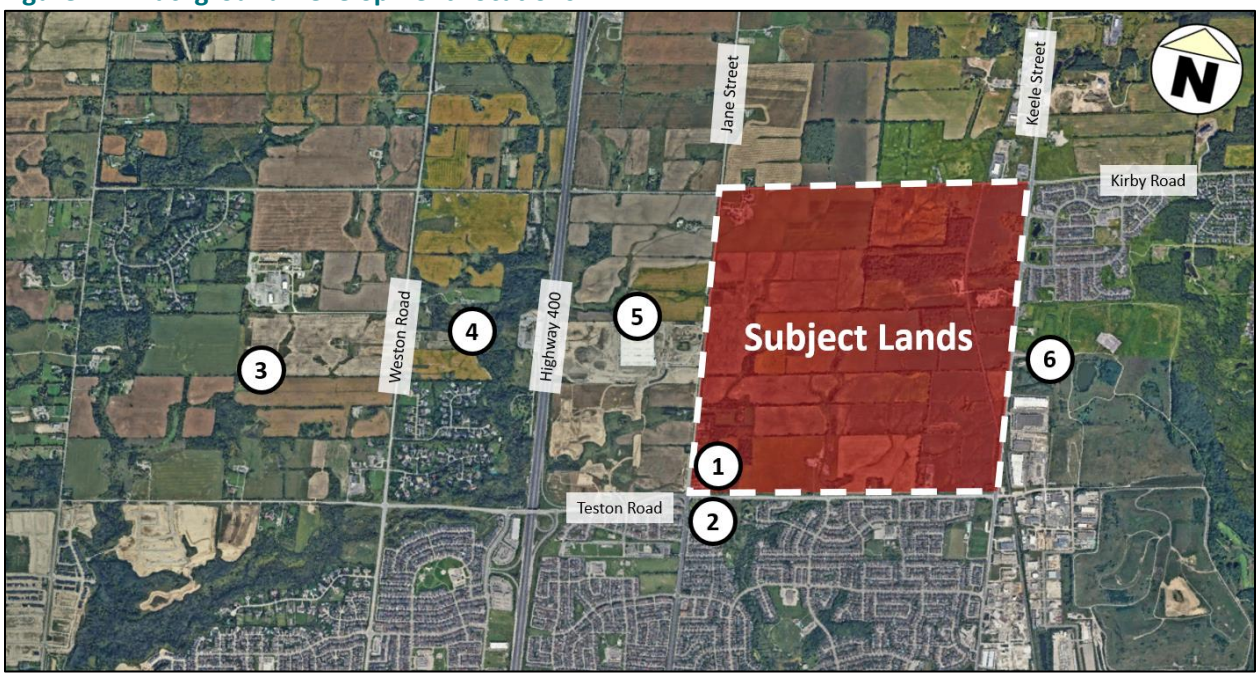
Note: (1) – In order to assign all the traffic to the network, all traffic (existing, background developments, growth, Block 34E, Kirby GO, and site traffic) were all put into an Aimsun model. As a result, the Block 34E traffic analyzed in the future background synchro work is the Aimsun model re-assigned traffic as opposed to the traffic shown in Figure 17A.

The background development traffic volumes were extracted from the respective traffic studies for their development application and subsequently assigned to the study area road network. Excerpts from the studies are provided in **Appendix C**.

The background traffic for North Maple Regional Park was estimated using the ITE trip generation rates. It is understood that the park will include amenities such as walking trails, soccer fields, cricket fields, and other multi-use sports fields. ITE Land Use Code 488 – Soccer Complex – was used as an approximation of this traffic, with the assumption of 4 soccer fields to be conservative. This resulted in 4 vehicle trips in the AM peak hour (2 inbound and 2 outbound) and 66 vehicle trips in the PM peak hour (44 inbound and 22

outbound). Detailed trip generation calculations for the North Maple Regional Park are provided in **Appendix C**.

Figure 4-1: Background Development Locations



The background development traffic volumes were separated into small background developments (i.e., background development #1, 2, and 6), Block 34E, Block 41, and Block 34W during the weekday AM and PM peak hours are illustrated in **Figure 4-2** to **Figure 4-5**.

Figure 4-2: Small Background Developments Peak Hour Traffic Volumes

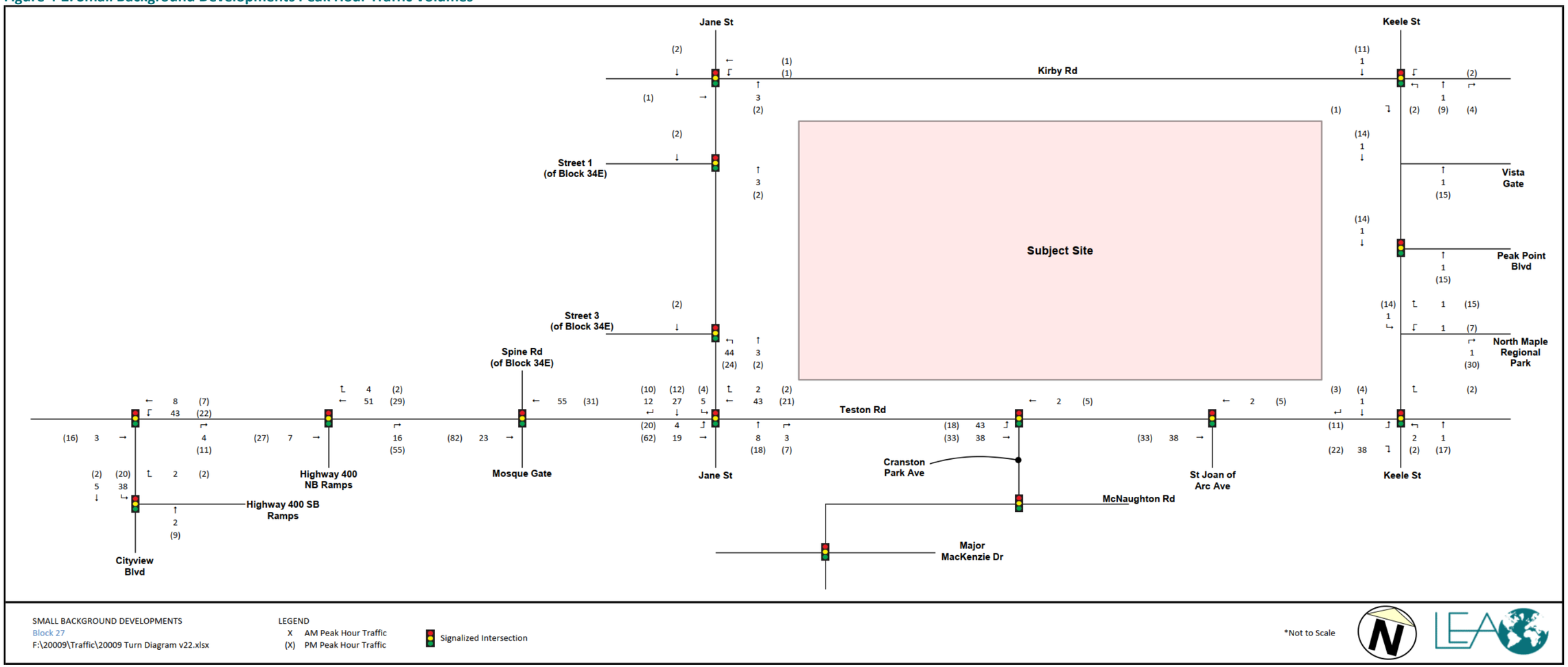
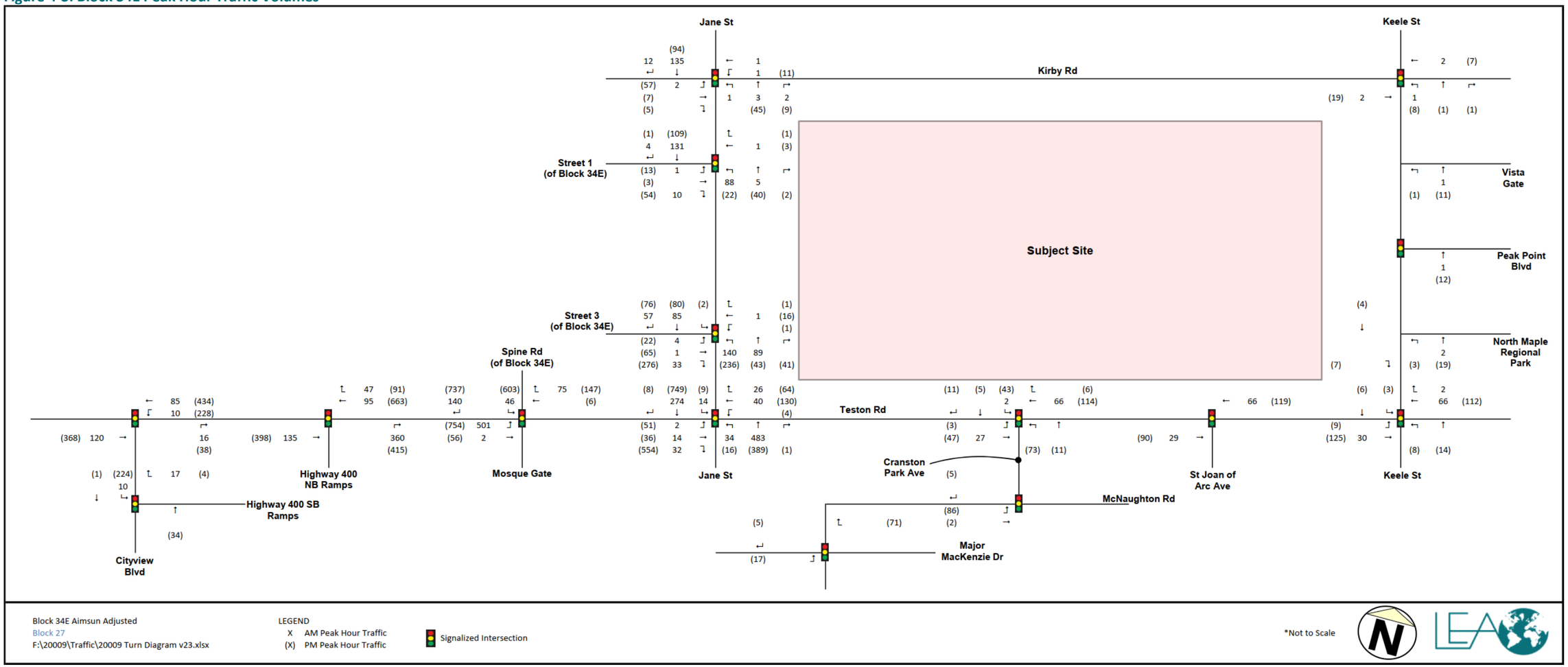


Figure 4-3: Block 34E Peak Hour Traffic Volumes



Block 34E Aimsun Adjusted
Block 27
F:\20009\Traffic\20009 Turn Diagram v23.xlsx

LEGEND
X AM Peak Hour Traffic
(X) PM Peak Hour Traffic

Signalized Intersection

*Not to Scale

Figure 4-4: Block 41 Peak Hour Traffic Volumes

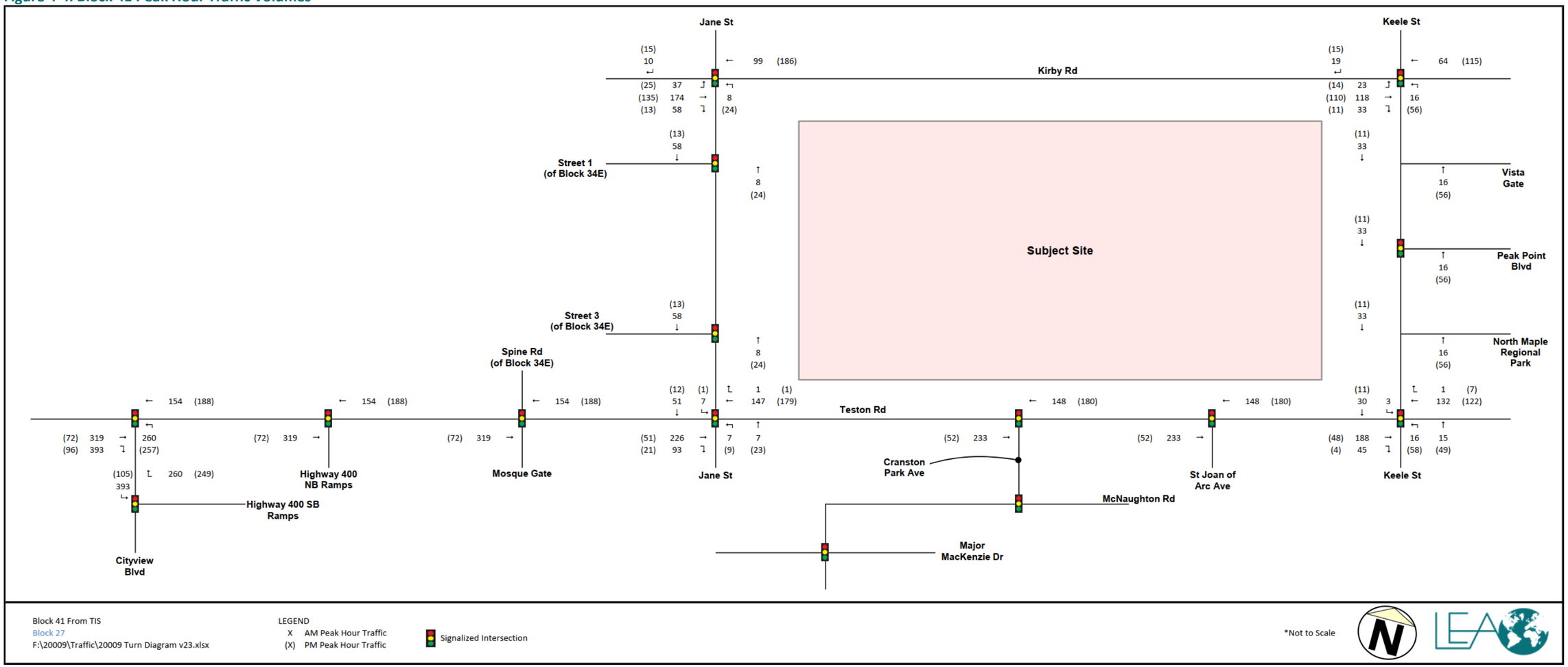
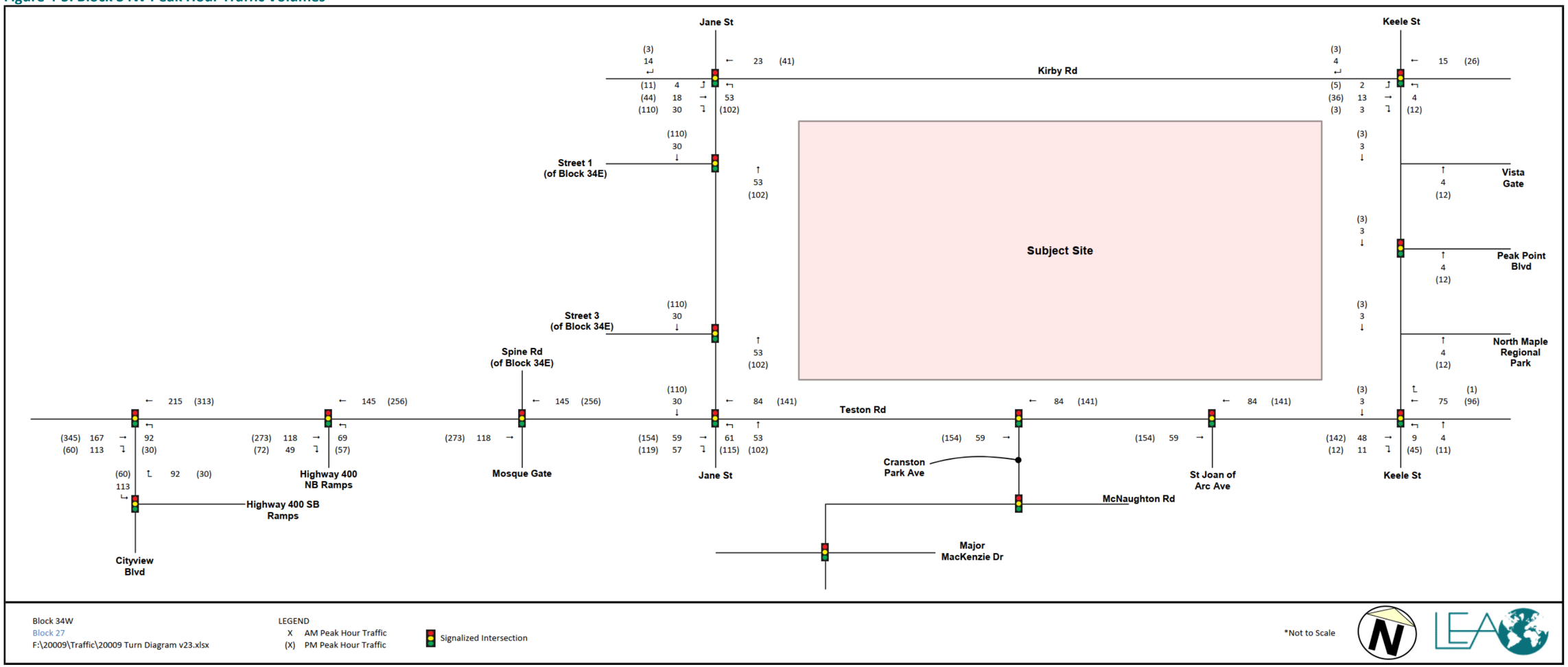


Figure 4-5: Block 34W Peak Hour Traffic Volumes



4.2 CORRIDOR GROWTH

Historical data was used to determine appropriate growth for the area. Historical data was collected for the intersections along Keele Street, Kirby Road, Teston Road, and Jane Street ranging from 2010 to 2021. The analysis showed inconsistent patterns across different areas of the network and at different peak hours. Little consistent increases were found for the through movements across the entire network, with one exception: PM peak hour traffic coming from the 400 NB off-ramp, turning eastbound onto Teston Road, and turning southbound onto Keele Street. For these movements, the growth rates ranged from 2.35% to 5.95%, with an average of 4.4%. Applying these growth rates resulted in different amounts of traffic added to adjacent intersections; however, yielded an average growth of 325 vehicles. To maintain balanced intersections, the average of all intersections, 325 vehicles, was added to all relevant movements.

4.3 FUTURE ROAD IMPROVEMENTS

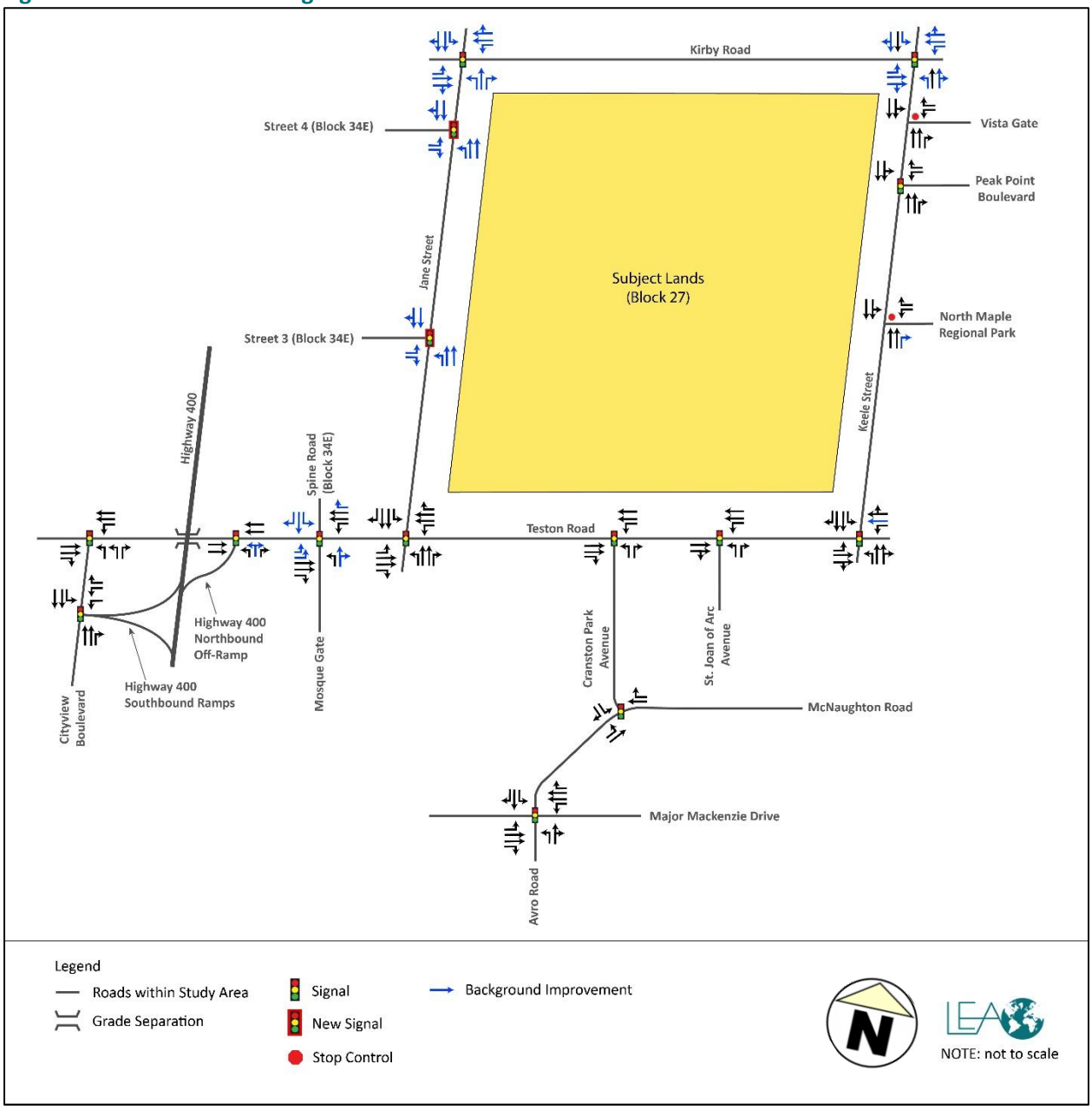
The following sub-sections detail the future road modifications and planned roadway improvements surrounding Block 27. It is noted that while the Kirby Road interchange with Highway 400 was identified in the NVNCTMP, MTO is currently not considering this improvement. As such, the updated analysis in this Transportation Mobility Plan does not include a Kirby Road interchange with Highway 400. To accommodate growth without a Kirby Road interchange with Highway 400, it was assumed that the surrounding regional improvements would result in a higher priority within the capital works program. Therefore, the following road network improvements were assumed to be completed by the 2031 horizon and have been included in the future background traffic analysis.

- York Region's 2022 TMP recommends the following road network improvements:
    - 4-lane extension of Teston Road between Keele Street and Dufferin Street
- City of Vaughan's 2023 TMP recommends the following road network improvements:
    - 4-lane extension of Kirby Road from Dufferin Street to Bathurst Street
    - Grade separated rail crossing at Kirby Road & Keele Street
    - 4-lane widening of Kirby Road from Jane Street to Dufferin Street and removal of jogged intersection with Jane Street

In addition to the above, the City of Vaughan's 2018 NVNCTMP recommends the widening 4-lane widening of Jane Street from Teston Road to Kirby Road.

Figure 4-6 illustrates the 2031 future background road network without development on the subject lands, followed by a description of each road improvement project.

Figure 4-6: 2031 Future Background Road Network

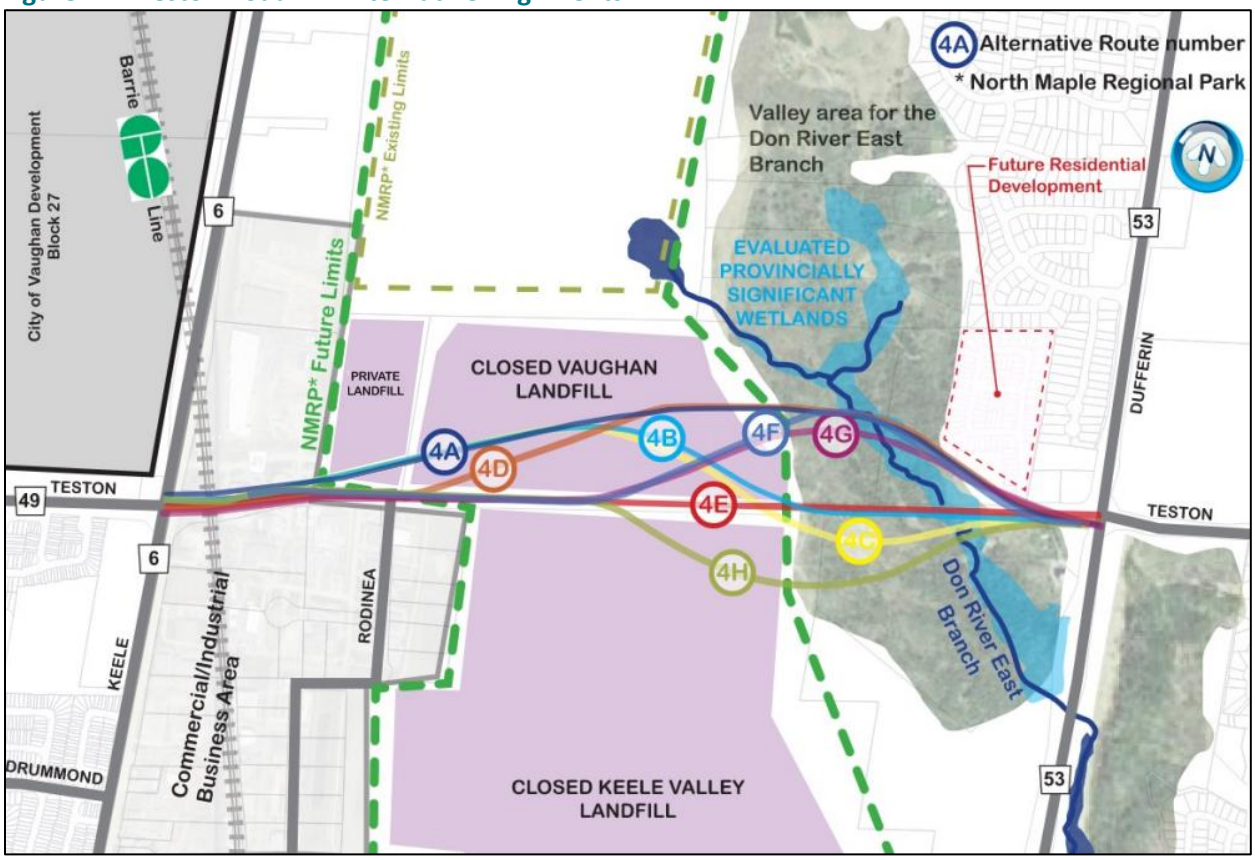


4.3.1 Teston Road Planned Improvements

As identified in York Region's 2022 TMP, a new section of Teston Road between Keele Street and Dufferin Street is proposed. The Regional Municipality of York is undertaking an Individual Environmental Assessment (IEA) to identify transportation improvements for the Teston Road area between Highway 400 to Bathurst Street and between Major Mackenzie Drive and Kirby Road. The purpose of the IEA is to address existing transportation deficiencies along Teston Road, accommodate planned growth in the area, and improve the efficiency, safety, and continuity of the transportation network within the Teston Road area.

As part of the IEA, several alternative corridors were identified and evaluated to address the "missing link" of Teston Road between Keele Street and Dufferin Street. Based on the preliminary evaluation results, Alternative 4E (see **Figure 4-7**) was carried forward for further review. The Teston Road IEA is currently ongoing however, it is understood that the extension of Teston Road from Keele Street to Dufferin Street will include a new 4-lane facility with provisions for pedestrian, cycling, and transit infrastructure.

Figure 4-7: Teston Road IEA Alternative Alignments



Source: Teston Road IEA Online Public Open House #2 (York Region, December 2021)

4.3.2 Jane Street Planned Improvements

As identified in the City of Vaughan's 2018 NVNC TMP, Jane Street is planned to widen from 2 lanes to 4 lanes between Teston Road and Kirby Road. In York Region's 2022 TMP, road improvements are planned for Jane Street between Teston Road and King-Vaughan Road. A separate MCEA study will be required prior to construction, which is anticipated to begin between 2027-2031. As there are currently no studies available for this improvement, only the widening to Kirby Road was included in the analysis. Furthermore, as noted in the NVNCTMP, it is recommended that buffered bike lanes be considered along the roadway.

4.3.3 Kirby Road Planned Improvements

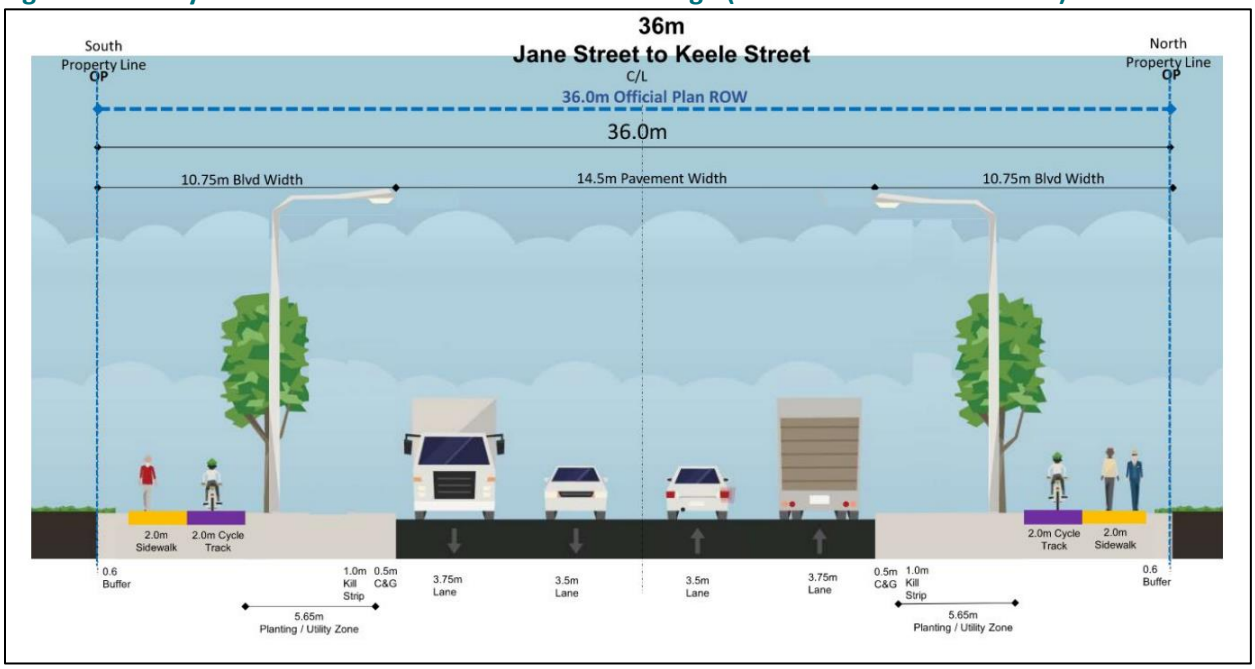
As identified in the City of Vaughan's 2023 TMP, Kirby Road is planned to widen from 2 lanes to 4 lanes between Jane Street to Dufferin Street and extend as a 4-lane road between Dufferin Street to Bathurst Street. A grade-separated rail crossing is also planned at Kirby Road & Keele Street for the Barrie GO corridor.

The recommended design of Kirby Road was identified through the Kirby Road Widening Schedule 'C' Municipal Class Environmental Assessment (MCEA) study which was filed in June 2022 with the notice of study completion issued June 23, 2022. The recommended design has been reflected in this analysis and includes in the following elements:

- Widening of Kirby Road from two to 4 general-purpose lanes (two in each direction) constructed to an urban arterial standard within a 36 m right-of-way
- Separated 2.0 m boulevard cycle tracks and 2.0 m sidewalks on both sides of the road (see **Figure 4-8**)
- Central realignment of Kirby Road at Jane Street (Option 2 in **Figure 4-9**)
- Underpass structure at Barrie GO Rail Crossing

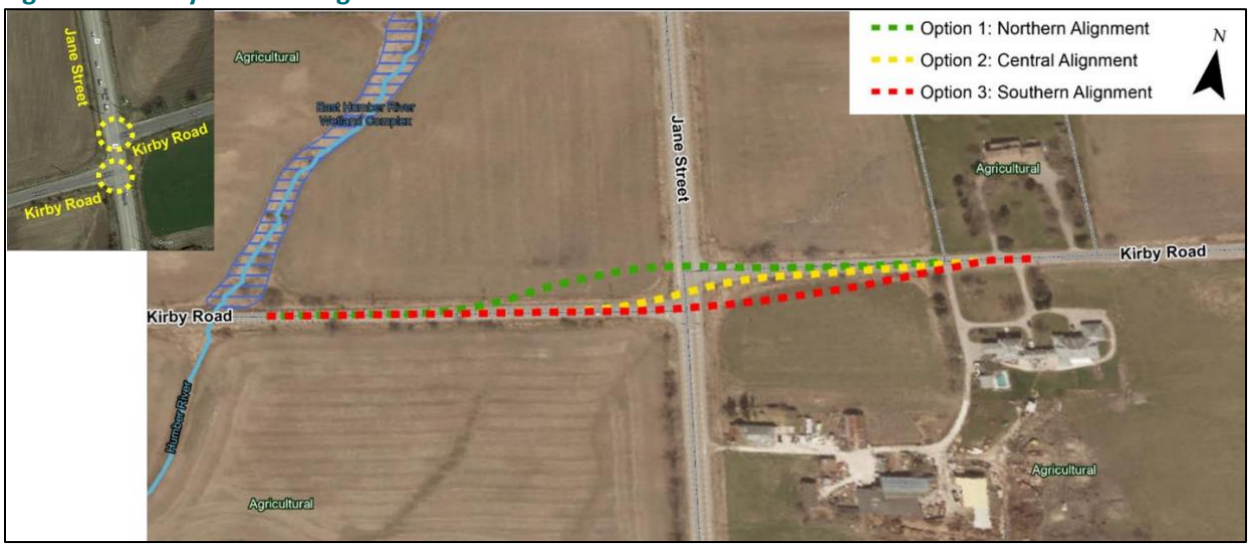
The preliminary design of the Kirby Road improvement utilized in this analysis is provided in **Appendix D**.

Figure 4-8: Kirby Road Recommended Cross-Section Design (Jane Street to Keele Street)



Source: Kirby Road Widening EA (City of Vaughan, 2022)

Figure 4-9: Kirby Road Realignment at Jane Street Alternatives



Source: Kirby Road Widening EA (City of Vaughan, 2022)

4.4 FUTURE TRANSIT NETWORK

The following sub-sections detail the future transit improvements surrounding Block 27 which include a new potential GO station (Kirby GO Station) at the northeast quadrant of the block as well as regional transit improvements along the boundary arterial roadways.

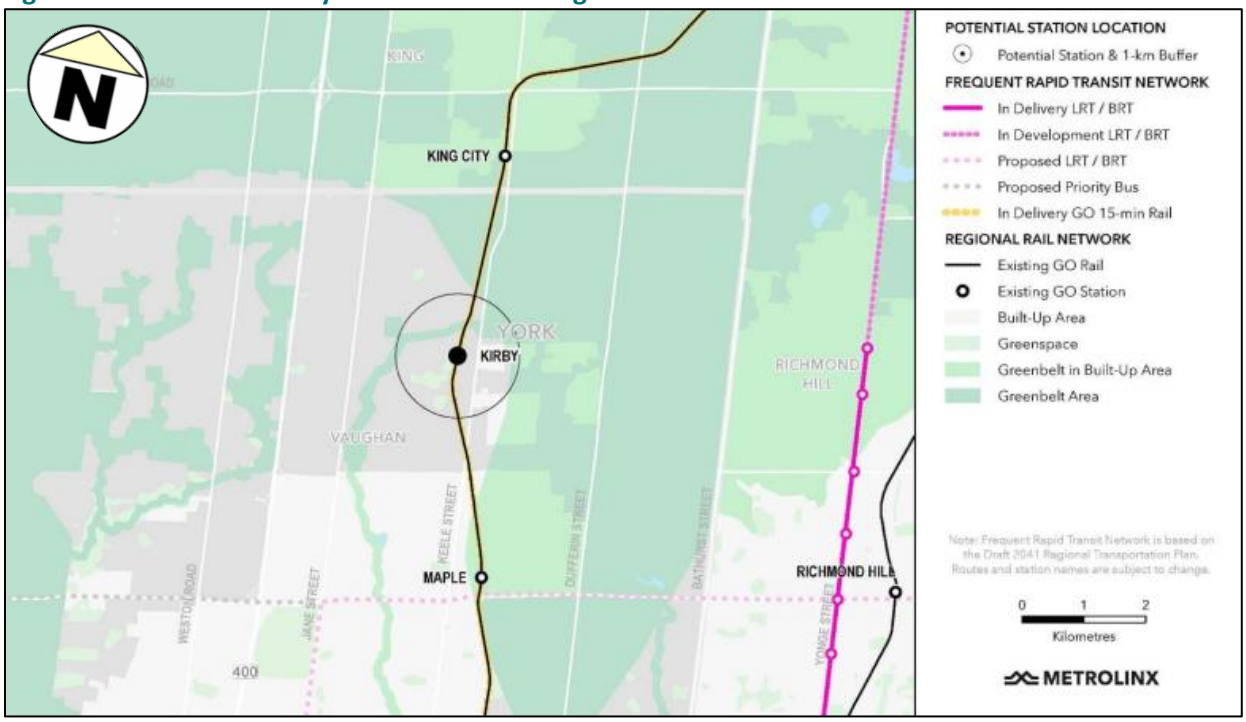
4.4.1 Metrolinx Improvements / Kirby GO Station

The Kirby GO Station was included as a new station along the Barrie GO Corridor as part of the Regional Express Rail (RER) expansion program. The station is proposed at the northeast quadrant of Block 27 at the Kirby Road & Keele Street intersection and is the focal point for the proposed Transit Hub Centre. As per the Block 27 Secondary Plan, the Transit Hub will be a local centre for the Block 27 community and will consist of mid-rise mixed-use buildings with at-grade retail opportunities. In addition to the Kirby GO Station, Metrolinx's RER program is planning for all-day two-way service using faster, electric trains at a service frequency of every 15 minutes.

In early 2016, the City initiated the Kirby GO Transit Hub Sub-Study to direct future development of the transit hub area and identify the required infrastructure to integrate the transit hub with the rest of Block 27 and surrounding areas. The Kirby GO Station provides an opportunity to connect the station directly to the active transportation network and create a multi-modal mobility hub. Detailed refinement of the preferred transportation network for this area will be developed as part of the station design process.

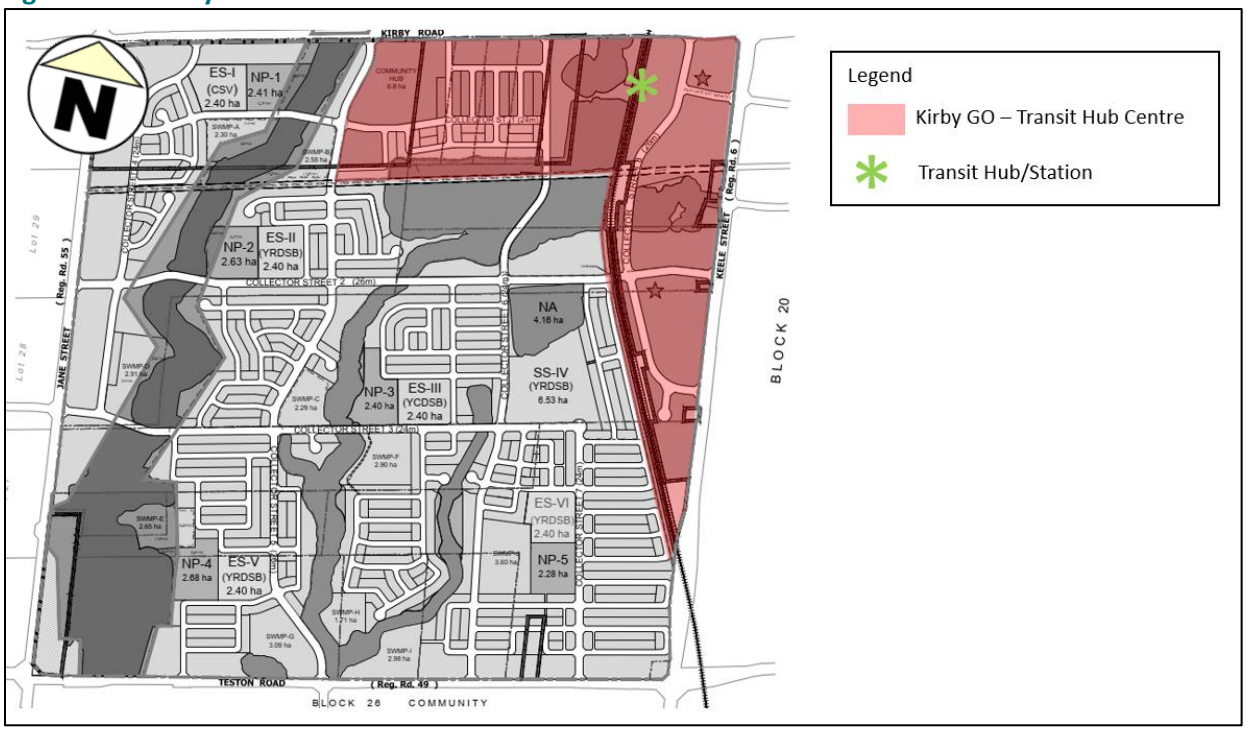
Figure 4-10 illustrates the location of the potential station along the Barrie GO rail line while **Figure 4-11** illustrates the location of the Kirby GO Transit Hub within the block.

Figure 4-10: Potential Kirby GO Station and Neighbourhood Context



Source: New Stations Business Cases Technical Report (Metrolinx, March 2018)

Figure 4-11: Kirby GO - Transit Hub Centre Location



Note: Subject to change based on recommendations from the Block 27 EA.

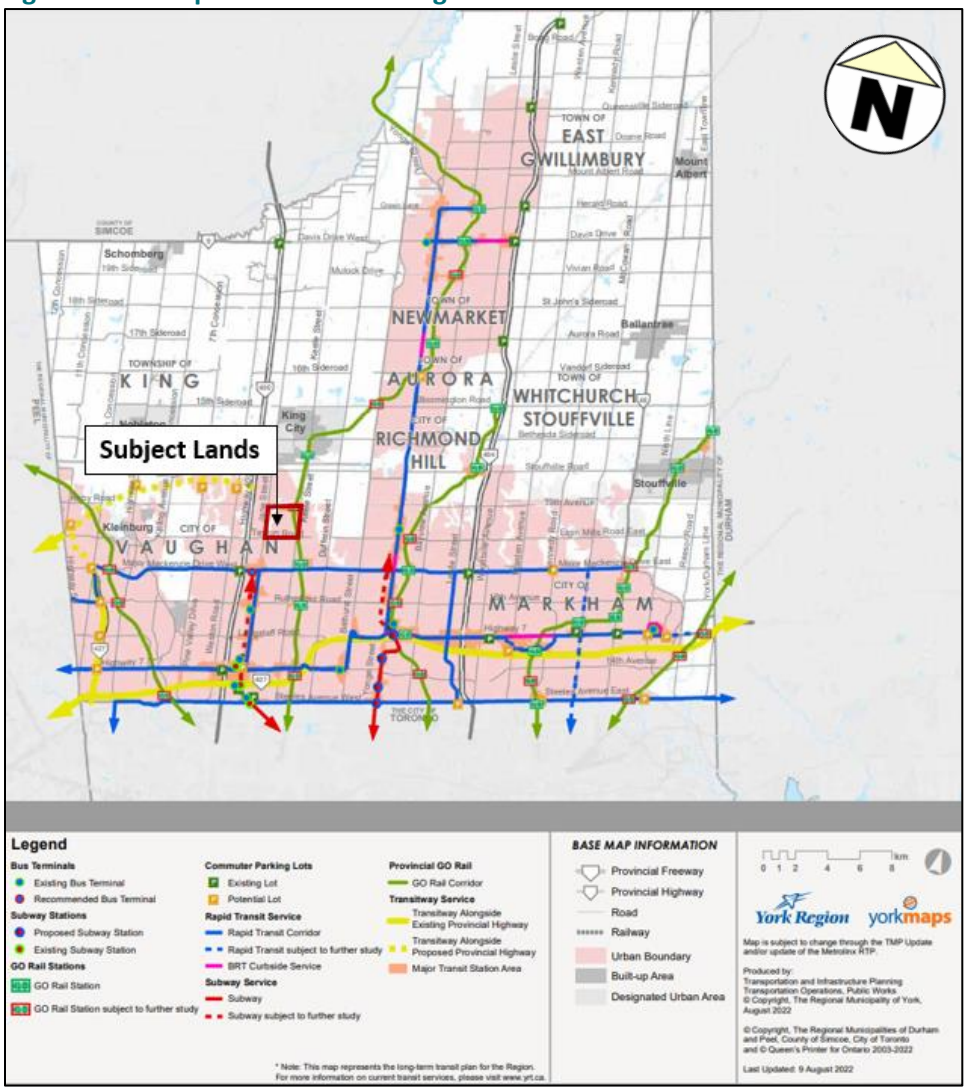
4.4.2 Regional Transit Improvements

Several regional transit improvements are planned for the surrounding area as illustrated in **Figure 4-12**. York Region's 2022 TMP recommends the following transit network improvements for the year 2051:

- A Rapid Transit Corridor on Major Mackenzie Drive
- A Bus Terminal at Jane Street & Major Mackenzie Drive
- Potential subway extension along Jane Street to Major Mackenzie West, subject to further study.

While York Region's 2022 TMP does not indicate transit improvements along the boundary arterial roadways, it is understood that as part of YRT's Frequent Transit Network, there are long-term plans to provide 15-minute all-day service 6-days a week along Jane Street to Kirby Road, Keele Street to Kirby Road, and along Teston Road within the subject area. Service levels are to be determined by ridership demand.

Figure 4-12: Proposed 2051 York Region Transit Network



Source: York Region Transportation Master Plan (York Region, 2022)

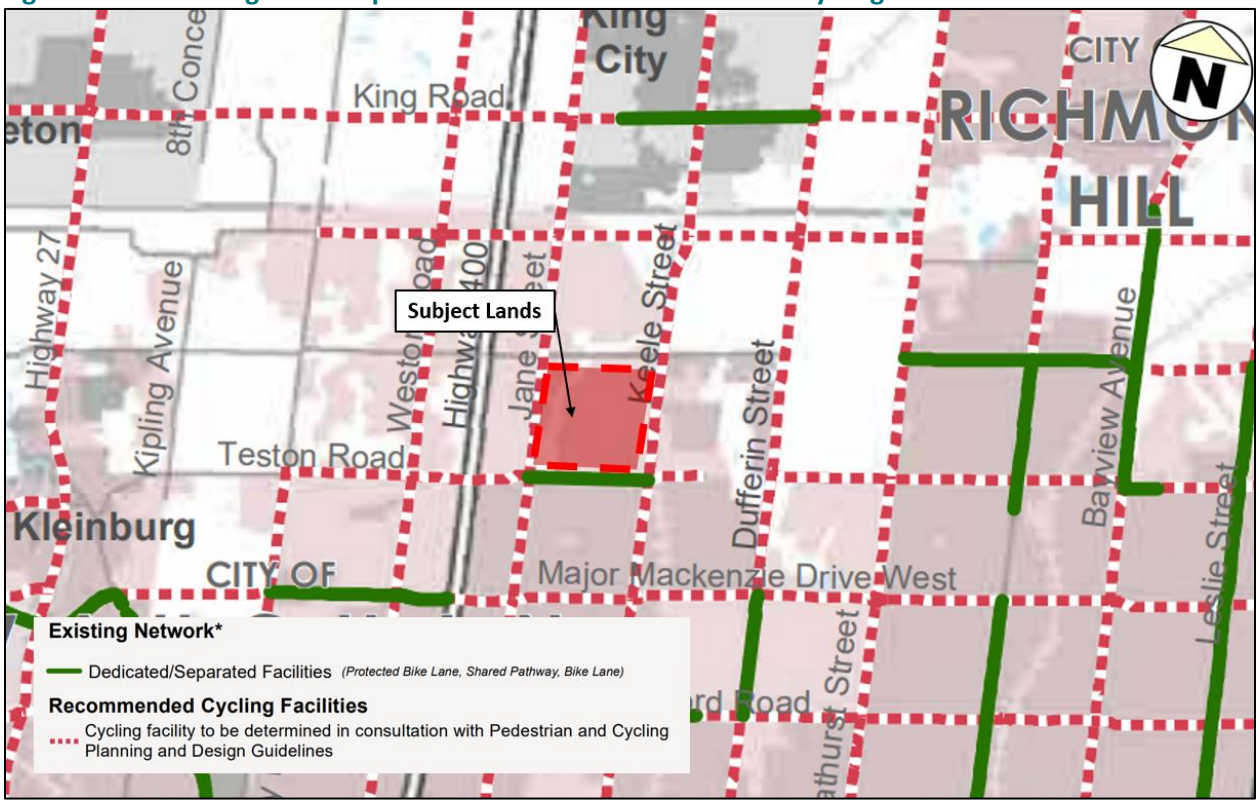
4.5 FUTURE ACTIVE TRANSPORTATION NETWORK

As noted in the NVNCTMP, the segment of Keele Street located between Teston Road and Kirby Road will require urbanization from its current form to support the future development of Block 27. This project involves adding sidewalks and dedicated cycling facilities to Keele Street. The NVNCTMP recommends that this improvement be implemented by 2026.

As per York Region's 2022 TMP, additional cycling facilities are recommended along Jane Street and Teston Road. The implementation of future cycling facilities will improve accessibility and provide opportunities to connect the subject lands to the surrounding areas using active modes of transportation. **Figure 4-13** illustrates the existing and proposed regional cycling network surrounding the subject lands. Moreover, as per the City of Vaughan's 2020 Pedestrian and Bicycle Master Plan Update, 4 priority multi-use recreational trails, including two new super trails are identified within Block 27, as shown in **Figure 4-14** and **Figure 4-15**.

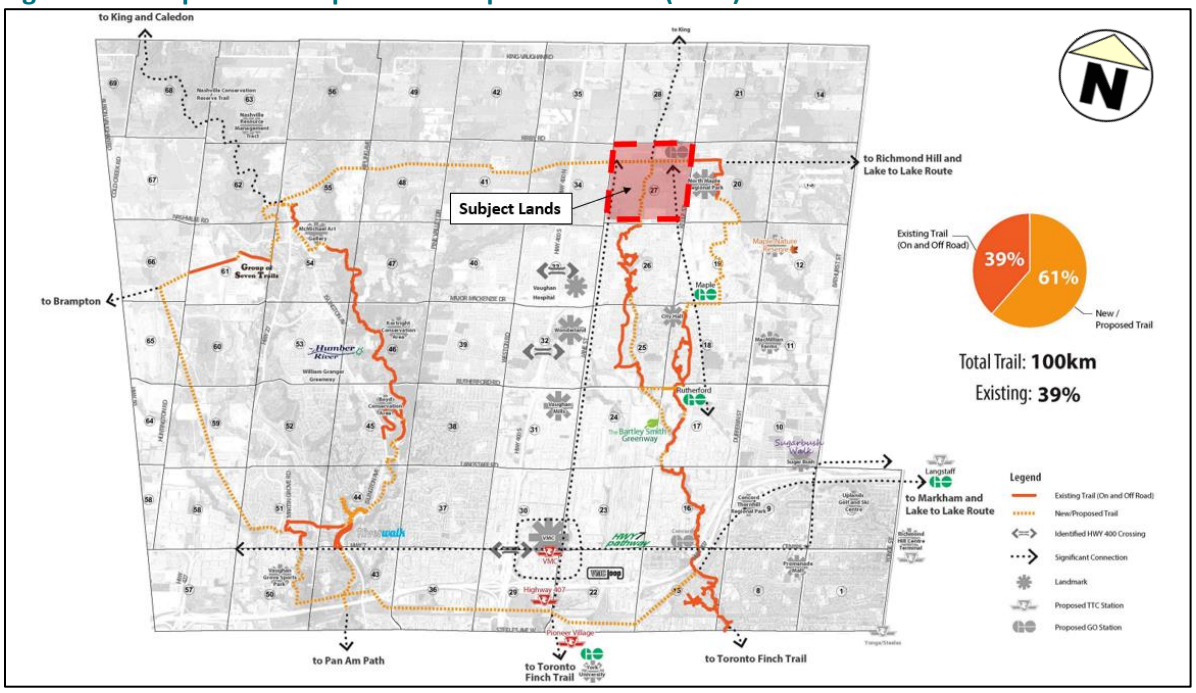
Furthermore, the internal transportation network planned for the subject site has been developed to provide appropriate active transportation connections to the planned external cycling and pedestrian network. Further discussion is provided in **Section 6.3**.

Figure 4-13: York Region Transportation Master Plan - 2051 Road Cycling Network



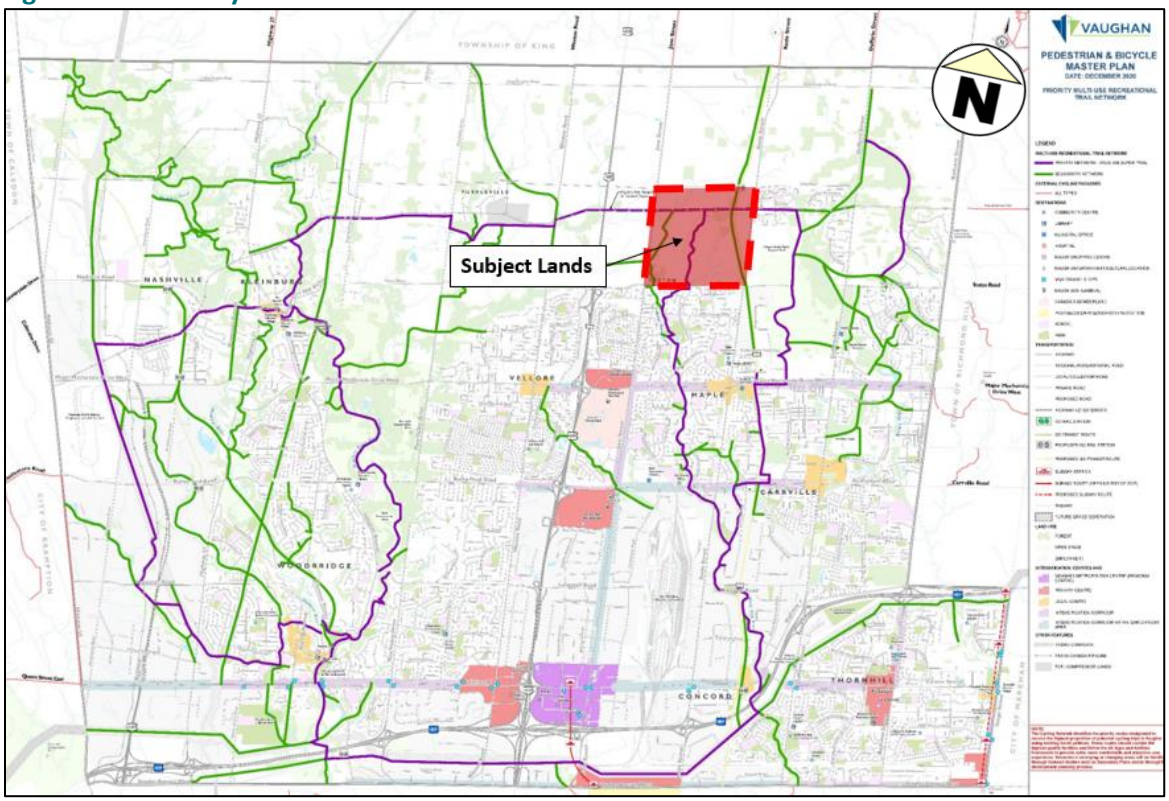
Source: York Region Transportation Master Plan (York Region, 2022)

Figure 4-14: Super Trail Proposed Concept Framework (2017)



Source: City of Vaughan Pedestrian and Bicycle Master Plan (City of Vaughan, 2020)

Figure 4-15: Priority Multi-Use Recreational Trail Network



Source: City of Vaughan Pedestrian and Bicycle Master Plan (City of Vaughan, 2020)

4.6 FUTURE BACKGROUND SYNCHRO MODEL INPUTS

Input parameters from the existing scenario were maintained with corresponding future background volumes, with the exception of the following changes outlined in **Table 4-2**.

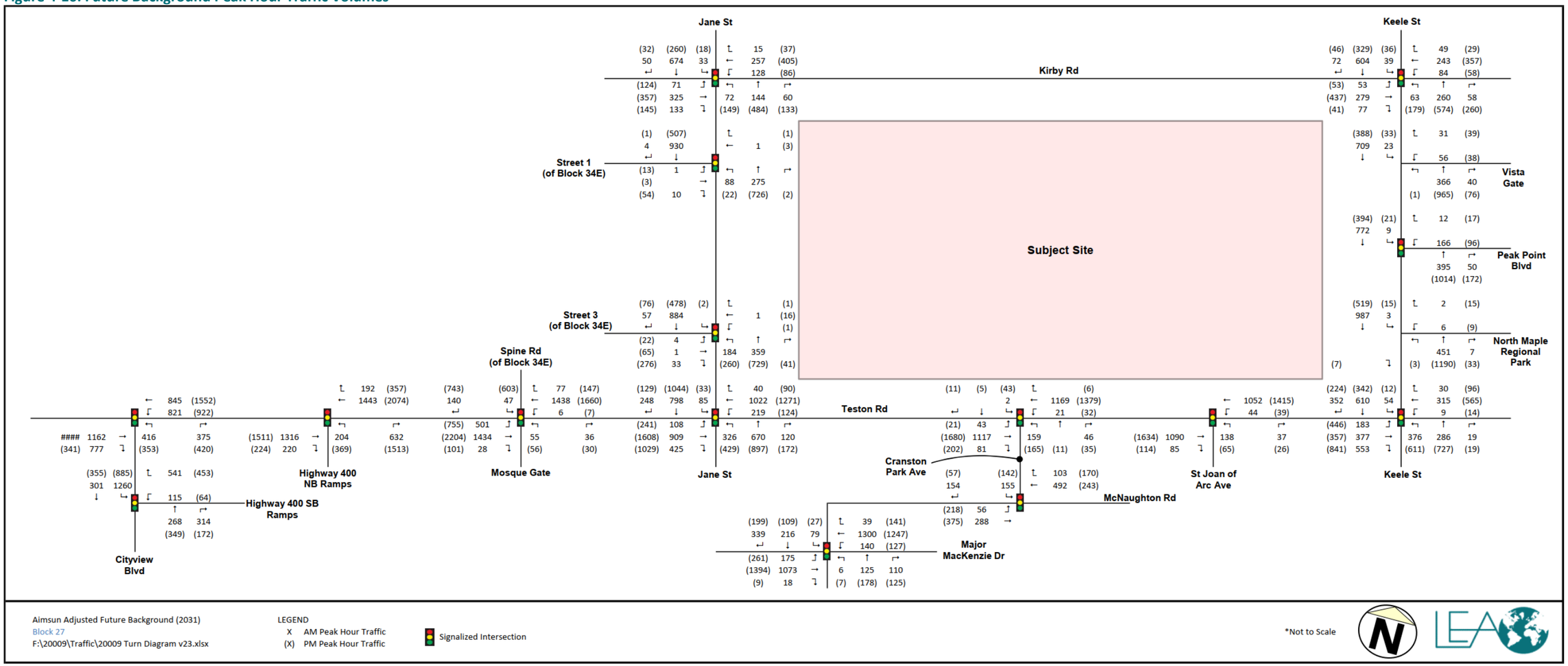
Table 4-2: Future Background Synchro Model Inputs

Intersection	Model Input Changes
Keele Street & Teston Road	• A lost time adjustment of -1 second was applied to the NBL and EBL movements during the PM peak hour. • The eastbound lanes are expected to have two through lanes and a dedicated left-turning lane. Right-turn movements are shared with one of the through lanes. However, for the PM peak hour only, the eastbound lanes were modelled as a left-turning lane, a through lane, and a right-turning lane given high right-turning traffic that results in no through movements in the right-most lane.
Jane Street & Teston Road	• The lane utilization factor was increased from 0.95 to 1 for the EBT movement during the AM and PM peak hours. • A lost time adjustment of -1 second was applied to the NBL movement during the PM peak hour.
Teston Road & Mosque Gate	• A lost-time adjustment of -1 second was applied to the SBL and EBL movements during the PM peak hour. • The lane utilization factor was increased from 0.95 to 1 for the WBT movement during the AM and PM peak hours.
Teston Road & Highway 400 NB Off-Ramp	• A lost-time adjustment of -1 second was applied to the NBR movement during the PM peak hour. • The lane utilization factor was increased from 0.95 to 1 for the WBT movement during the AM and PM peak hours. • The northbound lanes are 1 left turning lane, 1 shared left-right lane, and 1 right turning lane. However, for the PM peak hour only, the northbound lanes were modelled as 1 left-turning lane and 2 right-turning lane as the right-turning volumes are so high that no left turns are using the shared lane.

4.7 FUTURE BACKGROUND TRAFFIC VOLUMES

The future background traffic volumes for the weekday AM and PM peak hours are illustrated in **Figure 4-16**.

Figure 4-16: Future Background Peak Hour Traffic Volumes



5 SITE-GENERATED TRAFFIC

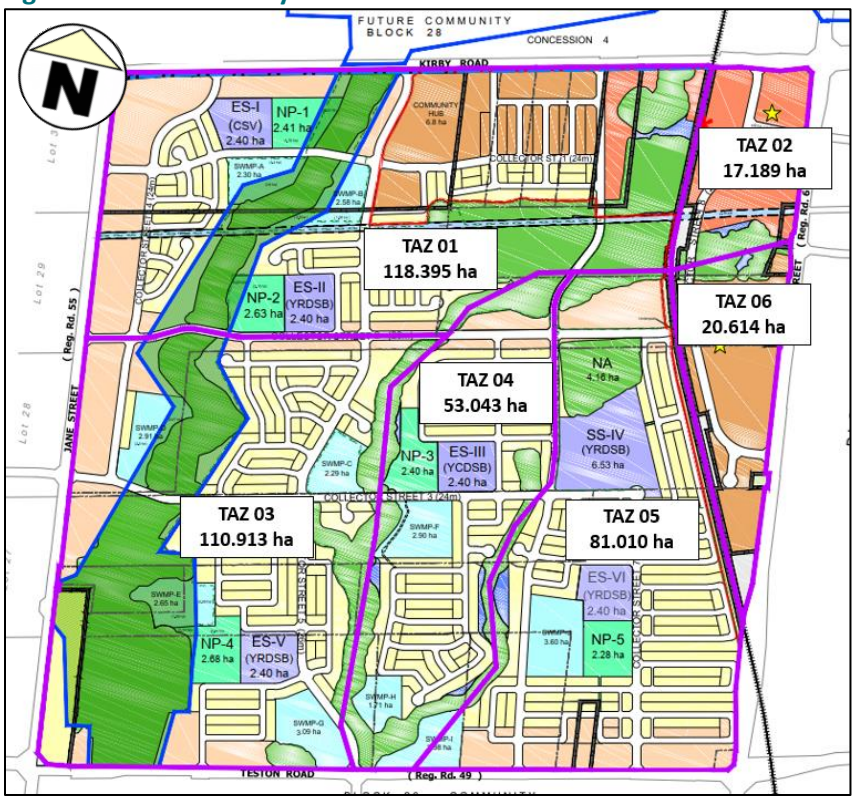
This section discusses the calculation, distribution, and assignment of the site-generated vehicle trips as well as vehicle traffic associated with the prospective GO station. As summarized in **Table 5-1**, full build-out of the proposed development consists of 7,067 residential units, 47,568 m^2 of retail GFA, 7,417 m^2 of office GFA, and 5 schools totaling 4,000 students.

To estimate the site-generated trips, the development statistics have been broken down into 6 traffic analysis zones (TAZs) that align with the location of internal collector roadways and major environmental features. The 6 TAZs are illustrated in **Figure 5-1** for reference.

Table 5-1: Development Statistics

TAZ	Residential (units)				Non-Residential (GFA m^2)		Schools
	Mid-Rise	Low-Rise	Attached	Detached	Retail	Office	(Students)
1	1,081	442	526	231	16,070	1618	1,000
2	928	0	0	0	5,798	5798	0
3	0	379	577	324	12,378	0	500
4	0	59	273	233	1,943	0	500
5	0	348	549	317	11,380	0	2,000
6	800	0	0	0	0	0	0
Total	2,809	1,228	1,925	1,105	47,568	7,417	4000
	7,067				54,985		

Figure 5-1: Traffic Analysis Zones



Note: Subject to change based on recommendations from the Block 27 EA.

5.1 MODAL SPLIT

Data from the 2016 Transportation Tomorrow Survey (TTS) was extracted to identify the mode split of neighbourhood trips from TAZs 2100, 2101, 2078, 2105, and 2106 which surround the study area. Trips were filtered based on the purpose of origin/destination of 'home' and 'facilitate passenger' for residential trips, 'market' for retail trips, 'work' for office trips, and 'school' for internal and external school trips. In addition, internal general purpose trips were filtered for a Manhattan distance of less than 2 km.

For the purposes of mode split, school employees were grouped with office trips, as the behaviour of school employees matches office employees more closely than school students. Furthermore, the mode split calculated for internal and external students was applied to determine the number of students driving to school and the number of students being driven (i.e., pick-up drop-off (PUDO) trips). The average number of students in each PUDO vehicle was determined based on TTS data for the average number of student passenger trips per household along with the assumption that 10% of households would carpool with another household.

According to the data reviewed, 71%, 88%, 87%, and 0% of external residential, retail, office, and school trips, respectively, are currently made by single-occupant vehicles (SOV). For internal trips, 58% of general purpose trips and 0% of school trips are made by SOV. The mode splits summarized in **Table 5-2** have been used to forecast the trip generation in the section below. Detailed TTS data is provided in **Appendix E**.

Table 5-2: Mode Splits

Mode	External				Internal	
	Residential	Retail	Work	School	All Others	School
Auto Driver	71%	88%	87%	0%	58%	2%
Auto Passenger	15%	12%	7%	58%	22%	33%
Transit	7%	0%	0%	2%	0%	0%
School Bus	-	-	-	26%	-	4%
Walk	7%	0%	6%	14%	19%	57%
Cycle	0%	0%	0%	0%	1%	4%
Total	100%	100%	100%	100%	100%	100%

Trips were estimated using trip rates for different land uses from the ITE Trip Generation Manual 11th Edition:

- Residential (Mid-Rise) – person trip rate for ITE LUC 221 (Multifamily Housing (Mid-Rise))
- Residential (Low-Rise) – person trip rate for ITE LUC 220 (Multifamily Housing (Low-Rise))
- Residential (Attached) – vehicle trip rate for ITE LUC 215 (single-family attached housing).
- Residential (Detached) – vehicle trip rate for ITE LUC 210 (single-family detached housing)
- Retail – vehicle trip rate for ITE LUC 821 (shopping plaza). It should be noted that while the floor space of the retail component is higher than the threshold for a shopping plaza, it is understood that retail GFA will be spread across the block in the form of multiple plazas.
- Office – vehicle trip rate for ITE LUC 712 (small office building). It should be noted that while the floor space of the office component is higher than the threshold for a small office, it is understood that office GFA will be spread across the block as many small businesses as opposed to concentrated within a large business park.

Vehicle trip rates were converted into person trips based on mode splits and vehicle occupancy for ITE LUC 220, 220, 820, and 710 as per ITE Trip Generation Handbook 3rd Edition for the proposed residential (attached), residential (detached), retail, and office uses, respectively. No pass-by retail trips were applied.

While the ITE Trip Generation Manual does provide vehicle trip generation rates, the availability of person-trip generation rates is limited. In order to fit in with the multi-modal trip generation and with the modelling of trips internal and external to Block 27, a first-principles method was used to derive conservative person-trip generation rates for school trips.

School trips were estimated in two categories: employee trips and student trips. Employee trips were estimated using an Ontario-wide student-to-staff ratio of 14:1 to determine the number of educational employees who would need to commute to school. Each employee was assumed to generate 1 trip during the AM peak period and 1 trip during the PM peak period. For student trips, each student is estimated to generate 1 trip during the AM peak hour, as school starting hours consistently overlap with the AM peak hour. During the PM peak, a peak-spreading effect is expected due to faculty and staff hours, school extracurriculars, and afterschool programs. As a conservative assumption, the PM peak hour trip generation rate was assumed to be 0.4 trips per student.

5.1.1 Site Interaction

Site interaction was applied to the trip generation to determine the number of trips that would stay within the block. Because the block is a large physical area and in contrast to typical site interaction, these trips were not assumed to be walking only. A separate internal mode split was derived from TTS data for trips in the north Vaughan area that are shorter than 2 km.

Site interaction was applied to 4 trip-purpose pairings:

1. residential and retail;
2. residential and office/school employment;
3. retail and office/school employment; and
4. residential and school attendance.

For the first 3 pairings, standard ITE site interaction methodology was used, however, the unconstrained internal person trip capture rates were modified to reflect the larger area of the block. TTS data was collected for trips travelling to or from zones 2100 and 2101, separated into categories according to the purpose within those zones and the distance of the trip. Trips 2 km in distance or shorter were considered to be internal trips. The zones above represent the block bounded by Major Mackenzie Drive W, Jane Street, Keele Street, and Teston Road, which is directly to the south of Block 27. This analysis revealed that the unconstrained internal person trip capture rates are generally higher for the larger area compared to a single development. **Table 5-3** shows a comparison between the ITE rates and the TTS-derived rates. For the purposes of site interaction, school employees were grouped with the office trips.

For residential-school trips, an appropriate ratio of students from within the block was determined using TTS, again with zones 2100 and 2101 as a comparison. The data suggests that 53% of trips are destined for schools in the morning (all modes combined) from within the Block. The remaining 47% would travel from areas external to the Block. This ratio was used to divide all the student trips into internal (i.e., site interaction) trips and external trips.

Table 5-3: Unconstrained Person Trip Capture Rates

From	To	Direction Basis	Unconstrained Person Trip Capture Rates			
			AM		PM	
			ITE	Modified	ITE	Modified
Residential	Retail	Origin	1%	21%	42%	21%
		Destination	17%	42%	10%	42%
Retail	Residential	Origin	14%	37%	26%	37%
		Destination	2%	20%	46%	20%
Residential	Office	Origin	2%	21%	4%	21%
		Destination	3%	42%	57%	42%
Office	Residential	Origin	1%	37%	2%	37%
		Destination	0%	20%	4%	20%
Retail	Office	Origin	29%	37%	2%	37%
		Destination	4%	42%	31%	42%
Office	Retail	Origin	28%	37%	20%	37%
		Destination	32%	42%	8%	42%

A summary of the site trip generation for Block 27 is provided in **Table 5-4**. Detailed trip generation calculations are provided in **Appendix F**.

Table 5-4: Block 27 Trip Generation

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential (*Mid-Rise 221*) 2,809 Units	Person Trip Rate (/Unit)	0.11	0.37	0.48	0.31	0.22	0.53
	Person Trips	310	1038	1348	879	610	1489
	Site Interaction	-63	-206	-269	-229	-139	-368
	Total External Person Trips	247	832	1079	650	471	1121
	External Auto Trips	**175**	**590**	**765**	**461**	**334**	**795**
Residential (*Low-Rise 220*) 1,228 Units	Person Trip Rate (/Unit)	0.08	0.30	0.38	0.34	0.20	0.54
	Person Trips	103	364	467	418	245	663
	Site Interaction	-21	-72	-93	-109	-56	-165
	Total External Person Trips	82	292	374	309	189	498
	External Auto Trips	**58**	**207**	**265**	**219**	**134**	**353**
Residential (*Attached 215*) 1,925 Units	Auto Trip Rate (/Unit)	0.12	0.36	0.48	0.34	0.23	0.57
	Total Auto Trips	231	693	924	647	450	1097
	Conversion to Person Trips	293	779	1072	775	573	1348
	Site Interaction	-59	-155	-214	-202	-131	-333
	Total External Person Trips	234	624	858	573	442	1015
	External Auto Trips	**166**	**442**	**608**	**406**	**313**	**719**
Residential (*Detached 210*) 1,105 Units	Auto Trip Rate (/Unit)	0.18	0.53	0.70	0.59	0.35	0.94
	Total Auto Trips	194	580	774	655	384	1039
	Conversion to Person Trips	246	652	898	785	489	1274
	Site Interaction	-50	-130	-180	-205	-112	-317
	Total External Person Trips	196	522	718	580	377	957
	External Auto Trips	**139**	**370**	**509**	**411**	**267**	**678**
Retail (*Multiple Strip Retail Plazas 821*)	Auto Trip Rate (/1000 ft^2)	1.42	0.94	2.36	3.30	3.30	6.59
	Total Auto Trips	695	426	1121	1549	1613	3162
	Conversion to Person Trips	813	494	1307	1874	1903	3777
	Site Interaction	-355	-355	-710	-561	-604	-1165

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
513,000 ft^2	Total External Person Trips	458	139	597	1313	1299	2612
	External Auto Trips	**405**	**123**	**528**	**1161**	**1148**	**2309**
Office (*Small Office Building 712*) 80,000 ft^2	Auto Trip Rate (/1000 ft^2)	1.37	0.30	1.67	0.73	1.43	2.16
	Total Auto Trips	110	24	134	59	114	173
	Adjusted Person Trips	120	28	148	68	124	192
	School Employee Trips	*286*	*0*	*286*	*0*	*286*	*286*
	Combined Person Trips	406	28	434	68	410	478
	Site Interaction	-344	-20	-364	-58	-304	-362
	Total External Trips	62	8	70	10	106	116
	External Auto Trips	**54**	**7**	**61**	**9**	**92**	**101**
School Students (*First Principles*) 4,000 Students	Student Person Trips	4000	0	4000	0	1600	1600
	Internal Person Trips	2129	0	2129	0	852	852
	Internal Driver Trips	46	0	46	0	18	18
	(Added) Internal PUDO Trips	338	338	674	135	135	270
	Total Internal Auto Trips	**384**	**338**	**722**	**135**	**153**	**288**
	External Person Trips	1871	0	1871	0	748	748
	External Driver Trips	0	0	0	0	0	0
	(Added) External PUDO Trips	524	524	1048	209	209	418
	Total External Auto Trips	**524**	**524**	**1048**	**209**	**209**	**418**
Total New External Auto Trips		**1521**	**2263**	**3784**	**2876**	**2497**	**5373**

Block 27 is anticipated to generate a total of 3,784 two-way trips during the AM peak hour (1,521 inbound and 2,263 outbound) and 5,373 two-way trips during the PM peak hour (2,876 inbound and 2,497 outbound).

5.2 MODELLING BACKGROUND (TRIP DISTRIBUTION AND ASSIGNMENT)

Trip distribution and assignment were carried out through 2 stages: first a general distribution was developed using data from the TTS, then an Aimsun model was built and calibrated in order to carry out the specific assignment of traffic onto the road network. A high-level description of the Aimsun model will be outlined in this report, with details available in the *Block 27 Aimsun Modelling Memo* attached in **Appendix G**.

For the general distribution, the different trip purposes were analyzed independently. TTS data was collected for each land use, according to the parameters shown in **Table 5-5**.

Table 5-5: TTS Data Search Parameters for Distribution

Trip Purpose / Land Use	Time	Zone	Purpose
Residential – In	1PM – 5PM	2100, 2101	Home, Facilitate Passenger
Residential – Out	6AM – 10AM	2100, 2101	Home, Facilitate Passenger
Retail – In	1PM – 5PM	2100, 2101, 2078, 2105, 2106	Market/Shop
Retail – Out	1PM – 5PM	2100, 2101, 2078, 2105, 2106	Market/Shop
Office / Work – In	6AM – 10AM	2100, 2101, 2078	Work
Office / Work – Out	1PM – 5PM	2100, 2101, 2078	Work
School – In	5AM – 12PM	2100, 2101	School
School – Out	12PM – 12AM	2100, 2101	School

The resulting distribution is shown in **Table 5-6**. Trips originating from or destined for the south were split into multiple categories: South (Local), Southwest (Local), and Southeast (Local) all represent trips that are not travelling far from the study area, with the separate groups to distinguish between trips that use only north-south routes from those who could use either north-south routes or east-west routes. The South (Far) category is for trips that are travelling further from the study area and would therefore make use of Highway 400 as a first choice.

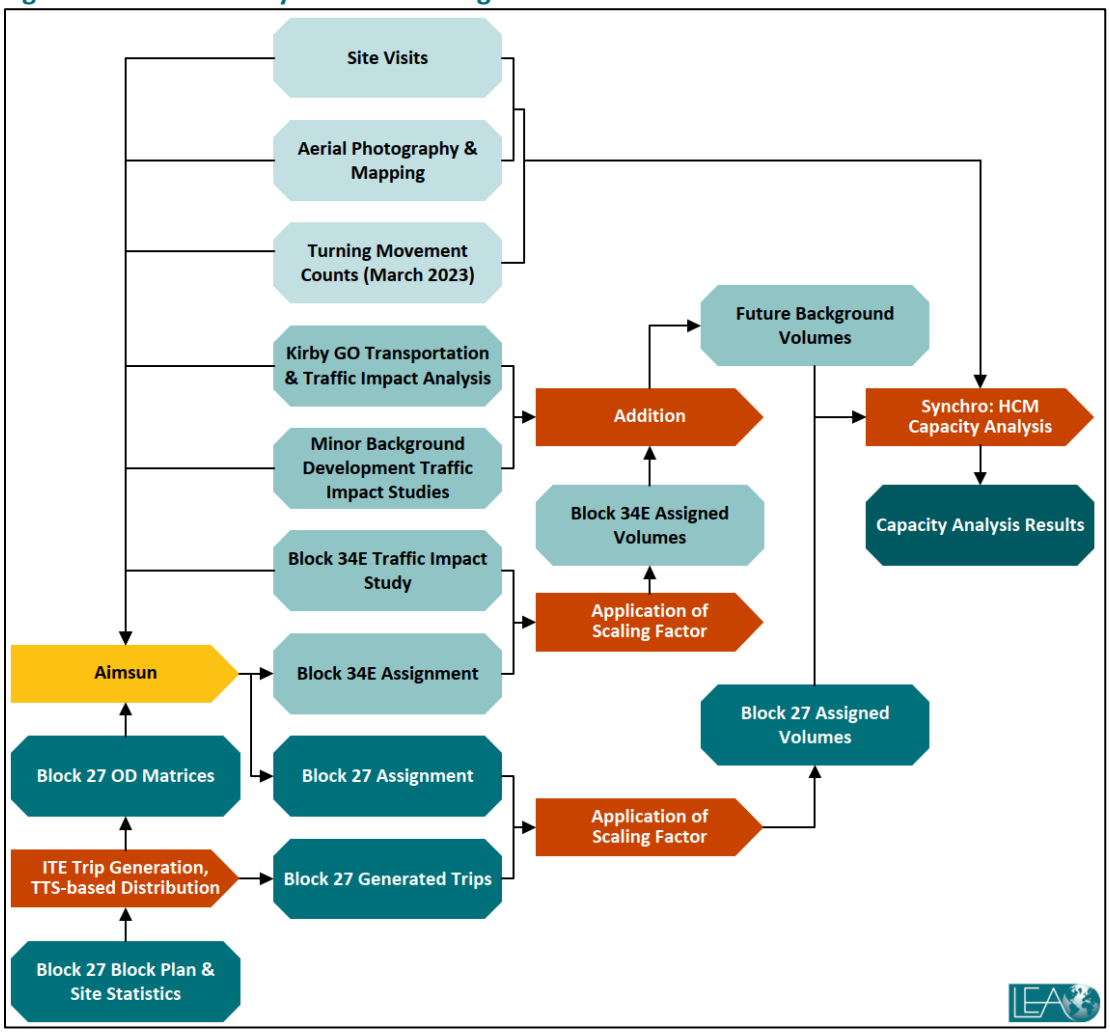
Table 5-6: Distribution (Values for both AM and PM Peak Hours)

Origin/Destination	Residential		Retail		Office		School	
	In	Out	In	Out	In	Out	In	Out
North	5%	3%	5%	6%	22.5%	14.5%	-	-
South (Local)	34%	40%	58.5%	45%	20%	27%	20%	20%
South (Far)	26%	30%	5%	2%	18%	19%	2%	2%
Southwest (Local)	8%	7%	4.5%	10%	16%	17.5%	30%	30%
Southeast (Local)	16%	13%	13%	15%	17.5%	18%	34%	34%
West	6%	3%	7%	5%	4%	2%	-	-
East	5%	4%	7%	17%	2%	2%	14%	14%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

To work with this distribution, the zonal structure of the Aimsun model included one zone for each of the distribution categories. The zones were connected to the modelled network in such a way as to allow for multiple routes in and out of the study area for each zone. For more information on the Aimsun model, see the *Block 27 Aimsun modelling memo* provided in **Appendix G**.

Figure 5-2 shows how the Aimsun model fits in with the rest of the modelling framework. In particular, the Aimsun model uses the same inputs as the main modelling work for existing conditions and most of the future background traffic volumes. These inputs include mapping, site visits, the TMC discussed in **Section 3.5** and reports for each of the background developments. Aimsun model outputs were used to assign traffic for both the site traffic (Block 27) and for the primary background development (Block 34E) as the traffic volumes associated with each of these are very high and a more naïve or manual assignment would result in an uneven traffic assignment that does not make full use of all the areas of the network.

Figure 5-2: Aimsun & Synchro Modelling Structure



To integrate the Aimsun model outputs into the rest of the modelling, the turning movement traffic volumes associated with Blocks 27 and 34E in each direction (in and out) were isolated and compared to the trip generation values. As the Aimsun model made use of Dynamic User Equilibrium microsimulation, the resulting volumes have some noise. To ensure that the total volumes match up with the trip generations, the traffic components were scaled by multiplying all turning movement volumes by a factor, with separate factors for each traffic component. The adjustments were less than 10% in all cases, which indicates that the random noise of the Aimsun model did not result in volumes that were significantly different from the inputs.

Finally, a small amount of traffic volumes were manually reassigned (e.g., truck traffic infiltration into Block 27, turning movements at the collector streets south of Teston Road) before carrying out the capacity analysis.

5.3 SITE-GENERATED TRAFFIC VOLUMES

The site generated traffic volumes for the weekday AM and PM peak hours are illustrated in **Figure 5-3**, **Figure 5-4**, and **Figure 5-5**.

Figure 5-3: Site-Generated External Peak Hour Traffic Volumes

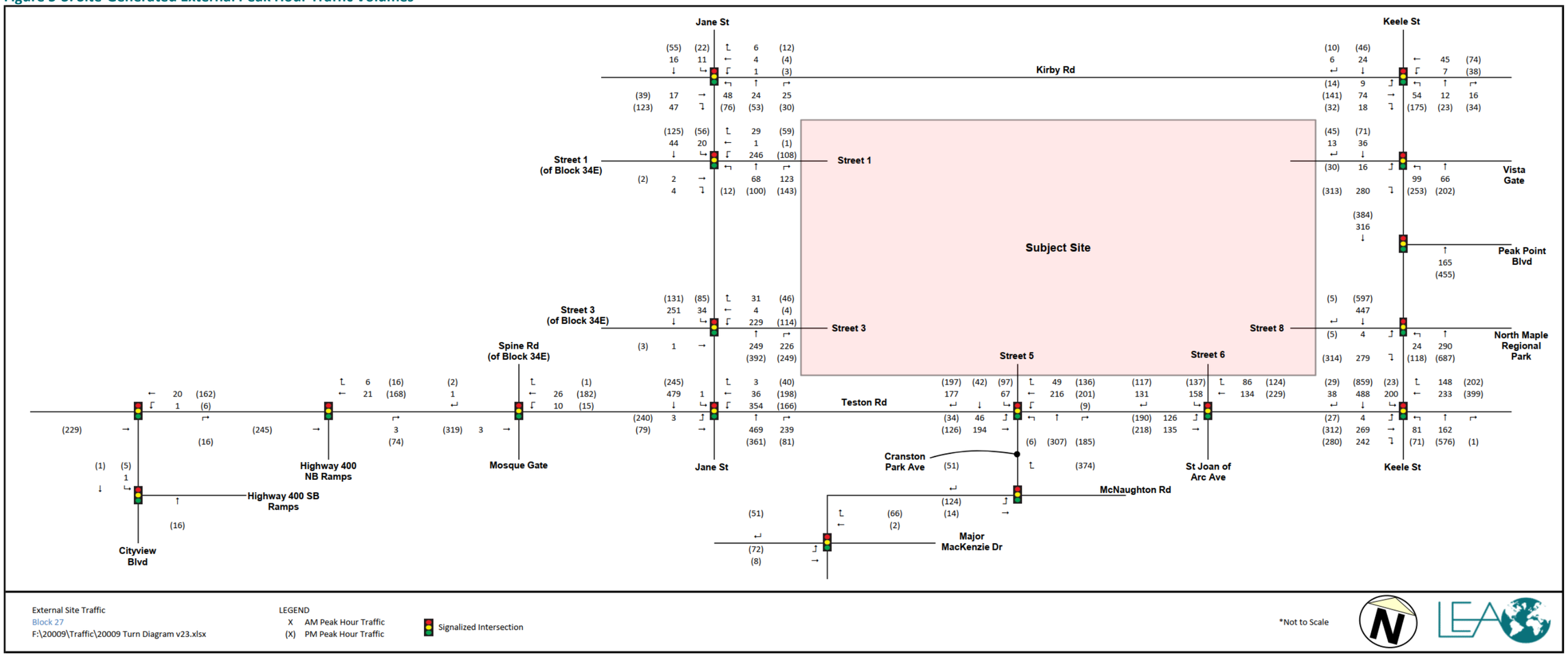


Figure 5-4: Site-Generated Internal Capture Peak Hour Traffic Volumes

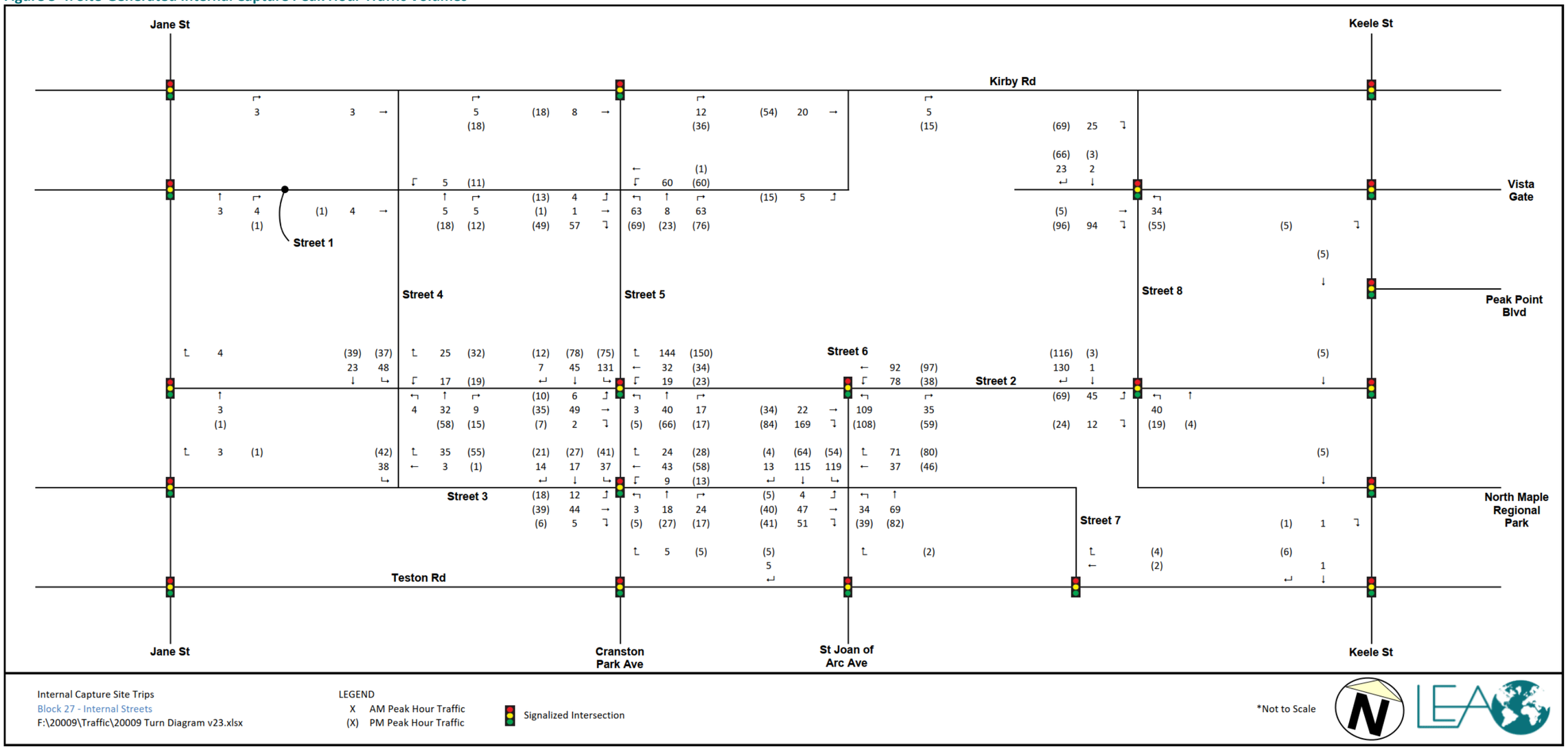
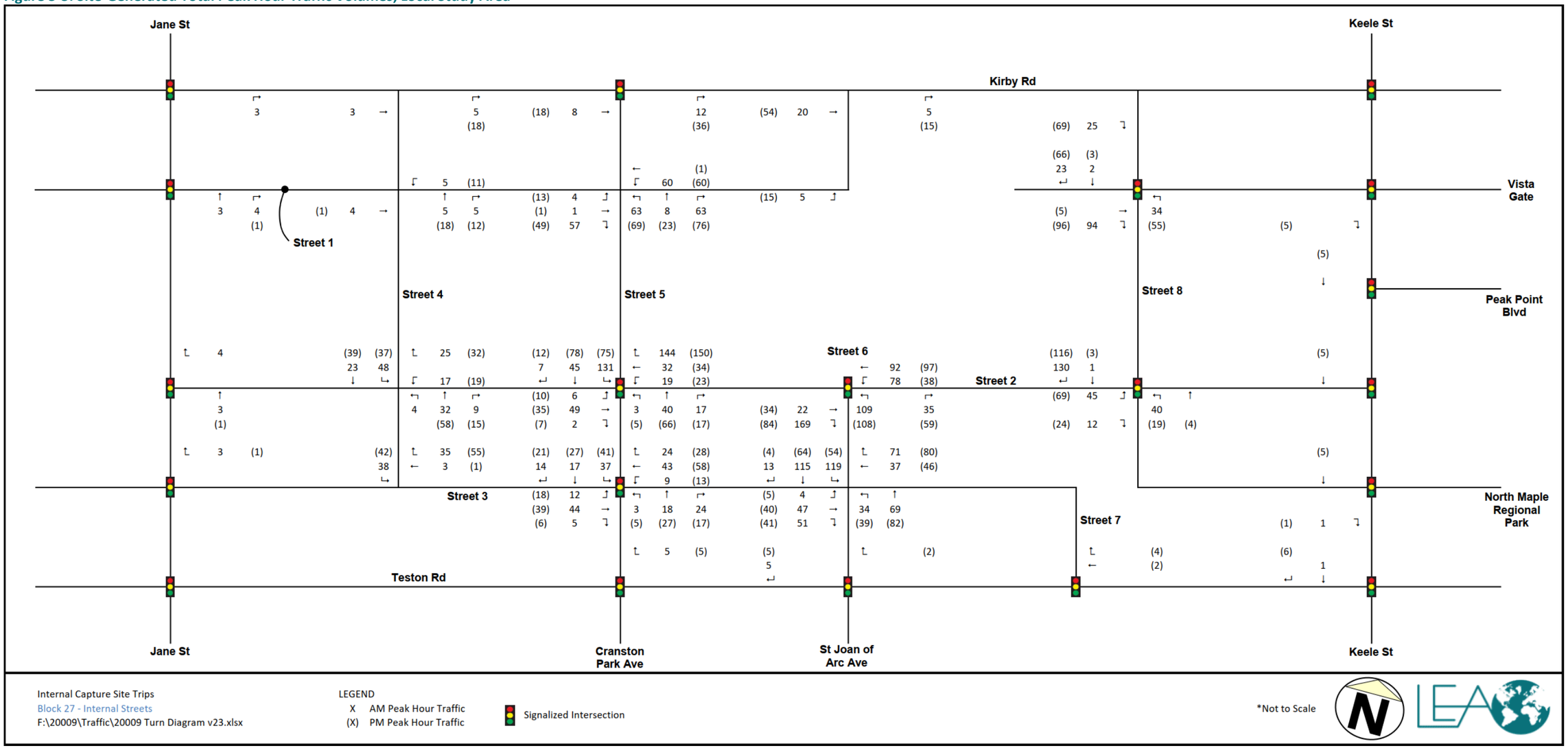


Figure 5-5: Site-Generated Total Peak Hour Traffic Volumes, Local Study Area



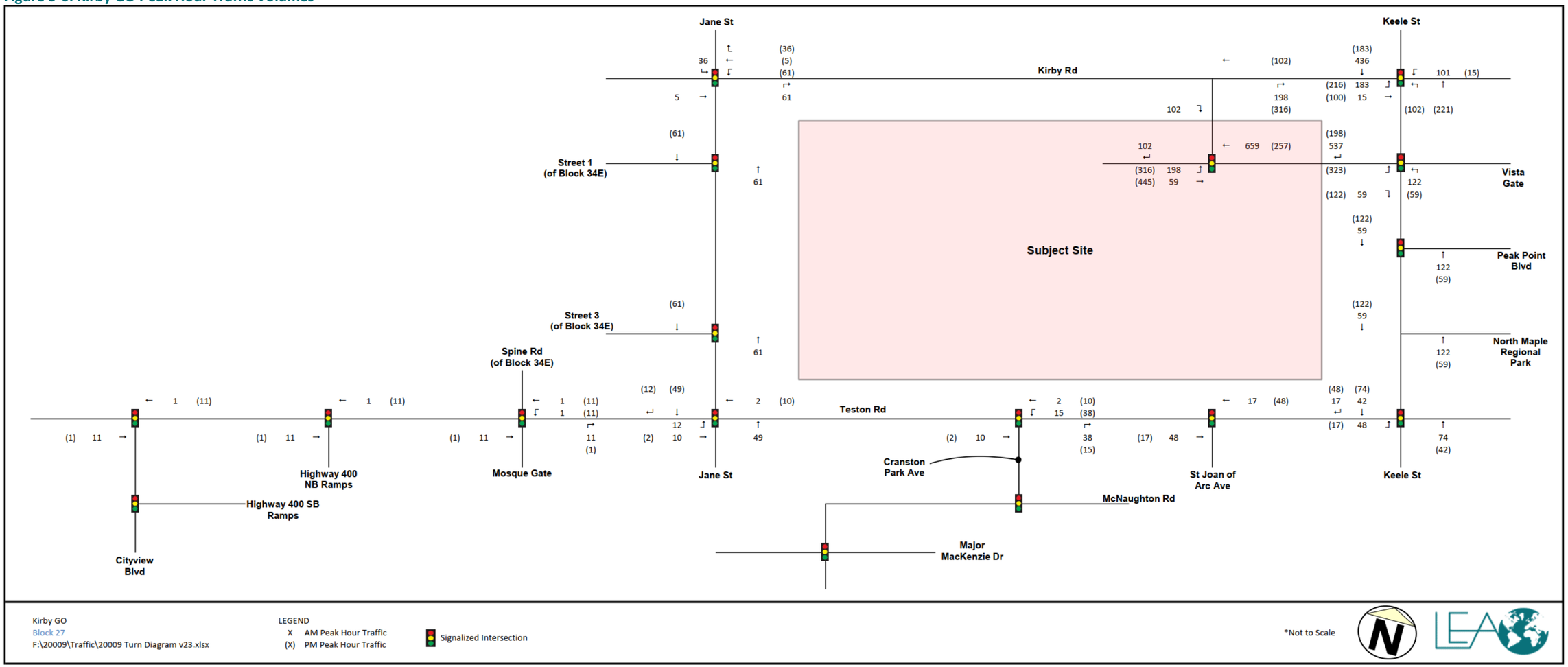
5.4 KIRBY GO STATION TRIPS

Site trips for the Kirby GO Station were based on the projected site-generated traffic volumes from the Transportation and Traffic Impact Analysis completed as part of the Transit Project Assessment Process (TPAP) for the future Kirby GO Station titled: *Barrie Rail Corridor Expansion: Transit project Assessment Process Environmental Project Report Addendum New GO Station, Volume 4: Kirby GO Station Design and Technical Studies, Appendix I: Transportation and Traffic Impact Analysis.* These trips were added into the network under future total conditions.

Vehicular access to the GO Station was assumed to be off Street 8 (Vista Gate extension).

The Kirby GO station traffic volumes are illustrated in **Figure 5-6**.

Figure 5-6: Kirby GO Peak Hour Traffic Volumes



6 FUTURE TOTAL TRANSPORTATION CONDITIONS

The future total traffic conditions include the addition of site trips to the 2031 background volumes.

6.1 INTERNAL NETWORK DEVELOPMENT

To support the development of Block 27, a new network of collector roads is required to provide connectivity to the external road network. As noted within the Secondary Plan policies in Section 4.1.1, in accordance with the Official Plan (OP) policy, "*the street and railway network in Block 27 will serve as the framework on which to build and enhance other movement networks, including walking, cycling and transit*". The transportation network within Block 27 will be designed for all travel modes and will prioritize non-vehicular modes of travel, including transit, bicycling, and walking. This is the case particularly within the Transit Hub Centre. Section 4.1.1 also notes that "*the planned street network will balance the needs of all users*" which is inclusive of pedestrians, bicyclists, users of transit, and automobiles.

In conformity with OP policies, the road network within Block 27 is intended to develop in a grid-like form and to be "connected and continuous", albeit recognizing any relevant natural environment and utility infrastructure constraints. Collector streets, both major and minor, are proposed for Block 27 to "*provide important linkages and thoroughfares*" through the lands of Block 27. Active transportation facilities will be focused on collector roadways. Furthermore, the secondary plan notes that for development that abuts major collector roads, vehicular accesses should be consolidated when possible and should "*be designed to minimize conflicts with active transportation modes, and to avoid negative impacts on traffic movement*".

The secondary plan further stipulates that a main street should be provided within the transit hub area, serving as an extension of Vista Gate west from the intersection with Keele Street. As noted in Policy 4.1.1 b) iv., this main street will "*provide an animated streetscape for active uses leading to the Kirby GO Station building*".

The proposed collector road network illustrated in **Figure 6-1** is consistent with the recommendations identified in the Block 27 Collector Roads MCEA which includes 3 major collector and 5 minor collector roadways as described below:

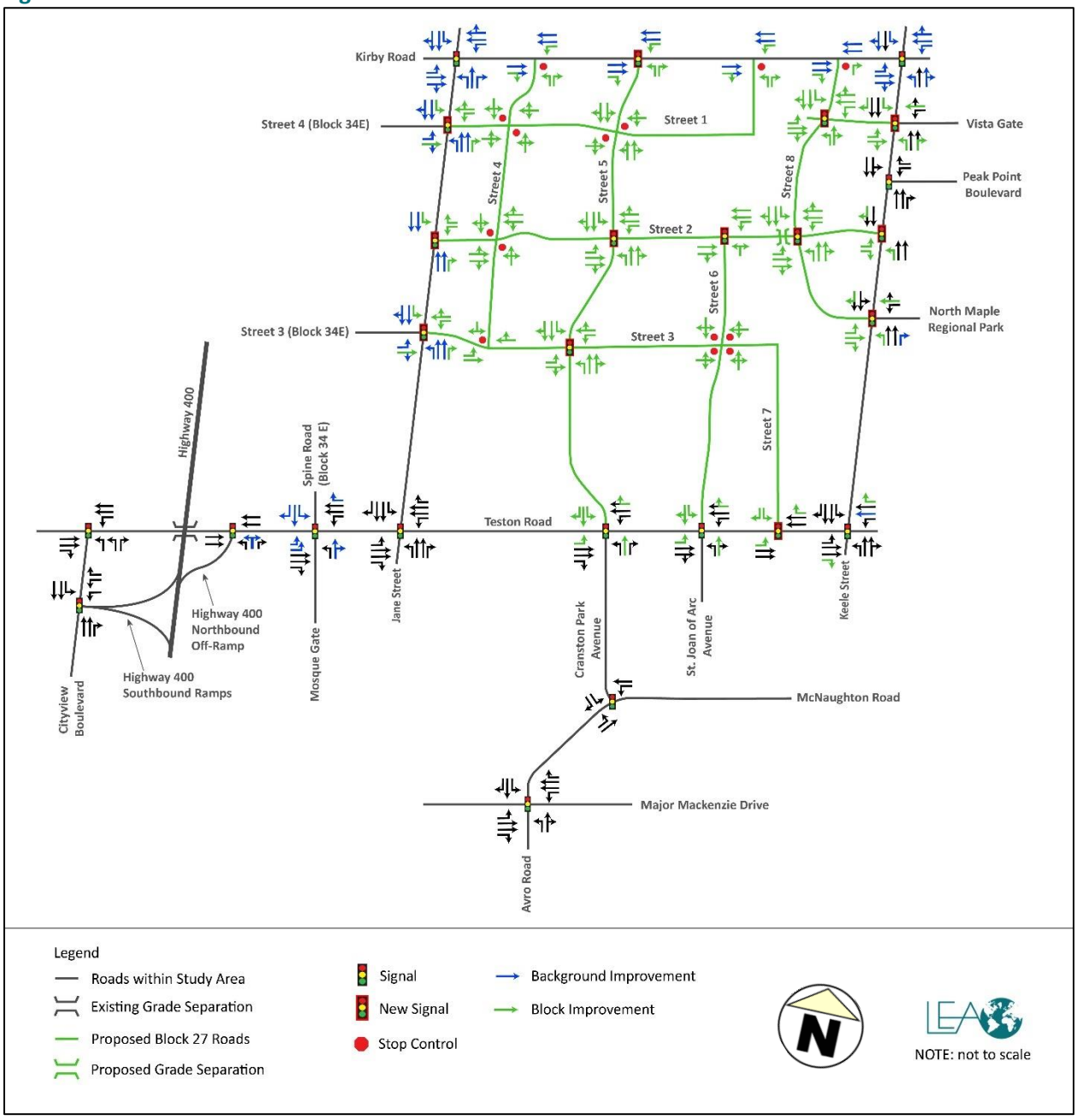
- **Street 1:** is proposed as minor collector with a 24 m ROW. The east-west alignment extends from Jane Street in the west to Street 6 in the east.
- **Street 2:** is proposed as a major collector with a 26 m ROW. The east-west alignment extends from Jane Street in the west to Keele Street in the east.
- **Street 3:** is proposed as a minor collector with a 24 m ROW. The east-west alignment extends from Jane Street in the west and connects with Street 7 to the east via a roundabout.
- **Street 4:** is proposed as a minor collector with a 24 m ROW. The north-south alignment extends from Kirby Road in the north to Street 3 in the south.
- **Street 5:** is proposed as a major collector with a 26 m ROW. The north-south alignment extends from Kirby Road in the north to Teston Road in the south and will connect with Cranston Park Avenue.

- **Street 6:** is proposed as a minor collector with a 24 m ROW. The north-south alignment extends from Teston Road in the south to Street 2 in the north. An additional segment of Street 6 extends south of Kirby Road to Street 1.
- **Street 7:** is proposed as a minor collector with a 24 m ROW. The north-south alignment extends from Teston Road in the south and connects with Street 3 via a roundabout.
- **Street 8:** is proposed as a major collector with a 26 m ROW. The north-south alignment extends south from Kirby Road and curves east to connect with Keele Street, aligning with the North Maple Regional Park Access. An additional extension off Street 8 is proposed to alignment with Vista Gate.

As per the Block 27 Collector Roads MCEA study, implementation of the full internal collector road network is required to support development on the Block. Should significant changes to the Block 27 Collector Roads MCEA be required, the Block Plan concept plan and associated roadways will be updated accordingly.

For all new Block 27 intersections (both external and internal), intersection control and lane configurations were determined through an assessment of the initial analysis results (see **Section 7**). Intersections were recommended for signalization based on signal warrants, the analysis results, and additional non-traffic considerations (e.g., facilitating pedestrian/cyclist movement). Furthermore, turn lanes were added to support inbound and outbound movements from the surrounding regional arterial road network, where applicable. A Functional Design Plan is provided in **Appendix N**.

Figure 6-1: Future Total Road Network



6.1.1 Turning Lane Requirements

Table 6-1 illustrates storage length requirements for additional left- and right- internal turn lanes as per the 95th percentile queue lengths from the 2031 base scenario. Turn lanes will be implemented as part of construction of the Block 27 collector road network once the preferred alignments and design are identified as part of the Block 27 Collector Roads EA. Of note, **Table 6-1** illustrates the required storage length to support traffic operations however, a minimum of 30 m has been provided in the Functional Design Plan (see **Appendix N**).

Table 6-1: Turn Lane Storage Length Requirements – Internal Intersections

Intersection	Movement	Queueing – AM Peak Hour (m)		Queueing – PM Peak Hour (m)		Storage Lane Required (m)
		50th	95th	50th	95th	
Keele St & Vista Gate	EBL	4	9	84	92	95
	WBL	12	19	7	15	20
	NBL	12	58	15	25	60
	SBL	2	4	1	4	15
	SBR	2	6	0	5	15
Keele St & North Maple Regional Park	EBL	1	4	1	4	15
	WBL	1	5	2	6	15
	NBL	2	8	7	17	20
	NBR	0	0	0	4	15
Street 4 & Kirby Rd [(1)]	NBL	-	0	-	1	15
	WBL	-	0	-	1	15
Street 5 & Kirby Rd	EBR	0	0	0	0	15
	WBL	1	5	3	8	15
	NBL	1	4	2	6	15
Street 6 & Kirby Rd [(1)]	NBL	-	0	-	1	15
	WBL	-	1	-	4	15
Street 8 & Kirby Rd [(1)]	EBR	-	0	-	0	15
Jane St & Street 1 / Street 4 (Block 34E)	EBL	0	2	3	8	15
	WBL	77	61	26	40	80
	NBL	3	21	1	3	25
	NBR	0	8	0	1	15
	SBL	1	4	2	6	15
Street 8 & Vista Gate	EBL	12	57	23	88	90
	WBL	0	1	1	4	15
	SBL	8	13	10	14	15
Jane St & Street 2	WBL	1	4	5	11	15
	NBR	0	5	0	0	15
	SBL	0	1	1	4	15
Street 5 & Street 2	EBL	2	8	4	13	15
	WBL	2	10	4	13	15
	NBL	0	2	1	5	15
	SBL	12	48	14	66	70
Street 6 & Street 2	WBL	4	18	5	21	25
Street 8 & Street 2	EBL	2	10	3	14	15
	WBL	0	1	1	5	15
	NBL	2	9	3	12	15
	SBL	1	7	1	6	15
Keele St & Street 2	NBL	5	40	3	19	40
Jane St & Street 3	EBL	1	4	5	12	15
	WBL	52	63	21	33	65
	NBL	13	34	27	48	50
	NBR	1	13	13	32	35
	SBL	3	7	10	26	30
Street 3 & Street 4 [(1)]	EBL	-	2	-	2	15

Intersection	Movement	Queueing – AM Peak Hour (m)		Queueing – PM Peak Hour (m)		Storage Lane Required (m)
		50th	95th	50th	95th	
Street 5 & Street 3	EBL	4	13	3	12	15
	WBL	1	6	1	5	15
	NBL	1	8	7	26	30
	SBL	1	8	2	10	15
Teston Rd & Street 7	EBL	3	5	23	42	45
	WBR	2	12	21	17	25
	SBL	39	55	127	167	170

Note: (1) – Queues have been converted from 'veh' to 'm'

Table 6-2 illustrates the turn lane length requirements of external intersections. Existing turn lane lengths are provided for reference; movements where the predicted 95th percentile queues exceed the available existing turn bay lengths are bolded. It is recommended that storage bay extensions be implemented as part of the future widenings/extensions of Kirby Road, Jane Street, and Teston Road to accommodate future queueing conditions at these intersections.

Table 6-2: Turn Lane Storage Length Requirements – External Intersections

Intersection	Movement	Queueing – AM Peak Hour (m)		Queueing – PM Peak Hour (m)		Storage Lane Required (m)	Existing Turn Lane Length (m)
		50th	95th	50th	95th		
Keele St & Peak Point Blvd	WBR	0	5	0	6	15	35
	NBR	0	0	0	0	15	55
Keele St & Kirby Rd	EBL	35	57	35	74	75	n/a
	WBL	38	68	26	58	70	n/a
	NBL	19	30	70	128	130	n/a
	SBL	4	10	7	18	20	n/a
Keele St & Teston Rd	EBL	55	92	194	268	**270**	**185**
	EBR	105	223	188	490	495	n/a
	WBL	2	8	4	11	15	40
	WBR	11	34	62	99	100	n/a
	NBL	127	201	292	372	**375**	**102**
	SBL	37	53	9	23	55	80
	SBR	58	100	46	79	**100**	**60**
St Joan of Arc Ave/Street 6 & Teston Rd	EBL	6	31	40	52	55	n/a
	WBL	6	12	0	0	15	60
	NBL	43	65	19	34	**65**	**35**
	SBL	48	70	42	64	70	n/a
Cranston Park Ave/Street 5 & Teston Rd	EBL	3	8	2	3	15	n/a
	EBR	0	0	1	1	15	39
	WBL	1	3	10	19	20	60
	NBL	44	61	42	63	**65**	**35**
	NBR	5	19	38	69	70	n/a
	SBL	21	35	33	59	60	n/a
Jane St & Teston Rd	EBL	24	38	206	166	**210**	**100**
	EBR	58	85	418	292	**420**	**70**
	WBL	210	289	112	172	**290**	**120**
	WBR	0	1	4	13	15	35

Intersection	Movement	Queueing – AM Peak Hour (m)		Queueing – PM Peak Hour (m)		Storage Lane Required (m)	Existing Turn Lane Length (m)
		50th	95th	50th	95th		
	NBL	112	177	180	250	**255**	**45**
	NBR	34	62	28	53	**65**	**55**
	SBL	27	66	6	13	70	135
	SBR	30	57	0	13	**60**	**58**
Jane St & Kirby Rd	EBL	16	29	29	61	65	n/a
	WBL	17	23	23	44	45	n/a
	NBL	10	24	18	26	30	n/a
	SBL	9	20	5	12	25	n/a
Teston Rd & Mosque Gate	EBL	82	91	161	142	165	n/a
	EBR	0	1	6	5	15	75
	WBL	1	2	3	3	15	60
	WBR	0	1	4	3	15	n/a
	NBL	17	29	15	29	30	35
	SBL	14	26	241	318	320	n/a
Hwy 400 NB Off-Ramp & Teston Rd	NBL	72	83	86	119	120	n/a
	NBR	85	112	309	352	**355**	**90**
Cityview Blvd & Teston Rd	EBR	177	259	41	73	**260**	**80**
	WBL	278	364	348	281	**365**	**230**
Cityview Blvd & Hwy 400 SB Ramps	WBL	13	22	7	14	25	100
	NBR	0	23	0	17	25	55
	SBL	352	489	87	235	**490**	**150**
McNaughton Rd & Cranston Park Ave	EBL	2	10	23	39	40	65
	WBR	1	12	0	30	30	40
	SBR	0	11	0	11	15	100
McNaughton Rd / Avro Rd & Major Mackenzie Dr W	EBL	14	31	81	125	**130**	**95**
	EBR	0	0	0	0	15	45
	WBL	11	22	11	23	25	50
	WBR	0	4	25	49	50	50
	NBL	2	6	2	6	15	35
	SBL	26	50	6	14	50	60
	SBR	37	73	17	34	**75**	**60**

6.2 INTERNAL TRANSIT SERVICE

The future transit network should be centered on the future Kirby GO station, serving as the terminus or a mid-route connection for existing and planned YRT routes along Kirby Road, Keele Street, and Jane Street; along with local routes serving the Block 27 residential neighbourhoods and major trip generators such as the community hub.

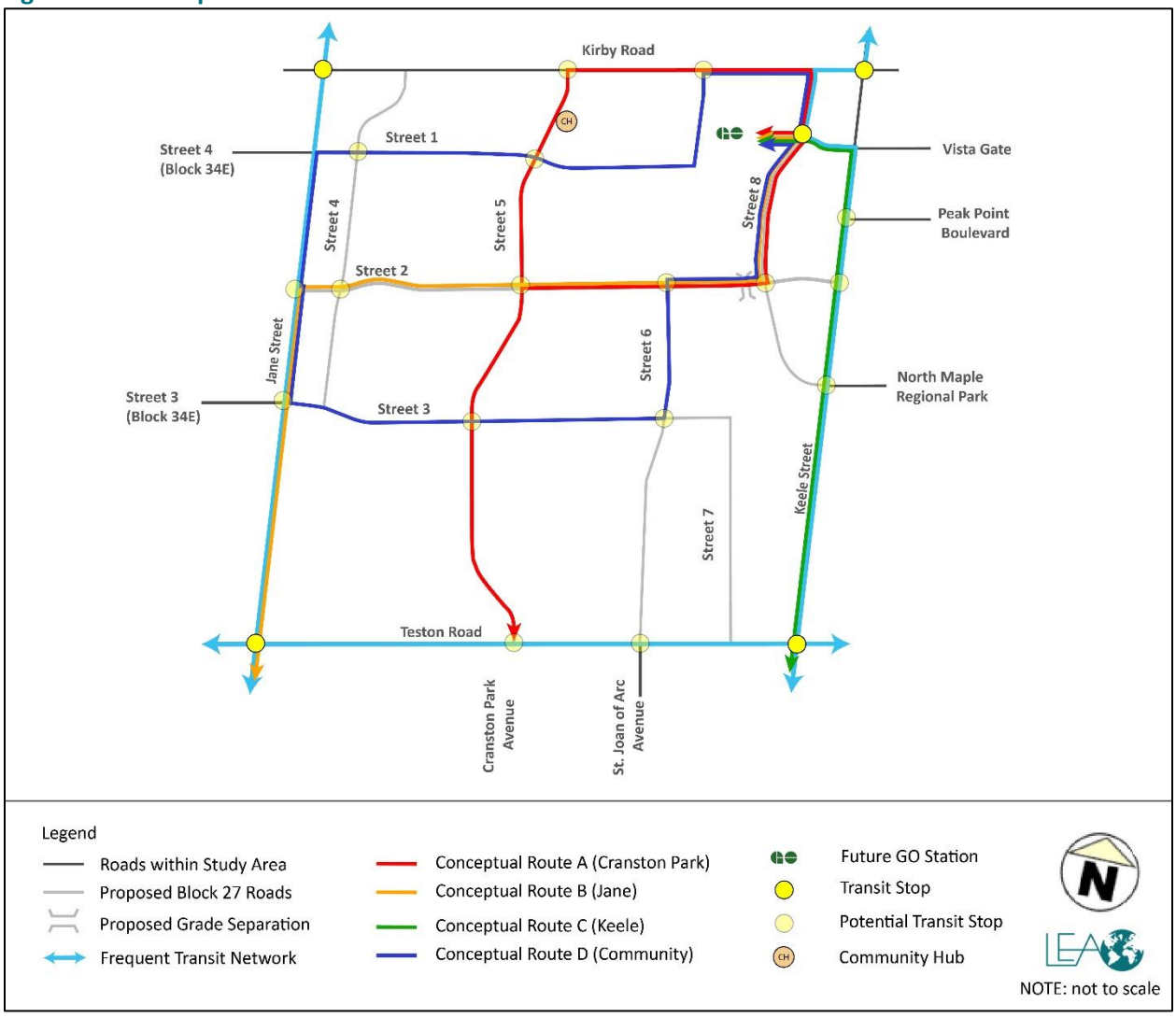
As previously noted in **Section 4.4.2**, YRT's Frequent Transit Network plans to provide 15-minute all-day service 6-days a week along Jane Street to Kirby Road, Keele Street to Kirby Road, and along Teston Road within the subject area. This service should be connected to the future Kirby GO station to provide a logical route terminus. In addition, 4 local YRT bus routes are recommended to provide transit service throughout the block:

- **Conceptual Route A:** is recommended along Street 5 and Kirby Road with connections to the Kirby GO station and the neighbourhood south of Teston Road.
- **Conceptual Route B:** is recommended along Street 2 with connections to the Kirby GO station and Jane Street.
- **Conceptual Route C:** is recommended along Vista Gate with connections to the Kirby GO station and Keele Street.
- **Conceptual Route D:** is recommended internally within the block, along Streets 1, 3, 6, 8 with connections to the Kirby GO station and Jane Street.

Service along these streets will also facilitate transfers with the surrounding arterial frequent transit network.

A conceptual diagram illustrating the location of future transit routes and stops within Block 27 is provided in **Figure 6-2**. Details on service routing and frequency will be developed through further discussions with YRT, City of Vaughan, and York Region. The provision of supporting transit infrastructure (e.g., bus shelters and laybys) at stop locations should be included as part of the detailed design process for future widenings/modifications to the surrounding arterial roadways and the Block 27 collector road network.

Figure 6-2: Conceptual Transit Network



6.3 INTERNAL ACTIVE TRANSPORTATION FACILITIES

Improved pedestrian and cycling facilities are provisionally planned for all 4 surrounding arterial roadways as part of the widening of Kirby Road and Jane Street, the urbanization of Keele Street, and the extension of Teston Road. These facilities will serve as the primary regional active transportation linkages to nearby amenities such as parks, multi-use trails, schools, and retail/services.

In addition, a multi-use trail network (Vaughan Super Trail) is planned to provide internal connections to serve both work, discretionary, and recreational walking and cycling trips within the Block 27 community. The conceptual multi-use trail network denoted in the Block 27 Secondary Plan and City of Vaughan's 2020 Pedestrian and Bicycle Master Plan Update includes trail facilities along the natural heritage areas, the TransCanada Pipeline, and the west side of the Barrie GO rail corridor (as illustrated above in **Figure 2-2** and **Figure 4-15**).

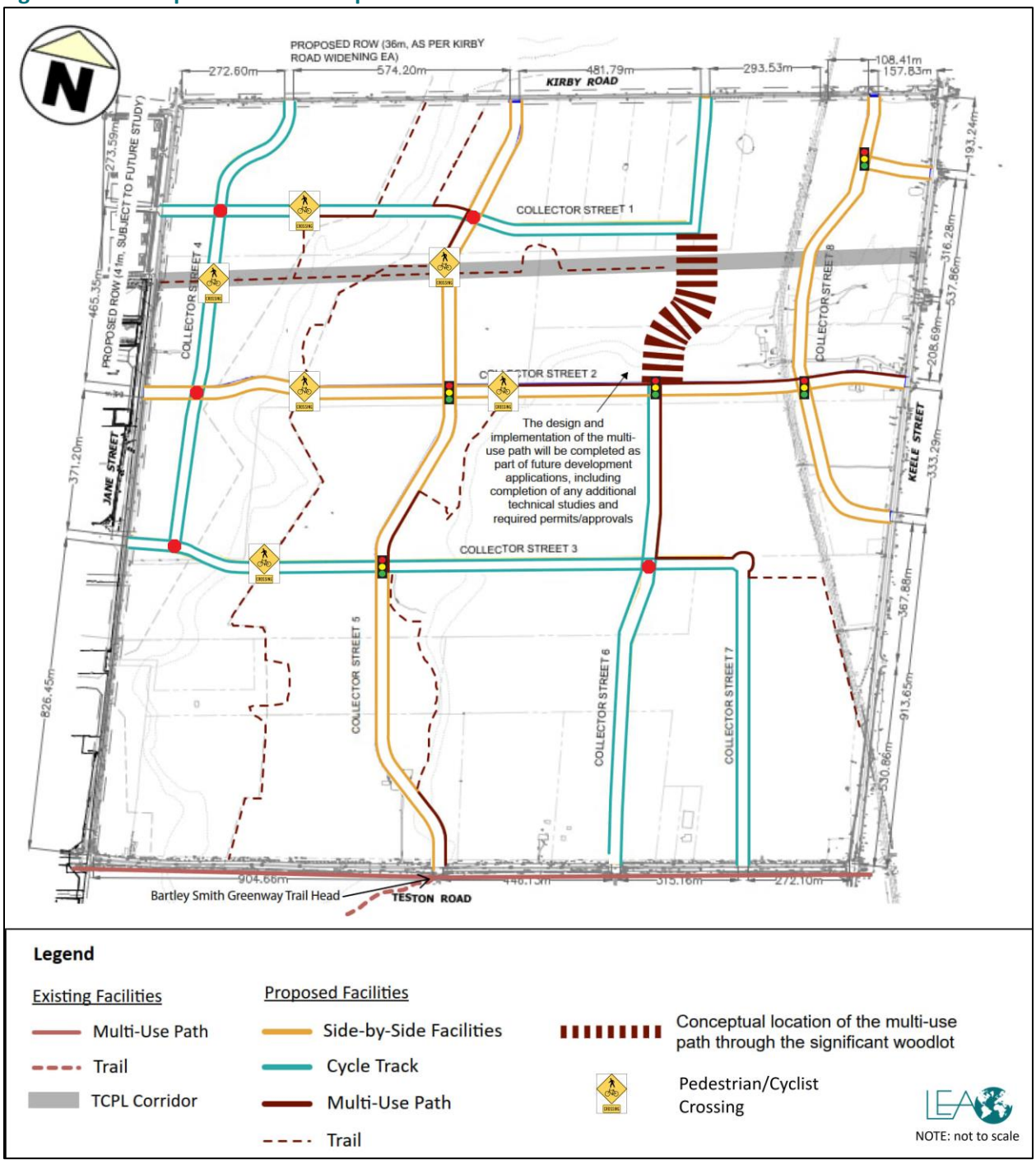
Internal streets within Block 27 will provide a permeable network of routing options and convenient connections to destinations such as the Kirby Transit Hub, the community hub, on-site retail, park space, the existing Bartley Smith Greenway trailhead south of Teston Road, and the external active transportation network along the boundary regional roads. Of note, a multi-use path current exists on the south side of Teston Road. Under ultimate conditions, the design of Teston Road will include sidewalk and cycle tracks as per the Pedestrian and Bike Master Plan and Vaughan Transportation Plan.

The proposed active transportation facilities are informed by the recommendations in the Block 27 Collector Roads EA which identified the preferred cross-section for major and minor collector roads within the Block (see **Appendix H** for the preferred major and minor collector cross-sections as per the EA). Pedestrian sidewalks and a cycle track will be provided on all minor collector roadways while side-by-side facilities will be provided on all major collector roadways. To create a continuous and safe connection from future recreational trails within the block (i.e., the Vaughan Super Trail), multi-use paths will be provided along portions of Street 1, Street 2, Street 3, Street 5, and Street 6. A future multi-use path is proposed between Street 1 and Street 2, in place of the Street 6 road connection. This multi-use path segment forms an important part of the Active Transportation network for Block 27 and the City of Vaughan. This connection is subject to future studies and its alignment will be confirmed and implemented through future site-specific development plans.

The proposed roadways will also include traffic calming measures (where appropriate) to moderate traffic speeds and provide a comfortable experience for active transportation users. Pedestrian crossing signals (PXO)s are also proposed at various mid-block locations to allow for a continuous and safe trail network. The Transportation Management Plan detailing the proposed active transportation facilities is illustrated in **Figure 6-3** and provided in **Appendix I**. Details on mid-block trail crossings, including PXO warrants, methods of control, and spacing to the nearest intersection will be analyzed as part of each individual development application.

A conceptual diagram illustrating the future active transportation network is provided in **Figure 6-3**. Based on the review of the surrounding circulation linkages, 100% of residents/jobs will be within 400 m of cycling infrastructure.

Figure 6-3: Conceptual Active Transportation Network



Note: Active Transportation Facilities are subject to the Block 27 Collector Roads EA

6.4 FUTURE TOTAL SYNCHRO MODEL INPUTS

Input parameters from the existing and future background scenarios were maintained with corresponding future background volumes, with the exception of the following changes outlined in **Table 6-3**.

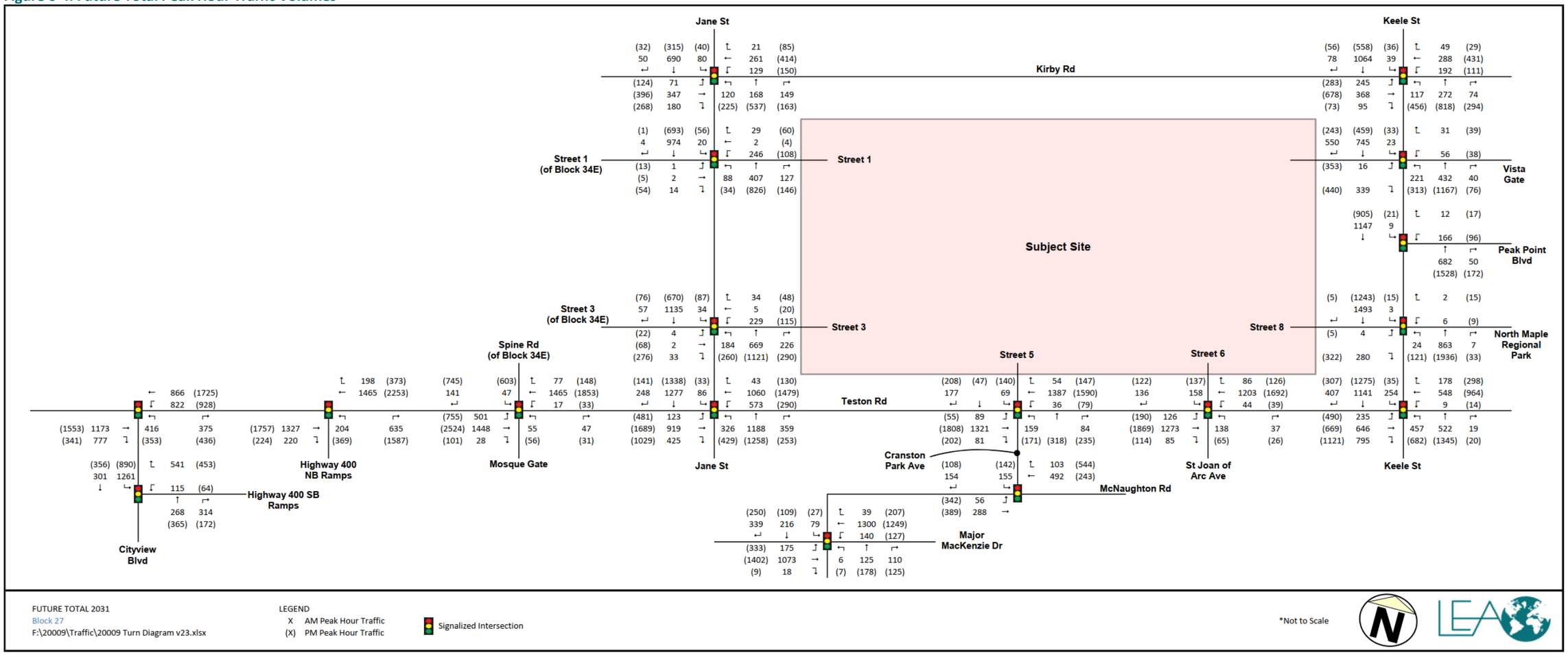
Table 6-3: Future Total Synchro Model Inputs

Intersection	Model Input Changes
Keele Street & Teston Road	• A lost-time adjustment of -1 second was applied to the EBL and NBL movements during the AM and PM peak hours. • The lane utilization factor was raised from 0.95 to 1 for the SBT movement during the AM and PM peak hours to reflect the change in a driver's behaviour when a through movement has significant queueing and delay.
Jane Street & Teston Road	• A lost-time adjustment of -1 second was applied to the WBL and NBL movements during the AM peak hour and to the EBL, WBL, and NBL movements during the PM peak hour. • The lane utilization factor was raised from 0.95 to 1 for the SBT, EBT, and WBT movements during the AM and PM peak hours to reflect the change in a driver's behaviour when a through movement has significant queueing and delay.
Teston Road & Mosque Gate	• A lost-time adjustment of -1 second was applied to the SBL and EBL movements during the PM peak hour. • The lane utilization factor was increased from 0.95 to 1 for the EBT and WBT movements during the AM and PM peak hours.
Teston Road & Highway 400 NB Off-Ramp	• A lost-time adjustment of -1 second was applied to the NBR movement during the PM peak hour. • The lane utilization factor was increased from 0.95 to 1 for the NBR movement during the AM and PM peak hours.
Keele Street & Vista Gate	• The recommended lane configuration for the eastbound and westbound legs is a dedicated left-turning lane and a shared through-right lane. The modelled vehicle demand does not have any EBT or WBT traffic. Therefore, to more accurately model the operations at the intersection, the eastbound and westbound legs were modelled as a dedicated left-turning lane and a dedicated right-turning lane.
Teston Road & Cityview Boulevard	• A lost-time adjustment of -1 second was applied to the WBL movement during the PM peak hour. • The lane utilization factor was increased from 0.95 to 1 for the EBT movement during both peak hours.

6.5 FUTURE TOTAL TRAFFIC VOLUMES

The future total traffic volumes for the weekday AM and PM peak hours are illustrated in **Figure 6-4** and **Figure 6-5.**

Figure 6-4: Future Total Peak Hour Traffic Volumes



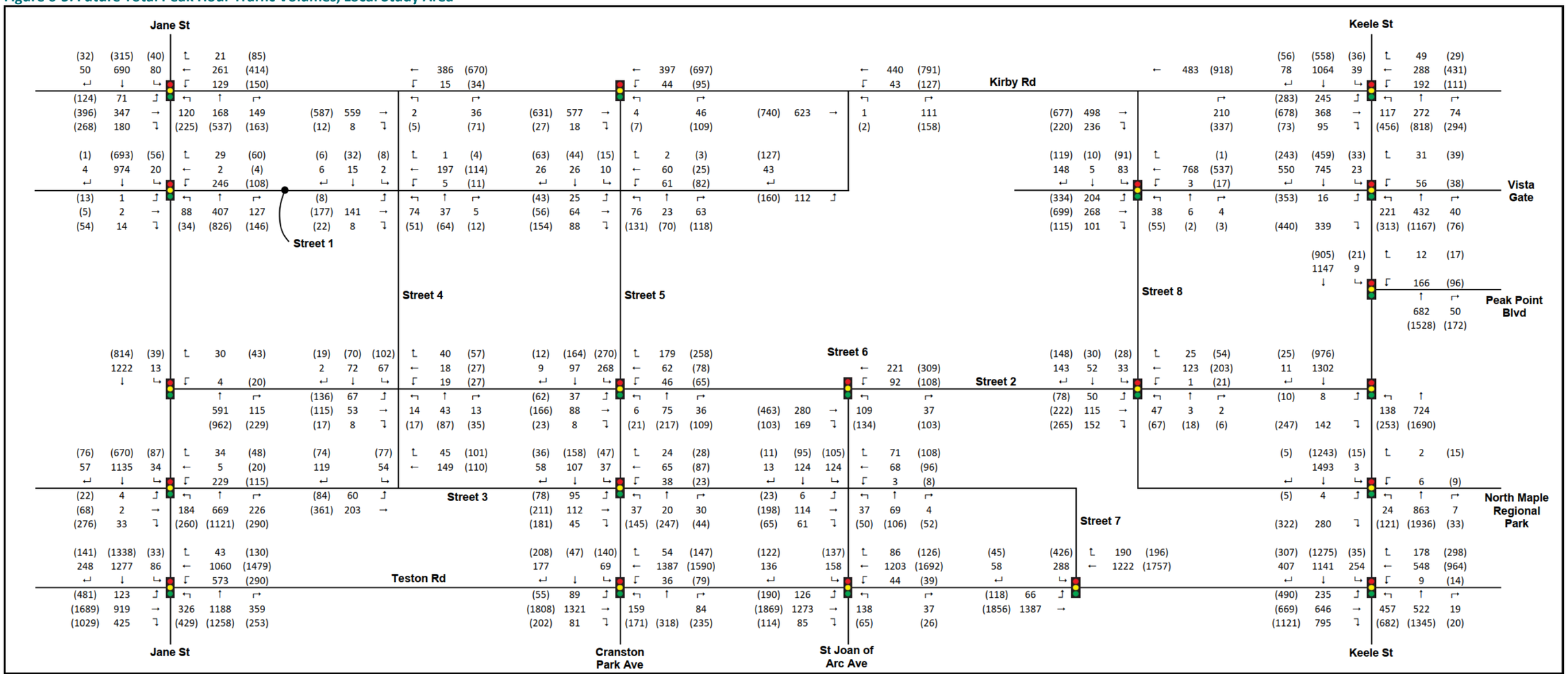
FUTURE TOTAL 2031
Block 27
F:\20009\Traffic\20009 Turn Diagram v23.xlsx

LEGEND
X AM Peak Hour Traffic
(X) PM Peak Hour Traffic

Signalized Intersection

*Not to Scale

Figure 6-5: Future Total Peak Hour Traffic Volumes, Local Study Area



7 INTERSECTION CAPACITY ANALYSIS

The intersection capacity analysis was undertaken using Synchro 11.0, which is based on the Highway Capacity Manual (HCM) (2000) methodology and adheres to the Region's Transportation Mobility Plan Guidelines. HCM 2000 results are presented for all signalized and unsignalized intersections. As per York Region Mobility Plan Guidelines, key movements of interest are identified as those with a level-of-service (LOS) 'E' or worse or volume-to-capacity (v/c) ratios greater than 0.85 for through and right movements and v/c ratios greater than 0.90 for left turn movements.

The following sections outline a comparison of the capacity analysis results under existing, future background, and future total conditions. Detailed capacity analysis results are provided in the following appendices:

- **Appendix J:** Existing Intersection Capacity Analysis;
- **Appendix K:** 2031 Future Background Intersection Capacity Analysis; and
- **Appendix L:** 2031 Future Total Intersection Capacity Analysis;

7.1 CRITICAL INTERSECTIONS

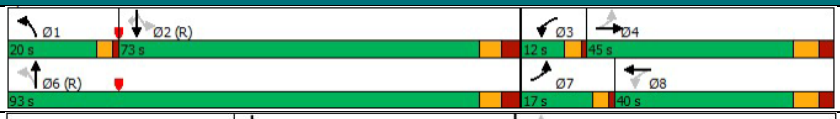
The sections below outline the intersection capacity analysis results for critical intersections. This includes intersections experiencing significant congestion and capacity constraints, despite recommended improvements. To note, the remaining intersections not identified in this section operate under acceptable conditions and are further discussed in **Section 7.2** and **Section 7.3**.

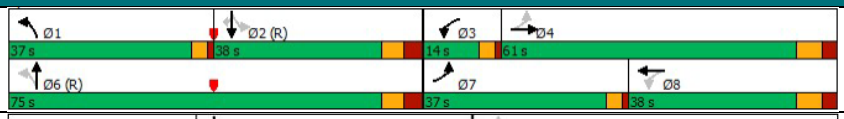
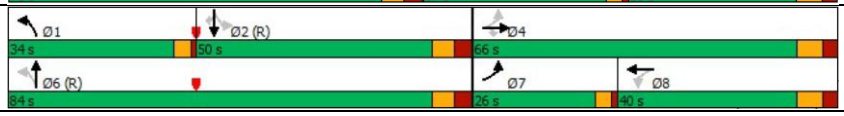
7.1.1 Keele Street & Teston Road

As per the York Region Transportation Master Plan (2022), Teston Road is proposed to extend between Keele Street to Dufferin Street to address the corridor's "missing link". Consistent with the recommendations in the Teston Road IEA, the extension of Teston Road was assumed to include a 4-lane cross-section (2 lanes per direction). Upon development of the site, dedicated right-turn lanes are recommended for the eastbound and westbound approaches to aid in reducing the impact of congestion under future conditions.

Furthermore, in order to improve traffic conditions and accommodate future traffic growth at the intersection, signal timing plans were optimized for both peak hours while maintaining the overall cycle length. The signal timing optimizations are summarized in **Table 7-1**.

Table 7-1: Signal Timing Optimizations, Keele Street & Teston Road

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	150	
2031 Weekday AM (Optimized)	150	

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday PM	150	
2031 Weekday PM (Optimized)	150	

The intersection capacity analysis at Keele Street & Teston Road is summarized in **Table 7-2** for the weekday AM and PM peak hours.

Table 7-2: Intersection Capacity Analysis, Keele Street & Teston Road

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.70	C (30)	-/-	-	0.80	C (26)	-/-	**-**	**1.04**	**E (65)**	**-/-**
EBL	183	0.67	E (57)	54/68	183	0.73	C (28)	16/21	235	0.91	**F (82)**	55/92
EBT	111	0.34	D (53)	32/49	930	0.85	B (14)	9/12	646	0.54	D (49)	78/115
EBR	459	0.47	D (55)	14/56					**795**	**0.98**	**F (103)**	**105/223**
WBL	9	0.07	E (58)	2/6	9	0.23	E (59)	3/9	9	0.07	D (49)	2/8
WBT	69	0.31	E (62)	16/29	345	0.67	E (64)	54/67	548	0.75	E (61)	85/107
WBR									178	0.23	D (51)	11/34
NBL	349	0.67	B (15)	34/74	376	0.72	B (20)	49/83	**457**	**0.98**	**F (84)**	**127/201**
NBTR	285	0.13	A (9)	13/28	305	0.16	B (16)	23/38	541	0.34	C (28)	59/75
SBL	51	0.10	B (18)	7/20	54	0.10	C (20)	6/13	254	0.60	C (34)	37/53
SBT	576	0.31	C (20)	48/81	610	0.37	C (28)	65/105	1141	0.97	E (71)	181/229
SBR	352	0.24	B (20)	0/19	352	0.26	C (27)	6/37	407	0.58	D (50)	58/100
PM	**Existing**				**Future Background (Optimized)**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	**-**	**1.05**	**D (53)**	**-/-**	**-**	**1.20**	**E (65)**	**-/-**	**-**	**1.69**	**F (144)**	**-/-**
EBL	426	0.99	E (80)	119/194	**446**	**1.41**	**F (240)**	**162/233**	**490**	**1.54**	**F (308)**	**194/268**
EBT	42	0.07	C (27)	8/19	357	0.50	B (10)	36/62	669	0.47	C (26)	51/78
EBR	478	0.35	C (30)	0/26	841	0.83	D (54)	236/291	**1121**	**1.40**	**F (211)**	**188/490**
WBL	14	0.05	D (45)	3/7	14	0.07	D (48)	4/10	14	0.09	D (47)	4/11
WBT	321	0.87	E (75)	106/167	661	0.88	E (70)	104/128	**964**	**1.18**	**F (154)**	**190/234**
WBR									298	0.67	E (59)	62/99
NBL	498	0.98	E (69)	127/180	611	0.95	D (50)	130/218	**682**	**1.66**	**F (354)**	**292/372**
NBTR	655	0.45	C (30)	80/97	746	0.39	C (22)	73/90	1365	0.72	C (31)	170/198
SBL	9	0.08	D (51)	3/9	12	0.07	D (40)	3/9	35	0.42	E (58)	9/23
SBT	318	0.50	E (57)	51/68	342	0.33	D (43)	45/60	**1275**	**1.15**	**F (132)**	**234/277**
SBR	221	0.16	D (51)	0/25	224	0.15	D (41)	0/21	307	0.48	D (48)	46/79

Existing Conditions: The signalized intersection operates with an overall LOS of 'D' or better during the weekday AM and PM peak hours. The overall intersection indicates a v/c ratio greater than 1 during the PM peak hour due to the near-capacity EBL and NBL movements operating with a LOS of 'E'; however, all movements at the intersection operate within capacity and with acceptable delays. A number of

movements experience a LOS of 'E': the EBL, WBL, WBT, and WBR in the AM peak hour, and the EBL, WBT, WBR, NBL, and SBT in the PM peak hour. However, all these movements operate with v/c ratios less than 1.

Future Background Conditions: With signal optimization and the planned extension of Teston Road, the AM peak hour continues to operate similarly to existing conditions with all movements operating within capacity and with acceptable delays. Despite signal optimization, the EBL movement during the PM peak hour is expected to operate with capacity constraints, with a LOS of 'F' and long delays. It should also be noted that the EBL movement is already approaching capacity under existing conditions. Furthermore, while most westbound movements during both peak hours have an LOS of 'E', these movements operate with v/c ratios less than 1.

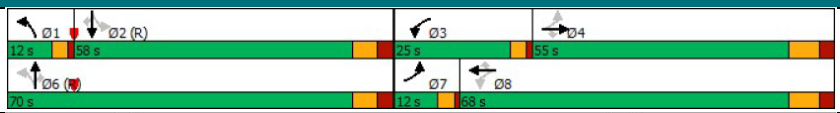
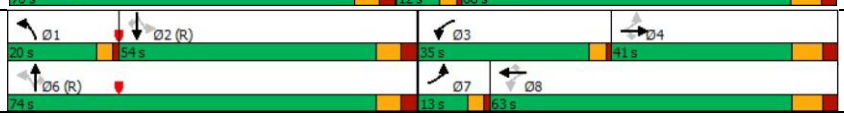
Future Total Conditions: During the AM peak hour, the overall intersection is expected to operate with a v/c ratio greater than 1; however, all movements operate within capacity and with acceptable delays. This suggests that increases in movements with residual capacity would cause different movements to be overcapacity. Furthermore, while the EBL, EBR, and NBL movements are expected to operate with a LOS of 'F', the movements can sufficiently progress through the intersection within 1 cycle length.

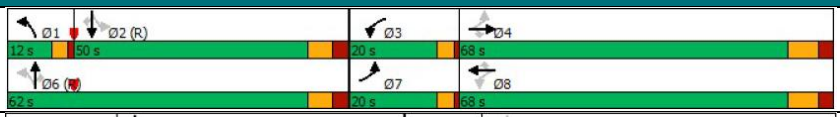
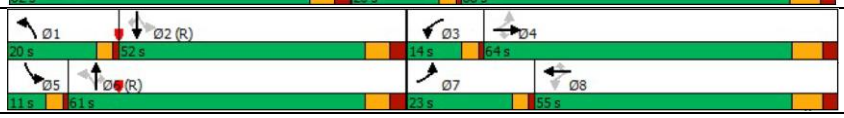
During the PM peak hour, the intersection is expected to experience congestion and capacity constraints, despite signal optimization. Specifically, the EBL, EBR, WBT, NBL, and SBT movements operate with v/c ratios greater than 1. However, it is anticipated that these movements will clear within two cycle lengths. It is recognized that these movements are anticipated to experience worsened operations due to site traffic. As such, dedicated right-turning lanes are recommended for the westbound and eastbound approaches to reduce the impact of congestion. It should be noted that congested conditions begin to appear under future background due to the addition of background development traffic and not only as a result of site traffic. It should be noted that opportunities to introduce dual left turn lanes were investigated at this intersection and found to yield minor to moderate improvements in the overall delay. That said, given the overall impact introducing dual left turn movements have to the geometry of the intersection, specifically how challenging the intersection becomes to be traversed by a pedestrian, and that the operational constraints are only noted during the Weekday PM peak hours, integrating dual left turn movements at this time is not recommended at this time.

7.1.2 Jane Street & Teston Road

In order to improve traffic conditions and accommodate future traffic growth at the intersection, signal timing plans were optimized for both peak hours while maintaining the overall cycle length. The signal timing optimizations are summarized in **Table 7-3**. No further improvements are recommended at this intersection as every turning movement has a dedicated turn lane under existing conditions.

Table 7-3: Signal Timing Optimizations, Jane Street & Teston Road

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	150	
2031 Weekday AM (Optimized)	150	

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday PM	150	
2031 Weekday PM (Optimized)	150	

The intersection capacity analysis at Jane Street & Teston Road is summarized in **Table 7-4** for the weekday AM and PM peak hours.

Table 7-4: Intersection Capacity Analysis, Jane Street & Teston Road

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.63	D (43)	-/-	-	0.91	D (43)	-/-	**-**	**1.41**	**F (84)**	**-/-**
EBL	102	0.61	D (50)	21/32	108	0.67	D (51)	6/40	123	0.73	D (49)	24/38
EBT	591	0.80	E (62)	98/114	909	0.79	C (33)	115/183	**919**	**1.10**	**F (117)**	**162/205**
EBR	243	0.17	D (48)	0/23	425	0.51	C (23)	63/82	425	0.80	E (64)	58/85
WBL	219	0.79	D (50)	49/66	219	0.78	D (47)	49/78	**573**	**1.35**	**F (202)**	**210/289**
WBT	708	0.72	D (50)	109/123	1022	0.77	C (35)	123/143	1060	0.76	C (31)	163/138
WBR	11	0.01	D (38)	0/0	40	0.03	C (31)	0/4	43	0.03	C (31)	0/1
NBL	224	0.47	C (21)	38/63	**326**	**0.98**	**F (90)**	**84/149**	**326**	**1.30**	**F (211)**	**112/177**
NBT	119	0.07	B (18)	10/18	670	0.42	C (29)	75/92	1188	0.72	D (37)	158/185
NBR	117	0.08	B (18)	0/12	120	0.08	C (24)	1/13	359	0.37	C (29)	34/62
SBL	59	0.13	C (29)	13/26	85	0.45	D (55)	23/42	**86**	**1.00**	**F (149)**	**27/66**
SBT	416	0.30	C (31)	51/70	798	0.85	E (63)	126/152	**1277**	**1.06**	**F (96)**	**219/262**
SBR	236	0.20	C (30)	5/27	248	0.35	D (48)	23/52	248	0.35	D (42)	30/57
PM	**Existing**				**Future Background (Optimized)**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.77	D (41)	-/-	**-**	**1.65**	**F (139)**	**-/-**	**-**	**1.82**	**F (175)**	**-/-**
EBL	170	0.79	D (45)	34/49	241	0.95	E (67)	62/58	**481**	**1.72**	**F (384)**	**206/166**
EBT	980	0.85	D (49)	171/178	**1608**	**1.10**	**F (98)**	**285/250**	**1689**	**1.17**	**F (127)**	**311/232**
EBR	335	0.41	D (36)	32/55	**1029**	**1.54**	**F (297)**	**409/363**	**1029**	**1.58**	**F (317)**	**418/292**
WBL	120	0.71	D (45)	25/42	124	0.76	E (56)	17/50	**290**	**1.62**	**F (341)**	**112/172**
WBT	800	0.73	D (45)	134/138	**1271**	**1.10**	**F (101)**	**242/287**	**1479**	**1.22**	**F (152)**	**285/330**
WBR	23	0.02	C (32)	0/0	**90**	**0.06**	**F (802)**	**1/5**	130	0.08	D (55)	4/13
NBL	289	0.64	C (35)	72/104	**429**	**1.72**	**F (386)**	**180/250**	**429**	**1.72**	**F (386)**	**180/250**
NBT	365	0.27	C (29)	46/61	897	0.67	D (43)	126/151	1258	0.91	E (56)	200/246
NBR	164	0.12	C (27)	0/14	172	0.16	C (33)	9/27	253	0.30	D (35)	28/53
SBL	19	0.08	D (38)	5/12	33	0.19	D (35)	6/13	33	0.29	D (40)	6/13
SBT	161	0.17	D (39)	23/33	1044	0.97	E (74)	171/218	**1338**	**1.17**	**F (141)**	**249/292**
SBR	111	0.09	D (38)	0/14	129	0.08	D (38)	0/10	141	0.09	D (39)	0/13

Existing Conditions: The intersection operates within capacity, with acceptable delays, and an overall LOS of 'D' during the weekday AM and PM peak hours. While the EBT movement operates with a LOS of 'E' during the AM peak hour, this movement operates within capacity and with acceptable delay.

Future Background Conditions: With signal optimization, the AM peak hour continues to operate similarly to existing conditions with all movements operating within capacity and with acceptable delays. While the NBL movement experiences an increase in delay and a LOS of 'F', the movement continue to operate within capacity. Despite signal optimization, the intersection is expected to operate with capacity constraints during the PM peak hour. Notably, the EBT, EBR, WBT, and NBL movements are expected to operate with long delays and v/c ratios greater than 1. This can be attributed to the high volumes added along both Jane Street and Teston Road from background developments, in particular Block 34E, Block 34W, and Block 41 which causes the PM peak hour to experience noticeable congestion.

Future Total Conditions: The intersection is expected to operate with capacity constraints during both AM and PM peak hours. During the AM peak hour, some of the left turns and through movements become critical. Notably, the EBT, WBL, NBL, SBL, and SBT movements are expected to operate with v/c ratios greater than 1 and with a LOS of 'F'; however, queues will be able to clear within 1-2 cycle lengths.

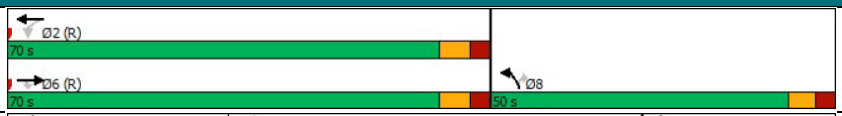
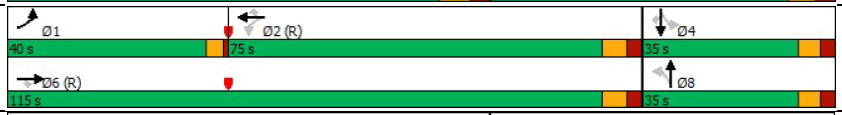
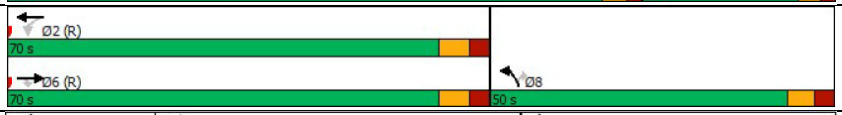
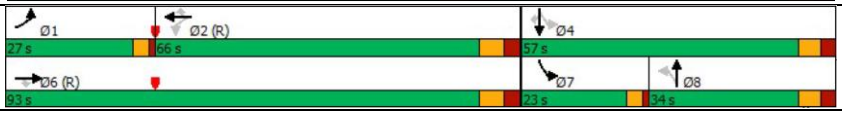
While the intersection is expected to operate with capacity constraints during the PM peak hour, these constraints were identified under future background conditions due to the addition of background growth and background development traffic. Notably, the EBL, EBT, EBR, WBL, WBT, NBL, and SBT movements are all overcapacity and most have an LOS of 'F'. The forecasted delay indicates that traffic will clear within 2-3 cycle lengths. Despite anticipated constraints, there is limited opportunity for geometric improvements to the intersection given that every turning movement already has a dedicated turning lane under existing conditions. Furthermore, it should be noted that the identified delays are isolated to the peak periods and that the forecasted traffic reflects the mature state of development for the area. Considering this, and the objective to support pedestrian and cycling on these streets, no additional lane widenings are recommended.

7.1.3 Teston Road & Mosque Gate

It is understood that as part of the Block 34E development, a new north-south spine road is proposed to extend from the Teston Road & Mosque Gate intersection to Kirby Road. As such, the Block 34E development is expected to add additional volumes to the EBL, WBR, SBL, and SBR turning movements at this intersection. To accommodate this traffic, the Transportation Mobility Plan prepared by Crozier in May 2021 for the Block 34E development recommended a dual eastbound left-, westbound right-, southbound left-, and southbound right-turning lanes. The northbound approach of Mosque Gate was also modified from a dedicated northbound right-turn lane to a shared through right-turn lane. These recommendations were included in the future background conditions for this study.

To ensure safe and effective operation of the dual left-turn lane, improve traffic conditions, and accommodate future traffic growth at the intersection, signal timing plans were optimized during both peak hours. This included increasing the cycle length to 150 seconds to match other intersections along Teston Road for improved signal coordination. The signal timing optimizations are summarized in **Table 7-5**.

Table 7-5: Signal Timing Optimizations, Teston Road & Mosque Gate

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	120	
2031 Weekday AM (Optimized)	150	
Existing Weekday PM	120	
2031 Weekday PM (Optimized)	150	

The intersection capacity analysis at Teston Road & Mosque Gate is summarized in **Table 7-6** for the weekday AM and PM peak hours.

Table 7-6: Intersection Capacity Analysis, Teston Road & Mosque Gate

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.42	A (7)	-/-	-	0.65	B (19)	-/-	-	0.65	B (19)	-/-
EBL	n/a				501	0.81	E (61)	70/99	501	0.81	E (74)	82/91
EBT	972	0.38	A (5)	33/78	1434	0.49	A (4)	38/145	1448	0.47	A (4)	25/56
EBR	28	0.02	A (3)	0/3	28	0.02	A (2)	0/2	28	0.02	A (3)	0/1
WBL	6	0.02	A (3)	0/2	6	0.03	A (10)	1/1	17	0.08	A (7)	1/2
WBT	1084	0.43	A (5)	39/90	1438	0.64	B (13)	71/86	1465	0.64	A (9)	36/204
WBR	n/a				77	0.06	A (9)	1/3	77	0.06	A (2)	0/1
NBL	55	0.37	D (52)	14/24	55	0.43	E (66)	17/29	55	0.43	E (66)	17/29
NBTR	36	0.03	D (49)	0/10	36	0.03	E (61)	0/0	47	0.03	E (62)	0/5
SBL	n/a				47	0.39	E (66)	14/26	47	0.39	E (66)	14/26
SBTR					140	0.10	E (62)	0/0	141	0.10	E (62)	0/0
PM	**Existing**				**Future Background (Optimized)**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.55	A (7)	-/-	**-**	**1.27**	**F (106)**	**-/-**	**-**	**1.32**	**F (129)**	**-/-**
EBL	n/a				**755**	**1.44**	**F (266)**	**166/161**	**755**	**1.37**	**F (234)**	**161/142**
EBT	1396	0.56	A (6)	63/132	**2204**	**1.06**	**E (60)**	**389/311**	**2524**	**1.15**	**F (103)**	**457/395**
EBR	101	0.08	A (3)	1/8	101	0.09	B (17)	6/5	101	0.09	B (18)	6/5
WBL	7	0.04	A (3)	0/3	7	0.14	B (19)	1/1	33	0.67	C (24)	3/3
WBT	1179	0.48	A (5)	48/101	**1660**	**1.11**	**E (75)**	**283/68**	**1853**	**1.24**	**F (130)**	**344/64**
WBR	n/a				147	0.16	B (13)	5/4	148	0.16	B (10)	4/3
NBL	56	0.40	D (52)	16/25	56	0.30	E (58)	15/29	56	0.30	E (58)	15/29
NBTR	30	0.17	D (50)	5/12	30	0.02	E (55)	0/0	31	0.02	E (55)	0/0
SBL	n/a				**603**	**1.27**	**F (185)**	**241/318**	**603**	**1.27**	**F (185)**	**241/318**
SBTR					**743**	**1.10**	**F (119)**	**192/273**	**745**	**1.10**	**F (120)**	**193/275**

Existing Conditions: The intersection operates within capacity, with acceptable delays, and an overall LOS of 'A' during the weekday AM and PM peak hours. No critical movements have been identified under existing conditions.

Future Background Conditions: With the Block 34E recommended improvements, the AM peak hour continues to operate within capacity, with acceptable delays, and with an overall LOS of 'B'. While the EBL, northbound, and southbound movements are starting to experience delay and an LOS of 'E', all movements operate with residual capacity. The intersection is now expected to operate with capacity constraints during the PM peak hour. Notably, the EBL, EBT, WBT, southbound movements are expected to operate with v/c ratios greater than 1. Noticeable congestion during the PM peak hour can be attributed to background growth along Teston Road and trips entering/departing the Block 34E development.

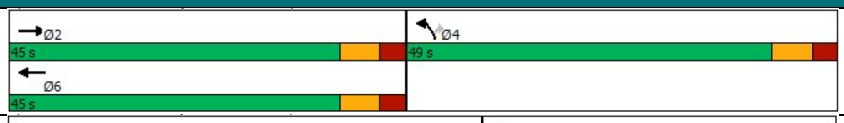
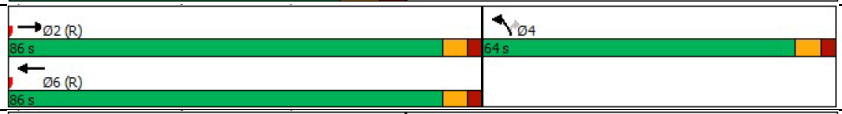
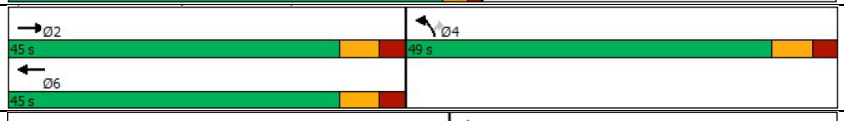
Future Total Conditions: With signal optimization, the AM peak hour continues to operate within capacity, with acceptable delays, and with an overall LOS of 'B'. Similar to future background conditions, the EBL, northbound movements, and southbound movements continue to operate with a LOS of 'E' but with residual capacity. Overall, the increase in delay is minimal and no new constraints have been identified as a result of site traffic.

The intersection is expected to experience some increase in delays and v/c ratios when compared to future background conditions during the PM peak hour. While it is recognized that the EBT and WBT movements are anticipated to experience worsened operations due to site traffic, delays for both movements can clear within 1 cycle length. It should be noted that congested conditions begin to appear under future background conditions due to the addition of background growth and background development traffic.

7.1.4 Teston Road & Highway 400 NB Off-Ramps

To improve traffic conditions and accommodate future traffic growth at the intersection, signal timing plans were optimized during both peak hours. This included increasing the cycle length to 150 seconds to match other intersections along Teston Road for improved signal coordination. The signal timing optimizations are summarized in **Table 7-7**.

Table 7-7: Signal Timing Optimizations, Teston Road & Highway 400 NB Off-Ramp

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	94	
2031 Weekday AM (Optimized)	150	
Existing Weekday PM	94	
2031 Weekday PM (Optimized)	150	

The intersection capacity analysis at Teston Road & Highway 400 NB Off-Ramp is summarized in **Table 7-8** for the weekday AM and PM peak hours.

Table 7-8: Intersection Capacity Analysis, Teston Road & Highway 400 NB Off-Ramps

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.46	B (13)	-/-	-	0.66	B (17)	-/-	-	0.65	B (18)	-/-
EBT	908	0.49	B (11)	35/74	1316	0.56	A (5)	21/38	1327	0.55	A (3)	19/19
WBT	998	0.54	B (12)	41/86	1443	0.59	A (4)	78/15	1465	0.58	A (7)	40/47
NBL	135	0.30	C (22)	11/20	204	0.66	D (52)	70/80	204	0.69	D (54)	72/83
NBR	256	0.23	C (21)	6/19	632	0.84	E (69)	89/117	635	0.83	E (68)	85/112
PM	**Existing**				**Future Background (Optimized)**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.66	C (20)	-/-	**-**	**1.19**	**E (77)**	**-/-**	**-**	**1.23**	**F (89)**	**-/-**
EBT	893	0.56	B (16)	54/99	1511	0.85	A (9)	34/35	1757	0.97	B (11)	41/35
WBT	938	0.58	B (16)	59/108	**2074**	**1.12**	**E (70)**	**366/314**	**2253**	**1.20**	**F (106)**	**421/315**
NBL	312	0.68	C (25)	46/64	369	0.53	C (34)	86/119	369	0.53	C (34)	86/119
NBR	718	0.78	C (32)	51/87	**1513**	**1.26**	**F (167)**	**310/355**	**1587**	**1.25**	**F (163)**	**309/352**

Existing Conditions: The intersection operates within capacity, with acceptable delays, and an overall LOS of 'C' or better during the weekday AM and PM peak hours. No critical movements have been identified under existing conditions.

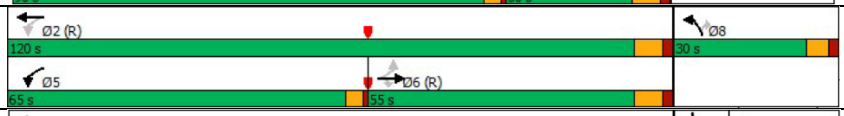
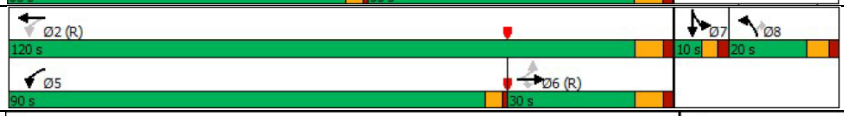
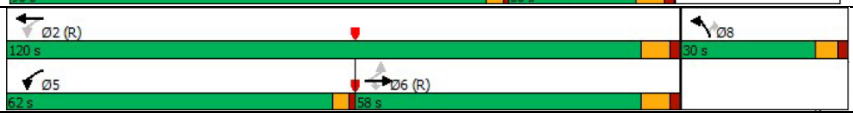
Future Background Conditions: The AM peak hour continues to operate similarly to existing conditions with all movements operating within capacity and with acceptable delays. While the NBR movement is expected to operate with a LOS of 'E', this movement operates with residual capacity. Capacity constraints are expected during the PM peak hour. Notably, the WBT and NBR movements are expected to operate with v/c ratios greater than 1. This can be attributed to the high volumes added along Teston Road and from background traffic exiting the highway.

Future Total Conditions: The AM peak hour continues to operate similarly to future background conditions. No new constraints have been identified as a result of site traffic. During the PM peak hour, the intersection continues to operate overcapacity. While the WBT and NBR movements continue to operate with v/c ratios greater than 1 and with long delays, these congested conditions were identified in future background due to background growth and background development traffic. No new constraints have been identified as a result of site traffic.

7.1.5 Cityview Boulevard & Teston Road

To improve traffic conditions and accommodate future traffic growth at the intersection, signal timing plans were optimized during both peak hours, while maintaining the cycle length of 150 seconds. The signal timing optimizations are summarized in **Table 7-9**.

Table 7-9: Signal Timing Optimizations, Cityview Boulevard & Teston Road

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	150	
2031 Weekday AM (Optimized)	150	
Existing Weekday PM	150	
2031 Weekday PM (Optimized)	150	

The intersection capacity analysis at Cityview Boulevard & Teston Road is summarized in **Table 7-10** for the weekday AM and PM peak hours.

Table 7-10: Intersection Capacity Analysis, Cityview Boulevard & Teston Road

AM	Existing Conditions				Future Background (Optimized)				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.81	C (32)	-/-	-	1.12	E (78)	-/-	-	1.07	E (68)	-/-
EBT	553	0.47	D (41)	74/142	1162	0.99	E (74)	191/240	1173	0.95	E (65)	179/222
EBR	271	0.18	D (36)	0/28	777	1.12	F (128)	198/280	777	1.06	F (107)	177/259
WBL	768	0.81	C (21)	110/186	821	1.11	F (123)	266/366	822	1.09	F (96)	278/364
WBT	383	0.13	A (2)	8/21	845	0.31	A (6)	31/49	866	0.31	B (11)	80/79
NBL	64	0.27	E (66)	11/17	416	0.80	E (70)	66/86	416	0.85	E (76)	66/86
NBR	355	0.25	E (66)	0/33	375	0.26	E (56)	0/33	375	0.26	E (57)	0/33
PM	**Existing Conditions**				**Future Background (Optimized)**				**2031 Future Total**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.73	C (25)	-/-	-	1.25	E (76)	-/-	-	1.18	F (80)	-/-
EBT	522	0.36	C (31)	59/108	1323	1.06	F (91)	238/283	1553	1.15	F (128)	286/328
EBR	185	0.13	C (27)	0/22	341	0.40	D (40)	35/67	341	0.42	D (41)	41/73
WBL	672	0.73	B (12)	50/127	922	1.29	F (175)	358/315	928	1.22	F (143)	348/281
WBT	610	0.21	A (3)	14/35	1552	0.56	B (19)	182/160	1725	0.60	B (18)	203/167
NBL	66	0.27	E (65)	11/17	353	0.68	E (63)	54/73	353	0.78	E (71)	56/73
NBR	371	0.26	E (66)	0/34	420	0.28	E (56)	0/36	436	0.29	E (59)	0/36

Existing Conditions: The intersection operates within capacity, with acceptable delays, and an overall LOS of 'C' during the weekday AM and PM peak hours. No critical movements have been identified under existing conditions.

Future Background Conditions: Despite signal optimization, capacity constraints are expected during both AM and PM peak hours. Notably, the EBR and WBL movements during the AM peak hour and EBT and WBL movements during the PM peak hour are expected to operate with a LOS of 'F' and with v/c ratios

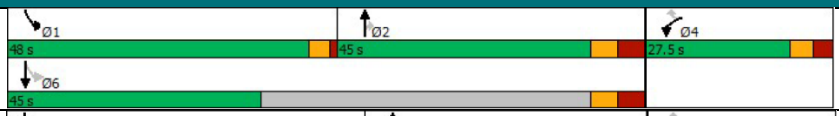
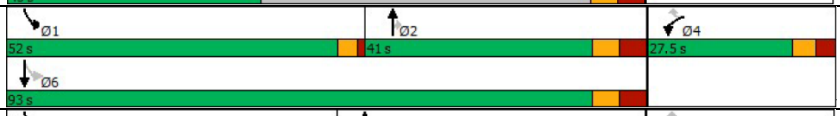
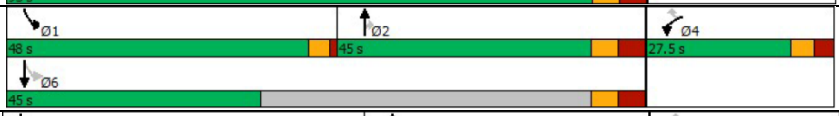
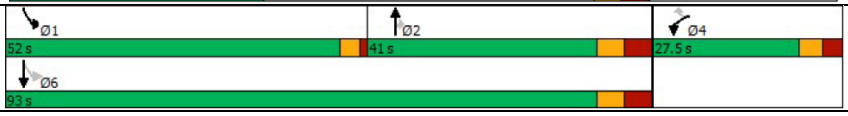
greater than 1. This can be attributed to the high volumes added along Teston Road and from background traffic.

Future Total Conditions: The AM peak hour continues to operate similarly to future background conditions. No new constraints have been identified as a result of site traffic. During the PM peak hour, site traffic is expected to increase the delays and v/c ratios for the EBT and WBL movements. However, these congested conditions were identified in future background due to background growth and background development traffic. No new constraints have been identified as a result of site traffic.

7.1.6 Cityview Boulevard & Highway 400 SB Ramps

To improve traffic conditions and accommodate future traffic growth at the intersection, signal timing plans were optimized during both peak hours, while maintaining the cycle length of 120.5 seconds. The signal timing optimizations are summarized in **Table 7-11**.

Table 7-11: Signal Timing Optimizations, Cityview Boulevard & Highway 400 SB Ramps

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	120.5	
2031 Weekday AM (Optimized)	120.5	
Existing Weekday PM	120.5	
2031 Weekday PM (Optimized)	120.5	

The intersection capacity analysis at Cityview Boulevard & Highway 400 SB Ramps is summarized in **Table 7-12** for the weekday AM and PM peak hours.

Table 7-12: Intersection Capacity Analysis, Cityview Boulevard & Highway 400 SB Ramps

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.83	B (20)	-/-	**-**	**1.19**	**F (82)**	**-/-**	**-**	**1.19**	**F (83)**	**-/-**
WBL	115	0.30	D (39)	11/23	115	0.31	D (46)	13/22	115	0.31	D (46)	13/22
WBR	170	0.13	D (38)	0/20	541	0.37	D (48)	0/38	541	0.37	D (48)	0/38
NBT	266	0.21	B (20)	18/40	268	0.26	C (31)	24/40	268	0.26	C (31)	24/40
NBR	314	0.23	C (21)	0/22	314	0.22	C (31)	0/23	314	0.22	C (31)	0/23
SBL	706	0.89	B (19)	46/119	**1260**	**1.27**	**F (143)**	**351/488**	**1261**	**1.27**	**F (143)**	**352/489**
SBT	296	0.13	A (4)	8/17	301	0.12	A (4)	8/16	301	0.12	A (4)	8/16

PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.64	B (14)	-/-	-	0.89	C (29)	-/-	-	0.89	C (30)	-/-
WBL	64	0.15	C (32)	5/13	64	0.17	D (45)	7/14	64	0.17	D (45)	7/14
WBR	168	0.13	C (33)	0/19	453	0.30	D (47)	0/33	453	0.30	D (47)	0/33
NBT	306	0.21	B (15)	17/39	349	0.31	C (29)	32/51	365	0.34	C (31)	34/53
NBR	172	0.13	B (15)	0/15	172	0.12	C (27)	0/17	172	0.12	C (29)	0/17
SBL	476	0.71	A (10)	25/65	885	0.94	C (28)	78/225	890	0.95	C (29)	87/235
SBT	352	0.16	A (5)	9/21	355	0.13	A (4)	9/19	356	0.13	A (4)	9/19

Existing Conditions: The intersection operates within capacity, with acceptable delays, and an overall LOS of 'B' during the weekday AM and PM peak hours. No critical movements have been identified under existing conditions.

Future Background Conditions: Despite signal optimization, capacity constraints are expected during the AM peak hour. Notably, the SBL movement is expected to operate with a LOS of 'F' and with a v/c ratio greater than 1. This can be attributed to the high volumes added along Teston Road and from background traffic. Minor increases in delay and v/c ratios are expected during the PM peak hour. While the SBL movement is approaching capacity, no critical movements have been identified during the PM peak hour.

Future Total Conditions: The AM peak hour continues to operate similarly to future background conditions. No new constraints have been identified as a result of site traffic. It should be noted that site traffic adds only 1 trip to the SBL movement. Minor increases in delay and v/c ratios are expected during the PM peak hour. No new constraints have been identified as a result of site traffic.

7.2 INTERSECTIONS OF INTEREST

The sections below outline the intersection capacity analysis results for intersections of interest. This includes intersections experiencing constraints; however, can be mitigated through recommended improvements. To note, the remaining intersections not identified in this section operate under acceptable conditions and are further discussed in **Section 7.3.**

7.2.1 Keele Street & Kirby Road

As per the City of Vaughan TMP (2023), Kirby Road is planned to widen from 2 lanes to 4 lanes between Jane Street to Dufferin Street and extend as a 4-lane road (2 lanes per direction) between Dufferin Street to Bathurst Street. As such, an additional east-west through lane was included in the analysis. To accommodate background traffic, dedicated left-turn lanes were also included for all approaches under the assumption that this improvement would occur as part of the Kirby widening.

Furthermore, to improve traffic conditions at the intersection, signal timing plans were optimized during both peak hours while maintaining the overall cycle length. The signal timing optimizations are summarized in **Table 7-13**.

Table 7-13: Signal Timing Optimizations, Keele Street & Kirby Road

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	120	
2031 Weekday AM (Optimized)	120	
Existing Weekday PM	120	
2031 Weekday PM (Optimized)	120	

The intersection capacity analysis at Keele Street & Kirby Road is summarized in **Table 7-14** for the weekday AM and PM peak hours.

Table 7-14: Intersection Capacity Analysis, Keele Street & Kirby Road

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.47	C (25)	-/-	-	0.37	B (19)	-/-	-	0.67	C (33)	-/-
EBL	215	0.65	D (46)	48/73	53	0.24	B (18)	3/7	**245**	**0.97**	**F (81)**	**35/57**
EBTR					356	0.65	C (26)	12/16	463	0.74	D (42)	41/45
WBL	246	0.90	E (74)	61/101	84	0.45	D (42)	16/26	**192**	**0.97**	**F (99)**	**38/68**
WBT					292	0.54	D (48)	34/44	337	0.55	D (46)	39/51
WBR	49	0.04	D (35)	0/10								
NBL	301	0.18	A (7)	11/16	63	0.14	A (5)	2/8	117	0.55	C (23)	19/30
NBT					318	0.14	A (4)	2/7	346	0.16	A (5)	22/2
NBR	58	0.04	A (5)	0/3								
SBL	642	0.32	A (10)	38/53	39	0.06	A (8)	3/10	39	0.07	B (10)	4/10
SBT					676	0.29	A (10)	36/59	1142	0.52	B (15)	80/113
SBR	49	0.04	A (8)	0/5								

PM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.55	C (30)	-/-	-	0.46	B (19)	-/-	-	0.95	C (33)	-/-
EBL	332	0.96	F (81)	82/138	53	0.26	B (18)	5/9	283	0.87	D (49)	35/74
EBTR					478	0.51	B (18)	22/26	751	0.59	C (27)	59/72
WBL	265	0.90	E (70)	65/112	58	0.44	D (47)	13/25	111	0.87	F (88)	26/58
WBT					386	0.66	D (50)	48/59	460	0.64	D (46)	53/71
WBR	29	0.02	C (34)	0/6								
NBL	665	0.38	A (9)	24/30	179	0.28	A (7)	10/15	456	0.92	D (37)	70/128
NBT					834	0.37	A (8)	22/28	1112	0.59	B (16)	45/76
NBR	255	0.17	A (5)	0/5								
SBL	354	0.20	A (10)	21/29	36	0.12	B (17)	5/15	36	0.28	D (38)	7/18
SBT					375	0.21	B (17)	26/47	614	0.59	D (39)	70/91
SBR	28	0.02	A (9)	0/3								

Existing Conditions: The signalized intersection operates within capacity, with acceptable delays and an overall LOS of 'C' during both weekday AM and PM peak hours. While the WBLT movement operates with an LOS of 'E' in both AM and PM peak hours, there is residual capacity, and the delays are acceptable. In the PM peak hour, the EBLTR movement operates with an LOS of 'F', but again has residual capacity and acceptable delay.

Future Background Conditions: With signal optimization and widening of Kirby Road, the intersection operates well under future background conditions with acceptable delays and an overall LOS of 'C' or better during both peak hours. No critical movements have been identified.

Future Total Conditions: The intersection is expected to operate within capacity, with acceptable delays, and with an LOS of 'C' for both the AM and the PM peak hour. While the EBL movement during the AM peak hour and the WBL movement in both peak hours have an LOS of 'F', the delays are acceptable and both movements have residual capacity. No constraints have been identified as a result of site traffic.

7.2.2 Keele Street & Vista Gate

As part of the Block 27 collector road network, Vista Gate is proposed to extend west into the Block. As such, a new west leg was included under future total conditions. As part of this work, exclusive left-turn lanes were added to the northbound, southbound, and eastbound approaches.

Additionally, the intersection of Keele Street & Vista Gate will act as the primary access between the future Kirby GO station and the arterial road network. As such, signalization of this intersection is recommended to better facilitate traffic flow to/from the GO station. The recommended signal timing plans under future conditions are summarized in **Table 7-15**. Furthermore, an exclusive right-turn lane was added to the southbound leg to accommodate the traffic going to the Kirby GO Station. The other approaches have shared through-right lanes.

Table 7-15: Recommended Signal Timing Plans, Keele Street & Vista Gate

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	-	-
2031 Weekday AM (New)	120	
Existing Weekday PM	-	-
2031 Weekday PM (New)	120	

The intersection capacity analysis at Keele Street & Vista Gate is summarized in **Table 7-16** for the weekday AM and PM peak hours.

Table 7-16: Intersection Capacity Analysis, Keele Street & Vista Gate

AM	Existing (TWSC)				Future Background (TWSC)				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	-	- (2)	-/-	-	-	- (1)	-/-	-	0.41	B (19)	-/-
EBL	n/a				n/a				16	0.08	D (49)	4/9
EBTR									**339**	**0.23**	**F (85)**	**0/26**
WBL	56	0.21	C (20)	-/1	56	0.17	C (18)	-/1	56	0.17	D (41)	12/19
WBTR	31	0.04	A (10)	-/0	31	0.04	A (10)	-/0	31	0.02	D (39)	0/0
NBL	n/a				n/a				221	0.44	A (8)	12/58
NBT	344	0.00	(0)	-/0	366	0.00	(0)	-/0	472	0.19	A (3)	13/48
NBR	40	0.00	(0)	-/0	40	0.00	(0)	-/0				
SBL	23	0.02	A (8)	-/0	23	0.02	A (8)	-/0	23	0.05	A (8)	2/4
SBT	672	0.00	A (0)	-/0	709	0.00	A (0)	-/0	745	0.36	A (9)	31/48
SBR	n/a				n/a				550	0.43	A (4)	2/6
PM	**Existing (TWSC)**				**Future Background (TWSC)**				**Future Total**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	-	- (2)	-/-	-	-	- (2)	-/-	-	0.63	B (15)	-/-
EBL	n/a				n/a				353	0.82	D (49)	84/92
EBTR									440	0.45	D (45)	20/43
WBL	38	0.25	D (34)	-/1	38	0.24	D (35)	-/1	38	0.09	C (34)	7/15
WBTR	39	0.08	B (12)	-/0	39	0.07	B (12)	-/0	39	0.03	C (33)	0/8
NBL	n/a				n/a				313	0.55	A (6)	15/25
NBT	871	0.00	(0)	-/0	965	0.00	(0)	-/0	1243	0.54	A (3)	29/26
NBR	76	0.00	(0)	-/0	76	0.00	(0)	-/0				
SBL	33	0.05	B (11)	-/0	33	0.05	B (11)	-/0	33	0.17	A (7)	1/4
SBT	360	0.00	A (0)	-/0	388	0.00	A (0)	-/0	459	0.20	A (5)	11/24
SBR	n/a				n/a				243	0.15	A (2)	0/5

Existing Conditions: The unsignalized intersection operates within capacity and with acceptable delays during both weekday AM and PM peak hours. No critical movements have been identified.

Future Background Conditions: The intersection continues to operate similarly to existing conditions during both weekday AM and PM peak hours. No new constraints have been identified.

Future Total Conditions: With signalization and the addition of site traffic, the intersection is expected to experience some increases in delay and v/c ratios. Notably, the EBTR movement is expected to operate with a LOS of F' for the AM peak hour, however the movement operates well within capacity for both peak hours. To note, there are no eastbound through movements forecasted at the intersection. Given a constraint in the model, the EBTR was modelled as an EBR within synchro to reflect how the intersection is anticipated to be used.

Furthermore, while the EBL movement is operating under capacity, it is understood that staff are concerned with potential delays for the movement which would result in GO commuter traffic using alternative routes to carry trips east along Kirby Road, thus infiltrating through the existing residential neighbourhood to the east of Keele Street on Vista Gate. It should be noted that the potential for traffic infiltration is limited given that there is no significant existing or planned population located east or north of the proposed GO station within its expected catchment area. Furthermore, the anticipated delay for the EBL movement indicates that all vehicles can progress through the intersection within 1 cycle.

7.2.3 Keele Street & North Maple Regional Park/Street 8

As part of the Block 27 collector road network, Street 8 is proposed as a 4-lane roadway, extending south from Kirby Road turning east to connect with the North Maple Regional Park access at Keele Street. As such, a new west leg was included under future conditions. Furthermore, consistent with the North Maple Regional Park improvements, a new northbound right-turn lane was included in this analysis as a background improvement.

Furthermore, signalization of this intersection is recommended to better facilitate traffic flow to/from the block. The recommended signal timing plans under future conditions are summarized in **Table 7-17**.

Table 7-17: Recommended Signal Timing Plans, Keele Street & North Maple Regional Park/Street 8

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	-	-
2031 Weekday AM (New)	120	
Existing Weekday PM	-	-
2031 Weekday PM (New)	120	

The intersection capacity analysis at Keele Street & North Maple Regional Park/Street 8 is summarized in **Table 7-18** for the weekday AM and PM peak hours.

Table 7-18: Intersection Capacity Analysis, Keele Street & North Maple Regional Park/Street 8

AM	Existing (TWSC)				Future Background (TWSC)				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	-	- (0)	-/-	-	-	- (0)	-/-	-	0.67	B (11)	-/-
EBL	n/a				n/a				4	0.01	D (38)	1/4
EBTR									280	0.79	E (58)	57/82
WBL	5	0.02	C (20)	-/0	6	0.02	C (19)	-/0	6	0.02	D (38)	1/5
WBTR	1	0.00	A (10)	-/0	2	0.00	A (10)	-/0	2	0.00	D (38)	0/0
NBL	n/a				n/a				24	0.15	A (9)	2/8
NBT	429	0.00	(0)	-/0	451	0.00	(0)	-/0	863	0.35	A (9)	44/70
NBR	6	0.00	(0)	-/0	7	0.00	(0)	-/0	7	0.00	A (6)	0/0
SBL	2	0.00	A (8)	-/0	3	0.00	A (8)	-/0	1496	0.63	A (3)	55/17
SBTR	951	0.00	A (0)	-/0	987	0.00	A (0)	-/0				
PM	Existing (TWSC)				Future Background (TWSC)				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	-	- (0)	-/-	-	-	- (1)	-/-	-	0.75	B (16)	-/-
EBL	n/a				n/a				5	0.02	D (43)	1/4
EBTR									322	0.73	E (59)	37/65
WBL	2	0.02	E (37)	-/0	9	0.08	E (39)	-/0	9	0.04	D (43)	2/6
WBTR	0	0.00	A (0)	-/0	15	0.03	B (13)	-/0	15	0.01	D (43)	0/0
NBL	n/a				n/a				121	0.39	A (9)	7/17
NBT	1103	0.00	(0)	-/0	1190	0.00	(0)	-/0	1936	0.72	B (11)	125/211
NBR	3	0.00	(0)	-/0	33	0.00	(0)	-/0	33	0.02	A (5)	0/4
SBL	1	0.00	B (11)	-/0	15	0.03	B (11)	-/0	1263	0.61	B (12)	56/116
SBTR	501	0.00	A (0)	-/0	519	0.00	A (0)	-/0				

Existing Conditions: The unsignalized intersection operates well during both the weekday AM and PM peak hours, within capacity and with acceptable delays. No critical movements have been identified.

Future Background Conditions: The intersection continues to operate within capacity and with acceptable delays in the AM and PM peak hours. No critical movements have been identified.

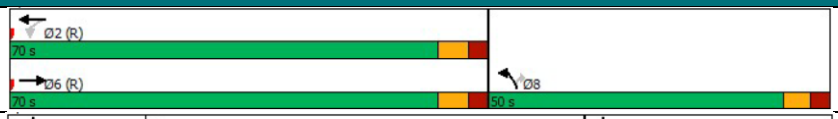
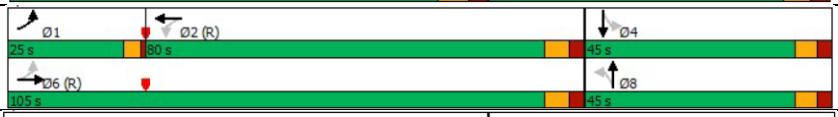
Future Total Conditions: With signalization and the addition of site traffic, the intersection is expected to experience some increases in delay and v/c ratios, but still operates with and LOS of 'B' for both peak hours. The EBTR movement during both peak hours is expected to operate with a LOS of 'E', however there is residual capacity for both peak hours and the delays are acceptable.

7.2.4 Teston Road & St Joan of Arc Avenue/Street 6

As part of the Block 27 collector road network, Street 6 is proposed as a 2-lane roadway, north from Teston Road. As such, a new north leg was included under future conditions and dedicated left-turn lanes are recommended for the eastbound and southbound approaches.

Furthermore, to improve signal coordination along Teston Road, signal timing plans were optimized during both peak hours. This included increasing the cycle length to 150 seconds. Signal timings were further optimized in the future total scenario to accommodate an EBL turning phase. The signal timing optimizations are summarized in **Table 7-19**.

Table 7-19: Signal Timing Optimizations, Teston Road & St Joan of Arc Avenue/Street 6

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	120	
2031 Weekday AM (Optimized)	150	
Existing Weekday PM	120	
2031 Weekday PM (Optimized)	150	

The intersection capacity analysis at Teston Road & St Joan of Arc Avenue/Street 6 is summarized in **Table 7-20** for the weekday AM and PM peak hours.

Table 7-20: Intersection Capacity Analysis, Teston Road & St Joan of Arc Avenue/Street 6

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.37	A (10)	-/-	-	0.45	A (8)	-/-	-	0.60	C (21)	-/-
EBL	n/a				n/a				126	0.41	B (19)	6/31
EBTR	816	0.32	A (5)	28/35	1175	0.42	A (1)	1/5	1358	0.50	A (7)	40/101
WBL	44	0.10	A (5)	3/8	44	0.14	A (4)	3/7	44	0.19	B (15)	6/12
WBTR	752	0.29	A (5)	28/47	1052	0.37	A (5)	53/66	1289	0.54	B (19)	100/242
NBL	138	0.63	D (55)	34/52	138	0.70	E (74)	42/64	**138**	**0.85**	**F (93)**	**43/65**
NBTR	37	0.03	D (45)	0/10	37	0.03	E (59)	0/11	37	0.02	D (53)	0/0
SBL	n/a				n/a				158	0.76	E (76)	48/70
SBTR									136	0.09	D (54)	0/0
PM	**Existing**				**Future Background (Optimized)**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.41	A (6)	-/-	-	0.57	A (4)	-/-	-	0.78	B (17)	-/-
EBL	n/a				n/a				190	0.77	D (36)	40/52
EBTR	1094	0.41	A (4)	37/45	1748	0.58	A (2)	8/14	1983	0.71	C (20)	232/264
WBL	39	0.12	A (4)	2/8	39	0.23	A (3)	0/2	39	0.42	A (8)	0/0
WBTR	970	0.35	A (4)	31/66	1415	0.47	A (2)	8/88	1818	0.78	A (3)	6/13
NBL	65	0.43	D (53)	16/28	65	0.50	E (69)	20/34	65	0.45	E (62)	19/34
NBTR	26	0.02	D (50)	0/8	26	0.02	E (64)	0/9	26	0.02	E (56)	0/0
SBL	n/a				n/a				137	0.76	E (79)	42/64
SBTR									122	0.08	E (57)	0/0

Existing Conditions: The signalized intersection operates within capacity, with acceptable delays, and an overall LOS of 'A' during both AM and PM peak hours. No critical movements have been identified.

Future Background Conditions: With signal optimization, the intersection continues to operate within capacity, with acceptable delays, and an overall LOS of 'A' during both AM and PM peak hours. While the NBL and NBR movements experience an LOS of 'E' during both peak hours, both have residual capacity, and the delays are acceptable.

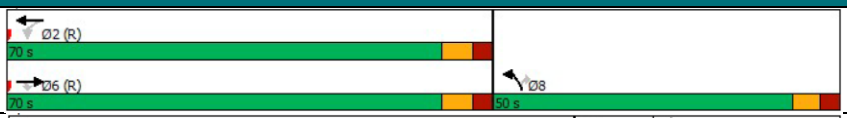
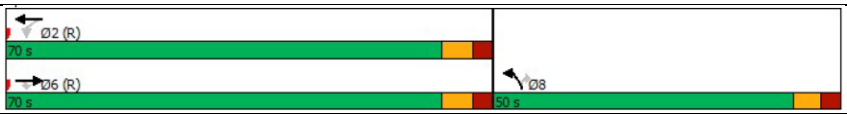
Future Total Conditions: With the addition of site traffic, the intersection continues to operate within capacity, with acceptable delays, and an overall LOS of 'C' or better during both AM and PM peak hours. In the AM peak hour, the NBL and SBL movements experience an LOS of 'E' or 'F'; however, both movements have acceptable delay and residual capacity. In addition, the congestion experienced by the NBL movement begins to appear in the future background conditions. In the PM peak hour, all the northbound and southbound movements experience an LOS of 'E' or 'F', but all have residual capacities and acceptable delays.

7.2.5 Teston Road & Cranston Park Avenue/Street 5

As part of the Block 27 collector road network, Street 5 is proposed as a 4-lane roadway, north from Teston Road. As such, a new north leg was included under future conditions with dedicated southbound left- and right-turn lanes. Furthermore, an eastbound left-turn lane and dedicated northbound through and right-turn lanes are recommended to accommodate the additional traffic using Cranston Park Avenue.

Furthermore, to improve signal coordination along Teston Road, signal timing plans were optimized during both peak hours. This included increasing the cycle length to 150 seconds. Signal timings were further optimized in the future total scenario to accommodate NBL and SBL turning phases. The signal timing optimizations are summarized in **Table 7-21**.

Table 7-21: Signal Timing Optimizations, Teston Road & Cranston Park Avenue/Street 5

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	120	
2031 Weekday AM (Optimized)	150	
Existing Weekday PM	120	
2031 Weekday PM (Optimized)	150	

The intersection capacity analysis at Teston Road & Cranston Park Avenue/Street 5 is summarized in **Table 7-22** for the weekday AM and PM peak hours.

Table 7-22: Intersection Capacity Analysis, Teston Road & Cranston Park Avenue

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.41	B (10)	-/-	-	0.46	A (8)	-/-	-	0.59	B (13)	-/-
EBL	n/a				n/a				89	0.48	B (11)	3/8
EBT	760	0.31	A (6)	33/55	1117	0.40	A (2)	7/8	1321	0.51	A (5)	19/170
EBR	81	0.06	A (5)	1/7	81	0.06	A (0)	0/0	81	0.06	A (0)	0/0
WBL	21	0.06	A (4)	1/4	21	0.07	A (2)	1/2	36	0.17	A (4)	1/3
WBTR	869	0.36	A (5)	27/47	1169	0.42	A (3)	22/34	1441	0.56	A (5)	31/36
NBL	159	0.67	D (55)	41/59	159	0.72	E (74)	49/71	159	0.63	E (59)	44/61
NBT	n/a				n/a				0	0.00	A (0)	0/0
NBR	46	0.04	D (44)	0/11	46	0.03	E (57)	0/12	84	0.11	D (49)	5/19
SBL	n/a				n/a				69	0.49	E (66)	21/35
SBT									0	0.00	A (0)	0/0
SBR									177	0.60	E (70)	27/50
PM	**Existing**				**Future Background (Optimized)**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.41	A (7)	-/-	-	0.62	A (8)	-/-	-	0.89	C (21)	-/-
EBL	n/a				n/a				55	0.74	B (14)	2/3
EBT	1069	0.40	A (6)	38/80	1680	0.59	A (4)	24/8	1808	0.88	A (9)	37/36
EBR	202	0.15	A (4)	4/15	202	0.15	A (0)	0/0	202	0.19	A (1)	1/1
WBL	32	0.10	A (4)	2/5	32	0.21	A (6)	2/4	79	0.60	E (71)	10/19
WBT	939	0.35	A (4)	29/44	1379	0.49	A (4)	34/49	1737	0.75	A (4)	18/20
NBL	92	0.46	D (51)	23/35	165	0.74	E (74)	50/74	171	0.50	D (48)	42/63
NBT	n/a				n/a				**318**	**0.90**	**F (85)**	**97/148**
NBR	35	0.03	D (46)	0/9	35	0.06	E (57)	2/13	235	0.54	E (57)	38/69
SBL	n/a				n/a				**140**	**0.88**	**F (88)**	**33/59**
SBT									47	0.14	D (52)	12/25
SBR									208	0.49	E (57)	33/62

Existing Conditions: The signalized intersection operates within capacity, with acceptable delays and an overall LOS of 'B' or better for both weekday AM and PM peak hours. No critical movements have been identified.

Future Background Conditions: The signalized intersection continues to operate within capacity, with acceptable delays and an LOS of 'A' or better for both AM and PM peak hours. While the NBL and NBR movements experience an LOS of 'E' in the AM peak hour, both movements have residual capacity. In the PM peak hour, the NBL and NBR movements also have an LOS of 'E', but again has residual capacity.

Future Total Conditions: Despite the addition of the site traffic, the intersection continues to operate within capacity and with an LOS of 'C' or better for both AM and PM peak hours. In the AM peak hour, similar to future background conditions, the NBL experiences an LOS of 'E' but has residual capacity. In the PM peak hour, the increase in traffic is greater: the WBL, NBT, NBR, SBL, and SBR movements all have an LOS of 'E' or 'F', but all have residual capacity, and the delays are acceptable for all movements to progress through the intersection within 1 cycle.

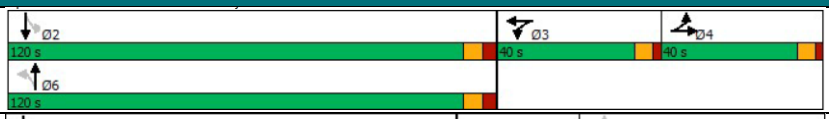
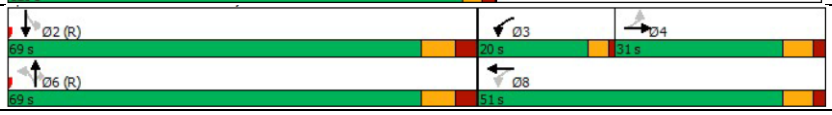
7.2.6 Jane Street & Kirby Road

As per the City of Vaughan TMP (2023), Kirby Road is planned to widen from 2 lanes to 4 lanes between Jane Street to Dufferin Street and extend as a 4-lane road between Dufferin Street to Bathurst Street. Furthermore, as per the City of Vaughan NVNC TMP (2018), Jane Street is planned to widen from 2 lanes to 4 lanes between Teston Road and Kirby Road. As such, an additional through lane was added to the southbound, eastbound, and westbound approaches.

To accommodate background traffic, dedicated left-turn lanes were included for all approaches and a dedicated right-turn lane was included for the northbound approach under the assumption that these improvements would occur as part of the Kirby and Jane widening.

Furthermore, to aid with signal coordination along Kirby Road, signal timing plans were optimized during both peak hours. This included setting the cycle length to 120 seconds under the future background scenario. Signal timings were further optimized in the future total scenario to accommodate a westbound left-turn phase in the PM peak hour. The signal timing optimizations are summarized in **Table 7-23**.

Table 7-23: Signal Timing Optimizations, Jane Street & Kirby Road

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	200	
2031 Weekday AM (Optimized)	120	
Existing Weekday PM	200	
2031 Weekday PM (Optimized)	120	

The intersection capacity analysis at Jane Street & Kirby Road is summarized in **Table 7-24** for the weekday AM and PM peak hours.

Table 7-24: Intersection Capacity Analysis, Jane Street & Kirby Road

AM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.76	D (44)	-/-	-	0.45	C (26)	-/-	-	0.47	C (27)	-/-
EBL	206	0.74	E (61)	54/96	71	0.42	D (46)	16/30	71	0.39	D (45)	16/29
EBTR					458	0.73	D (52)	52/66	527	0.76	D (52)	57/73
WBL	276	0.65	D (46)	69/141	128	0.54	D (39)	16/31	129	0.57	D (38)	17/23
WBTR					272	0.26	C (21)	15/21	282	0.26	B (19)	17/13
NBL	206	0.32	C (27)	37/63	72	0.20	B (11)	8/19	120	0.35	B (15)	10/24
NBT					144	0.13	A (9)	16/30	168	0.16	B (12)	13/31
NBR					60	0.04	A (7)	0/1	149	0.10	C (21)	0/20
SBL	586	0.84	D (44)	149/223	33	0.05	B (11)	4/10	80	0.12	B (13)	9/20
SBTR					724	0.35	B (14)	48/70	740	0.36	B (15)	51/75

PM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.76	D (44)	-/-	-	0.52	C (26)	-/-	-	0.61	C (30)	-/-
EBL	218	0.75	E (60)	57/100	**124**	**0.94**	**F (106)**	**31/54**	124	0.77	E (66)	29/61
EBTR					502	0.62	D (44)	54/63	664	0.85	E (57)	68/99
WBL	288	0.67	D (46)	70/143	86	0.81	E (60)	10/17	150	0.65	D (49)	23/44
WBTR					442	0.59	C (26)	25/32	499	0.42	C (28)	36/46
NBL	584	0.84	D (43)	143/216	149	0.21	A (5)	6/9	225	0.41	B (11)	18/26
NBT					484	0.38	A (6)	47/24	537	0.51	B (11)	44/54
NBR					133	0.09	A (2)	0/1	163	0.11	A (4)	0/1
SBL	196	0.31	C (27)	36/62	18	0.04	A (7)	1/6	40	0.12	B (15)	5/12
SBTR					292	0.12	A (8)	12/24	347	0.18	B (14)	22/32

Existing Conditions: The signalized intersection operates within capacity, with acceptable delays and an overall LOS of 'D' during both AM and PM peak hours. The eastbound movements experience moderate congestion in both peak hours with an LOS of 'E', though both movements have residual capacity.

Future Background Conditions: With the widening of both Jane Street and Kirby Road, signalization optimization, and despite the addition of future background traffic, the intersection operates well. Both the AM and PM peak hours have an LOS of 'C' and the intersection operates well within capacity. The EBL movement in the PM peak hour has an LOS of 'F', however, there is residual capacity, and the delays are acceptable.

Future Total Conditions: With the addition of the site traffic, the intersection continues to operate similarly to the future background. Both the AM and PM peak hours are within capacity and have an LOS of 'C' or better. The EBL movement continues to operate with a LOS of 'E' during the PM peak hour, but the delay is acceptable and there is residual capacity.

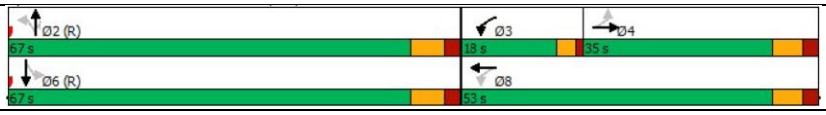
7.2.7 Jane Street & Street 1/Street 4 (Block 34E)

As previously mentioned, Jane Street is planned to widen from 2 lanes to 4 lanes between Teston Road and Kirby Road. As such, an additional N/S through lane was added into the analysis. To accommodate background traffic, dedicated left-turn lanes were included for the northbound and eastbound approaches and a dedicated right-turn lane was included for the eastbound approach under the assumption that these improvements would occur as part of the Jane widening and Block 34E development.

As part of the Block 27 collector road network, Street 1 is proposed as a 2-lane roadway, east from Jane Street. As such, a new east leg was included under future conditions with a dedicated westbound left-turn lane. It is also recommended that the eastbound approach modify to a shared eastbound through-right, the southbound approach to add a dedicated left-turn lane, and the northbound approach to add a dedicated right-turn lane in order to accommodate site traffic.

Furthermore, signalization of this intersection is recommended to better facilitate traffic flow to/from the Blocks. As part of the Jane widening, it is recommended that the cycle length be 120 seconds during both peak hours to improve signal coordination along Jane Street. Signal timings are recommended for optimization in the future total scenario to accommodate a westbound left-turn phase in the AM peak hour. The optimized signal timings under future conditions are summarized in **Table 7-25**.

Table 7-25: Signal Timing Optimizations, Jane Street & Street 1/Street 4 (Block 34E)

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	-	-
2031 Weekday AM (Optimized)	120	
Existing Weekday PM	-	-
2031 Weekday PM (Optimized)	120	

The intersection capacity analysis at Jane Street & Street 1/Street 4 (Block 34E) is summarized in **Table 7-26** for the weekday AM and PM peak hours.

Table 7-26: Intersection Capacity Analysis, Jane Street & Street 1/Street 4 (Block 34E)

AM	Existing				Future Background				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				-	0.29	A (2)	-/-	-	0.53	B (15)	-/-
EBL					1	0.01	D (53)	0/2	1	0.01	D (53)	0/2
EBTR					10	0.01	D (53)	0/5	16	0.03	D (53)	1/7
WBL					n/a				246	0.88	E (70)	77/61
WBTR									31	0.02	D (39)	0/7
NBL					88	0.20	A (4)	0/18	88	0.27	B (11)	3/21
NBT					275	0.10	A (2)	0/18	407	0.17	A (7)	8/27
NBR					n/a				127	0.08	A (5)	0/8
SBL					n/a				20	0.03	A (4)	1/4
SBTR					934	0.31	A (2)	0/29	978	0.40	A (5)	16/56
PM	**Existing**				**Future Background**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				-	0.23	A (5)	-/-	-	0.35	A (9)	-/-
EBL					13	0.09	D (50)	3/8	13	0.08	D (45)	3/8
EBTR					54	0.04	D (49)	0/11	59	0.06	D (45)	1/12
WBL					n/a				108	0.60	D (55)	26/40
WBTR									64	0.05	D (48)	1/13
NBL					22	0.03	A (3)	1/4	34	0.06	A (3)	1/3
NBT					726	0.25	A (3)	19/32	826	0.30	A (3)	13/18
NBR					n/a				146	0.09	A (1)	0/1
SBL					n/a				56	0.12	A (3)	2/6
SBTR					508	0.18	A (3)	5/38	694	0.26	A (3)	18/32

Existing Conditions: This intersection is not present under existing conditions.

Future Background Conditions: The signalized intersection is newly constructed and has background traffic added under future background conditions. It performs within capacity with acceptable delays, and

an overall LOS of 'A' during both weekday AM and PM peak hours. No critical movements have been identified.

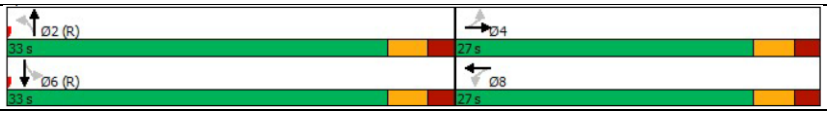
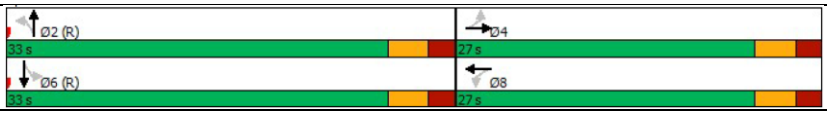
Future Total Conditions: With the addition of site traffic, the intersection continues to operate similarly as the future background, with an LOS of 'B' or better for both AM and PM peak hours. The WBL movement in the AM peak hour experiences some congestion with an LOS of 'E', but there is residual capacity, and the delay is acceptable.

7.2.8 Street 8 & Vista Gate

Street 8 & Vista Gate is proposed as a new intersection as part of the Block 27 collector road network. Both Street 8 and Vista gate are proposed as 4-lane major collectors. As such, the recommended lane configuration for Vista Gate is 2 through-lanes in each direction, with an eastbound left-turn lane to accommodate traffic exiting the Kirby GO station. For Street 8, a dedicated left-turn lane is recommended for the northbound approach.

Furthermore, signalization of this intersection is recommended to better facilitate traffic flow to/from the GO station. A cycle length of 60 seconds is recommended. The recommended signal timing plans under future conditions are summarized in **Table 7-27**.

Table 7-27: Recommended Signal Timing Plans, Street 8 & Vista Gate

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	-	-
2031 Weekday AM (New)	60	
Existing Weekday PM	-	-
2031 Weekday PM (New)	60	

The intersection capacity analysis at Street 8 & Vista Gate is summarized in **Table 7-28** for the weekday AM and PM peak hours.

Table 7-28: Intersection Capacity Analysis, Street 8 & Vista Gate

AM	Existing				Future Background				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.57	A (8)	-/-
EBL									204	0.64	B (11)	12/57
EBTR									369	0.17	A (5)	6/15
WBL									3	0.01	A (4)	0/1
WBTR									768	0.38	A (6)	27/58
NBL									38	0.19	C (22)	4/10
NBTR									10	0.02	B (20)	1/4
SBL									83	0.35	B (19)	8/13
SBTR									153	0.26	B (14)	6/9

PM	Existing				Future Background				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.67	A (9)	-/-
EBL									334	0.77	B (16)	23/88
EBTR									814	0.40	A (6)	19/43
WBL									17	0.06	A (4)	1/4
WBTR									538	0.26	A (5)	14/53
NBL									55	0.27	C (23)	6/13
NBTR									5	0.01	B (19)	0/2
SBL									91	0.36	C (21)	10/14
SBTR									129	0.10	B (15)	2/5

Existing Conditions: This intersection is not present under existing conditions.

Future Background Conditions: This intersection is not present under future background conditions.

Future Total Conditions: The signalized intersection is newly constructed under future total conditions. It performs within capacity with acceptable delays, and an overall LOS of 'A' during both weekday AM and PM peak hours. No critical movements have been identified.

7.2.9 Keele Street & Street 2

As part of the Block 27 collector road network, Street 2 is proposed as a 4-lane roadway, extending west from Keele Street. As such, a new west leg was included under future conditions. The recommended lane configuration at this intersection includes dedicated eastbound left- eastbound right- and northbound left-turn lanes.

Furthermore, signalization of this intersection is recommended to better facilitate traffic flow to/from the Block. A cycle length of 120 seconds is recommended to match other intersections along Keele Street and improve signal coordination. A northbound left-turn phase is recommended for both AM and PM peak hours. The recommended signal timing plans under future conditions are summarized in **Table 7-29**.

Table 7-29: Recommended Signal Timing Plans, Keele Street & Street 2

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	-	-
2031 Weekday AM (New)	120	
Existing Weekday PM	-	-
2031 Weekday PM (New)	120	

The intersection capacity analysis at Keele Street & Street 2 is summarized in **Table 7-30** for the weekday AM and PM peak hours.

Table 7-30: Intersection Capacity Analysis, Keele Street & Street 2

AM	Existing				Future Background				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.47	A (9)	-/-
EBL									8	0.04	D (48)	2/6
EBR									142	0.10	D (48)	0/17
NBL									138	0.46	C (28)	5/40
NBT									724	0.26	A (4)	20/46
SBTR									1313	0.53	A (5)	22/52
PM	Existing				Future Background				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.59	A (7)	-/-
EBL									10	0.05	D (47)	2/7
EBR									247	0.39	D (50)	11/34
NBL									253	0.58	A (9)	3/19
NBT									1690	0.60	A (2)	9/11
SBTR									1001	0.42	A (3)	18/21

Existing Conditions: This intersection is not present under existing conditions.

Future Background Conditions: This intersection is not present under future background conditions.

Future Total Conditions: The signalized intersection is newly constructed under future total conditions. It performs within capacity with acceptable delays, and an overall LOS of 'A' during both weekday AM and PM peak hours. No critical movements have been identified.

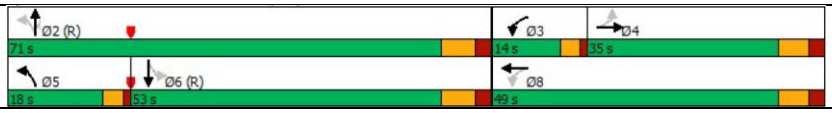
7.2.10 Jane Street & Street 3/Street 3 (Block 34E)

As previously mentioned, Jane Street is planned to widen from 2 lanes to 4 lanes between Teston Road and Kirby Road. As such, an additional N/S through lane was added into the analysis. To accommodate background traffic, dedicated left-turn lanes were included for the northbound and eastbound approaches and a dedicated right-turn lane was included for the eastbound approach under the assumption that these improvements would occur as part of the Jane widening and Block 34E development.

As part of the Block 27 collector road network, Street 3 is proposed as a 2-lane roadway, east from Jane Street. As such, a new east leg was included under future conditions with a dedicated westbound left-turn lane. It is also recommended that the eastbound approach modify to a shared eastbound through-right, the southbound approach to add a dedicated left-turn lane, and the northbound approach to add a dedicated right-turn lane in order to accommodate site traffic.

Furthermore, signalization of this intersection is recommended to better facilitate traffic flow to/from the Blocks. As part of the Jane widening, it is recommended that the cycle length be 120 seconds during both peak hours to improve signal coordination along Jane Street. Signal timings are recommended for optimization in the future total scenario to accommodate a westbound left-turn phase and a northbound left-turn phase during both peak hours. The optimized signal timings under future conditions are summarized in **Table 7-31**.

Table 7-31: Signal Timing Optimizations, Jane Street & Street 3/Street 3 (Block 34E)

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	-	-
2031 Weekday AM (Optimized)	120	
Existing Weekday PM	-	-
2031 Weekday PM (Optimized)	120	

The intersection capacity analysis at Jane Street & Street 3/Street 3 (Block 34E) is summarized in **Table 7-32** for the weekday AM and PM peak hours.

Table 7-32: Intersection Capacity Analysis, Jane Street & Street 3/Street 3 (Block 34E)

AM	Existing				Future Background				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				-	0.37	A (5)	-/-	-	0.69	B (16)	-/-
EBL					4	0.04	D (51)	1/4	4	0.05	D (51)	1/4
EBTR					33	0.02	D (51)	0/9	35	0.04	D (51)	1/9
WBL					n/a				229	0.91	E (78)	52/63
WBTR									39	0.04	D (38)	1/9
NBL					184	0.39	A (4)	7/24	184	0.57	B (14)	13/34
NBT					359	0.13	A (3)	9/24	669	0.28	A (8)	31/62
NBR					n/a				226	0.15	A (8)	1/13
SBL					n/a				34	0.08	A (5)	3/7
SBTR					941	0.38	A (4)	30/22	1192	0.59	A (9)	87/63
PM	**Existing**				**Future Background**				**Future Total (Optimized)**			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				-	0.38	B (12)	-/-	-	0.65	C (23)	-/-
EBL					22	0.12	D (48)	5/12	22	0.11	D (43)	5/12
EBTR					276	0.19	D (49)	0/23	344	0.80	E (64)	46/78
WBL					n/a				115	0.60	D (40)	21/33
WBTR									68	0.07	C (32)	4/13
NBL					260	0.40	A (4)	10/34	260	0.59	B (15)	27/48
NBT					729	0.26	A (4)	20/49	1121	0.50	B (15)	81/115
NBR					n/a				290	0.24	B (12)	13/32
SBL					n/a				87	0.40	C (22)	10/26
SBTR					554	0.24	A (5)	13/25	746	0.44	B (18)	34/48

Existing Conditions: This intersection is not present under existing conditions.

Future Background Conditions: The signalized intersection is newly constructed and has background traffic added under future background conditions. It performs within capacity, with acceptable delays,

and an overall LOS of 'B' or better during the weekday AM and PM peak hours. No critical movements have been identified.

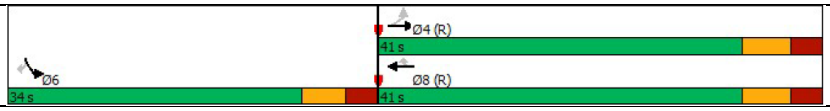
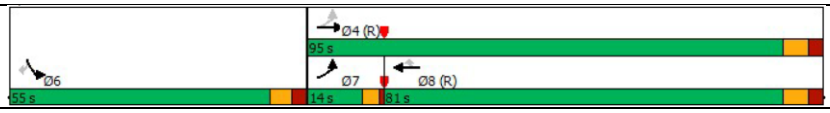
Future Total Conditions: With the addition of site traffic, the delays increase, though the intersection experiences an LOS of 'C' or better during the AM and PM peak hours. The WBL movement in the AM peak hour experiences some congestion with an LOS of 'F', but there is residual capacity, and the delay is acceptable. In the PM peak hour, while the EBTR movement has an LOS of 'E', the delay is acceptable and there is residual capacity.

7.2.11 Teston Road & Street 7

As part of the Block 27 collector road network, Street 7 is proposed as a 2-lane roadway, extending north from Teston Road. As such, a new north leg was included under future conditions. The recommended lane configuration at this intersection includes dedicated southbound left and right-turn lanes, a dedicated right-turn lane for the westbound approach, and a dedicated left-turn lane for the eastbound approach.

Furthermore, signalization of this intersection is recommended to better facilitate traffic flow to/from the Block. A cycle length of 75 - 150 seconds is recommended to match other intersections along Teston Road and improve signal coordination. An eastbound left-turn phase is recommended for the PM peak hour. The recommended signal timing plans under future conditions are summarized in **Table 7-33**.

Table 7-33: Recommended Signal Timing Plans, Teston Road & Street 7

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	-	-
2031 Weekday AM (New)	75	
Existing Weekday PM	-	-
2031 Weekday PM (New)	150	

The intersection capacity analysis at Teston Road & Street 7 is summarized in **Table 7-34** for the weekday AM and PM peak hours.

Table 7-34: Intersection Capacity Analysis, Teston Road & Street 7

AM	Existing				Future Background				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.69	B (11)	-/-
EBL									66	0.41	B (10)	3/5
EBT									1387	0.69	A (7)	33/38
WBT									1222	0.61	A (9)	52/107
WBR									190	0.15	A (7)	2/12
SBL									288	0.70	C (31)	39/55
SBR									58	0.11	C (22)	4/11

PM	Existing				Future Background				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.90	C (29)	-/-
EBL									118	0.75	E (75)	23/42
EBT									1856	0.81	B (15)	112/128
WBT									1757	0.89	C (31)	165/120
WBR									196	0.20	C (20)	21/17
SBL									426	0.90	E (72)	127/167
SBR									45	0.04	D (39)	1/11

Existing Conditions: This intersection is not present under existing conditions.

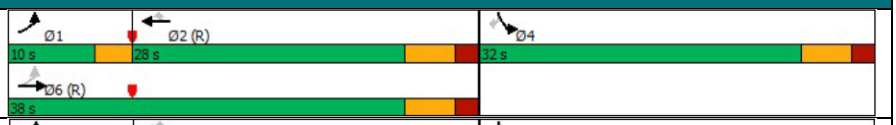
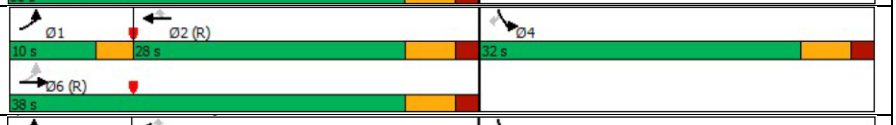
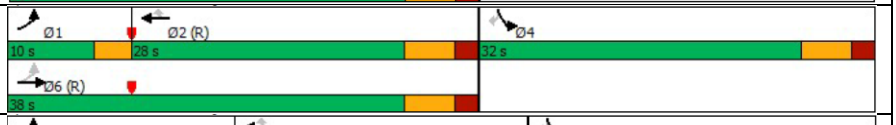
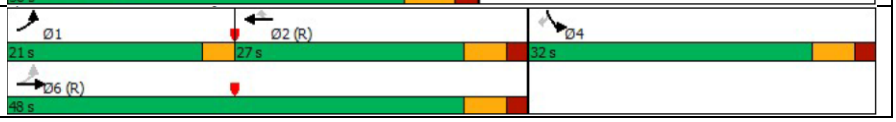
Future Background Conditions: This intersection is not present under future background conditions.

Future Total Conditions: The signalized intersection is newly constructed under future total conditions. It performs within capacity, with acceptable delays, and an overall LOS of 'C' or better during both weekday AM and PM peak hours. The SBL movement experiences an LOS of 'E' in the PM peak hour but has residual capacity and the delays are acceptable.

7.2.12 McNaughton Road & Cranston Park Avenue

Cranston Park Avenue is a major collector and the only north-south route between Keele Street and Jane Street. As such, it serves as a third option for Block 27 traffic travelling to or from the south. To improve traffic conditions and accommodate future traffic, signal timing plans were optimized for the PM peak hour. In particular, the cycle length was increased to allow for more green time for the EBL turning phase. The recommended signal timing plans under future conditions are summarized in **Table 7-35**.

Table 7-35: Recommended Signal Timing Plans, McNaughton Road & Cranston Park Avenue

Horizon	Cycle Length (s)	Signal Timing
Existing Weekday AM	70	
2031 Weekday AM	70	
Existing Weekday PM	70	
2031 Weekday PM (Optimized)	80	

The intersection capacity analysis at McNaughton Road & Cranston Park Avenue is summarized in **Table 7-36** for the weekday AM and PM peak hours.

Table 7-36: Intersection Capacity Analysis, McNaughton Road & Cranston Park Avenue

AM	Existing				Future Background				Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.59	B (15)	-/-	-	0.54	B (14)	-/-	-	0.54	B (14)	-/-
EBL	56	0.19	A (7)	3/10	56	0.15	A (6)	2/10	56	0.15	A (6)	2/10
EBT	288	0.32	A (7)	19/45	288	0.29	A (7)	16/47	288	0.29	A (7)	16/47
WBT	492	0.63	B (15)	57/129	492	0.57	B (14)	48/133	492	0.57	B (14)	48/133
WBR	103	0.11	A (9)	2/12	103	0.09	A (9)	1/12	103	0.09	A (9)	1/12
SBL	155	0.55	C (26)	24/30	155	0.51	C (26)	22/30	155	0.51	C (26)	22/30
SBR	154	0.12	C (23)	0/9	154	0.11	C (23)	0/11	154	0.11	C (23)	0/11
PM	Existing				Future Background (Optimized)				Future Total (Optimized)			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.41	B (11)	-/-	-	0.40	B (12)	-/-	-	0.54	B (14)	-/-
EBL	132	0.23	A (6)	5/20	218	0.34	A (6)	15/26	342	0.52	A (7)	23/39
EBT	373	0.36	A (7)	22/61	375	0.34	A (7)	32/53	389	0.35	A (7)	31/45
WBT	243	0.30	B (11)	20/50	243	0.29	B (12)	22/59	243	0.31	B (14)	24/61
WBR	170	0.13	A (10)	0/13	170	0.13	B (11)	0/15	544	0.41	B (16)	0/30
SBL	142	0.47	C (26)	20/28	142	0.52	C (31)	24/34	142	0.52	C (31)	24/34
SBR	52	0.04	C (23)	0/7	57	0.04	C (27)	0/8	108	0.08	C (27)	0/11

Existing Conditions: The signalized intersection operates within capacity, with acceptable delays, and an overall LOS of 'B' during both the weekday AM and PM peak hours. No critical movements have been identified.

Future Background Conditions: With the addition of future background traffic and optimization of the PM peak hour signal timing plan, the intersection continues to operate well. Both the AM and PM peak hours experience an LOS of 'B' with acceptable delays and within capacity. No critical movements have been identified.

Future Total Conditions: During the AM peak hour, the intersection continues to operate similarly to future background conditions with no issues. In the PM peak hour, the addition of a site traffic using McNaughton as a route to the Block increases the v/c ratios and delay; however, the intersection overall has an LOS of 'B' and is within capacity.

7.3 INTERSECTIONS OF NO CONCERN

The section below outlines the intersection capacity analysis results for all intersections of no concern. These intersections are expected to operate within capacity, with v/c ratios below 1.00, and with acceptable delays and queues. No constraints have been identified for the following intersections. The following intersections are summarized in **Table 7-37** to **Table 7-53**. Detailed analysis results are provided in **Appendix J** to **Appendix L**.

- Keele Street & Peak Point Boulevard
- Major Mackenzie Drive W & McNaughton Road/Avro Road
- Kirby Road & Street 4
- Kirby Road & Street 5

- Kirby Road & Street 6
- Kirby Road & Street 8
- Street 4 & Street 1
- Street 5 & Street 1
- Street 6 & Street 1
- Jane Street & Street 2
- Street 4 & Street 2
- Street 5 & Street 2
- Street 6 & Street 2
- Street 8 & Street 2
- Street 4 & Street 3
- Street 5 & Street 3
- Street 6 & Street 3/Street 7

Table 7-37: Intersection Capacity Analysis, Keele Street & Peak Point Boulevard

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.38	B (11)	-/-	-	0.37	B (11)	-/-	-	0.49	A (8)	-/-
WBL	166	0.69	E (56)	42/62	166	0.67	E (55)	40/58	166	0.67	E (55)	40/58
WBR	12	0.01	D (43)	0/6	12	0.01	D (43)	0/5	12	0.01	D (43)	0/5
NBT	373	0.15	A (5)	14/25	395	0.15	A (5)	13/25	682	0.26	A (2)	26/2
NBR	50	0.03	A (5)	0/4	50	0.03	A (4)	0/4	50	0.03	A (1)	0/0
SBLT	744	0.31	A (5)	22/33	781	0.31	A (5)	23/39	1156	0.45	A (4)	49/21
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.38	A (8)	-/-	-	0.37	A (8)	-/-	-	0.53	A (6)	-/-
WBL	96	0.50	D (51)	25/38	96	0.48	D (51)	23/36	96	0.48	D (51)	23/36
WBR	17	0.01	D (46)	0/6	17	0.01	D (46)	0/6	17	0.01	D (46)	0/6
NBT	919	0.35	A (5)	34/69	1014	0.36	A (5)	33/70	1528	0.54	A (2)	10/12
NBR	172	0.12	A (4)	0/8	172	0.11	A (4)	0/7	172	0.12	A (0)	0/0
SBLT	387	0.18	A (3)	10/17	415	0.17	A (3)	9/18	926	0.38	A (8)	59/91

Table 7-38: Intersection Capacity Analysis, Major Mackenzie Drive W & McNaughton Road/Avro Road

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.68	C (33)	-/-	-	0.64	C (31)	-/-	-	0.64	C (31)	-/-
EBL	175	0.57	C (20)	15/46	175	0.51	B (15)	14/31	175	0.51	B (15)	14/31
EBT	1073	0.49	B (16)	94/159	1073	0.45	B (14)	83/132	1073	0.45	B (14)	83/132
EBR	18	0.01	B (10)	0/0	18	0.01	A (9)	0/0	18	0.01	A (9)	0/0
WBL	140	0.42	B (12)	12/26	140	0.38	B (11)	11/22	140	0.38	B (11)	11/22
WBT	1300	0.65	C (24)	155/235	1300	0.60	C (21)	137/202	1300	0.60	C (21)	137/202
WBR	39	0.03	B (14)	0/4	39	0.03	B (13)	0/4	39	0.03	B (13)	0/4
NBL	6	0.06	E (56)	2/6	6	0.06	E (57)	2/6	6	0.06	E (57)	2/6
NBTR	235	0.76	E (74)	71/95	235	0.77	E (77)	67/93	235	0.77	E (77)	67/93
SBL	**79**	**0.89**	**F (124)**	**28/49**	**79**	**0.90**	**F (129)**	**26/50**	**79**	**0.90**	**F (129)**	**26/50**
SBT	216	0.70	E (69)	73/94	216	0.72	E (72)	70/93	216	0.72	E (72)	70/93
SBR	339	0.68	E (70)	45/79	339	0.64	E (69)	37/73	339	0.64	E (69)	37/73
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	-	0.72	C (35)	-/-	-	0.70	D (36)	-/-	-	0.76	D (40)	-/-
EBL	244	0.60	D (37)	47/83	261	0.58	C (32)	43/80	333	0.63	D (43)	81/125
EBT	1394	0.65	C (22)	159/237	1394	0.61	C (20)	145/217	1402	0.62	C (21)	148/220
EBR	9	0.01	B (13)	0/0	9	0.01	B (12)	0/0	9	0.01	B (12)	0/0
WBL	127	0.52	C (21)	12/24	127	0.47	B (20)	11/23	127	0.47	C (24)	11/23
WBT	1247	0.73	D (36)	176/237	1247	0.71	D (35)	166/222	1249	0.83	D (47)	188/233
WBR	70	0.06	C (22)	3/14	141	0.15	C (24)	15/33	207	0.25	C (32)	25/49
NBL	7	0.03	D (51)	2/6	7	0.03	D (52)	2/6	7	0.03	D (52)	2/6
NBTR	303	0.82	E (74)	94/122	303	0.81	E (74)	91/118	303	0.81	E (74)	91/118
SBL	27	0.33	E (57)	8/18	27	0.32	D (47)	6/13	27	0.32	D (49)	6/14
SBT	109	0.30	D (54)	33/48	109	0.30	D (46)	25/37	109	0.30	D (48)	26/40
SBR	194	0.14	D (52)	0/21	**199**	**0.14**	**F (101)**	**13/31**	250	0.22	E (79)	17/34

Table 7-39: Intersection Capacity Analysis, Kirby Road & Street 4

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (1)	-/-
NBL									2	0.01	C (16)	-/0
NBR									36	0.05	B (10)	-/0
WBL									15	0.02	A (9)	-/0

PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (1)	-/-
NBL									5	0.02	C (21)	-/0
NBR									71	0.10	B (11)	-/0
WBL									34	0.03	A (9)	-/0

Table 7-40: Intersection Capacity Analysis, Kirby Road & Street 5

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.19	A (4)	-/-
EBT									577	0.21	A (2)	11/8
EBR									18	0.01	A (0)	0/0
WBL									44	0.07	A (2)	1/5
WBT									397	0.15	A (2)	6/14
NBL									4	0.03	D (49)	1/4
NBR									46	0.03	D (49)	0/10
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.24	A (6)	-/-
EBT									631	0.23	A (2)	8/20
EBR									27	0.02	A (1)	0/0
WBL									95	0.17	A (3)	3/8
WBT									697	0.26	A (3)	12/24
NBL									7	0.04	D (48)	2/6
NBR									109	0.07	D (48)	0/15

Table 7-41: Intersection Capacity Analysis, Kirby Road & Street 6

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (1)	-/-
NBL									1	0.00	C (19)	-/0
NBR									111	0.16	B (11)	-/1
WBL									43	0.04	A (9)	-/0
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (2)	-/-
NBL									2	0.02	E (37)	-/0
NBR									158	0.25	B (13)	-/1
WBL									127	0.15	A (10)	-/1

Table 7-42: Intersection Capacity Analysis, Kirby Road & Street 8

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (2)	-/-
NBR									210	0.28	B (12)	-/1
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (3)	-/-
NBR									337	0.51	C (16)	-/3

Table 7-43: Intersection Capacity Analysis, Street 4 & Street 1

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (4)	-/-
NBLTR									116	0.24	B (14)	-/1
EBL									0	0.00	A (0)	-/0
WBL									5	0.01	A (9)	-/0
SBLTR									23	0.04	B (11)	-/0
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (5)	-/-
NBLTR									127	0.26	B (14)	-/1
EBL									8	0.01	A (8)	-/0
WBL									11	0.01	A (8)	-/0
SBLTR									46	0.09	B (12)	-/0

Table 7-44: Intersection Capacity Analysis, Street 5 & Street 1

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (9)	-/-
NBL									76	0.06	A (8)	-/0
EBLTR									177	0.27	B (12)	-/1
WBLTR									123	0.26	B (14)	-/1
SBL									10	0.01	A (7)	-/0
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (10)	-/-
NBL									131	0.10	A (8)	-/0
EBLTR									253	0.46	C (16)	-/2
WBLTR									110	0.40	C (24)	-/2
SBL									15	0.01	A (8)	-/0

Table 7-45: Intersection Capacity Analysis, Street 6 & Street 1

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (7)	-/-
EBL									112	0.13	A (9)	-/0
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (5)	-/-
EBL									160	0.19	A (10)	-/1

Table 7-46: Intersection Capacity Analysis, Jane Street & Street 2

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.38	A (3)	-/-
WBL									4	0.08	D (52)	1/4
WBR									30	0.02	D (51)	0/8
NBT									591	0.20	A (3)	15/30
NBR									115	0.08	A (2)	0/5
SBL									13	0.02	A (1)	0/1
SBT									1222	0.42	A (2)	19/44
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.31	A (3)	-/-
WBL									20	0.13	D (50)	5/11
WBR									43	0.03	D (49)	0/10
NBT									962	0.33	A (1)	4/7
NBR									229	0.15	A (0)	0/0
SBL									39	0.09	A (2)	1/4
SBT									814	0.28	A (2)	9/29

Table 7-47: Intersection Capacity Analysis, Street 4 & Street 2

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (8)	-/-
NBLTR									70	0.13	B (12)	-/1
EBL									67	0.05	A (7)	-/0
WBL									19	0.01	A (7)	-/0
SBLTR									141	0.28	B (14)	-/1

PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (14)	-/-
NBLTR									139	0.37	C (18)	-/2
EBL									136	0.10	A (8)	-/0
WBL									27	0.02	A (8)	-/0
SBLTR									191	0.61	D (30)	-/4

Table 7-48: Intersection Capacity Analysis, Street 5 & Street 2

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.40	A (9)	-/-
EBL									37	0.12	A (9)	2/8
EBTR									96	0.09	A (9)	2/8
WBL									46	0.13	A (9)	2/10
WBTR									241	0.13	A (9)	1/9
NBL									6	0.01	A (7)	0/2
NBTR									111	0.08	A (7)	1/7
SBL									268	0.63	B (12)	12/48
SBTR									106	0.08	A (7)	2/8
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.52	A (10)	-/-
EBL									62	0.24	B (11)	4/13
EBTR									189	0.18	B (10)	5/13
WBL									65	0.21	B (10)	4/13
WBTR									336	0.18	B (10)	2/10
NBL									21	0.05	A (7)	1/5
NBTR									326	0.20	A (7)	4/16
SBL									270	0.72	B (15)	14/66
SBTR									176	0.12	A (7)	3/12

Table 7-49: Intersection Capacity Analysis, Street 6 & Street 2

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.36	A (6)	-/-
EBTR									449	0.31	A (6)	6/21
WBL									92	0.34	A (7)	4/18
WBT									221	0.19	A (6)	4/15
NBLTR									146	0.39	A (9)	4/16

PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.44	A (8)	-/-
EBTR									566	0.40	A (7)	11/34
WBL									108	0.38	A (7)	5/21
WBT									309	0.22	A (6)	6/20
NBLTR									237	0.51	B (12)	7/31

Table 7-50: Intersection Capacity Analysis, Street 8 & Street 2

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.15	A (8)	-/-
EBL									50	0.14	A (8)	2/10
EBTR									267	0.17	A (8)	2/11
WBL									1	0.00	A (7)	0/1
WBTR									148	0.12	A (8)	2/10
NBL									47	0.13	A (8)	2/9
NBTR									5	0.00	A (7)	0/1
SBL									33	0.08	A (8)	1/7
SBTR									195	0.10	A (8)	1/7
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.24	A (8)	-/-
EBL									78	0.24	A (8)	3/14
EBTR									487	0.30	A (8)	4/18
WBL									21	0.08	A (8)	1/5
WBTR									257	0.20	A (8)	4/15
NBL									67	0.19	A (8)	3/12
NBTR									24	0.02	A (7)	0/3
SBL									28	0.07	A (7)	1/6
SBTR									178	0.08	A (8)	1/6

Table 7-51: Intersection Capacity Analysis, Street 4 & Street 3

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (4)	-/-
EBL									60	0.05	A (8)	-/0
SBLR									173	0.28	B (12)	-/1
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	- (4)	-/-
EBL									84	0.07	A (8)	-/0
SBLR									151	0.34	C (16)	-/2

Table 7-52: Intersection Capacity Analysis, Street 5 & Street 3

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.18	A (8)	-/-
EBL									95	0.24	A (8)	4/13
EBTR									157	0.23	A (8)	4/16
WBL									38	0.10	A (7)	1/6
WBTR									89	0.13	A (7)	2/10
NBL									37	0.11	A (8)	1/8
NBTR									50	0.03	A (7)	0/4
SBL									37	0.09	A (8)	1/8
SBTR									165	0.13	A (8)	2/10
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	0.50	A (9)	-/-
EBL									78	0.19	A (8)	3/12
EBTR									392	0.57	A (10)	13/44
WBL									23	0.09	A (7)	1/5
WBTR									115	0.16	A (7)	3/13
NBL									145	0.43	B (10)	7/26
NBTR									291	0.25	A (9)	6/18
SBL									47	0.16	A (9)	2/10
SBTR									194	0.16	A (8)	3/12

Table 7-53: Intersection Capacity Analysis, Street 6 & Street 3/Street 7

AM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	B (10)	-/-
NBLTR									110	0.18	A (10)	-/1
EBLTR									181	0.28	A (10)	-/1
WBLTR									142	0.22	A (9)	-/1
SBLTR									261	0.41	B (12)	-/2
PM	Existing Conditions				2031 Future Background				2031 Future Total			
Mvmt	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
Overall	n/a				n/a				-	-	B (13)	-/-
NBLTR									208	0.37	B (12)	-/2
EBLTR									286	0.50	B (14)	-/3
WBLTR									212	0.37	B (12)	-/2
SBLTR									211	0.39	B (13)	-/2

7.4 SUMMARY OF INTERSECTION CAPACITY ANALYSIS RESULTS

The development of Block 27 and of adjacent areas such as Block 34E, Block 34W, and Block 41 add high volumes of traffic to the local network. Planned widenings along Jane Street and Kirby Road,

recommended lane configurations, and recommended signal optimizations and coordination will reduce the impact of congestion. A number of capacity constraints have been identified, mostly related to the portion of the network where Teston Road, Jane Street, the Highway 400 NB Off-Ramps, Cityview Boulevard, and Spine Road (Block 34E) are in close proximity to each other with high volumes. However, some amount of congestion should be expected, as these are relatively high-density developments in predominantly suburban, vehicle-travel focused areas with a single, unconventional highway interchange.

The collector street network of Block 27 performs well, both where the collector streets intersect with each other and where they intersect with regional roads. Appropriate signal control, lane configuration, and street cross-sections have been identified for the collector street network that will allow for effective vehicle movement within the Block.

Table 7-54 summarizes the operating conditions and recommendations for each intersection.

Table 7-54: Summary of Intersection Operations and Recommendations

Scenario	AM		PM		Recommendations
	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	
Keele Street & Teston Road					
Existing Conditions	0.70	C (30)	**1.05**	**D (53)**	• Optimize splits and re-evaluate which left-turn phases are needed. • Add east and westbound right-turning lanes.
Future Background	0.80	C (26)	**1.20**	**E (65)**	
Future Total	**1.04**	**E (65)**	**1.69**	**F (144)**	
Jane Street & Teston Road					
Existing Conditions	0.63	D (43)	0.77	D (41)	• Optimize splits and re-evaluate which left-turn phases are needed.
Future Background	0.91	D (43)	**1.65**	**F (139)**	
Future Total	**1.41**	**F (84)**	**1.82**	**F (175)**	
Teston Road & Mosque Gate					
Existing Conditions	0.42	A (7)	0.55	A (7)	• As part of future background conditions and recommended by the Block 34E development, add a dual eastbound left-turning lane and westbound right-, southbound left-, and soutbound right-turning lanes. • Increase the cycle length to 150 seconds.
Future Background	0.65	B (19)	**1.27**	**F (106)**	
Future Total	0.65	B (19)	**1.32**	**F (129)**	
Teston Road & Highway 400 NB Off-Ramp					
Existing Conditions	0.46	B (13)	0.66	C (20)	• Optimize splits. • Increase the cycle length to 150 seconds.
Future Background	0.66	B (17)	**1.19**	**E (77)**	
Future Total	0.65	B (18)	**1.23**	**F (89)**	
Keele Street & Kirby Road					
Existing Conditions	0.47	C (25)	0.55	C (30)	• As part of future background conditions and the widening of Kirby Road, add left-turning lanes for all approaches, optimize splits, and re-evaluate which left-turn phases are needed.
Future Background	0.37	B (19)	0.46	B (19)	
Future Total	0.67	C (33)	0.95	C (33)	
Keele Street & Vista Gate					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 120 seconds and advance left-turning phases for the westbound and northbound left movements. • Add dedicated northbound left-, southbound left-, southbound right-, and eastbound left-turning lanes.
Future Background	-	-	-	-	
Future Total	0.41	B (19)	0.63	B (15)	

Scenario	AM		PM		Recommendations
	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	
Keele Street & North Maple Regional Park / Street 8					
Existing Conditions	-	-	-	-	• As part of future background conditions and recommended by the North Maple Regional Park development, add a dedicated northbound right-turning lane. • Signalize, with a cycle time of 120 seconds and an advance left-turning phase for the northbound left. • Add dedicated northbound left- and eastbound left-turning lanes. • Convert one eastbound through lane to an eastbound right-turning lane.
Future Background	-	-	-	-	
Future Total	0.67	B (11)	0.75	B (16)	
Teston Road & St Joan of Arc Ave / Street 6					
Existing Conditions	0.37	A (10)	0.41	A (6)	• Increase the cycle length to 150 seconds and add an advance left-turning phase for the eastbound left. • Add dedicated eastbound left- and soutbound left-turning lanes.
Future Background	0.45	A (8)	0.57	A (4)	
Future Total	0.60	C (21)	0.78	B (17)	
Teston Road & Cranston Park Ave / Street 5					
Existing Conditions	0.41	B (10)	0.41	A (7)	• Increase the cycle length to 150 seconds and add an advance left-turning phase for the northbound, southbound, and westbound lefts. • Add dedicated eastbound left-, northbound right- and southbound left-turning lanes. • Convert the northbound right-turning lane to a northbound through lane. Convert one southbound through lane to a southbound right-turning lane.
Future Background	0.46	A (8)	0.62	A (8)	
Future Total	0.59	B (13)	0.89	C (21)	
Jane Street & Kirby Road					
Existing Conditions	0.76	D (44)	0.76	D (44)	• As part of the future background conditions, widen both Jane Street and Kirby Road to have 2 through lanes, and add dedicated left-turn lanes for all approaches. • Change the cycle length to 120 seconds and add an advance left-turning phase for the westbound left.
Future Background	0.45	C (26)	0.52	C (26)	
Future Total	0.47	C (27)	0.61	C (30)	
Jane Street & Street 1 / Street 4 (Block 34E)					
Existing Conditions	-	-	-	-	• As part of future background conditions, widen Jane Street to have 2 through lanes, and as part of the Block 34E development, add dedicated eastbound and northbound left-turning lanes. • Signalize, with a cycle time of 120 seconds and an advance left-turning phase for the westbound left during the AM peak hour. • Add dedicated westbound left-, southbound left-, and northbound right-turning lanes.
Future Background	0.29	A (2)	0.23	A (5)	
Future Total	0.53	B (15)	0.35	A (9)	
Street 8 & Vista Gate					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 60 seconds. • Add dedicated left-turning lanes for all approaches.
Future Background	-	-	-	-	
Future Total	0.57	A (8)	0.67	A (9)	

Scenario	AM		PM		Recommendations
	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	
Keele Street & Street 2					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 120 seconds and an advance left turning phase for the nourthbound left. • Add dedicated eastbound and northbound left-turning lanes.
Future Background	-	-	-	-	
Future Total	0.47	A (9)	0.59	A (7)	
Jane Street & Street 3 / Street 3 (Block 34E)					
Existing Conditions	-	-	-	-	• As part of future background conditions, widen Jane Street to have 2 through lanes, and as part of the Block 34E develoment, add dedicated eastbound and northbound left-turning lanes. • Signalize, with a cycle time of 120 seconds and an advance left-turning phase for the westbound and northbound lefts. • Add dedicated westbound left-, southbound left-, and northbound right-turning lanes.
Future Background	0.37	A (5)	0.38	B (12)	
Future Total	0.69	B (16)	0.65	C (23)	
Teston Road & Street 7					
Existing Conditions	-	-	-	-	• Signalize, with a cycle times of 75 and 150 seconds in the AM and PM peak hours, respectively, and an advance eastbound left-turning phase. • Add dedicated eastbound left-, southbound left-, and westbound right-turning lanes. • Convert the southbound through lane to a southbound right-turning lane.
Future Background	-	-	-	-	
Future Total	0.69	B (11)	0.90	C (29)	
McNaughton Road & Cranston Park Avenue					
Existing Conditions	0.59	B (15)	0.41	B (11)	• Optimize splits and re-evaluate the cycle length.
Future Background	0.54	B (14)	0.40	B (12)	
Future Total	0.54	B (14)	0.54	B (14)	
Keele Street & Peak Point Boulevard					
Existing Conditions	0.38	B (11)	0.38	A (8)	n/a
Future Background	0.37	B (11)	0.37	A (8)	
Future Total	0.49	A (8)	0.53	A (6)	
Kirby Road & Street 4					
Existing Conditions	-				• Two-way stop control. • Add dedicated westbound and northbound left-turning lanes.
Future Background	-				
Future Total	Worst movement has LOS 'C'				
Kirby Road & Street 5					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 120 seconds. • Add dedicated eastbound right-, westbound left-, and northbound left-turning lanes.
Future Background	-	-	-	-	
Future Total	0.19	A (4)	0.24	A (6)	
Kirby Road & Street 6					
Existing Conditions	-				• Two-way stop control. • Add dedicated westbound and northbound left-turning lanes.
Future Background	-				
Future Total	Worst movement has LOS 'E'				

Scenario	AM		PM		Recommendations
	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	
Kirby Road & Street 8					
Existing Conditions	-				• Two-way stop control, with all left turns restricted. • Add a dedicated eastbound right-turning lane. • Convert the northbound through lane to a northbound right-turning lane.
Future Background	-				
Future Total	Worst movement has LOS 'C'				
Street 4 & Street 1					
Existing Conditions	-				• Two-way stop control, with the east/west (Street 1) free. • All approaches have a single shared lane.
Future Background	-				
Future Total	Worst movement has LOS 'B'				
Street 5 & Street 1					
Existing Conditions	-				• Two-way stop control, with the north/south (Street 5) free. • North and southbound have two shared-through lanes. East and westbound have a single shared lane.
Future Background	-				
Future Total	Worst movement has LOS 'C'				
Street 6 & Street 1					
Existing Conditions	-				• Two-way stop control, with the north/south (Street 6) free. • All approaches have a single shared lane.
Future Background	-				
Future Total	Worst movement has LOS 'A'				
Jane Street & Street 2					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 120. • Add dedicated westbound left-, southbound left-, and northbound right-turning lanes. • Convert one westbound through lane to a westbound right-turning lane.
Future Background	-	-	-	-	
Future Total	0.38	A (3)	0.31	A (3)	
Street 4 & Street 2					
Existing Conditions	-				• Two-way stop control, with the east/west (Street 2) free. • East and westbound have two shared-through lanes. North and southbound have a single shared lane.
Future Background	-				
Future Total	Worst movement has LOS 'D'				
Street 5 & Street 2					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 60 seconds. • Add dedicated left-turning lanes for all approaches.
Future Background	-	-	-	-	
Future Total	0.40	A (9)	0.52	A (10)	
Street 6 & Street 2					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 60 seconds. • East and westbound have two shared-through lanes. Northbound has a single shared lane. • Add a dedicated westbound left-turning lane.
Future Background	-	-	-	-	
Future Total	0.36	A (6)	0.44	A (8)	
Street 8 & Street 2					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 60 seconds. • Add dedicated left-turning lanes for all approaches.
Future Background	-	-	-	-	
Future Total	0.15	A (8)	0.24	A (8)	

Scenario	AM		PM		Recommendations
	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	
Street 4 & Street 3					
Existing Conditions	-				• Two-way stop control, with the east/west (Street 3) free. • Add a dedicated eastbound left-turning lane.
Future Background	-				
Future Total	Worst movement has LOS 'C'				
Street 5 & Street 3					
Existing Conditions	-	-	-	-	• Signalize, with a cycle time of 60 seconds. • Add dedicated left-turning lanes for all approaches.
Future Background	-	-	-	-	
Future Total	0.18	A (8)	0.50	A (9)	
Street 6 & Street 3/Street 7					
Existing Conditions	-				• All-way stop control. • All approaches have single shared lane.
Future Background	-				
Future Total	Worst movement has LOS 'B'				
Cityview Boulevard & Teston Road					
Existing Conditions	0.81	C (32)	0.73	C (25)	n/a
Future Background	**1.12**	**E (78)**	**1.25**	**E (76)**	
Future Total	**1.07**	**E (68)**	**1.18**	**F (80)**	
Cityview Boulevard & Highway 400 SB Ramps					
Existing Conditions	0.83	B (20)	0.64	B (14)	Optimize splits and re-evaluate the cycle length.
Future Background	**1.19**	**F (82)**	0.89	C (29)	
Future Total	**1.19**	**F (83)**	0.89	C (30)	
McNaughton Rd / Avro Rd & Major Mackenzie Dr W					
Existing Conditions	0.68	C (33)	0.72	C (35)	n/a
Future Background	0.64	C (31)	0.70	D (36)	
Future Total	0.64	C (31)	0.76	D (40)	

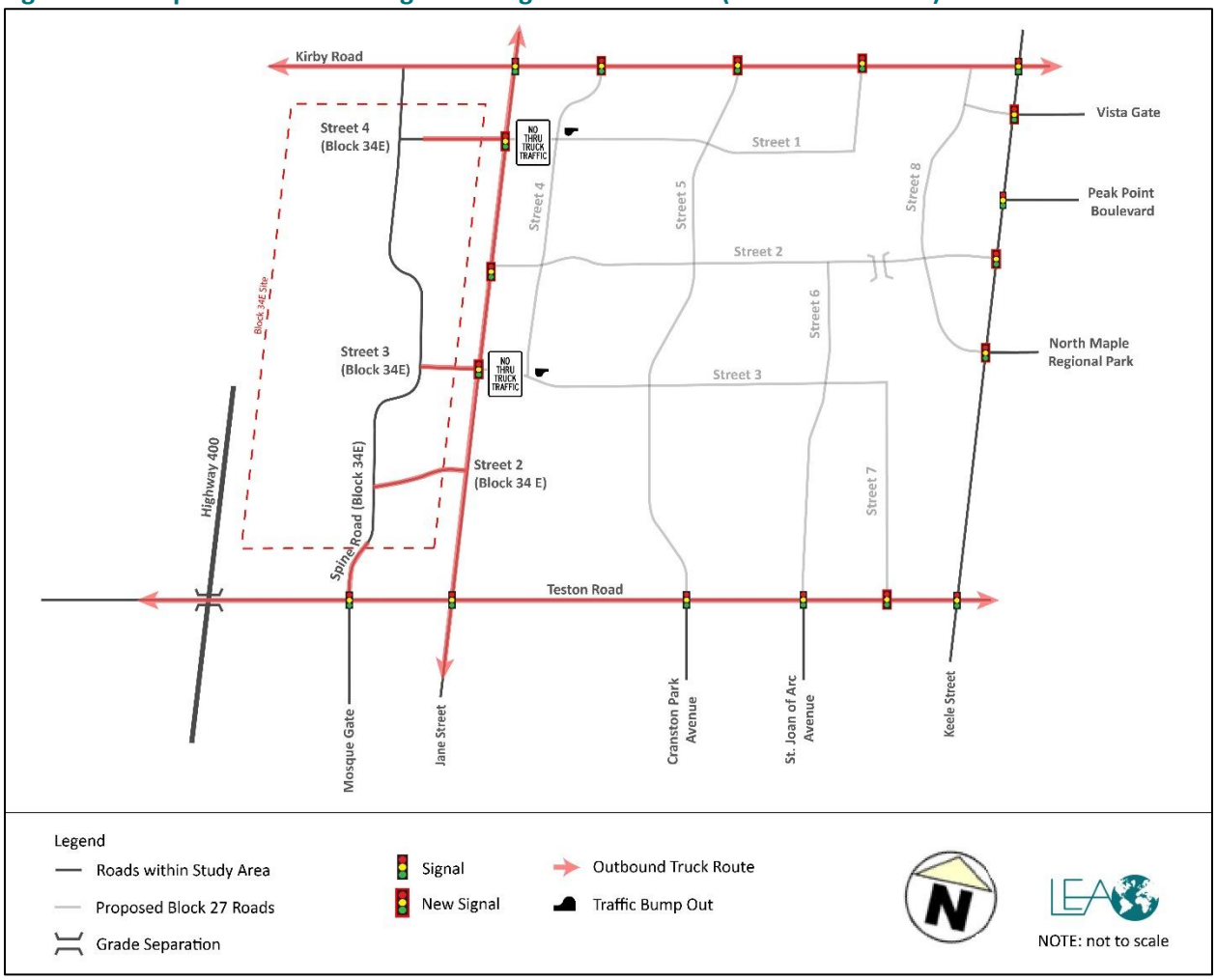
8 PROPOSED TRUCK ROUTING

The Blocks surrounding Block 27 contain industrial and employment uses, including the new Wal-Mart distribution centre located within Block 34E, west of Jane Street. It is understood that the proposed Block 27 collector road network provides a convenient route for trucks to access regional arterials by infiltrating through the Block 27 development which is primarily residential. As such, to mitigate potential truck noise and truck traffic infiltrating through the Block 27 residential neighbourhood, *no thru truck traffic* signs are recommended at the intersections of Jane Street & Street 1 and Jane Street & Street 3 to direct trucks along the major arterial roads. Traffic bump outs are also recommended at Street 4 & Street 1 and Street 4 & Street 3 to reduce motorized vehicle speeds and redirect the potential truck traffic back to the arterial network.

The proposed mitigation measures and resulting truck routing to/from the Block 34E site are illustrated in **Figure 8-1** and **Figure 8-2**.

Figure 8-1: Proposed Truck Routing and Mitigation Measures (Inbound Traffic)

Figure 8-2: Proposed Truck Routing and Mitigation Measures (Outbound Traffic)



9 WARRANTS

Warrants were conducted for all new intersections and for all intersections where signalization is recommended. For the intersections along the 4 boundary roads (Jane Street, Keele Street, Teston Road, and Kirby Road), only traffic signal warrants were conducted, as all-way stop control is an inappropriate measure on these high-volume, wide arterials. For the intersections within Block 27, both all-way stop control warrants and traffic signal warrants were conducted.

All warrants used the future total vehicle volumes, as these intersections either do not exist before the future total horizon or have only 3 legs prior to the future total horizon.

Table 9-1 provides a summary of the warrant conclusions for each intersection as well as the recommendation traffic control. Full warrant calculations can be found in **Appendix M**.

Table 9-1: Summary of Warrant Results

Intersection	Existing Control	Warrant		Recommendation
		AWSC	Signal	
Keele St & Vista Gate	Unsignalized	-	Pass	Signal
Keele St & Street 2	n/a	-	Fail	Signal
Keele St & North Maple Regional Park	Unsignalized	-	Fail	Signal
Jane St & Street 1	n/a	-	Fail	Signal
Jane St & Street 2	n/a	-	Fail	Signal
Jane St & Street 3	n/a	-	Fail	Signal
Street 7 & Teston Rd	n/a	-	Pass	Signal
Street 4 & Kirby Rd	n/a	-	Fail	Two-Way Stop Control
Street 5 & Kirby Rd	n/a	-	Fail	Signal
Street 6 & Kirby Rd	n/a	-	Fail	Two-Way Stop Control
Street 8 & Kirby Rd	n/a	-	Fail	Two-Way Stop Control
Street 4 & Street 1	n/a	Fail	Fail	Two-Way Stop Control
Street 5 & Street 1	n/a	Pass	Fail	Two-Way Stop Control
Street 8 & Vista Gate / GO Station	n/a	Fail	Fail	Signal
Street 4 & Street 2	n/a	Fail	Fail	Two-Way Stop Control
Street 5 & Street 2	n/a	Pass	Fail	Signal
Street 6 & Street 2	n/a	Fail	Fail	Signal
Street 8 & Street 2	n/a	Fail	Fail	Signal
Street 4 & Street 3	n/a	Fail	Fail	Two-Way Stop Control
Street 5 & Street 3	n/a	Pass	Fail	Signal
Street 6 & Street 3 / Street 7	n/a	Pass	Fail	All-Way Stop Control

9.1 ALL-WAY STOP CONTROL WARRANTS

All-way stop control warrants were conducted using the procedure in Book 5, Chapter 2 of the Ontario Traffic Manual (December 2021). The warrants require 8 hours of vehicle volumes as an input, which is a difficult requirement to meet considering that the volumes for these intersections are projections. To develop 8-hour vehicle volumes, the volumes from the AM and PM peak hours were expanded using the Vehicle Time-of-Data from the 11th edition of the ITE Trip Generation Manual. As Block 27 contains multiple land uses, the weighted average of the land uses was calculated using weights from the total Block 27 trips generated for that land use. **Table 9-2** shows the weights, and **Table 9-3** shows the resulting time-of-day profile.

Table 9-2: Weights by Land Use

Land Use Type	Weight
221 – Multifamily Housing (Mid-Rise)	17%
220 – Multifamily Housing (Low-Rise)	7%
215 – Single-Family Attached Housing	14%
210 – Single-Family Detached Housing	13%
821 – Shopping Plaza (40-150k)	31%
712 – Small Office Building	2%
522 – Middle School/Junior High School	16%
Total	100%

Table 9-3: Time-of-Day Ratios, relative to the nearest peak hour

Time	7:00	8:00	14:00	15:00	16:00	17:00	18:00	19:00
Percentage	100%	73%	71%	90%	85%	100%	94%	75%

The majority of the intersections within Block 27 do not warrant an all-way stop control, with 4 exceptions:

- Street 5 & Street 1,
- Street 5 & Street 2,
- Street 5 & Street 3, and
- Street 6 & Street 3/7.

9.2 SIGNAL WARRANTS

Traffic signal warrants were conducted using the procedure in Book 12, Chapter 4 of the Ontario Traffic Manual (March 2012). The majority of the intersections do not warrant a traffic signal according to these methods. As summarized in **Table 9-1**, signalization is recommended at various intersections despite failing the warrant.

The nature of the warrant procedure is that any uncertainty raises the volume threshold for signalization. In the case of Block 27, there is uncertainty as the volumes are future projections, analyze only the peak hours, and because all intersections are currently missing at least one leg compared to the future total horizon. Additionally, the warrant process does not distinguish between through movements and turning movements. In short, the warrant threshold is very high causing the warrants to fail despite having an appropriate reason to install a signal.

For certain intersections, high turning volumes necessitate a signal, such as at Keele Street & Vista Gate, Jane Street & Street 1, and Jane Street & Street 3.

In other cases, there is a lack of appropriate crossings for pedestrians if the intersection were not signalized. This occurs at Street 8 & Vista Gate, Street 6 & Street 2, Street 5 & Street 3, and Keele Street & North Maple Regional Park.

Finally, the major collectors (Streets 2, 5, and 8) all have 4-lane cross sections and is therefore appropriate for signalization where they meet each other or the collector roads.

9.3 RIGHT-TURN LANE WARRANTS

A right-turn lane was considered for each of the right-turning movements into Block 27 from the boundary roads (Jane Street, Keele Street, Teston Road, and Kirby Road).

Guidance for right-turns can be found in Section 9.14.2 of the Geometric Design Guide for Canadian Roads (TAC, June 2017) (TAC). Instead of a formal warrant process, the TAC manual provides a guideline for different contexts. For unsignalized intersections, it suggests including a right-turn lane where the "volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard." For signalized intersections, it suggests a right-turn lane "when the volume of right-turning traffic is 10% to 20% of the total approaching volume."

As shown in **Table 9-4**, the 10% threshold is met at 6 intersections, 5 of which are signalized and therefore a right-turn lane is recommended. To note, Street 8 & Kirby Road is an unsignalized right-in-right-out with up to 175 vehicles per hour, which is enough to disrupt the through movements and therefore, a right-turn lane is recommended.

Table 9-4: Right-Turn Percentages at Boundary Roads

Intersection	Direction	Approach Total	Right Turns	Percentage	Recommendation
Keele St & Vista Gate	**Southbound**	**2053**	**793**	**39%**	**Right-turn Lane**
Keele St & Street 2	Southbound	2314	36	2%	Shared Lane
Keele St & North Maple Regional Park	Southbound	2759	5	0%	Shared Lane
Jane St & Street 1	**Northbound**	**1628**	**273**	**17%**	**Right-turn Lane**
Jane St & Street 2	**Northbound**	**1897**	**344**	**18%**	**Right-turn Lane**
Jane St & Street 3	**Northbound**	**2750**	**516**	**19%**	**Right-turn Lane**
Street 7 & Teston Rd	**Westbound**	**3365**	**386**	**11%**	**Right-turn Lane**
Joan of Arc & Teston Rd	Westbound	3190	212	7%	Shared Lane
Cranston & Teston Rd	Westbound	3293	201	6%	Shared Lane
Street 4 & Kirby Rd	Eastbound	1166	20	2%	Shared Lane
Street 5 & Kirby Rd	Eastbound	1253	45	4%	Shared Lane
Street 6 & Kirby Rd	Eastbound	1363	0	0%	Shared Lane
Street 8 & Kirby Rd	**Eastbound**	**1631**	**456**	**28%**	**Right-turn Lane**

9.4 LEFT-TURN LANE WARRANTS

A left-turn lane was considered for each of the left-turning movements into and out of Block 27 at the intersections with the boundary roads (Jane Street, Keele Street, Teston Road, and Kirby Road).

Guidance for left-turn lanes can be found in the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads (April 2020). Appendix 9A includes a volume warrant for left-turn lanes. For signalized intersections, no specific methodology is given, but the guide states that "left-turn lanes must be considered on all highway approaches and on high speed sideroad approaches" and "left turn lanes at signalized intersections have the advantages of increased safety, improved intersection capacity, flexibility for possible phasing schemes, and clarity of purpose". Given these benefits and the availability of space when developing in a greenfield context, left-turn lanes are recommended at all approaches at all signalized intersections.

For unsignalized intersections, the Design Supplement provides a warrant method taking into account the traffic volume approaching the left turn, the traffic volume in the opposite direction, and the percentage

of left-turning traffic. **Table 9-5** shows the results of left-turn warrants for the two unsignalized intersections along the regional roads that have left turning movements, as well as for one of the internal intersections where a left-turn is warranted.

Table 9-5: Left-Turn Warrant Results

Intersection	Movement	Warrant Result	Recommendation
Kirby Road & Street 4	Westbound Left	Pass (PM)	15 m left-turning lane
	Northbound Left	Fail	15 m left-turning lane
Kirby Road & Street 6	Westbound Left	Pass (AM & PM)	15 m left-turning lane
	Northbound Left	Fail	15 m left-turning lane
Street 4 & Street 3	Eastbound Left	Pass (PM)	15 m left-turning lane

Left-turn lanes are recommended for the northbound left turns at Kirby Road despite failing the warrant in order to future-proof these intersections for future signalization and for potential development of the lands north of Kirby Road. In addition, the warrant process suggests a 60 m lane for the westbound left at Kirby Road & Street 6, but as shown in **Table 6-1**, the capacity analysis reveals that a shorter lane is anticipated to be sufficient.

Full warrant analysis can be found in **Appendix M**.

10 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation Demand Management (TDM) is a set of strategies that strives toward a more efficient transportation network by influencing travel behaviour. Effective TDM measures can reduce vehicle usage and encourage people to engage in more sustainable methods of travel. The City of Vaughan has updated its Transportation Demand Management Development Guideline in October 2021. This TDM Guideline outlines a variety of initiatives that are organized into five (5) different categories:

1. **Promotion:** Programs that promote the use of sustainable travel options and monitor the success of all TDM initiatives.
2. **Active Transportation:** Implementing infrastructure that supports the use of human-powered transportation (ex., walking, cycling).
3. **Transit:** Implementing infrastructure and trip planning resources that support the use of transit.
4. **Parking:** Utilizing parking management strategies and programs that discourage driving alone and may reduce minimum parking requirements.
5. **Other TDM Initiatives:** Implementing additional TDM-supportive programs and preparing for future infrastructure and programs.

In addition to the existing and future active transportation and transit routes in the area, there are several opportunities to incorporate TDM measures that support alternative modes of transportation and fulfill the targeted modal split of 30% citywide, during peak periods and by 2031. The following section provides a list of potential TDM measures to be explored and applied by each subsequent planning application and confirmed at the site plan stage by the individual landowners. The threshold requirements for applying the TDM measures would also be determined on a site by site basis by the individual landowners and be determined based on the specific proposed uses and applicable priority zone.

10.1 CATEGORY 1: PROMOTION / MONITORING

(1.1) Provide Transit Incentives

Providing transit incentives builds awareness, understanding, and encourages the use of sustainable modes by removing financial barriers. Free or subsidized fares are an attractive incentive for single-occupancy vehicles and enable sustainable travel options to be more competitive to achieve modal targets. Effective incentives include discounted transit fares, pre-loaded PRESTO cards, and bikeshare or carshare memberships (if available). For residential or mixed-use applications that meet York Region TDM Plan requirements, it is recommended that each residential unit be provided with one pre-loaded PRESTO card with a 3-month typical travel fare through the My Trip Program, funded by York Region Development Charges. This will encourage future residents to utilize transit for daily travel and could have a lasting effect on travel behaviour. The cost of this TDM measure is estimated at $160 per PRESTO card). Provision of this TDM measure would award a score between 2 to 8 in the City of Vaughan TDM Toolkit.

(1.2) Communication Strategy

Information packages containing trip planning tools, transit schedules and route information, pedestrian and cycling facilities, carshare membership and service information (if available), Smart Commute, and subsidized transit passes should be made accessible to all residents. For residential or mixed-use applications, it is recommended that the applicant distribute the information in resident welcome

packages (one per unit) on-site in an accessible location such as the front desk, during promotional campaigns, events, and educational programs. The Region and City should be responsible for making Smart Commute and transit information available to help commuters become aware of the various travel alternatives. The cost of this TDM measure is estimated at $1.00 per letter + $1,000 (security) venue. Provision of this TDM measure satisfies the City's Level 1 requirements in the City of Vaughan TDM Toolkit.

(1.4) Awards / Recognition Program

Awards are given to organizations, developers, individuals, and businesses that demonstrate outstanding efforts in promoting cycling, walking, and/or transit usage through promotional/educational programs or other initiatives. For residential, non-residential, and mixed-use applications, it is recommended that applicants consider participation in an Awards/Recognition Program to allow developers and businesses to be publicly recognized by the City of Vaughan for having a sustainable and transportation-friendly development. Provision of this TDM measure would award a score of 1 in the City of Vaughan TDM Toolkit.

(1.5) Cycling Skills Courses

Unfamiliarity with cycling fundamentals and safety presents a barrier for many in adopting cycling as a mode of everyday travel. Offering cycling skill courses or training for new residents, students, and employees can enhance cycling behaviour on the road and encourage those currently hesitant to ride on streets shared with motor vehicles. For residential, non-residential, and mixed-use applications, it is recommended that on-road cycling skill courses be provided by the applicant to interested individuals through CAN-BIKE certification courses. Provision of this TDM measure awards a score of 1 in the City of Vaughan TDM Toolkit.

(1.6) Provide Individualized Marketing Programs & Travel Planning Resources

Individualized marketing provides resources such as training, trip planning tools, and incentives customized to individual's needs to promote the use of active and sustainable travel options. This TDM measure is most effective for new residents looking to explore their travel options. For residential, non-residential, and mixed-use applications, it is recommended that the applicant implement a social marketing campaign for new residents/employees and provide travel information in promotional material or through welcome packages detailing information on the transit, cycling, pedestrian, and other travel options available in the area. Provision of this TDM measure awards a score between 1 to 4 in the City of Vaughan TDM Toolkit.

10.2 CATEGORY 2: ACTIVE TRANSPORTATION

(2.1) Pedestrian Network Implementation

Each development block should ensure safe, comfortable, and convenient pedestrian connections to key destinations such as existing and future transit stops and stations within and adjacent to the development lands. This includes sidewalk facilities on all new roadways and traffic calming measures (where required) to encourage walking and pedestrian activity. The pedestrian facilities planned along surrounding arterial roadways and the multi-use trail network planning within the Block, will further encourage work/discretionary and recreational walking trips within the Block 27 community. For low and mid-rise developments, main building entrances should front the major roads to minimize travel distances to sidewalks and transit stops while maximizing visibility to encourage pedestrian activity. The pedestrian realm surrounding the proposed developments should also provide a pleasant and safe experience

through enhanced landscaping and adequate lighting. Provision of this TDM measure satisfies the City's Level 1 requirements in the City of Vaughan TDM Toolkit.

(2.2) Cycling Network Implementation

Cycling facilities including bike lanes, cycle tracks, and/or multi-use pathways are considered as part of the Block Plan to encourage cycling trips within the new community. These facilities will connect to the planned multi-use trail network as defined in the Block 27 Secondary Plan and the City of Vaughan Pedestrian and Bicycle Master Plan to create east-west and north-south cycling connections between the Block 27 community and its surrounding lands. To further encourage cycling activity, it is recommended that information packages are provided to all new residents. This should include information on the health and environmental benefits of cycling as well as cycling maps of the existing available infrastructure in the surrounding area. Provision of this TDM measure satisfies the City's Level 1 requirements in the City of Vaughan TDM Toolkit.

(2.3) Provide Long-Term and Short-Term Bicycle Parking

The City's base recommendation is to provide the minimum amount of bicycle parking required by the City of Vaughan Comprehensive Zoning By-law. However, for low and mid-rise developments, it is recommended that bicycle parking spaces in excess of the Zoning By-law requirements be provided for residential and non-residential uses. All long-term spaces should be located in a secure and weather-protected location, such as storage rooms and bicycle locker rooms. Short-term bicycle spaces should be provided in highly visible and convenient locations along the frontage of the building and close to building entrances. Provision of this TDM measure awards a score between 1 to 2 in the City of Vaughan TDM Toolkit.

(2.6) Install Bike Repair Station

Bike repair stations offer cycling commuters the necessary tools (ex., air pumps, allen keys, and wrenches) to complete basic maintenance and ensure the safe operation of their bicycle. Providing a bicycle repair stand, hand tools, tire gauges, and tire pumps accompanied with basic information on site will alleviate the stress of technical issues and promote cycling as a convenient travel option for residents. For low and mid-rise developments, it is recommended that a bike repair station be provided within bike storage areas. This measure is estimated at $3,000 per station. Provision of this TDM measure awards a score between 0 to 2 in the City of Vaughan TDM Toolkit.

10.3 CATEGORY 3: TRANSIT

(3.1) Provide Transit Information Kiosks

Information kiosks or booths distribute transit information to existing and future transit users, especially when located in high-traffic areas that connect to major transit stations. Kiosks or booths would feature static or digital information boards that detail transit information specific to the local context such as transit route maps, route schedules, and information on multi-modal access including connections to other transit systems and transportation modes. Where applicable, a transit information kiosk is recommended to encourage transit use for future residents. This is especially relevant for developments adjacent to the future potential Kirby GO station at the north-east quadrant of the development lands. The estimated cost for this measure is $5,000 per kiosk. Provision of this TDM measure awards a score of 1 in the City of Vaughan TDM Toolkit.

(3.3) Provide Real-Time Transit Information

Real-time transit information enables users to understand departure and waiting times, allowing them to plan their trips accordingly and enhance the overall transit experience. Where applicable, provision of real-time transit screens in prominent locations (ex., entrances, lobbies, or elevators) is recommended to enhance the convenience of transit trips. This is especially relevant for developments adjacent to the future potential Kirby GO station at the north-east quadrant of the development lands. The estimated cost for this measure is $5,000 per real-time transit screen. Provision of this TDM measure awards a score of 1 in the City of Vaughan TDM Toolkit.

(3.4) Launch Shuttle Services

The Block 27 active transportation network will provide excellent connections to future transit stations and stops including the future potential Kirby GO station and existing and planned YRT routes serving Kirby Road, Keele Street and Jane Street. Additional local YRT services and shuttle buses should be considered to connect residents to major destinations within Block 27 including the future Kirby GO station and Community Hub, reducing the reliance on automobiles for daily commute trips. These local routes would also facilitate transfers within the surrounding arterial transit network to provide extended service coverage. Provision of this TDM measure awards a score between 4 to 14 in the City of Vaughan TDM Toolkit.

10.4 CATEGORY 4: PARKING

(4.3) Unbundle Parking from Unit Cost

Selling or leasing parking spaces separately from the sale of each residential unit can lead to lower rates of vehicle ownership and can be used as a selling feature in an area well-served by transit and/or cycling infrastructure. For low and mid-rise developments, it is recommended that the proposed development unbundle the cost of parking from new dwelling units to support zero-car households and reduce parking demand from the proposed development. Provision of this TDM measure awards a score of 5 in the City of Vaughan TDM Toolkit.

(4.6) Implement Pick-Up and Drop-Off Zones

Designated pick-up and drop-off zones enable convenient locations for passenger loading and require special consideration to manage potential conflicts between vehicle and pedestrian movements. For low and mid-rise developments, a pick-up drop-off layby, fronting the residential entrance is recommended to facilitate convenient short-term pick-up and drop-off activities. The pick-up drop-off layby should provide adequate space to ensure queueing does not spillback onto public roads or disrupt traffic flow on-site. Provision of this TDM measure awards a score of 1 in the City of Vaughan TDM Toolkit.

10.5 CATEGORY 5: OTHER TDM INITIATIVES

(5.1) Install Wayfinding & Signage

Wayfinding & signage assist people that are walking or cycling to navigate and locate transportation services, infrastructure, and key destinations in the area. It is recommended that development within the Block include multi-modal wayfinding signage in key locations so that residents and visitors are directed to transportation services and infrastructure such as transit, bicycle parking, pick-up and drop-off locations, and key destinations. Wayfinding signage should be located in significant locations such as

entrances/exits and identify the direction, distance, and estimated travel time to key destinations. Provision of this TDM measure awards a score of 1 in the City of Vaughan TDM Toolkit.

(5.2) Offer Micromobility Services

Micromobility options such as bike share or kick-style e-scooters can provide residents, employees, and community members a convenient travel option for all trip types inclusive of commuting to work, recreation, errands, or for connection to transit. Bike share and kick-style e-scooters are services where a bike or e-scooter can be rented on a short-term basis through a subscription to a membership (e.g., monthly, yearly, or pay-as-you-go). It is recommended that the proposed development partner with a service provider such as Kite, which is a Canadian technology company offering sustainable mobility as a service via a proprietary platform, enabling connected electric bicycles, electric scooters, electric mobility vehicles, and related technology in cities and communities.

A one-time onboarding setup fee of **$5,000** would be required and would work on a revenue basis. It is noted that Kite provides micromobility options that vary by the size of the community; however, they typically launch with 2 cars and 8 e-bikes/e-scooters and tailor to match demand[1]. Provision of this TDM measure awards a score of 1 in the City of Vaughan TDM Toolkit.

10.6 TDM MONITORING

The City of Vaughan requires all residential developments generating 50 or more gross peak hour trips to participate in a TDM monitoring program to measure the success and effectiveness of the TDM initiatives implemented. It is recommended that the applicant/owner of subsequent development applications complete a baseline travel survey within one year of occupancy and a follow-up travel survey two (2) years later to ensure effective monitoring. It is understood that upon completion of the follow-up survey and submission of a follow-up report, the letter of credit will be released to the applicant. The key goal of performance measuring is to provide useful information on identifying successful program activities, improvements to existing programming, as well as the potential development of future programs. The estimated cost for this measure is $5,000 ($2,500 at the time of occupancy + $2,500 2-years after occupancy).

10.7 SUMMARY OF TDM RECOMMENDATIONS

Table 10-1 provides the cost and implementation table as outlined in the City of Vaughan Transportation Demand Management Development Guidelines summarizing the TDM measures, estimated costs, and responsibility of the applicant to implement the recommended TDM measures. It should be noted that a Letter of Credit should be provided to the City which covers the costs associated with TDM measures as identified in the TDM checklist for each subsequent development.

[1] https://www.kitemobility.io/support

Table 10-1: Summary of TDM Measures

TDM Initiative		Typical Cost	Responsibility	TDM Score
Category 1: Promotion / Monitoring				
(1.1)	Provide Transit Incentives	$160 per transit pass	Applicant / York Region to consider	2-8
(1.2)	Communication Strategy	~$1.00 per Letter + Venue Cost ($1,000 Security)	Applicant	-
(1.6)	Individualized Marketing Program			2
(1.4)	Awards / Recognition Program	TBD	Applicant	1
(1.5)	Cycling Skills Courses	TBD	Applicant	1
Category 2: Active Transportation				
(2.1)	Pedestrian Network Implementation	Design cost	Applicant	-
(2.2)	Cycling Network Implementation	Design cost	Applicant	-
(2.3)	Provide Long-Term and Short-Term Bicycle Parking	Design cost	Applicant	1-2
(2.6)	Install Bike Repair Station	$3,000 each station	Applicant	2
Category 3: Transit				
(3.1)	Provide Transit Information Kiosks	$5,000	Applicant	1
(3.3)	Provide Real-Time Transit Information	$5,000	Applicant	1
(3.4)	Launch Shuttle Services	TBD	Applicant / York Region to consider	4-14
Category 4: Parking				
(4.3)	Unbundled Parking from Unit Cost	Design cost	Applicant	5
(4.6)	Implement Pick-Up and Drop-Off Zones	Design cost	Applicant	1
Category 5: Other TDM Initiatives				
(5.1)	Install Wayfinding Signage	TBD	Applicant	1
(5.2)	Offer Micromobility Services	$5,000	Applicant	1
TDM Monitoring				
-	Monitoring Program/Report	$5,000	Applicant / City of Vaughan	-
			Total	**23-40**

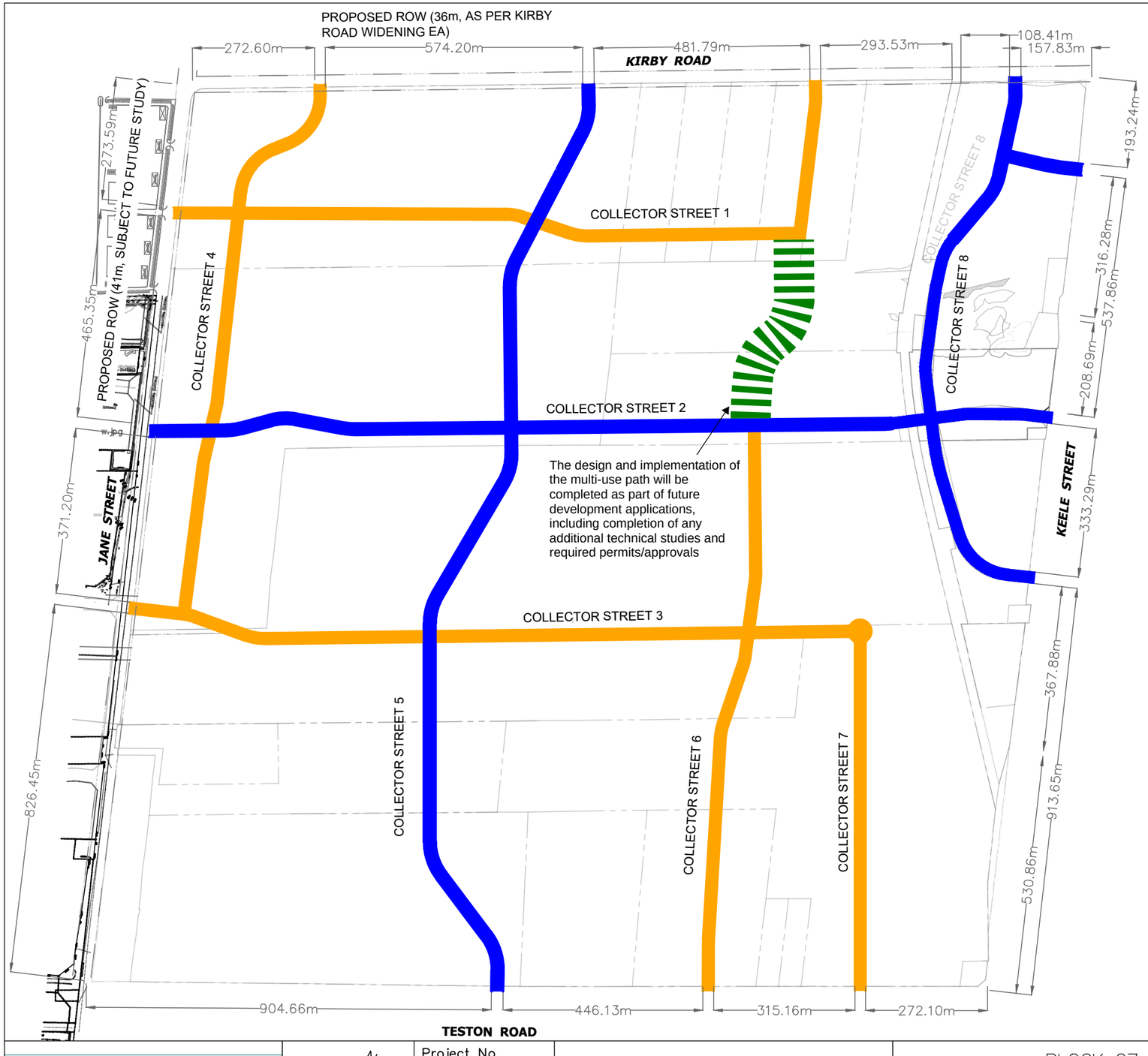
11 CONCLUSION

- This Transportation Mobility Plan Update has been prepared to support the development of Block 27 in the City of Vaughan, including the identification of a preferred transportation network in conjunction with the ongoing Block 27 Collector Roads EA and other related studies.
- Block 27 is proposed to be developed into a new complete community focused around the Transit Hub Centre, proposed in northeastern part of the subject lands. The new community will include a range of uses including low- and mid-rise housing, mixed use designations, retail, office, and a new community hub. A total of 7,067 residential units, 47,568 m^2 of retail GFA, 7,417 m^2 of office GFA, and 5 schools are proposed on the Block.
- Block 27 is serviced by York Region and City of Vaughan roads. 3 regional and 1 municipal road borders the subject lands. Local transit service is provided by York Region Transit and is currently available in select areas where there is demand. A shared multi-use path is available along Teston Road. However, there are no other dedicated cycling facilities along the remaining study area roads. The study area also exhibits poor pedestrian connectivity which can be attributed to the rural nature of the area.
- This assessment considers an 8-year horizon from the existing year 2023 to full build-out year of 2031. The future background conditions include traffic added to the network from other future developments, corridor growth, and road network improvements.
- Full build-out of the subject lands is anticipated to generate 3,784 two-way trips during the AM peak hour (1,521 inbound and 2,263 outbound) and 5,373 two-way trips during the PM peak hour (2,876 inbound and 2,497 outbound).
- A network of collector roads is required to provide servicing, frontage, and connectivity to the external road network. Consistent with the Block 27 Collector Roads EA, 8 collector roads (3 major collectors and 5 minor collectors) are proposed through the Block. As part of the Block development, internal transit and active transportation facilities are proposed to create a well-connected permeable transportation network.
- The preferred lane configuration of all internal roadways and connections to the surrounding arterial road network were identified through an iterative process based on the initial Synchro results. Where required, signalization and turn lanes were recommended to support site and background traffic.
- The intersection capacity analysis was conducted for the AM and PM peak hours under the existing, future background, and future total horizons. Planned widenings along Jane Street and Kirby Road, recommended lane configurations, and recommended signal optimizations and coordination will reduce the impact of congestion. A number of capacity constraints have been identified, mostly related to the portion of the network where Teston Road, Jane Street, the Highway 400 NB Off-Ramps, and Spine Road (Block 34E) are in close proximity to each other with high volumes. The collector street network of Block 27 performs well, both where the collector streets intersect with each other and where they intersect with the regional roads.

- The analysis of this report has recommended a preferred road network, along with a conceptual plan for the future transit and active transportation network. Additional details will be provided as the Block 27 Collector Roads EA progresses.
- Several Transportation Demand Management (TDM) strategies have been suggested for the development lands to reduce traffic demand by influencing behaviour. Details on the proposed TDM plan will be development as the Block 27 block plan is refined.

APPENDIX A

Block 27 Recommended Collector Road Network



NOTES:

1. AS PER CITY OF VAUGHAN ENGINEERING DESIGN CRITERIA AND STANDARD DRAWINGS (DECEMBER 2020)

HORIZONTAL ALIGNMENT CRITERIA		
	COLLECTOR ST 2, 5 & 8	COLLECTOR ST 1, 3, 4, 6 & 7
ROAD CLASSIFICATION	MAJOR COLLECTOR	MINOR COLLECTOR
MIN. HORZ. CURVE RADIUS (m)	125	115

2. AS PER CITY OF VAUGHAN ENGINEERING STD. DWG. R – 108: HORIZONTAL CURVE RADIUS AT ANGLE BEND = 12m

3. AS PER TAC 3.2.6.1.18: INTERSECTING ROADS ARE ALLOWED TO MEET BETWEEN 70 – 110°

4. AS PER CITY OF VAUGHAN NORTH VAUGHAN NEW COMMUNITIES TRANSPORTATION MASTER PLAN (JAN 2019);
   MAJOR COLLECTOR ROADS TO HAVE A RIGHT–OF–WAY OF 26m
   MINOR COLLECTOR ROADS TO HAVE A RIGHT–OF–WAY OF 24m

LEGEND:

- MINOR COLLECTOR STREETS
- MAJOR COLLECTOR STREETS
- PROPERTY LIMITS
- PROPOSED ROAD WIDENING (BY OTHERS)
- CONCEPTUAL LOCATION OF THE MULTI–USE PATH CONNECTION THROUGH THE SIGNIFICANT WOODLOT

LEA Consulting Ltd.
Consulting Engineers and Planners
www.LEA.ca

Project No. 20009

Date AUG 22, 2024

NOT FOR CONSTRUCTION

BLOCK 27
VAUGHAN ONTARIO

SCALE 1:10000

FINAL ROAD NETWORK

Drawing No. 001

APPENDIX B

TMCs & STPs

APPENDIX Bi

TMCs

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Kirby Rd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Data

Start Time	Keele Street Southbound						Kirby Road Westbound						Keele Street Northbound						Kirby Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:30 AM	8	29	2	0	0	39	4	7	5	0	0	16	2	9	1	0	0	12	2	4	6	0	0	12	79
5:45 AM	3	52	3	0	0	58	4	7	5	0	0	16	2	22	2	0	0	26	3	1	3	0	0	7	107
Hourly Total	11	81	5	0	0	97	8	14	10	0	0	32	4	31	3	0	0	38	5	5	9	0	0	19	186
6:00 AM	6	43	3	0	0	52	9	12	4	0	0	25	1	13	3	0	0	17	4	5	7	0	0	16	110
6:15 AM	19	72	8	0	0	99	6	26	6	0	0	38	2	23	4	0	0	29	7	7	3	0	0	17	183
6:30 AM	18	109	7	0	0	134	12	19	8	0	0	39	6	35	5	0	0	46	10	17	4	0	0	31	250
6:45 AM	15	113	1	0	0	129	8	17	10	0	0	35	8	32	6	0	0	46	11	19	6	0	0	36	246
Hourly Total	58	337	19	0	0	414	35	74	28	0	0	137	17	103	18	0	0	138	32	48	20	0	0	100	789
7:00 AM	13	97	3	0	0	113	6	19	8	0	0	33	15	48	11	0	0	74	5	16	3	0	0	24	244
7:15 AM	19	103	5	0	0	127	2	29	24	0	0	55	6	50	8	0	0	64	11	27	7	0	0	45	291
7:30 AM	21	129	8	0	0	158	12	28	18	0	0	58	11	61	10	0	0	82	13	38	5	0	0	56	354
7:45 AM	14	146	18	0	0	178	15	44	19	0	0	78	22	84	5	0	0	111	19	38	10	0	0	67	434
Hourly Total	67	475	34	0	0	576	35	120	69	0	0	224	54	243	34	0	0	331	48	119	25	0	0	192	1323
8:00 AM	13	171	13	0	2	197	12	36	16	0	0	64	15	71	10	0	2	96	9	39	5	0	1	53	410
8:15 AM	19	151	5	0	0	175	8	42	11	0	0	61	14	68	9	0	0	91	10	41	10	0	0	61	388
8:30 AM	9	145	13	0	2	167	14	43	35	0	1	92	16	67	10	0	0	93	13	35	6	0	0	54	406
8:45 AM	8	136	8	0	0	152	15	41	22	0	0	78	13	53	13	0	0	79	9	31	7	0	0	47	356
Hourly Total	49	603	39	0	4	691	49	162	84	0	1	295	58	259	42	0	2	359	41	146	28	0	1	215	1560
9:00 AM	17	118	8	0	0	143	9	33	9	0	0	51	13	60	6	0	0	79	12	16	4	0	0	32	305
9:15 AM	12	93	6	0	0	111	8	29	11	0	0	48	8	51	7	0	0	66	7	16	6	0	0	29	254
9:30 AM	7	92	7	0	1	106	13	18	12	0	0	43	11	50	8	0	0	69	10	27	7	0	0	44	262
9:45 AM	7	74	11	0	0	92	7	23	8	0	0	38	8	46	12	0	0	66	11	28	12	0	0	51	247
Hourly Total	43	377	32	0	1	452	37	103	40	0	0	180	40	207	33	0	0	280	40	87	29	0	0	156	1068
10:00 AM	6	66	6	0	0	78	6	22	7	0	0	35	16	39	4	0	0	59	11	14	6	0	0	31	203
10:15 AM	15	59	9	0	0	83	7	15	9	0	0	31	17	47	5	0	0	69	12	20	2	0	0	34	217
10:30 AM	15	58	8	0	0	81	5	16	5	0	0	26	8	32	5	0	0	45	7	14	3	0	0	24	176
10:45 AM	7	57	5	0	1	69	2	20	7	0	1	29	7	47	10	0	0	64	6	21	5	0	0	32	194
Hourly Total	43	240	28	0	1	311	20	73	28	0	1	121	48	165	24	0	0	237	36	69	16	0	0	121	790
11:00 AM	8	66	7	0	0	81	4	12	8	0	0	24	5	49	7	0	0	61	10	10	4	0	0	24	190
11:15 AM	10	68	6	0	0	84	5	20	2	0	0	27	6	52	12	0	0	70	7	12	8	0	0	27	208
11:30 AM	9	46	8	0	0	63	5	20	10	0	1	35	16	50	5	0	0	71	9	19	7	0	0	35	204
11:45 AM	6	52	6	0	1	64	4	28	15	0	0	47	11	49	7	0	0	67	12	11	3	0	0	26	204
Hourly Total	33	232	27	0	1	292	18	80	35	0	1	133	38	200	31	0	0	269	38	52	22	0	0	112	806
12:00 PM	9	62	6	0	0	77	7	16	5	0	0	28	10	56	4	0	0	70	7	16	10	0	0	33	208
12:15 PM	6	63	3	0	0	72	4	16	4	0	0	24	7	55	12	0	0	74	5	19	5	0	0	29	199

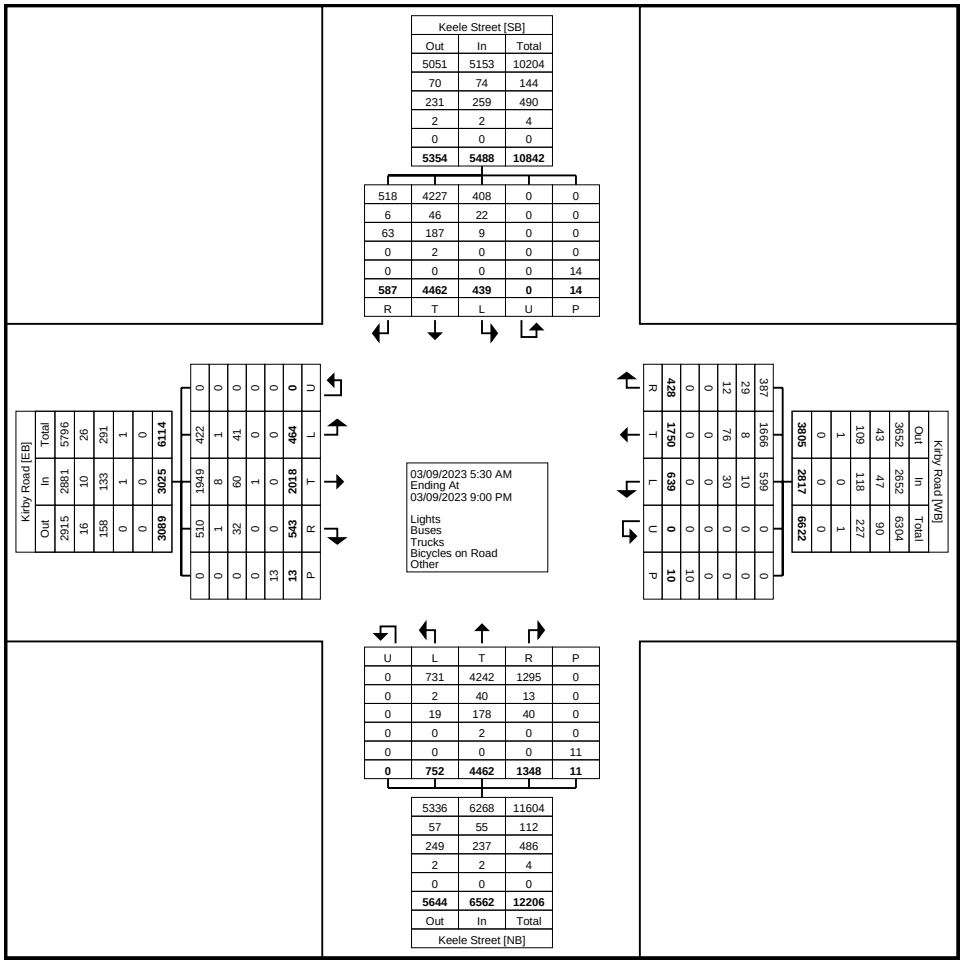
12:30 PM	4	66	4	0	0	74	6	22	10	0	0	38	10	70	10	0	0	90	10	19	5	0	1	34	236
12:45 PM	5	53	6	0	1	64	3	18	5	0	1	26	7	72	13	0	1	92	13	15	6	0	2	34	216
Hourly Total	24	244	19	0	1	287	20	72	24	0	1	116	34	253	39	0	1	326	35	69	26	0	3	130	859
1:00 PM	12	60	5	0	0	77	3	24	10	0	0	37	21	64	13	0	0	98	12	15	7	0	0	34	246
1:15 PM	4	56	7	0	0	67	3	22	5	0	0	30	8	52	9	0	1	69	9	22	6	0	1	37	203
1:30 PM	6	45	6	0	0	57	4	21	11	0	0	36	19	56	11	0	0	86	14	33	7	0	0	54	233
1:45 PM	11	60	3	0	0	74	7	14	14	0	0	35	15	62	13	0	0	90	5	29	9	0	1	43	242
Hourly Total	33	221	21	0	0	275	17	81	40	0	0	138	63	234	46	0	1	343	40	99	29	0	2	168	924
2:00 PM	8	51	5	0	0	64	2	24	10	0	0	36	21	76	19	0	0	116	7	28	15	0	0	50	266
2:15 PM	6	45	6	0	0	57	4	45	17	0	0	66	29	91	18	0	0	138	7	25	14	0	0	46	307
2:30 PM	9	64	6	0	1	79	10	25	9	0	1	44	27	78	7	0	0	112	7	59	13	0	0	79	314
2:45 PM	7	66	9	0	0	82	3	34	11	0	0	48	24	98	13	0	0	135	8	34	7	0	0	49	314
Hourly Total	30	226	26	0	1	282	19	128	47	0	1	194	101	343	57	0	0	501	29	146	49	0	0	224	1201
3:00 PM	9	59	5	0	4	73	5	39	5	0	4	49	34	87	16	0	0	137	10	43	9	0	0	62	321
3:15 PM	5	71	11	0	1	87	2	40	14	0	1	56	27	89	9	0	0	125	13	56	9	0	0	78	346
3:30 PM	12	62	9	0	0	83	10	57	4	0	0	71	35	129	21	0	0	185	13	61	7	0	0	81	420
3:45 PM	13	98	10	0	0	121	11	55	10	0	0	76	43	142	14	0	2	199	9	63	11	0	2	83	479
Hourly Total	39	290	35	0	5	364	28	191	33	0	5	252	139	447	60	0	2	646	45	223	36	0	2	304	1566
4:00 PM	15	72	7	0	0	94	14	52	11	0	0	77	49	137	20	0	1	206	10	50	11	0	1	71	448
4:15 PM	15	88	7	0	0	110	13	54	9	0	0	76	55	138	37	0	0	230	3	59	16	0	0	78	494
4:30 PM	9	79	14	0	0	102	12	52	13	0	0	77	55	148	35	0	0	238	6	69	12	0	0	87	504
4:45 PM	16	72	19	0	0	107	10	37	14	0	0	61	70	146	23	0	1	239	6	81	16	0	1	103	510
Hourly Total	55	311	47	0	0	413	49	195	47	0	0	291	229	569	115	0	2	913	25	259	55	0	2	339	1956
5:00 PM	8	83	6	0	0	97	5	38	12	0	0	55	74	150	38	0	2	262	5	75	11	0	2	91	505
5:15 PM	5	70	6	0	0	81	6	62	15	0	0	83	57	143	22	0	0	222	9	67	6	0	0	82	468
5:30 PM	7	90	13	0	0	110	4	54	11	0	0	69	80	136	25	0	0	241	2	58	8	0	0	68	488
5:45 PM	8	75	11	0	0	94	14	55	18	0	0	87	44	135	16	0	0	195	10	72	9	0	1	91	467
Hourly Total	28	318	36	0	0	382	29	209	56	0	0	294	255	564	101	0	2	920	26	272	34	0	3	332	1928
6:00 PM	9	55	12	0	0	76	12	43	15	0	0	70	48	112	24	0	0	184	10	64	11	0	0	85	415
6:15 PM	12	66	11	0	0	89	11	36	16	0	0	63	40	111	11	0	0	162	8	59	12	0	0	79	393
6:30 PM	6	54	7	0	0	67	3	30	11	0	0	44	31	105	17	0	0	153	10	52	10	0	0	72	336
6:45 PM	5	43	7	0	0	55	6	20	9	0	0	35	21	71	12	0	0	104	11	42	6	0	0	59	253
Hourly Total	32	218	37	0	0	287	32	129	51	0	0	212	140	399	64	0	0	603	39	217	39	0	0	295	1397
7:00 PM	6	39	4	0	0	49	7	25	12	0	0	44	17	73	11	0	1	101	5	30	12	0	0	47	241
7:15 PM	3	41	6	0	0	50	1	20	7	0	0	28	16	71	13	0	0	100	8	42	6	0	0	56	234
7:30 PM	4	36	1	0	0	41	1	17	5	0	0	23	14	54	10	0	0	78	7	32	6	0	0	45	187
7:45 PM	6	40	10	0	0	56	6	17	4	0	0	27	10	44	8	0	0	62	7	21	5	0	0	33	178
Hourly Total	19	156	21	0	0	196	15	79	28	0	0	122	57	242	42	0	1	341	27	125	29	0	0	181	840
8:00 PM	7	35	2	0	0	44	4	15	6	0	0	25	18	68	15	0	0	101	5	17	7	0	0	29	199
8:15 PM	9	36	2	0	0	47	9	10	6	0	0	25	24	48	7	0	0	79	13	20	5	0	0	38	189
8:30 PM	3	36	4	0	0	43	2	10	7	0	0	19	19	42	10	0	0	71	9	23	3	0	0	35	168
8:45 PM	4	26	5	0	0	35	2	5	0	0	0	7	10	45	11	0	0	66	10	22	3	0	0	35	143
Hourly Total	23	133	13	0	0	169	17	40	19	0	0	76	71	203	43	0	0	317	37	82	18	0	0	137	699
Grand Total	587	4462	439	0	14	5488	428	1750	639	0	10	2817	1348	4462	752	0	11	6562	543	2018	464	0	13	3025	17892
Approach %	10.7	81.3	8.0	0.0	-	-	15.2	62.1	22.7	0.0	-	-	20.5	68.0	11.5	0.0	-	-	18.0	66.7	15.3	0.0	-	-	-
Total %	3.3	24.9	2.5	0.0	-	30.7	2.4	9.8	3.6	0.0	-	15.7	7.5	24.9	4.2	0.0	-	36.7	3.0	11.3	2.6	0.0	-	16.9	-
Lights	518	4227	408	0	-	5153	387	1666	599	0	-	2652	1295	4242	731	0	-	6268	510	1949	422	0	-	2881	16954
% Lights	88.2	94.7	92.9	-	-	93.9	90.4	95.2	93.7	-	-	94.1	96.1	95.1	97.2	-	-	95.5	93.9	96.6	90.9	-	-	95.2	94.8
Buses	6	46	22	0	-	74	29	8	10	0	-	47	13	40	2	0	-	55	1	8	1	0	-	10	186
% Buses	1.0	1.0	5.0	-	-	1.3	6.8	0.5	1.6	-	-	1.7	1.0	0.9	0.3	-	-	0.8	0.2	0.4	0.2	-	-	0.3	1.0
Trucks	63	187	9	0	-	259	12	76	30	0	-	118	40	178	19	0	-	237	32	60	41	0	-	133	747
% Trucks	10.7	4.2	2.1	-	-	4.7	2.8	4.3	4.7	-	-	4.2	3.0	4.0	2.5	-	-	3.6	5.9	3.0	8.8	-	-	4.4	4.2

Bicycles on Road	0	2	0	0	-	2	0	0	0	0	-	0	0	2	0	0	-	2	0	1	0	0	-	1	5
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	14	-	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Kirby Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Kirby Rd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Keele Street Southbound						Kirby Road Westbound						Keele Street Northbound						Kirby Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:45 AM	14	146	18	0	0	178	15	44	19	0	0	78	22	84	5	0	0	111	19	38	10	0	0	67	434
8:00 AM	13	171	13	0	2	197	12	36	16	0	0	64	15	71	10	0	2	96	9	39	5	0	1	53	410
8:15 AM	19	151	5	0	0	175	8	42	11	0	0	61	14	68	9	0	0	91	10	41	10	0	0	61	388
8:30 AM	9	145	13	0	2	167	14	43	35	0	1	92	16	67	10	0	0	93	13	35	6	0	0	54	406
Total	55	613	49	0	4	717	49	165	81	0	1	295	67	290	34	0	2	391	51	153	31	0	1	235	1638
Approach %	7.7	85.5	6.8	0.0	-	-	16.6	55.9	27.5	0.0	-	-	17.1	74.2	8.7	0.0	-	-	21.7	65.1	13.2	0.0	-	-	-
Total %	3.4	37.4	3.0	0.0	-	43.8	3.0	10.1	4.9	0.0	-	18.0	4.1	17.7	2.1	0.0	-	23.9	3.1	9.3	1.9	0.0	-	14.3	-
PHF	0.724	0.896	0.681	0.000	-	0.910	0.817	0.938	0.579	0.000	-	0.802	0.761	0.863	0.850	0.000	-	0.881	0.671	0.933	0.775	0.000	-	0.877	0.944
Lights	50	598	46	0	-	694	41	157	77	0	-	275	63	272	32	0	-	367	48	147	30	0	-	225	1561
% Lights	90.9	97.6	93.9	-	-	96.8	83.7	95.2	95.1	-	-	93.2	94.0	93.8	94.1	-	-	93.9	94.1	96.1	96.8	-	-	95.7	95.3
Buses	0	3	3	0	-	6	3	1	1	0	-	5	1	3	2	0	-	6	1	2	1	0	-	4	21
% Buses	0.0	0.5	6.1	-	-	0.8	6.1	0.6	1.2	-	-	1.7	1.5	1.0	5.9	-	-	1.5	2.0	1.3	3.2	-	-	1.7	1.3
Trucks	5	12	0	0	-	17	5	7	3	0	-	15	3	15	0	0	-	18	2	4	0	0	-	6	56
% Trucks	9.1	2.0	0.0	-	-	2.4	10.2	4.2	3.7	-	-	5.1	4.5	5.2	0.0	-	-	4.6	3.9	2.6	0.0	-	-	2.6	3.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
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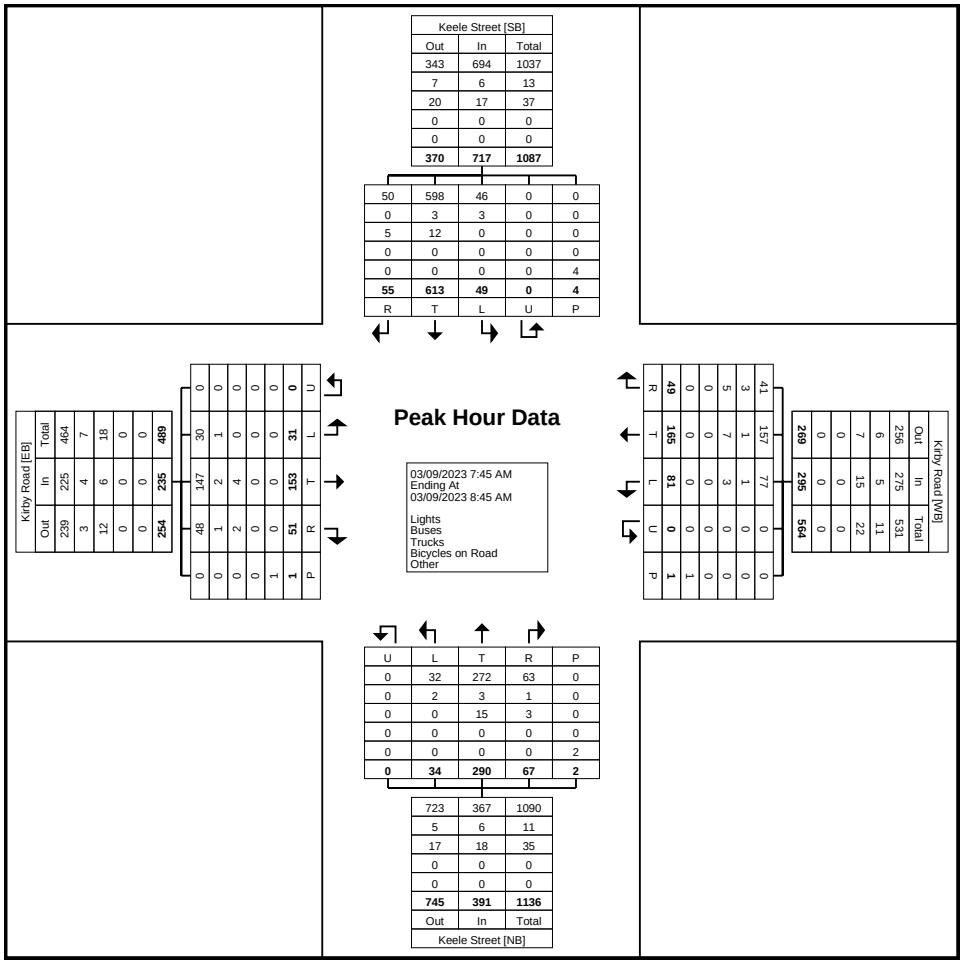
Count Name: 20009_Keele St & Kirby Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Kirby Rd
Site Code: 20009
Start Date: 03/09/2023

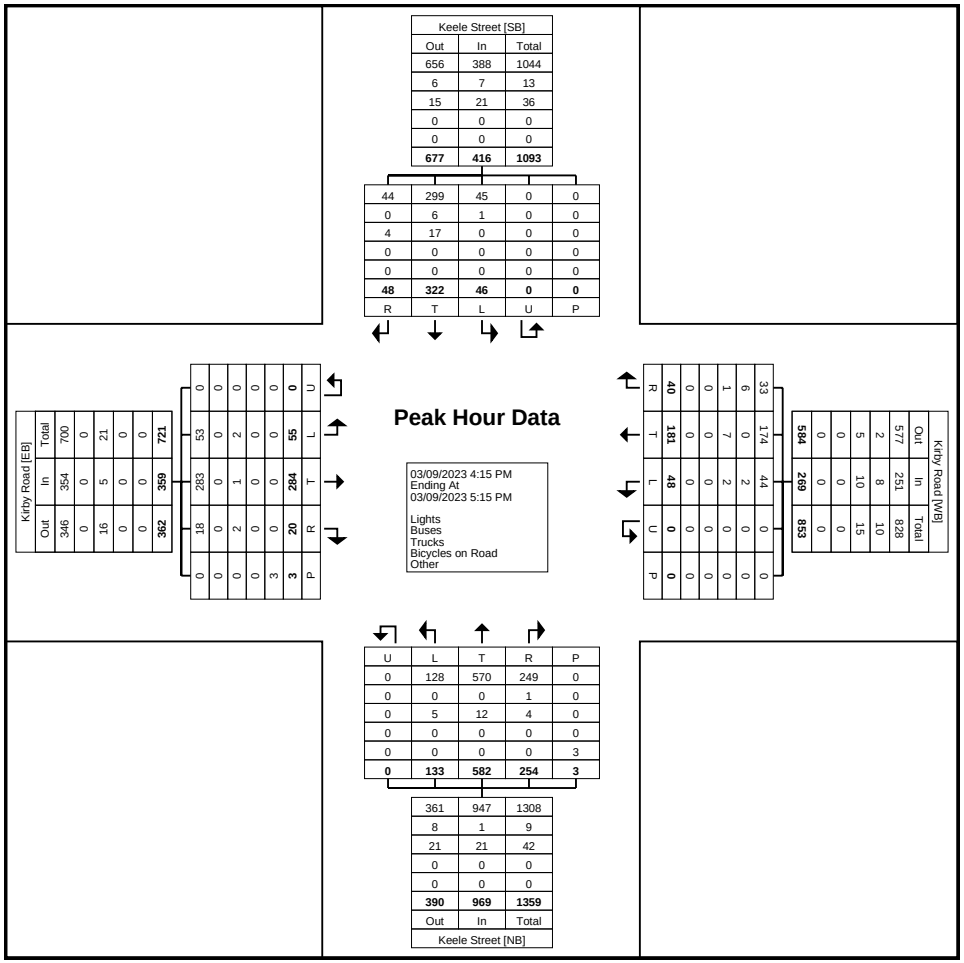
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Keele Street Southbound						Kirby Road Westbound						Keele Street Northbound						Kirby Road Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:15 PM	15	88	7	0	0	110	13	54	9	0	0	76	55	138	37	0	0	230	3	59	16	0	0	78	494
4:30 PM	9	79	14	0	0	102	12	52	13	0	0	77	55	148	35	0	0	238	6	69	12	0	0	87	504
4:45 PM	16	72	19	0	0	107	10	37	14	0	0	61	70	146	23	0	1	239	6	81	16	0	1	103	510
5:00 PM	8	83	6	0	0	97	5	38	12	0	0	55	74	150	38	0	2	262	5	75	11	0	2	91	505
Total	48	322	46	0	0	416	40	181	48	0	0	269	254	582	133	0	3	969	20	284	55	0	3	359	2013
Approach %	11.5	77.4	11.1	0.0	-	-	14.9	67.3	17.8	0.0	-	-	26.2	60.1	13.7	0.0	-	-	5.6	79.1	15.3	0.0	-	-	-
Total %	2.4	16.0	2.3	0.0	-	20.7	2.0	9.0	2.4	0.0	-	13.4	12.6	28.9	6.6	0.0	-	48.1	1.0	14.1	2.7	0.0	-	17.8	-
PHF	0.750	0.915	0.605	0.000	-	0.945	0.769	0.838	0.857	0.000	-	0.873	0.858	0.970	0.875	0.000	-	0.925	0.833	0.877	0.859	0.000	-	0.871	0.987
Lights	44	299	45	0	-	388	33	174	44	0	-	251	249	570	128	0	-	947	18	283	53	0	-	354	1940
% Lights	91.7	92.9	97.8	-	-	93.3	82.5	96.1	91.7	-	-	93.3	98.0	97.9	96.2	-	-	97.7	90.0	99.6	96.4	-	-	98.6	96.4
Buses	0	6	1	0	-	7	6	0	2	0	-	8	1	0	0	0	-	1	0	0	0	0	-	0	16
% Buses	0.0	1.9	2.2	-	-	1.7	15.0	0.0	4.2	-	-	3.0	0.4	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.8
Trucks	4	17	0	0	-	21	1	7	2	0	-	10	4	12	5	0	-	21	2	1	2	0	-	5	57
% Trucks	8.3	5.3	0.0	-	-	5.0	2.5	3.9	4.2	-	-	3.7	1.6	2.1	3.8	-	-	2.2	10.0	0.4	3.6	-	-	1.4	2.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Kirby Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (4:15 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Vista Gate
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Data

Start Time	Keele Street Southbound					Vista Gate Westbound					Keele Street Northbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
5:30 AM	36	0	0	0	36	1	6	0	0	7	1	11	0	0	12	55
5:45 AM	58	1	0	0	59	1	12	0	0	13	2	25	0	0	27	99
Hourly Total	94	1	0	0	95	2	18	0	0	20	3	36	0	0	39	154
6:00 AM	45	0	0	0	45	4	2	0	0	6	2	13	0	0	15	66
6:15 AM	86	3	0	0	89	7	8	0	0	15	5	21	0	0	26	130
6:30 AM	120	4	0	0	124	4	7	0	0	11	7	43	0	0	50	185
6:45 AM	136	7	0	0	143	7	8	0	0	15	8	39	0	0	47	205
Hourly Total	387	14	0	0	401	22	25	0	0	47	22	116	0	0	138	586
7:00 AM	115	3	0	0	118	12	14	0	0	26	2	62	0	0	64	208
7:15 AM	142	2	0	0	144	3	14	0	0	17	5	56	0	0	61	222
7:30 AM	139	5	0	0	144	9	13	0	0	22	4	83	0	0	87	253
7:45 AM	166	7	0	0	173	10	20	0	0	30	5	95	0	0	100	303
Hourly Total	562	17	0	0	579	34	61	0	0	95	16	296	0	0	312	986
8:00 AM	167	5	0	0	172	8	17	0	0	25	7	97	0	0	104	301
8:15 AM	144	5	0	0	149	8	7	0	0	15	9	78	0	0	87	251
8:30 AM	190	10	0	0	200	6	16	0	0	22	12	99	0	0	111	333
8:45 AM	171	3	0	0	174	9	16	0	0	25	12	70	0	0	82	281
Hourly Total	672	23	0	0	695	31	56	0	0	87	40	344	0	0	384	1166
9:00 AM	138	11	0	0	149	5	14	0	0	19	10	74	0	0	84	252
9:15 AM	115	9	1	0	125	7	9	0	0	16	4	63	0	0	67	208
9:30 AM	109	7	0	0	116	4	13	0	0	17	11	58	0	0	69	202
9:45 AM	83	6	0	0	89	2	4	0	0	6	8	63	0	0	71	166
Hourly Total	445	33	1	0	479	18	40	0	0	58	33	258	0	0	291	828
10:00 AM	86	2	0	0	88	4	2	0	0	6	11	54	0	0	65	159
10:15 AM	75	4	0	0	79	3	7	0	0	10	4	69	1	0	74	163
10:30 AM	71	3	0	0	74	2	3	0	0	5	5	44	0	0	49	128
10:45 AM	62	7	0	0	69	6	8	0	0	14	8	59	0	0	67	150
Hourly Total	294	16	0	0	310	15	20	0	0	35	28	226	1	0	255	600
11:00 AM	78	4	0	0	82	8	7	0	0	15	4	50	0	0	54	151
11:15 AM	73	5	0	0	78	5	5	0	0	10	10	64	0	0	74	162
11:30 AM	58	5	0	0	63	7	7	0	0	14	9	68	0	0	77	154
11:45 AM	77	5	0	0	82	5	14	0	0	19	9	59	0	0	68	169
Hourly Total	286	19	0	0	305	25	33	0	0	58	32	241	0	0	273	636
12:00 PM	66	8	0	0	74	6	7	0	0	13	5	66	0	1	71	158
12:15 PM	63	10	0	0	73	5	9	0	0	14	9	72	0	1	81	168
12:30 PM	81	4	0	0	85	5	5	0	0	10	10	84	0	0	94	189

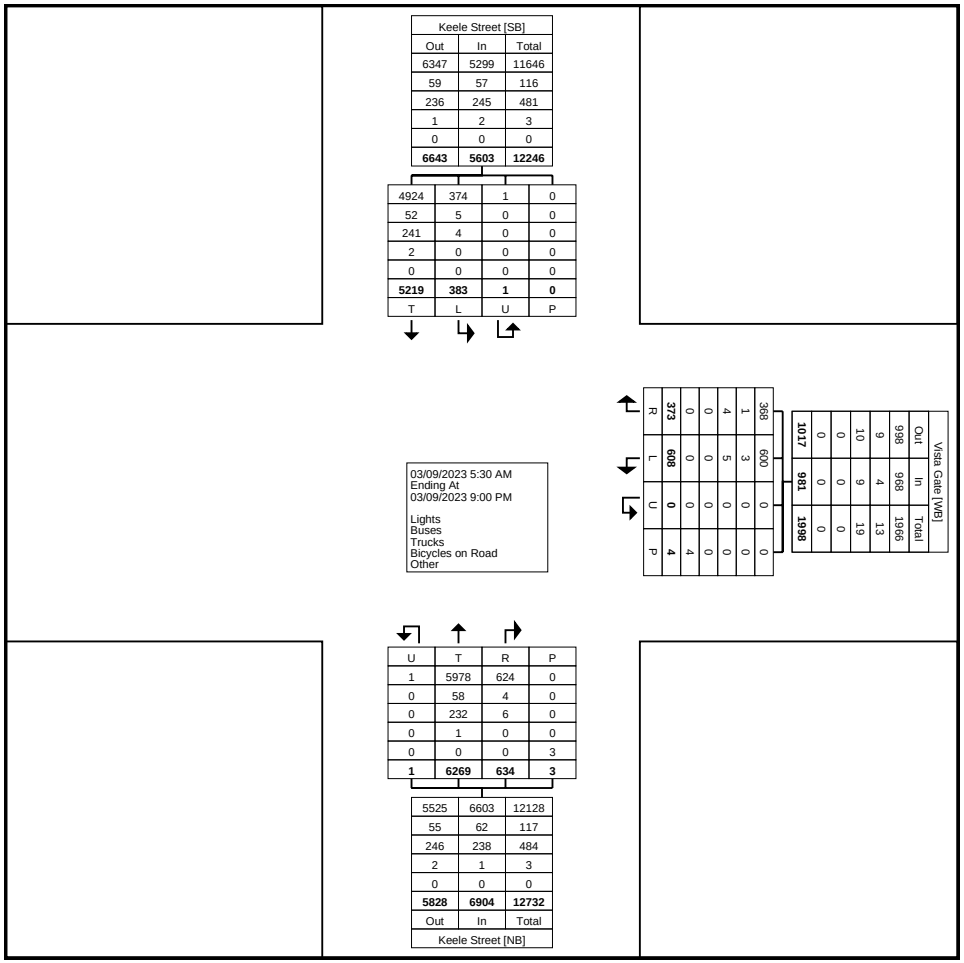
12:45 PM	70	2	0	0	72	4	9	0	1	13	7	88	0	0	95	180
Hourly Total	280	24	0	0	304	20	30	0	1	50	31	310	0	2	341	695
1:00 PM	70	8	0	0	78	4	7	0	0	11	9	94	0	0	103	192
1:15 PM	63	7	0	0	70	4	7	0	0	11	9	62	0	0	71	152
1:30 PM	63	5	0	0	68	6	10	0	0	16	13	79	0	0	92	176
1:45 PM	75	4	0	0	79	4	8	0	2	12	15	87	0	0	102	193
Hourly Total	271	24	0	0	295	18	32	0	2	50	46	322	0	0	368	713
2:00 PM	65	4	0	0	69	6	8	0	0	14	10	113	0	0	123	206
2:15 PM	56	8	0	0	64	3	11	0	1	14	11	130	0	1	141	219
2:30 PM	68	10	0	0	78	5	8	0	0	13	15	108	0	0	123	214
2:45 PM	81	7	0	0	88	8	6	0	0	14	9	126	0	0	135	237
Hourly Total	270	29	0	0	299	22	33	0	1	55	45	477	0	1	522	876
3:00 PM	65	10	0	0	75	12	15	0	0	27	8	126	0	0	134	236
3:15 PM	94	7	0	0	101	3	14	0	0	17	14	123	0	0	137	255
3:30 PM	68	10	0	0	78	13	12	0	0	25	16	183	0	0	199	302
3:45 PM	110	8	0	0	118	5	11	0	0	16	10	206	0	0	216	350
Hourly Total	337	35	0	0	372	33	52	0	0	85	48	638	0	0	686	1143
4:00 PM	81	11	0	0	92	2	11	0	0	13	13	214	0	0	227	332
4:15 PM	94	5	0	0	99	6	9	0	0	15	19	235	0	0	254	368
4:30 PM	92	6	0	0	98	5	14	0	0	19	15	236	0	0	251	368
4:45 PM	82	10	0	0	92	7	14	0	0	21	17	230	0	0	247	360
Hourly Total	349	32	0	0	381	20	48	0	0	68	64	915	0	0	979	1428
5:00 PM	97	4	0	0	101	9	7	0	0	16	15	250	0	0	265	382
5:15 PM	78	11	0	0	89	9	5	0	0	14	15	211	0	0	226	329
5:30 PM	93	10	0	0	103	14	12	0	0	26	26	228	0	0	254	383
5:45 PM	92	8	0	0	100	7	14	0	0	21	20	182	0	0	202	323
Hourly Total	360	33	0	0	393	39	38	0	0	77	76	871	0	0	947	1417
6:00 PM	54	10	0	0	64	6	16	0	0	22	22	187	0	0	209	295
6:15 PM	82	11	0	0	93	9	11	0	0	20	13	151	0	0	164	277
6:30 PM	65	8	0	0	73	6	9	0	0	15	11	148	0	0	159	247
6:45 PM	55	10	0	0	65	13	23	0	0	36	16	95	0	0	111	212
Hourly Total	256	39	0	0	295	34	59	0	0	93	62	581	0	0	643	1031
7:00 PM	47	9	0	0	56	7	13	0	0	20	17	101	0	0	118	194
7:15 PM	48	7	0	0	55	4	5	0	0	9	8	96	0	0	104	168
7:30 PM	42	5	0	0	47	3	11	0	0	14	12	75	0	0	87	148
7:45 PM	46	3	0	0	49	6	5	0	0	11	10	58	0	0	68	128
Hourly Total	183	24	0	0	207	20	34	0	0	54	47	330	0	0	377	638
8:00 PM	46	3	0	0	49	6	9	0	0	15	8	100	0	0	108	172
8:15 PM	45	8	0	0	53	8	12	0	0	20	12	71	0	0	83	156
8:30 PM	52	2	0	0	54	1	3	0	0	4	13	70	0	0	83	141
8:45 PM	30	7	0	0	37	5	5	0	0	10	8	67	0	0	75	122
Hourly Total	173	20	0	0	193	20	29	0	0	49	41	308	0	0	349	591
Grand Total	5219	383	1	0	5603	373	608	0	4	981	634	6269	1	3	6904	13488
Approach %	93.1	6.8	0.0	-	-	38.0	62.0	0.0	-	-	9.2	90.8	0.0	-	-	-
Total %	38.7	2.8	0.0	-	41.5	2.8	4.5	0.0	-	7.3	4.7	46.5	0.0	-	51.2	-
Lights	4924	374	1	-	5299	368	600	0	-	968	624	5978	1	-	6603	12870
% Lights	94.3	97.7	100.0	-	94.6	98.7	98.7	-	-	98.7	98.4	95.4	100.0	-	95.6	95.4
Buses	52	5	0	-	57	1	3	0	-	4	4	58	0	-	62	123
% Buses	1.0	1.3	0.0	-	1.0	0.3	0.5	-	-	0.4	0.6	0.9	0.0	-	0.9	0.9
Trucks	241	4	0	-	245	4	5	0	-	9	6	232	0	-	238	492
% Trucks	4.6	1.0	0.0	-	4.4	1.1	0.8	-	-	0.9	0.9	3.7	0.0	-	3.4	3.6
Bicycles on Road	2	0	0	-	2	0	0	0	-	0	0	1	0	-	1	3

% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	25.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	75.0	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Vista Gate
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Vista Gate
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Keele Street Southbound					Vista Gate Westbound					Keele Street Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	166	7	0	0	173	10	20	0	0	30	5	95	0	0	100	303
8:00 AM	167	5	0	0	172	8	17	0	0	25	7	97	0	0	104	301
8:15 AM	144	5	0	0	149	8	7	0	0	15	9	78	0	0	87	251
8:30 AM	190	10	0	0	200	6	16	0	0	22	12	99	0	0	111	333
Total	667	27	0	0	694	32	60	0	0	92	33	369	0	0	402	1188
Approach %	96.1	3.9	0.0	-	-	34.8	65.2	0.0	-	-	8.2	91.8	0.0	-	-	-
Total %	56.1	2.3	0.0	-	58.4	2.7	5.1	0.0	-	7.7	2.8	31.1	0.0	-	33.8	-
PHF	0.878	0.675	0.000	-	0.868	0.800	0.750	0.000	-	0.767	0.688	0.932	0.000	-	0.905	0.892
Lights	647	25	0	-	672	32	60	0	-	92	33	344	0	-	377	1141
% Lights	97.0	92.6	-	-	96.8	100.0	100.0	-	-	100.0	100.0	93.2	-	-	93.8	96.0
Buses	3	2	0	-	5	0	0	0	-	0	0	7	0	-	7	12
% Buses	0.4	7.4	-	-	0.7	0.0	0.0	-	-	0.0	0.0	1.9	-	-	1.7	1.0
Trucks	17	0	0	-	17	0	0	0	-	0	0	18	0	-	18	35
% Trucks	2.5	0.0	-	-	2.4	0.0	0.0	-	-	0.0	0.0	4.9	-	-	4.5	2.9
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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625 Cochrane Drive

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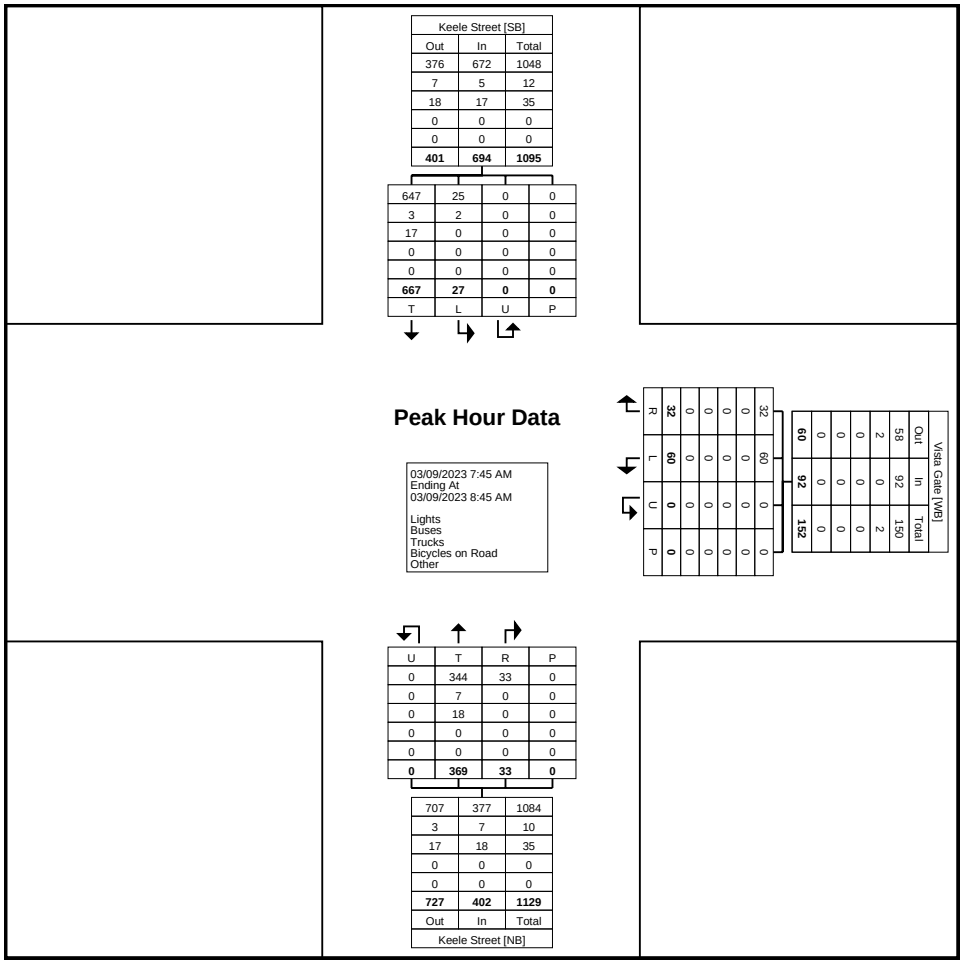
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Vista Gate
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Vista Gate
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Keele Street Southbound					Vista Gate Westbound					Keele Street Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:15 PM	94	5	0	0	99	6	9	0	0	15	19	235	0	0	254	368
4:30 PM	92	6	0	0	98	5	14	0	0	19	15	236	0	0	251	368
4:45 PM	82	10	0	0	92	7	14	0	0	21	17	230	0	0	247	360
5:00 PM	97	4	0	0	101	9	7	0	0	16	15	250	0	0	265	382
Total	365	25	0	0	390	27	44	0	0	71	66	951	0	0	1017	1478
Approach %	93.6	6.4	0.0	-	-	38.0	62.0	0.0	-	-	6.5	93.5	0.0	-	-	-
Total %	24.7	1.7	0.0	-	26.4	1.8	3.0	0.0	-	4.8	4.5	64.3	0.0	-	68.8	-
PHF	0.941	0.625	0.000	-	0.965	0.750	0.786	0.000	-	0.845	0.868	0.951	0.000	-	0.959	0.967
Lights	337	24	0	-	361	27	43	0	-	70	66	927	0	-	993	1424
% Lights	92.3	96.0	-	-	92.6	100.0	97.7	-	-	98.6	100.0	97.5	-	-	97.6	96.3
Buses	7	1	0	-	8	0	1	0	-	1	0	1	0	-	1	10
% Buses	1.9	4.0	-	-	2.1	0.0	2.3	-	-	1.4	0.0	0.1	-	-	0.1	0.7
Trucks	21	0	0	-	21	0	0	0	-	0	0	23	0	-	23	44
% Trucks	5.8	0.0	-	-	5.4	0.0	0.0	-	-	0.0	0.0	2.4	-	-	2.3	3.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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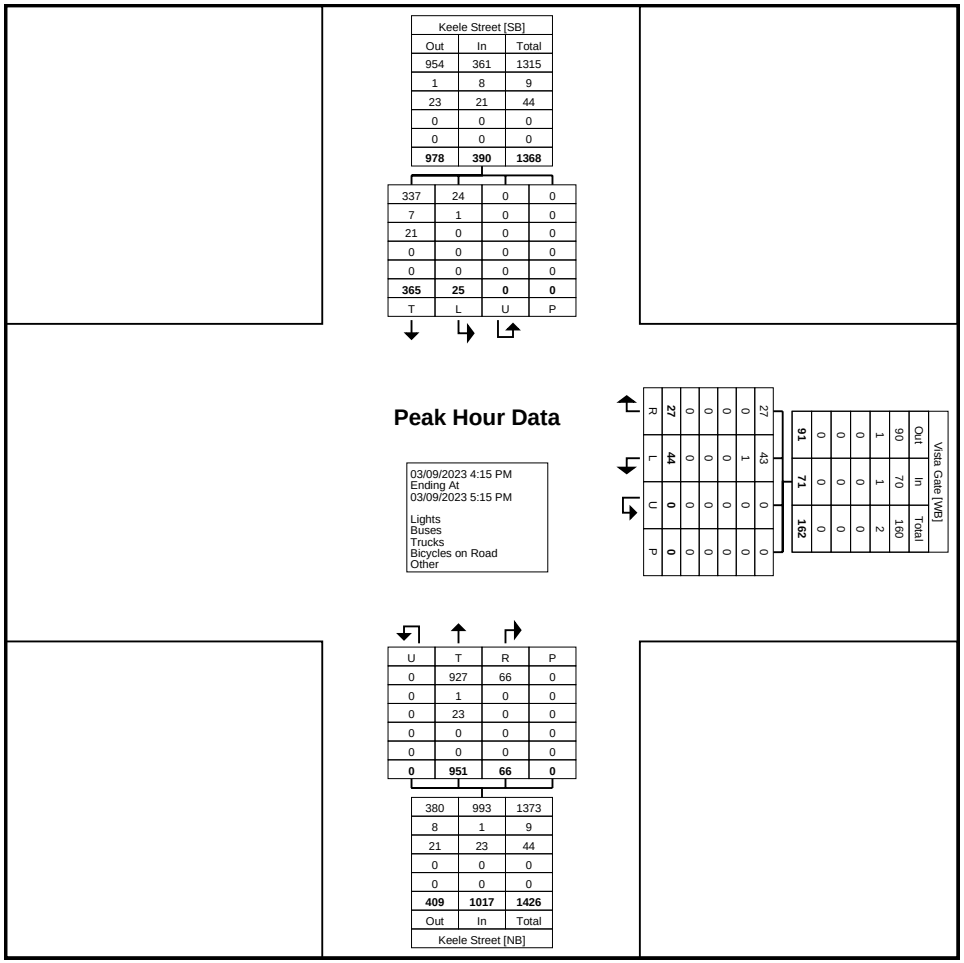
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (4:15 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Peak Point Blvd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Data

Start Time	Keele Street Southbound					Peak Point Boulevard Westbound					Keele Street Northbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
5:30 AM	42	0	0	0	42	2	11	0	0	13	2	11	0	0	13	68
5:45 AM	72	0	0	0	72	2	16	0	0	18	2	24	0	0	26	116
Hourly Total	114	0	0	0	114	4	27	0	0	31	4	35	0	0	39	184
6:00 AM	46	0	0	0	46	3	23	0	0	26	1	12	0	0	13	85
6:15 AM	95	0	0	0	95	3	20	0	0	23	4	24	0	0	28	146
6:30 AM	126	1	0	0	127	5	28	0	0	33	2	46	0	0	48	208
6:45 AM	133	3	0	0	136	4	35	0	0	39	4	43	0	0	47	222
Hourly Total	400	4	0	0	404	15	106	0	0	121	11	125	0	0	136	661
7:00 AM	130	1	0	0	131	2	41	0	0	43	10	65	0	0	75	249
7:15 AM	135	2	0	0	137	8	41	0	0	49	7	53	0	0	60	246
7:30 AM	176	2	0	0	178	8	28	0	0	36	15	85	0	0	100	314
7:45 AM	184	3	0	0	187	5	54	0	0	59	11	97	0	0	108	354
Hourly Total	625	8	0	0	633	23	164	0	0	187	43	300	0	0	343	1163
8:00 AM	204	2	0	0	206	5	37	0	0	42	13	97	0	0	110	358
8:15 AM	172	0	0	0	172	1	40	0	0	41	16	93	0	0	109	322
8:30 AM	177	1	0	0	178	5	43	0	0	48	12	101	0	0	113	339
8:45 AM	182	6	0	0	188	1	46	0	0	47	9	82	0	0	91	326
Hourly Total	735	9	0	0	744	12	166	0	0	178	50	373	0	0	423	1345
9:00 AM	142	0	0	0	142	2	21	0	0	23	19	83	0	0	102	267
9:15 AM	114	3	0	0	117	4	18	0	0	22	12	60	0	1	72	211
9:30 AM	118	3	0	0	121	2	18	0	0	20	9	68	0	0	77	218
9:45 AM	91	1	0	0	92	5	18	0	0	23	8	69	0	0	77	192
Hourly Total	465	7	0	0	472	13	75	0	0	88	48	280	0	1	328	888
10:00 AM	86	4	0	0	90	2	19	0	0	21	11	64	0	0	75	186
10:15 AM	83	1	0	0	84	2	12	0	0	14	7	66	0	0	73	171
10:30 AM	71	3	0	0	74	0	17	0	0	17	9	58	0	0	67	158
10:45 AM	69	1	0	0	70	1	21	0	0	22	13	59	0	0	72	164
Hourly Total	309	9	0	0	318	5	69	0	0	74	40	247	0	0	287	679
11:00 AM	90	0	0	1	90	1	10	0	0	11	17	57	0	1	74	175
11:15 AM	75	1	0	0	76	1	14	0	0	15	10	69	0	0	79	170
11:30 AM	65	3	0	0	68	3	16	0	0	19	8	73	0	0	81	168
11:45 AM	88	1	0	0	89	3	13	0	0	16	16	65	0	0	81	186
Hourly Total	318	5	0	1	323	8	53	0	0	61	51	264	0	1	315	699
12:00 PM	66	4	0	0	70	3	15	0	0	18	20	68	0	0	88	176
12:15 PM	74	3	0	0	77	3	14	0	0	17	12	78	0	0	90	184
12:30 PM	85	3	0	2	88	3	21	0	0	24	17	93	0	0	110	222

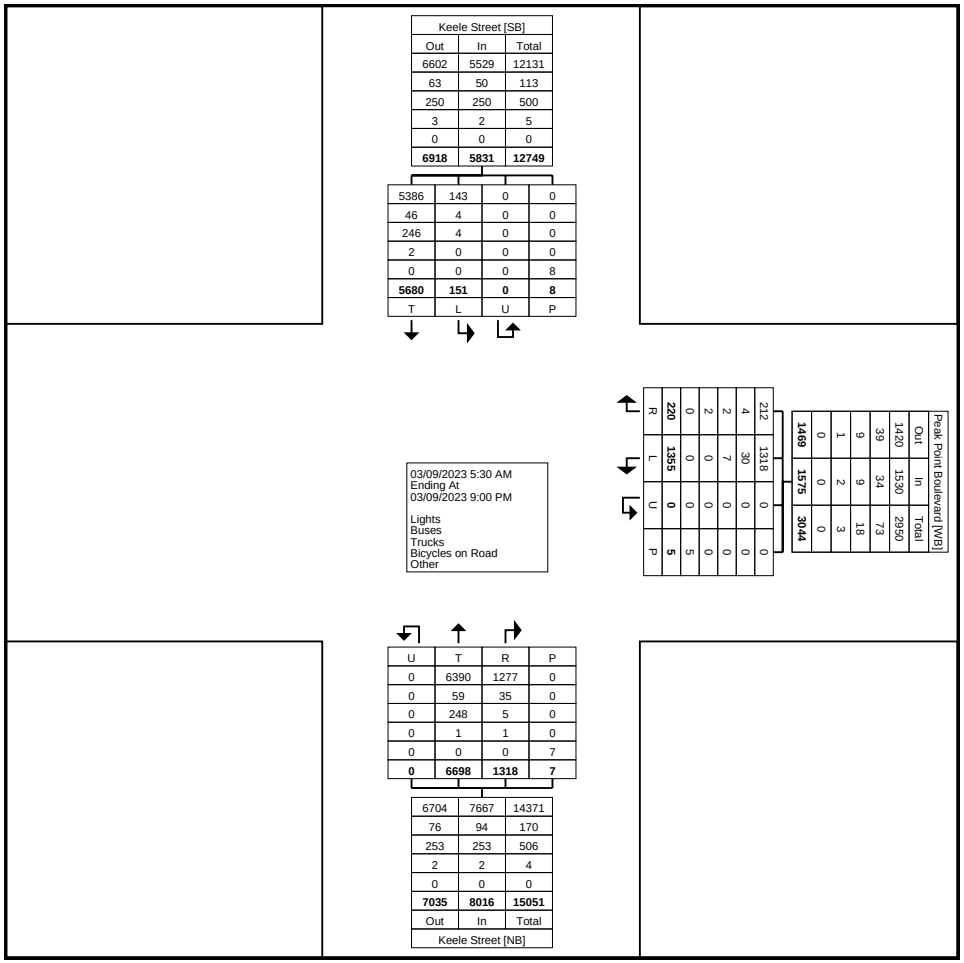
12:45 PM	72	5	0	0	77	8	15	0	0	23	20	83	0	0	103	203
Hourly Total	297	15	0	2	312	17	65	0	0	82	69	322	0	0	391	785
1:00 PM	79	2	0	1	81	3	10	0	0	13	15	104	0	0	119	213
1:15 PM	65	1	0	0	66	0	21	0	0	21	19	67	0	0	86	173
1:30 PM	77	2	0	0	79	4	17	0	1	21	17	88	0	1	105	205
1:45 PM	81	1	0	3	82	5	15	0	0	20	12	102	0	0	114	216
Hourly Total	302	6	0	4	308	12	63	0	1	75	63	361	0	1	424	807
2:00 PM	71	3	0	0	74	2	20	0	0	22	15	119	0	0	134	230
2:15 PM	71	1	0	0	72	3	19	0	0	22	21	142	0	0	163	257
2:30 PM	76	2	0	0	78	6	18	0	1	24	26	110	0	1	136	238
2:45 PM	89	2	0	0	91	8	19	0	0	27	26	128	0	0	154	272
Hourly Total	307	8	0	0	315	19	76	0	1	95	88	499	0	1	587	997
3:00 PM	80	2	0	0	82	3	11	0	1	14	25	133	0	1	158	254
3:15 PM	100	3	0	0	103	5	15	0	0	20	30	134	0	0	164	287
3:30 PM	77	2	0	1	79	6	23	0	0	29	42	195	0	0	237	345
3:45 PM	118	4	0	0	122	3	27	0	0	30	30	207	0	0	237	389
Hourly Total	375	11	0	1	386	17	76	0	1	93	127	669	0	1	796	1275
4:00 PM	90	4	0	0	94	2	19	0	0	21	34	238	0	0	272	387
4:15 PM	100	1	0	0	101	9	32	0	0	41	40	258	0	0	298	440
4:30 PM	103	1	0	0	104	2	20	0	0	22	35	234	0	0	269	395
4:45 PM	89	2	0	0	91	2	24	0	0	26	51	266	0	0	317	434
Hourly Total	382	8	0	0	390	15	95	0	0	110	160	996	0	0	1156	1656
5:00 PM	96	6	0	0	102	5	16	0	0	21	34	246	0	0	280	403
5:15 PM	76	4	0	0	80	4	30	0	0	34	47	229	0	0	276	390
5:30 PM	99	4	0	0	103	4	33	0	0	37	44	247	0	2	291	431
5:45 PM	95	7	0	0	102	4	17	0	1	21	47	197	0	0	244	367
Hourly Total	366	21	0	0	387	17	96	0	1	113	172	919	0	2	1091	1591
6:00 PM	68	1	0	0	69	3	21	0	0	24	41	211	0	0	252	345
6:15 PM	88	6	0	0	94	4	28	0	1	32	41	163	0	0	204	330
6:30 PM	72	2	0	0	74	5	20	0	0	25	38	151	0	0	189	288
6:45 PM	77	3	0	0	80	4	23	0	0	27	34	107	0	0	141	248
Hourly Total	305	12	0	0	317	16	92	0	1	108	154	632	0	0	786	1211
7:00 PM	55	3	0	0	58	3	28	0	0	31	28	109	0	0	137	226
7:15 PM	51	3	0	0	54	5	24	0	0	29	28	99	0	0	127	210
7:30 PM	48	3	0	0	51	1	18	0	0	19	35	80	0	0	115	185
7:45 PM	43	4	0	0	47	4	14	0	0	18	35	65	0	0	100	165
Hourly Total	197	13	0	0	210	13	84	0	0	97	126	353	0	0	479	786
8:00 PM	48	6	0	0	54	6	13	0	0	19	32	94	0	0	126	199
8:15 PM	56	2	0	0	58	2	16	0	0	18	33	74	0	0	107	183
8:30 PM	47	5	0	0	52	4	7	0	0	11	25	81	0	0	106	169
8:45 PM	32	2	0	0	34	2	12	0	0	14	22	74	0	0	96	144
Hourly Total	183	15	0	0	198	14	48	0	0	62	112	323	0	0	435	695
Grand Total	5680	151	0	8	5831	220	1355	0	5	1575	1318	6698	0	7	8016	15422
Approach %	97.4	2.6	0.0	-	-	14.0	86.0	0.0	-	-	16.4	83.6	0.0	-	-	-
Total %	36.8	1.0	0.0	-	37.8	1.4	8.8	0.0	-	10.2	8.5	43.4	0.0	-	52.0	-
Lights	5386	143	0	-	5529	212	1318	0	-	1530	1277	6390	0	-	7667	14726
% Lights	94.8	94.7	-	-	94.8	96.4	97.3	-	-	97.1	96.9	95.4	-	-	95.6	95.5
Buses	46	4	0	-	50	4	30	0	-	34	35	59	0	-	94	178
% Buses	0.8	2.6	-	-	0.9	1.8	2.2	-	-	2.2	2.7	0.9	-	-	1.2	1.2
Trucks	246	4	0	-	250	2	7	0	-	9	5	248	0	-	253	512
% Trucks	4.3	2.6	-	-	4.3	0.9	0.5	-	-	0.6	0.4	3.7	-	-	3.2	3.3
Bicycles on Road	2	0	0	-	2	2	0	0	-	2	1	1	0	-	2	6

% Bicycles on Road	0.0	0.0	-	-	0.0	0.9	0.0	-	-	0.1	0.1	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	25.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	6	-	-	-	-	5	-	-	-	-	7	-	-
% Pedestrians	-	-	-	75.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Peak Point Blvd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Peak Point Blvd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Keele Street Southbound					Peak Point Boulevard Westbound					Keele Street Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	184	3	0	0	187	5	54	0	0	59	11	97	0	0	108	354
8:00 AM	204	2	0	0	206	5	37	0	0	42	13	97	0	0	110	358
8:15 AM	172	0	0	0	172	1	40	0	0	41	16	93	0	0	109	322
8:30 AM	177	1	0	0	178	5	43	0	0	48	12	101	0	0	113	339
Total	737	6	0	0	743	16	174	0	0	190	52	388	0	0	440	1373
Approach %	99.2	0.8	0.0	-	-	8.4	91.6	0.0	-	-	11.8	88.2	0.0	-	-	-
Total %	53.7	0.4	0.0	-	54.1	1.2	12.7	0.0	-	13.8	3.8	28.3	0.0	-	32.0	-
PHF	0.903	0.500	0.000	-	0.902	0.800	0.806	0.000	-	0.805	0.813	0.960	0.000	-	0.973	0.959
Lights	717	6	0	-	723	16	168	0	-	184	48	362	0	-	410	1317
% Lights	97.3	100.0	-	-	97.3	100.0	96.6	-	-	96.8	92.3	93.3	-	-	93.2	95.9
Buses	3	0	0	-	3	0	6	0	-	6	4	7	0	-	11	20
% Buses	0.4	0.0	-	-	0.4	0.0	3.4	-	-	3.2	7.7	1.8	-	-	2.5	1.5
Trucks	17	0	0	-	17	0	0	0	-	0	0	19	0	-	19	36
% Trucks	2.3	0.0	-	-	2.3	0.0	0.0	-	-	0.0	0.0	4.9	-	-	4.3	2.6
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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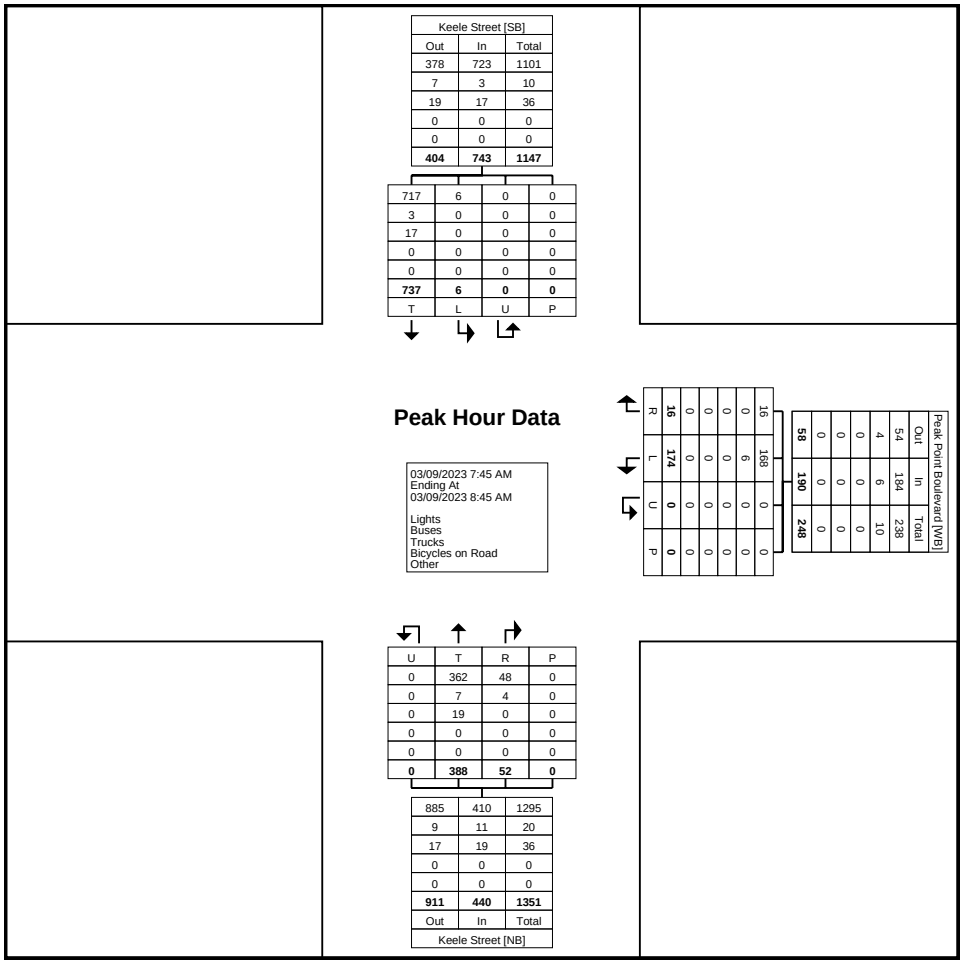


Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Peak Point Blvd
Site Code: 20009
Start Date: 03/09/2023

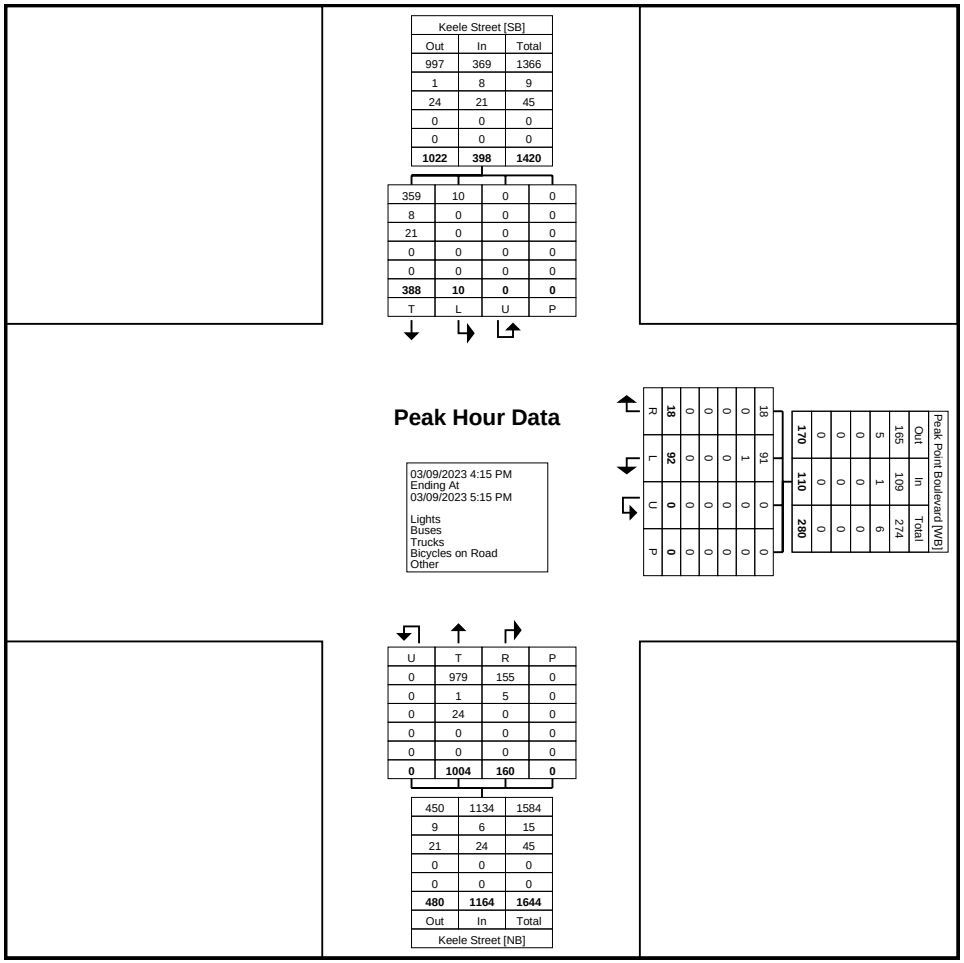
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Keele Street Southbound					Peak Point Boulevard Westbound					Keele Street Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:15 PM	100	1	0	0	101	9	32	0	0	41	40	258	0	0	298	440
4:30 PM	103	1	0	0	104	2	20	0	0	22	35	234	0	0	269	395
4:45 PM	89	2	0	0	91	2	24	0	0	26	51	266	0	0	317	434
5:00 PM	96	6	0	0	102	5	16	0	0	21	34	246	0	0	280	403
Total	388	10	0	0	398	18	92	0	0	110	160	1004	0	0	1164	1672
Approach %	97.5	2.5	0.0	-	-	16.4	83.6	0.0	-	-	13.7	86.3	0.0	-	-	-
Total %	23.2	0.6	0.0	-	23.8	1.1	5.5	0.0	-	6.6	9.6	60.0	0.0	-	69.6	-
PHF	0.942	0.417	0.000	-	0.957	0.500	0.719	0.000	-	0.671	0.784	0.944	0.000	-	0.918	0.950
Lights	359	10	0	-	369	18	91	0	-	109	155	979	0	-	1134	1612
% Lights	92.5	100.0	-	-	92.7	100.0	98.9	-	-	99.1	96.9	97.5	-	-	97.4	96.4
Buses	8	0	0	-	8	0	1	0	-	1	5	1	0	-	6	15
% Buses	2.1	0.0	-	-	2.0	0.0	1.1	-	-	0.9	3.1	0.1	-	-	0.5	0.9
Trucks	21	0	0	-	21	0	0	0	-	0	0	24	0	-	24	45
% Trucks	5.4	0.0	-	-	5.3	0.0	0.0	-	-	0.0	0.0	2.4	-	-	2.1	2.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Peak Point Blvd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (4:15 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Maple Regional Park Dwy
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Data

Start Time	Keele Street Southbound					Maple Regional Park Driveway Westbound					Keele Street Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
5:30 AM	51	0	0	0	51	0	0	0	0	0	0	14	0	0	14	65
5:45 AM	87	0	0	0	87	0	0	0	0	0	0	26	0	0	26	113
Hourly Total	138	0	0	0	138	0	0	0	0	0	0	40	0	0	40	178
6:00 AM	72	0	0	0	72	0	0	0	0	0	1	11	0	0	12	84
6:15 AM	109	0	0	0	109	1	1	0	0	2	0	32	0	0	32	143
6:30 AM	155	0	0	0	155	1	0	0	0	1	1	44	0	0	45	201
6:45 AM	172	0	0	0	172	0	1	0	0	1	0	49	0	0	49	222
Hourly Total	508	0	0	0	508	2	2	0	0	4	2	136	0	0	138	650
7:00 AM	168	1	0	0	169	0	0	0	0	0	3	77	0	0	80	249
7:15 AM	168	1	0	0	169	0	0	0	0	0	0	59	0	0	59	228
7:30 AM	218	0	0	0	218	0	0	0	0	0	1	100	0	0	101	319
7:45 AM	244	0	0	0	244	0	0	0	0	0	0	106	0	0	106	350
Hourly Total	798	2	0	0	800	0	0	0	0	0	4	342	0	0	346	1146
8:00 AM	261	1	0	0	262	0	1	0	0	1	0	119	0	0	119	382
8:15 AM	223	0	0	0	223	0	2	0	0	2	2	106	0	0	108	333
8:30 AM	241	0	0	0	241	1	1	0	0	2	1	112	0	0	113	356
8:45 AM	226	1	0	0	227	0	1	0	0	1	3	92	0	0	95	323
Hourly Total	951	2	0	0	953	1	5	0	0	6	6	429	0	0	435	1394
9:00 AM	175	1	0	0	176	0	0	0	0	0	1	99	0	0	100	276
9:15 AM	136	0	0	0	136	1	0	0	0	1	2	73	0	0	75	212
9:30 AM	133	1	0	0	134	0	0	0	0	0	0	82	0	0	82	216
9:45 AM	104	0	0	0	104	1	4	0	0	5	0	74	0	0	74	183
Hourly Total	548	2	0	0	550	2	4	0	0	6	3	328	0	0	331	887
10:00 AM	101	0	0	0	101	2	1	0	0	3	1	71	0	0	72	176
10:15 AM	93	1	0	0	94	0	0	0	0	0	2	72	0	0	74	168
10:30 AM	83	0	0	0	83	0	2	0	0	2	2	63	0	0	65	150
10:45 AM	102	0	0	0	102	1	4	0	0	5	1	73	0	0	74	181
Hourly Total	379	1	0	0	380	3	7	0	0	10	6	279	0	0	285	675
11:00 AM	92	1	0	0	93	0	0	0	0	0	1	78	0	0	79	172
11:15 AM	88	0	0	0	88	0	1	0	0	1	0	80	0	0	80	169
11:30 AM	79	1	0	0	80	0	2	0	0	2	1	84	0	0	85	167
11:45 AM	104	0	0	0	104	0	2	0	0	2	0	83	0	0	83	189
Hourly Total	363	2	0	0	365	0	5	0	0	5	2	325	0	0	327	697
12:00 PM	85	0	0	0	85	0	1	0	0	1	1	86	0	0	87	173
12:15 PM	90	1	0	0	91	0	0	0	0	0	3	87	0	0	90	181
12:30 PM	102	1	0	0	103	0	1	0	1	1	4	114	0	0	118	222

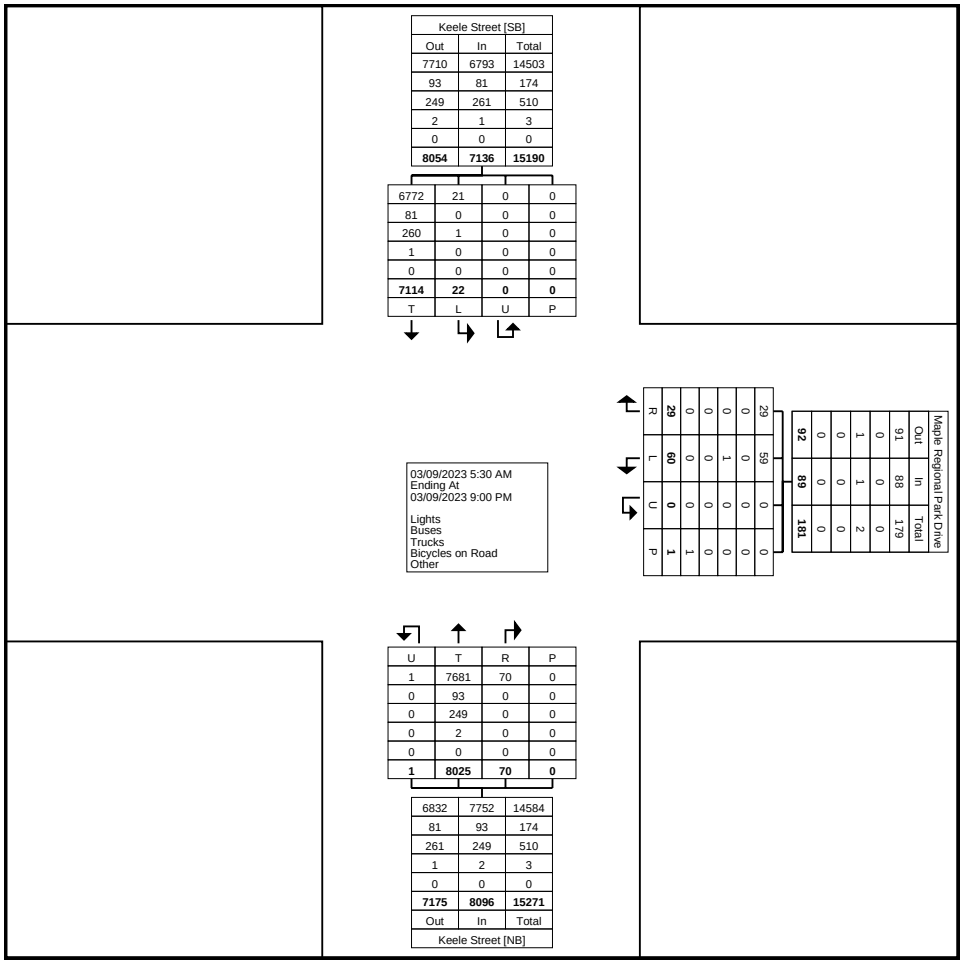
12:45 PM	92	0	0	0	92	1	1	0	0	2	1	106	0	0	107	201
Hourly Total	369	2	0	0	371	1	3	0	1	4	9	393	0	0	402	777
1:00 PM	92	1	0	0	93	0	2	0	0	2	2	114	0	0	116	211
1:15 PM	79	1	0	0	80	2	2	0	0	4	4	88	0	0	92	176
1:30 PM	97	1	0	0	98	1	2	0	0	3	3	104	0	0	107	208
1:45 PM	94	0	0	0	94	1	1	0	0	2	2	117	0	0	119	215
Hourly Total	362	3	0	0	365	4	7	0	0	11	11	423	0	0	434	810
2:00 PM	97	0	0	0	97	1	1	0	0	2	0	129	0	0	129	228
2:15 PM	90	0	0	0	90	0	2	0	0	2	2	160	0	0	162	254
2:30 PM	95	0	0	0	95	1	2	0	0	3	1	141	0	0	142	240
2:45 PM	105	2	0	0	107	1	0	0	0	1	1	157	0	0	158	266
Hourly Total	387	2	0	0	389	3	5	0	0	8	4	587	0	0	591	988
3:00 PM	91	0	0	0	91	2	1	0	0	3	4	156	0	0	160	254
3:15 PM	110	0	0	0	110	1	3	0	0	4	2	170	0	0	172	286
3:30 PM	106	0	0	0	106	1	3	0	0	4	2	228	0	0	230	340
3:45 PM	150	0	0	0	150	1	2	0	0	3	1	235	0	0	236	389
Hourly Total	457	0	0	0	457	5	9	0	0	14	9	789	0	0	798	1269
4:00 PM	112	0	0	0	112	0	2	0	0	2	2	260	0	0	262	376
4:15 PM	138	0	0	0	138	1	0	0	0	1	1	281	0	0	282	421
4:30 PM	126	0	0	0	126	1	0	0	0	1	0	283	1	0	284	411
4:45 PM	110	0	0	0	110	0	1	0	0	1	1	310	0	0	311	422
Hourly Total	486	0	0	0	486	2	3	0	0	5	4	1134	1	0	1139	1630
5:00 PM	116	0	0	0	116	0	0	0	0	0	1	280	0	0	281	397
5:15 PM	111	1	0	0	112	0	1	0	0	1	0	286	0	0	286	399
5:30 PM	131	0	0	0	131	0	1	0	0	1	2	298	0	0	300	432
5:45 PM	113	0	0	0	113	0	0	0	0	0	0	239	0	0	239	352
Hourly Total	471	1	0	0	472	0	2	0	0	2	3	1103	0	0	1106	1580
6:00 PM	93	0	0	0	93	0	1	0	0	1	0	255	0	0	255	349
6:15 PM	107	0	0	0	107	1	0	0	0	1	1	204	0	0	205	313
6:30 PM	96	1	0	0	97	0	4	0	0	4	2	188	0	0	190	291
6:45 PM	94	1	0	0	95	1	0	0	0	1	0	149	0	0	149	245
Hourly Total	390	2	0	0	392	2	5	0	0	7	3	796	0	0	799	1198
7:00 PM	85	0	0	0	85	0	0	0	0	0	0	134	0	0	134	219
7:15 PM	76	0	0	0	76	0	0	0	0	0	0	124	0	0	124	200
7:30 PM	61	1	0	0	62	2	0	0	0	2	1	120	0	0	121	185
7:45 PM	59	1	0	0	60	1	0	0	0	1	2	99	0	0	101	162
Hourly Total	281	2	0	0	283	3	0	0	0	3	3	477	0	0	480	766
8:00 PM	58	0	0	0	58	0	2	0	0	2	0	131	0	0	131	191
8:15 PM	68	0	0	0	68	1	0	0	0	1	0	112	0	0	112	181
8:30 PM	57	1	0	0	58	0	1	0	0	1	0	102	0	0	102	161
8:45 PM	43	0	0	0	43	0	0	0	0	0	1	99	0	0	100	143
Hourly Total	226	1	0	0	227	1	3	0	0	4	1	444	0	0	445	676
Grand Total	7114	22	0	0	7136	29	60	0	1	89	70	8025	1	0	8096	15321
Approach %	99.7	0.3	0.0	-	-	32.6	67.4	0.0	-	-	0.9	99.1	0.0	-	-	-
Total %	46.4	0.1	0.0	-	46.6	0.2	0.4	0.0	-	0.6	0.5	52.4	0.0	-	52.8	-
Lights	6772	21	0	-	6793	29	59	0	-	88	70	7681	1	-	7752	14633
% Lights	95.2	95.5	-	-	95.2	100.0	98.3	-	-	98.9	100.0	95.7	100.0	-	95.8	95.5
Buses	81	0	0	-	81	0	0	0	-	0	0	93	0	-	93	174
% Buses	1.1	0.0	-	-	1.1	0.0	0.0	-	-	0.0	0.0	1.2	0.0	-	1.1	1.1
Trucks	260	1	0	-	261	0	1	0	-	1	0	249	0	-	249	511
% Trucks	3.7	4.5	-	-	3.7	0.0	1.7	-	-	1.1	0.0	3.1	0.0	-	3.1	3.3
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3

% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Maple Regional Park Dwy
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Maple Regional Park Dwy
Site Code: 20009
Start Date: 03/09/2023

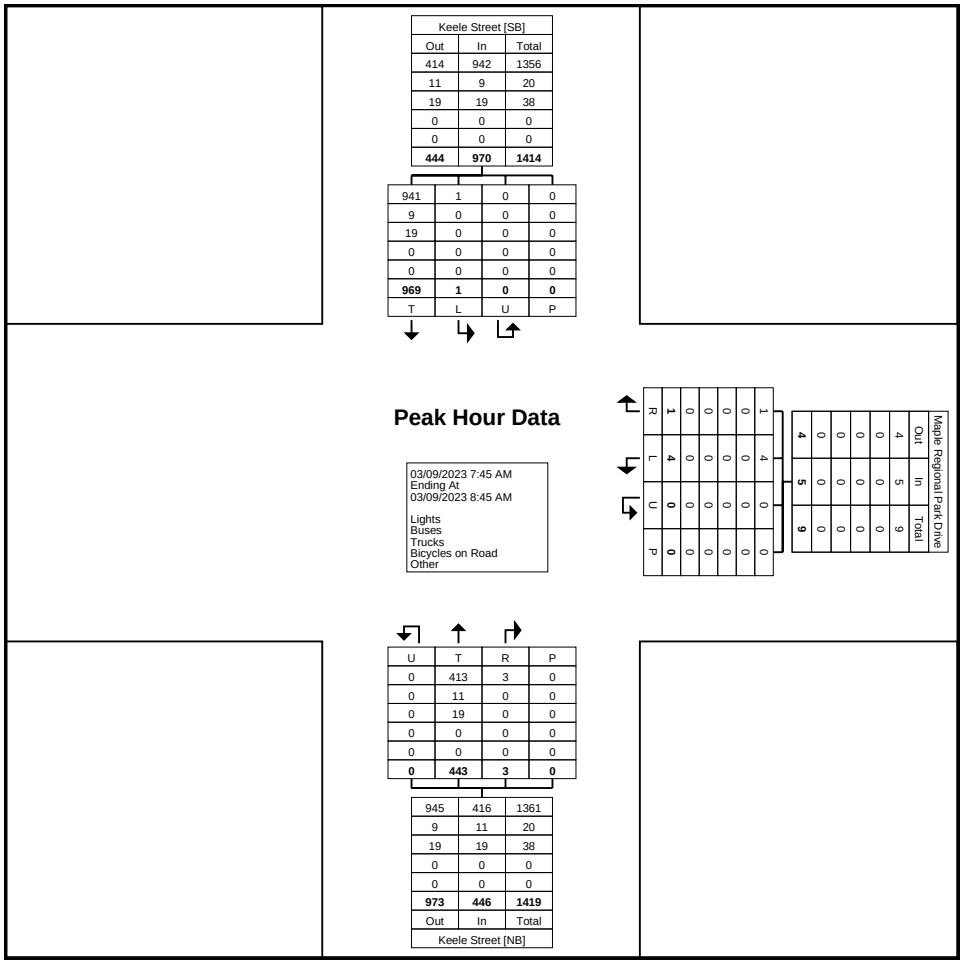
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Keele Street Southbound					Maple Regional Park Driveway Westbound					Keele Street Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	244	0	0	0	244	0	0	0	0	0	0	106	0	0	106	350
8:00 AM	261	1	0	0	262	0	1	0	0	1	0	119	0	0	119	382
8:15 AM	223	0	0	0	223	0	2	0	0	2	2	106	0	0	108	333
8:30 AM	241	0	0	0	241	1	1	0	0	2	1	112	0	0	113	356
Total	969	1	0	0	970	1	4	0	0	5	3	443	0	0	446	1421
Approach %	99.9	0.1	0.0	-	-	20.0	80.0	0.0	-	-	0.7	99.3	0.0	-	-	-
Total %	68.2	0.1	0.0	-	68.3	0.1	0.3	0.0	-	0.4	0.2	31.2	0.0	-	31.4	-
PHF	0.928	0.250	0.000	-	0.926	0.250	0.500	0.000	-	0.625	0.375	0.931	0.000	-	0.937	0.930
Lights	941	1	0	-	942	1	4	0	-	5	3	413	0	-	416	1363
% Lights	97.1	100.0	-	-	97.1	100.0	100.0	-	-	100.0	100.0	93.2	-	-	93.3	95.9
Buses	9	0	0	-	9	0	0	0	-	0	0	11	0	-	11	20
% Buses	0.9	0.0	-	-	0.9	0.0	0.0	-	-	0.0	0.0	2.5	-	-	2.5	1.4
Trucks	19	0	0	-	19	0	0	0	-	0	0	19	0	-	19	38
% Trucks	2.0	0.0	-	-	2.0	0.0	0.0	-	-	0.0	0.0	4.3	-	-	4.3	2.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Maple Regional Park Dwy
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Maple Regional Park Dwy
Site Code: 20009
Start Date: 03/09/2023

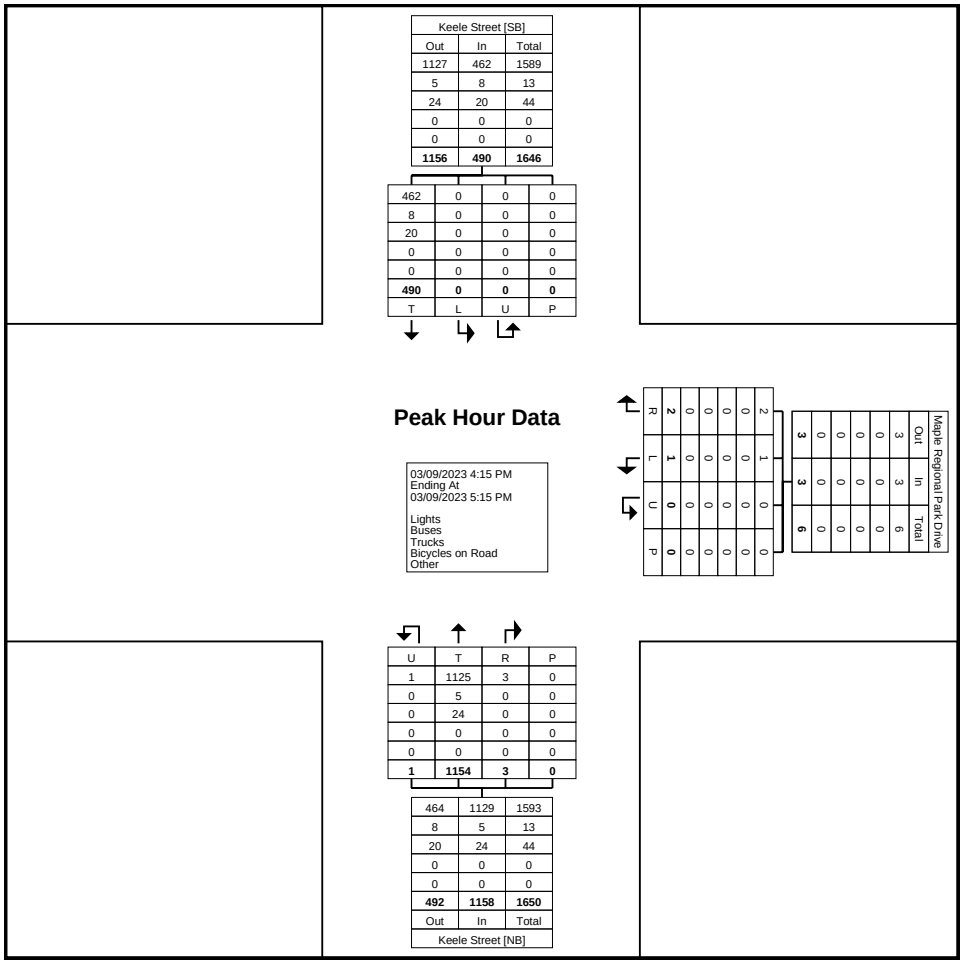
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Keele Street Southbound					Maple Regional Park Driveway Westbound					Keele Street Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:15 PM	138	0	0	0	138	1	0	0	0	1	1	281	0	0	282	421
4:30 PM	126	0	0	0	126	1	0	0	0	1	0	283	1	0	284	411
4:45 PM	110	0	0	0	110	0	1	0	0	1	1	310	0	0	311	422
5:00 PM	116	0	0	0	116	0	0	0	0	0	1	280	0	0	281	397
Total	490	0	0	0	490	2	1	0	0	3	3	1154	1	0	1158	1651
Approach %	100.0	0.0	0.0	-	-	66.7	33.3	0.0	-	-	0.3	99.7	0.1	-	-	-
Total %	29.7	0.0	0.0	-	29.7	0.1	0.1	0.0	-	0.2	0.2	69.9	0.1	-	70.1	-
PHF	0.888	0.000	0.000	-	0.888	0.500	0.250	0.000	-	0.750	0.750	0.931	0.250	-	0.931	0.978
Lights	462	0	0	-	462	2	1	0	-	3	3	1125	1	-	1129	1594
% Lights	94.3	-	-	-	94.3	100.0	100.0	-	-	100.0	100.0	97.5	100.0	-	97.5	96.5
Buses	8	0	0	-	8	0	0	0	-	0	0	5	0	-	5	13
% Buses	1.6	-	-	-	1.6	0.0	0.0	-	-	0.0	0.0	0.4	0.0	-	0.4	0.8
Trucks	20	0	0	-	20	0	0	0	-	0	0	24	0	-	24	44
% Trucks	4.1	-	-	-	4.1	0.0	0.0	-	-	0.0	0.0	2.1	0.0	-	2.1	2.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Maple Regional Park Dwy
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (4:15 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Teston Rd
Site Code: 20009
Start Date: 03/22/2023

Turning Movement Data

Start Time	Keele Street Southbound						Teston Road Westbound						Keele Street Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:30 AM	28	19	6	0	0	53	2	6	0	0	0	8	2	5	5	0	0	12	33	21	10	0	0	64	137
5:45 AM	35	33	13	0	0	81	1	5	0	0	0	6	2	9	10	0	1	21	40	31	7	0	0	78	186
Hourly Total	63	52	19	0	0	134	3	11	0	0	0	14	4	14	15	0	1	33	73	52	17	0	0	142	323
6:00 AM	24	42	3	0	0	69	0	6	2	0	0	8	3	9	25	0	1	37	32	18	10	0	0	60	174
6:15 AM	40	59	10	0	0	109	2	13	1	0	0	16	1	16	24	0	0	41	45	20	7	0	0	72	238
6:30 AM	47	81	6	0	0	134	1	9	0	0	1	10	3	19	35	0	5	57	73	32	31	0	0	136	337
6:45 AM	63	81	19	0	0	163	3	13	2	0	0	18	4	32	33	0	0	69	56	35	22	0	0	113	363
Hourly Total	174	263	38	0	0	475	6	41	5	0	1	52	11	76	117	0	6	204	206	105	70	0	0	381	1112
7:00 AM	59	75	8	0	0	142	5	8	3	0	0	16	4	36	47	0	1	87	78	37	45	0	0	160	405
7:15 AM	78	75	15	0	0	168	8	10	2	0	1	20	2	49	65	0	0	116	79	35	40	0	0	154	458
7:30 AM	96	95	18	0	0	209	11	6	0	0	0	17	7	65	71	0	1	143	105	46	47	0	1	198	567
7:45 AM	88	163	18	0	0	269	7	14	0	0	0	21	3	66	73	0	0	142	138	52	56	0	1	246	678
Hourly Total	321	408	59	0	0	788	31	38	5	0	1	74	16	216	256	0	2	488	400	170	188	0	2	758	2108
8:00 AM	83	135	12	0	0	230	13	17	2	0	0	32	7	70	85	0	4	162	102	33	44	0	0	179	603
8:15 AM	80	120	10	0	0	210	6	7	4	0	0	17	5	71	94	0	1	170	116	37	54	0	0	207	604
8:30 AM	88	156	21	0	0	265	6	10	1	0	0	17	3	67	79	0	1	149	123	23	50	0	0	196	627
8:45 AM	101	165	8	0	3	274	2	8	2	0	0	12	4	58	91	0	1	153	118	18	35	0	1	171	610
Hourly Total	352	576	51	0	3	979	27	42	9	0	0	78	19	266	349	0	7	634	459	111	183	0	1	753	2444
9:00 AM	61	88	9	0	0	158	6	15	1	0	0	22	4	44	72	0	0	120	111	27	33	0	0	171	471
9:15 AM	54	112	12	1	0	179	14	7	0	0	0	21	4	48	83	0	1	135	69	17	20	0	0	106	441
9:30 AM	49	83	6	0	0	138	10	12	0	0	0	22	2	56	70	0	0	128	61	15	28	0	0	104	392
9:45 AM	37	85	11	0	0	133	6	13	5	0	0	24	4	41	60	0	0	105	72	11	27	0	0	110	372
Hourly Total	201	368	38	1	0	608	36	47	6	0	0	89	14	189	285	0	1	488	313	70	108	0	0	491	1676
10:00 AM	43	72	0	0	0	115	3	9	4	0	0	16	5	52	57	0	0	114	44	12	17	0	0	73	318
10:15 AM	35	79	7	0	0	121	3	13	3	0	0	19	0	50	52	0	0	102	52	13	33	0	0	98	340
10:30 AM	42	75	3	0	0	120	10	13	7	0	0	30	2	43	50	0	0	95	46	9	27	0	0	82	327
10:45 AM	27	70	1	0	0	98	3	3	1	0	0	7	6	58	49	0	0	113	49	18	25	0	0	92	310
Hourly Total	147	296	11	0	0	454	19	38	15	0	0	72	13	203	208	0	0	424	191	52	102	0	0	345	1295
11:00 AM	34	69	4	0	0	107	6	7	3	0	0	16	7	53	44	0	0	104	51	15	27	0	0	93	320
11:15 AM	27	61	5	0	0	93	5	11	6	0	0	22	5	61	47	0	0	113	46	13	35	0	0	94	322
11:30 AM	41	72	8	0	0	121	7	12	3	0	0	22	3	84	63	0	0	150	42	13	24	0	0	79	372
11:45 AM	39	67	6	0	0	112	8	16	5	0	0	29	2	68	46	0	1	116	53	24	37	0	0	114	371
Hourly Total	141	269	23	0	0	433	26	46	17	0	0	89	17	266	200	0	1	483	192	65	123	0	0	380	1385
12:00 PM	34	65	7	0	0	106	7	15	4	0	0	26	7	63	55	0	0	125	44	16	31	0	0	91	348
12:15 PM	25	59	2	0	0	86	14	23	1	0	0	38	3	71	66	0	0	140	61	15	39	0	1	115	379

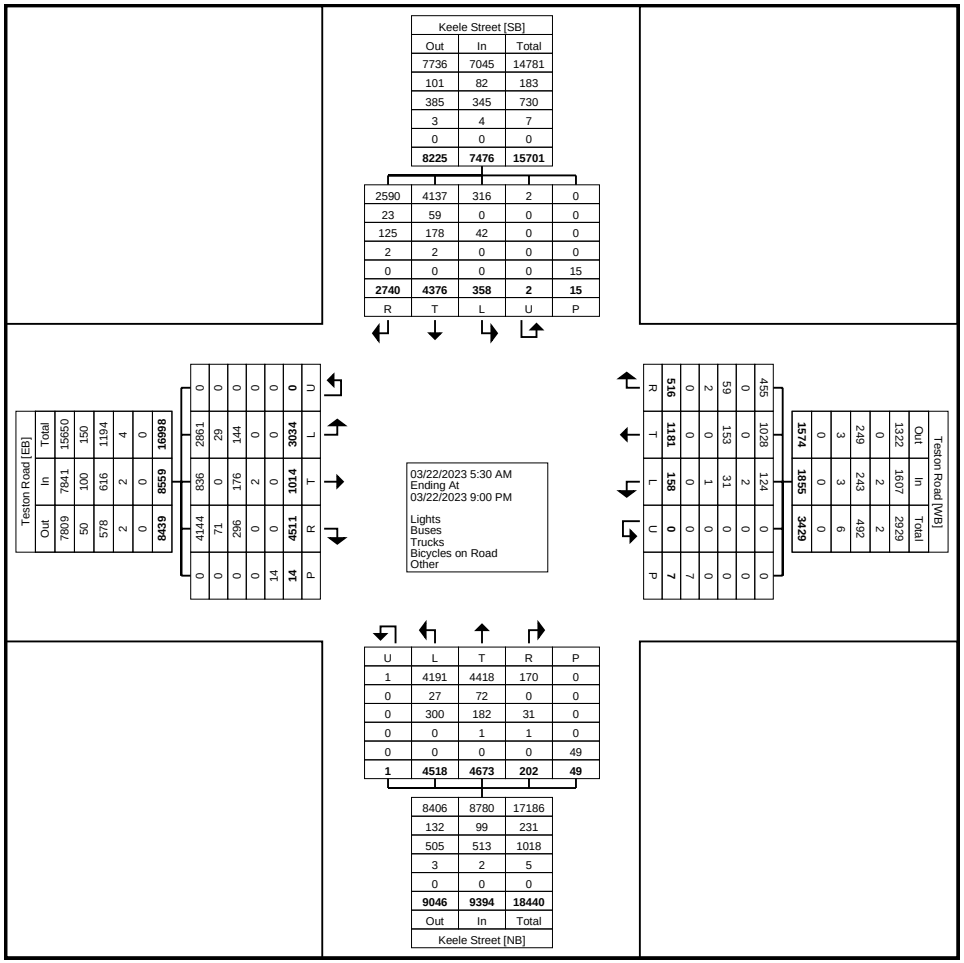
12:30 PM	39	75	8	0	0	122	7	18	7	0	1	32	2	68	50	0	1	120	55	14	35	0	0	104	378
12:45 PM	37	80	9	0	0	126	11	12	1	0	0	24	3	75	51	0	0	129	55	23	33	0	0	111	390
Hourly Total	135	279	26	0	0	440	39	68	13	0	1	120	15	277	222	0	1	514	215	68	138	0	1	421	1495
1:00 PM	38	59	4	0	0	101	10	17	5	0	0	32	7	75	52	0	0	134	40	19	39	0	1	98	365
1:15 PM	32	63	5	0	0	100	8	13	4	0	1	25	7	47	43	0	1	97	48	15	43	0	0	106	328
1:30 PM	30	42	2	0	0	74	7	18	0	0	0	25	1	58	40	0	0	99	68	24	44	0	0	136	334
1:45 PM	24	58	5	0	0	87	7	16	5	0	0	28	4	73	52	0	0	129	60	14	34	0	0	108	352
Hourly Total	124	222	16	0	0	362	32	64	14	0	1	110	19	253	187	0	1	459	216	72	160	0	1	448	1379
2:00 PM	29	48	5	0	1	82	4	12	1	0	0	17	3	75	68	0	0	146	50	17	59	0	0	126	371
2:15 PM	32	66	0	0	0	98	3	23	2	0	0	28	3	66	74	0	0	143	55	9	45	0	0	109	378
2:30 PM	25	48	3	0	0	76	6	26	3	0	0	35	3	92	88	0	0	183	69	15	47	0	0	131	425
2:45 PM	30	50	8	0	0	88	4	21	2	0	0	27	4	80	102	0	0	186	72	8	64	0	0	144	445
Hourly Total	116	212	16	0	1	344	17	82	8	0	0	107	13	313	332	0	0	658	246	49	215	0	0	510	1619
3:00 PM	42	64	1	0	0	107	6	11	5	0	0	22	3	93	115	0	1	211	92	13	53	0	0	158	498
3:15 PM	40	80	4	0	0	124	9	25	5	0	0	39	6	122	133	0	0	261	91	9	71	0	0	171	595
3:30 PM	34	72	2	0	3	108	17	53	8	0	1	78	5	115	124	0	1	244	98	21	78	0	1	197	627
3:45 PM	35	88	10	0	0	133	9	22	1	0	0	32	1	110	149	0	1	260	131	11	107	0	0	249	674
Hourly Total	151	304	17	0	3	472	41	111	19	0	1	171	15	440	521	0	3	976	412	54	309	0	1	775	2394
4:00 PM	50	91	3	0	0	144	20	53	9	0	0	82	8	180	143	0	3	331	102	16	86	0	2	204	761
4:15 PM	61	62	5	0	0	128	25	27	9	0	0	61	4	152	141	0	4	297	115	8	132	0	0	255	741
4:30 PM	56	76	5	0	0	137	14	89	4	0	0	107	7	183	147	0	5	337	127	15	113	0	2	255	836
4:45 PM	56	72	3	0	0	131	30	70	2	0	0	102	4	165	127	0	1	296	121	20	112	0	1	253	782
Hourly Total	223	301	16	0	0	540	89	239	24	0	0	352	23	680	558	0	13	1261	465	59	443	0	5	967	3120
5:00 PM	58	82	1	0	0	141	30	66	5	0	2	101	2	168	125	0	1	295	124	11	105	0	0	240	777
5:15 PM	49	63	5	1	3	118	23	76	4	0	0	103	9	169	140	0	0	318	156	13	115	0	1	284	823
5:30 PM	67	102	2	0	3	171	15	51	3	0	0	69	6	143	126	0	2	275	96	7	115	0	0	218	733
5:45 PM	47	71	1	0	0	119	18	42	2	0	0	62	2	156	107	0	0	265	102	11	91	0	0	204	650
Hourly Total	221	318	9	1	6	549	86	235	14	0	2	335	19	636	498	0	3	1153	478	42	426	0	1	946	2983
6:00 PM	42	47	3	0	1	92	16	31	2	0	0	49	0	123	130	0	1	253	82	9	72	0	1	163	557
6:15 PM	38	52	1	0	0	91	8	7	1	0	0	16	0	93	123	0	0	216	92	6	73	0	1	171	494
6:30 PM	49	58	1	0	0	108	8	20	1	0	0	29	2	94	103	1	7	200	88	6	54	0	0	148	485
6:45 PM	40	53	1	0	0	94	8	13	0	0	0	21	1	74	78	0	1	153	68	3	56	0	0	127	395
Hourly Total	169	210	6	0	1	385	40	71	4	0	0	115	3	384	434	1	9	822	330	24	255	0	2	609	1931
7:00 PM	29	46	0	0	0	75	3	8	0	0	0	11	0	65	58	0	0	123	59	2	54	0	0	115	324
7:15 PM	37	34	0	0	1	71	4	7	0	0	0	11	1	73	53	0	1	127	56	2	47	0	0	105	314
7:30 PM	31	50	3	0	0	84	3	7	4	0	0	14	0	78	53	0	0	131	37	2	46	0	0	85	314
7:45 PM	19	32	3	0	0	54	3	5	1	0	0	9	0	71	42	0	0	113	33	2	36	0	0	71	247
Hourly Total	116	162	6	0	1	284	13	27	5	0	0	45	1	287	206	0	1	494	185	8	183	0	0	376	1199
8:00 PM	24	33	0	0	0	57	2	5	0	0	0	7	0	37	35	0	0	72	41	4	31	0	0	76	212
8:15 PM	20	36	2	0	0	58	2	4	0	0	0	6	0	45	25	0	0	70	33	1	21	0	0	55	189
8:30 PM	22	35	4	0	0	61	4	10	0	0	0	14	0	57	33	0	0	90	35	6	35	0	0	76	241
8:45 PM	20	32	1	0	0	53	3	2	0	0	0	5	0	34	37	0	0	71	21	2	27	0	0	50	179
Hourly Total	86	136	7	0	0	229	11	21	0	0	0	32	0	173	130	0	0	303	130	13	114	0	0	257	821
Grand Total	2740	4376	358	2	15	7476	516	1181	158	0	7	1855	202	4673	4518	1	49	9394	4511	1014	3034	0	14	8559	27284
Approach %	36.7	58.5	4.8	0.0	-	-	27.8	63.7	8.5	0.0	-	-	2.2	49.7	48.1	0.0	-	-	52.7	11.8	35.4	0.0	-	-	-
Total %	10.0	16.0	1.3	0.0	-	27.4	1.9	4.3	0.6	0.0	-	6.8	0.7	17.1	16.6	0.0	-	34.4	16.5	3.7	11.1	0.0	-	31.4	-
Lights	2590	4137	316	2	-	7045	455	1028	124	0	-	1607	170	4418	4191	1	-	8780	4144	836	2861	0	-	7841	25273
% Lights	94.5	94.5	88.3	100.0	-	94.2	88.2	87.0	78.5	-	-	86.6	84.2	94.5	92.8	100.0	-	93.5	91.9	82.4	94.3	-	-	91.6	92.6
Buses	23	59	0	0	-	82	0	0	2	0	-	2	0	72	27	0	-	99	71	0	29	0	-	100	283
% Buses	0.8	1.3	0.0	0.0	-	1.1	0.0	0.0	1.3	-	-	0.1	0.0	1.5	0.6	0.0	-	1.1	1.6	0.0	1.0	-	-	1.2	1.0
Trucks	125	178	42	0	-	345	59	153	31	0	-	243	31	182	300	0	-	513	296	176	144	0	-	616	1717
% Trucks	4.6	4.1	11.7	0.0	-	4.6	11.4	13.0	19.6	-	-	13.1	15.3	3.9	6.6	0.0	-	5.5	6.6	17.4	4.7	-	-	7.2	6.3

Bicycles on Road	2	2	0	0	-	4	2	0	1	0	-	3	1	1	0	0	-	2	0	2	0	0	-	2	11
% Bicycles on Road	0.1	0.0	0.0	0.0	-	0.1	0.4	0.0	0.6	-	-	0.2	0.5	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	14.3	-	-	-	-	-	6.1	-	-	-	-	-	14.3	-	-
Pedestrians	-	-	-	-	15	-	-	-	-	-	6	-	-	-	-	-	46	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	85.7	-	-	-	-	-	93.9	-	-	-	-	-	85.7	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Teston Rd
Site Code: 20009
Start Date: 03/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Teston Rd
Site Code: 20009
Start Date: 03/22/2023

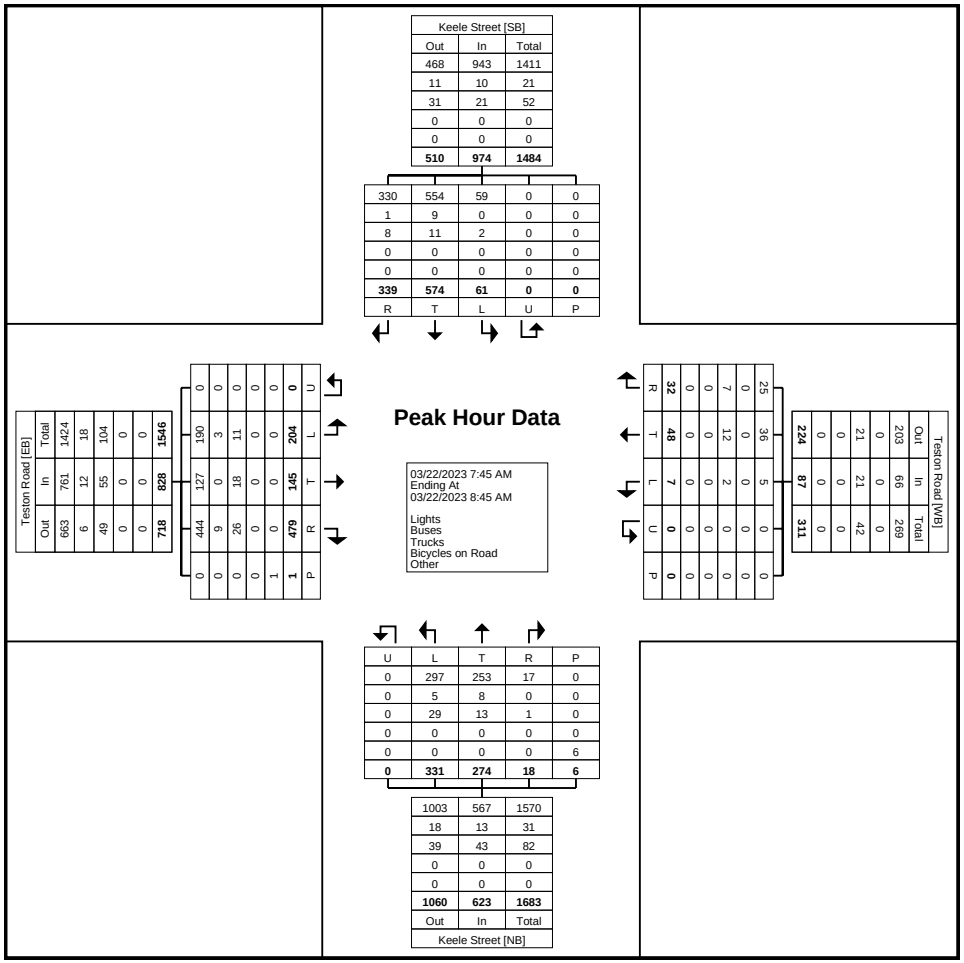
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Keele Street Southbound						Teston Road Westbound						Keele Street Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:45 AM	88	163	18	0	0	269	7	14	0	0	0	21	3	66	73	0	0	142	138	52	56	0	1	246	678
8:00 AM	83	135	12	0	0	230	13	17	2	0	0	32	7	70	85	0	4	162	102	33	44	0	0	179	603
8:15 AM	80	120	10	0	0	210	6	7	4	0	0	17	5	71	94	0	1	170	116	37	54	0	0	207	604
8:30 AM	88	156	21	0	0	265	6	10	1	0	0	17	3	67	79	0	1	149	123	23	50	0	0	196	627
Total	339	574	61	0	0	974	32	48	7	0	0	87	18	274	331	0	6	623	479	145	204	0	1	828	2512
Approach %	34.8	58.9	6.3	0.0	-	-	36.8	55.2	8.0	0.0	-	-	2.9	44.0	53.1	0.0	-	-	57.9	17.5	24.6	0.0	-	-	-
Total %	13.5	22.9	2.4	0.0	-	38.8	1.3	1.9	0.3	0.0	-	3.5	0.7	10.9	13.2	0.0	-	24.8	19.1	5.8	8.1	0.0	-	33.0	-
PHF	0.963	0.880	0.726	0.000	-	0.905	0.615	0.706	0.438	0.000	-	0.680	0.643	0.965	0.880	0.000	-	0.916	0.868	0.697	0.911	0.000	-	0.841	0.926
Lights	330	554	59	0	-	943	25	36	5	0	-	66	17	253	297	0	-	567	444	127	190	0	-	761	2337
% Lights	97.3	96.5	96.7	-	-	96.8	78.1	75.0	71.4	-	-	75.9	94.4	92.3	89.7	-	-	91.0	92.7	87.6	93.1	-	-	91.9	93.0
Buses	1	9	0	0	-	10	0	0	0	0	-	0	0	8	5	0	-	13	9	0	3	0	-	12	35
% Buses	0.3	1.6	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	2.9	1.5	-	-	2.1	1.9	0.0	1.5	-	-	1.4	1.4
Trucks	8	11	2	0	-	21	7	12	2	0	-	21	1	13	29	0	-	43	26	18	11	0	-	55	140
% Trucks	2.4	1.9	3.3	-	-	2.2	21.9	25.0	28.6	-	-	24.1	5.6	4.7	8.8	-	-	6.9	5.4	12.4	5.4	-	-	6.6	5.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Teston Rd
Site Code: 20009
Start Date: 03/22/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Teston Rd
Site Code: 20009
Start Date: 03/22/2023

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Keele Street Southbound						Teston Road Westbound						Keele Street Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	56	76	5	0	0	137	14	89	4	0	0	107	7	183	147	0	5	337	127	15	113	0	2	255	836
4:45 PM	56	72	3	0	0	131	30	70	2	0	0	102	4	165	127	0	1	296	121	20	112	0	1	253	782
5:00 PM	58	82	1	0	0	141	30	66	5	0	2	101	2	168	125	0	1	295	124	11	105	0	0	240	777
5:15 PM	49	63	5	1	3	118	23	76	4	0	0	103	9	169	140	0	0	318	156	13	115	0	1	284	823
Total	219	293	14	1	3	527	97	301	15	0	2	413	22	685	539	0	7	1246	528	59	445	0	4	1032	3218
Approach %	41.6	55.6	2.7	0.2	-	-	23.5	72.9	3.6	0.0	-	-	1.8	55.0	43.3	0.0	-	-	51.2	5.7	43.1	0.0	-	-	-
Total %	6.8	9.1	0.4	0.0	-	16.4	3.0	9.4	0.5	0.0	-	12.8	0.7	21.3	16.7	0.0	-	38.7	16.4	1.8	13.8	0.0	-	32.1	-
PHF	0.944	0.893	0.700	0.250	-	0.934	0.808	0.846	0.750	0.000	-	0.965	0.611	0.936	0.917	0.000	-	0.924	0.846	0.738	0.967	0.000	-	0.908	0.962
Lights	209	275	13	1	-	498	95	297	14	0	-	406	22	667	531	0	-	1220	510	48	441	0	-	999	3123
% Lights	95.4	93.9	92.9	100.0	-	94.5	97.9	98.7	93.3	-	-	98.3	100.0	97.4	98.5	-	-	97.9	96.6	81.4	99.1	-	-	96.8	97.0
Buses	2	4	0	0	-	6	0	0	0	0	-	0	0	2	0	0	-	2	3	0	0	0	-	3	11
% Buses	0.9	1.4	0.0	0.0	-	1.1	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.2	0.6	0.0	0.0	-	-	0.3	0.3
Trucks	8	14	1	0	-	23	2	4	1	0	-	7	0	16	8	0	-	24	15	11	4	0	-	30	84
% Trucks	3.7	4.8	7.1	0.0	-	4.4	2.1	1.3	6.7	-	-	1.7	0.0	2.3	1.5	-	-	1.9	2.8	18.6	0.9	-	-	2.9	2.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	7	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

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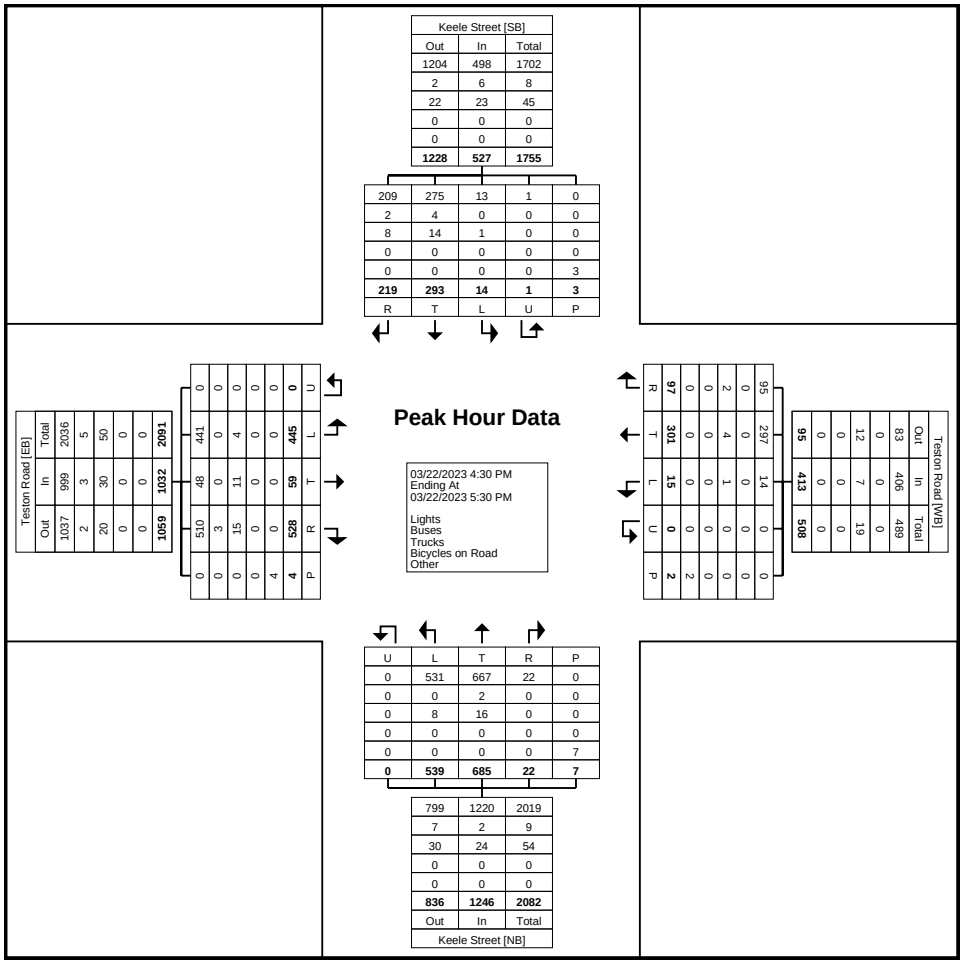
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Keele St & Teston Rd
Site Code: 20009
Start Date: 03/22/2023



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

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_St Joan of Arc Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Data

Start Time	Teston Road Westbound					St Joan of Arc Avenue Northbound					Teston Road Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
5:30 AM	28	0	0	0	28	5	21	0	0	26	3	67	0	0	70	124
5:45 AM	44	1	0	0	45	6	19	0	0	25	1	67	0	0	68	138
Hourly Total	72	1	0	0	73	11	40	0	0	51	4	134	0	0	138	262
6:00 AM	59	0	0	0	59	3	20	0	0	23	1	42	0	0	43	125
6:15 AM	62	1	0	0	63	5	20	0	0	25	5	69	0	0	74	162
6:30 AM	80	2	0	0	82	9	18	0	0	27	5	108	0	0	113	222
6:45 AM	106	0	0	0	106	6	13	0	1	19	3	130	0	0	133	258
Hourly Total	307	3	0	0	310	23	71	0	1	94	14	349	0	0	363	767
7:00 AM	126	2	0	0	128	6	26	0	0	32	5	139	0	0	144	304
7:15 AM	153	1	0	0	154	8	25	0	1	33	3	135	0	0	138	325
7:30 AM	179	4	0	0	183	18	26	0	0	44	13	159	0	0	172	399
7:45 AM	203	4	0	0	207	22	27	0	0	49	20	202	0	0	222	478
Hourly Total	661	11	0	0	672	54	104	0	1	158	41	635	0	0	676	1506
8:00 AM	185	13	0	0	198	14	33	0	0	47	23	212	0	0	235	480
8:15 AM	220	9	0	0	229	10	35	0	0	45	20	171	0	0	191	465
8:30 AM	218	8	0	0	226	10	35	0	1	45	26	172	0	0	198	469
8:45 AM	200	14	0	0	214	3	35	0	4	38	16	176	0	0	192	444
Hourly Total	823	44	0	0	867	37	138	0	5	175	85	731	0	0	816	1858
9:00 AM	153	7	0	0	160	7	26	0	1	33	10	136	0	0	146	339
9:15 AM	155	4	0	0	159	3	14	0	0	17	4	122	0	0	126	302
9:30 AM	161	1	0	0	162	2	10	0	2	12	4	120	0	0	124	298
9:45 AM	93	4	0	0	97	6	16	0	1	22	10	103	0	0	113	232
Hourly Total	562	16	0	0	578	18	66	0	4	84	28	481	0	0	509	1171
10:00 AM	84	4	0	0	88	6	8	0	0	14	10	82	1	0	93	195
10:15 AM	99	1	0	0	100	1	16	0	0	17	4	80	0	0	84	201
10:30 AM	90	2	0	0	92	3	8	0	0	11	8	89	0	0	97	200
10:45 AM	86	4	0	0	90	5	6	0	0	11	12	88	0	0	100	201
Hourly Total	359	11	0	0	370	15	38	0	0	53	34	339	1	0	374	797
11:00 AM	67	2	0	0	69	4	10	0	0	14	7	73	0	0	80	163
11:15 AM	91	5	0	0	96	4	11	0	0	15	5	94	0	0	99	210
11:30 AM	72	2	0	0	74	6	7	0	1	13	6	88	0	0	94	181
11:45 AM	98	6	0	0	104	4	15	0	0	19	8	91	0	0	99	222
Hourly Total	328	15	0	0	343	18	43	0	1	61	26	346	0	0	372	776
12:00 PM	102	2	0	0	104	5	5	0	0	10	12	97	0	0	109	223
12:15 PM	122	2	0	0	124	4	4	0	0	8	7	87	0	0	94	226
12:30 PM	82	4	0	0	86	4	16	0	1	20	7	94	0	0	101	207

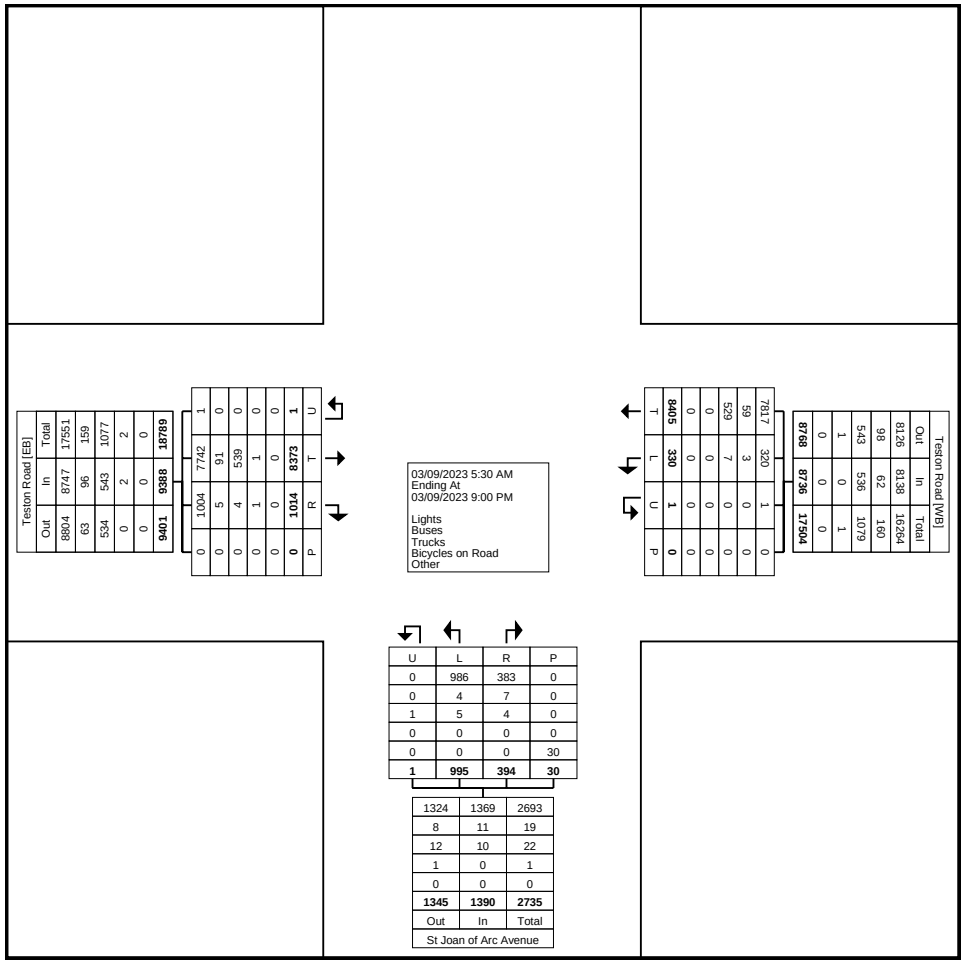
12:45 PM	92	3	0	0	95	4	15	0	0	19	14	77	0	0	91	205
Hourly Total	398	11	0	0	409	17	40	0	1	57	40	355	0	0	395	861
1:00 PM	91	9	0	0	100	5	14	0	0	19	12	117	0	0	129	248
1:15 PM	98	5	0	0	103	5	10	0	1	15	8	94	0	0	102	220
1:30 PM	90	9	0	0	99	2	8	0	0	10	13	98	0	0	111	220
1:45 PM	112	1	0	0	113	9	6	0	0	15	11	103	0	0	114	242
Hourly Total	391	24	0	0	415	21	38	0	1	59	44	412	0	0	456	930
2:00 PM	136	5	0	0	141	10	7	0	1	17	19	123	0	0	142	300
2:15 PM	111	4	0	0	115	4	11	0	0	15	15	144	0	0	159	289
2:30 PM	148	5	0	0	153	4	24	0	1	28	21	131	0	0	152	333
2:45 PM	153	8	0	0	161	13	18	0	0	31	31	138	0	0	169	361
Hourly Total	548	22	0	0	570	31	60	0	2	91	86	536	0	0	622	1283
3:00 PM	153	5	0	0	158	4	16	0	0	20	30	164	0	0	194	372
3:15 PM	164	15	0	0	179	5	19	0	1	24	31	182	0	0	213	416
3:30 PM	206	9	0	0	215	10	18	0	0	28	23	195	0	0	218	461
3:45 PM	196	6	0	0	202	14	25	0	0	39	34	214	0	0	248	489
Hourly Total	719	35	0	0	754	33	78	0	1	111	118	755	0	0	873	1738
4:00 PM	230	8	0	0	238	11	25	0	0	36	29	222	0	0	251	525
4:15 PM	215	14	0	0	229	7	15	1	2	23	25	224	0	0	249	501
4:30 PM	250	4	0	0	254	5	12	0	0	17	32	231	0	0	263	534
4:45 PM	219	9	0	0	228	12	22	0	1	34	40	237	0	0	277	539
Hourly Total	914	35	0	0	949	35	74	1	3	110	126	914	0	0	1040	2099
5:00 PM	246	1	0	0	247	9	14	0	5	23	31	255	0	0	286	556
5:15 PM	233	12	0	0	245	4	21	0	0	25	27	245	0	0	272	542
5:30 PM	276	11	0	0	287	3	15	0	0	18	24	247	0	0	271	576
5:45 PM	215	15	0	0	230	10	15	0	1	25	32	233	0	0	265	520
Hourly Total	970	39	0	0	1009	26	65	0	6	91	114	980	0	0	1094	2194
6:00 PM	206	12	0	0	218	6	13	0	0	19	27	197	0	0	224	461
6:15 PM	188	8	0	0	196	5	16	0	0	21	31	192	0	0	223	440
6:30 PM	193	6	0	0	199	9	14	0	0	23	22	162	0	0	184	406
6:45 PM	122	4	0	0	126	8	13	0	2	21	18	138	0	0	156	303
Hourly Total	709	30	0	0	739	28	56	0	2	84	98	689	0	0	787	1610
7:00 PM	118	7	0	0	125	7	16	0	0	23	24	132	0	0	156	304
7:15 PM	110	4	1	0	115	3	13	0	0	16	18	130	0	0	148	279
7:30 PM	83	6	0	0	89	1	21	0	0	22	21	98	0	0	119	230
7:45 PM	63	5	0	0	68	4	8	0	1	12	23	60	0	0	83	163
Hourly Total	374	22	1	0	397	15	58	0	1	73	86	420	0	0	506	976
8:00 PM	69	3	0	0	72	6	12	0	0	18	26	86	0	0	112	202
8:15 PM	68	4	0	0	72	2	6	0	0	8	14	79	0	0	93	173
8:30 PM	75	3	0	0	78	1	4	0	1	5	15	76	0	0	91	174
8:45 PM	58	1	0	0	59	3	4	0	0	7	15	56	0	0	71	137
Hourly Total	270	11	0	0	281	12	26	0	1	38	70	297	0	0	367	686
Grand Total	8405	330	1	0	8736	394	995	1	30	1390	1014	8373	1	0	9388	19514
Approach %	96.2	3.8	0.0	-	-	28.3	71.6	0.1	-	-	10.8	89.2	0.0	-	-	-
Total %	43.1	1.7	0.0	-	44.8	2.0	5.1	0.0	-	7.1	5.2	42.9	0.0	-	48.1	-
Lights	7817	320	1	-	8138	383	986	0	-	1369	1004	7742	1	-	8747	18254
% Lights	93.0	97.0	100.0	-	93.2	97.2	99.1	0.0	-	98.5	99.0	92.5	100.0	-	93.2	93.5
Buses	59	3	0	-	62	7	4	0	-	11	5	91	0	-	96	169
% Buses	0.7	0.9	0.0	-	0.7	1.8	0.4	0.0	-	0.8	0.5	1.1	0.0	-	1.0	0.9
Trucks	529	7	0	-	536	4	5	1	-	10	4	539	0	-	543	1089
% Trucks	6.3	2.1	0.0	-	6.1	1.0	0.5	100.0	-	0.7	0.4	6.4	0.0	-	5.8	5.6
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	1	0	-	2	2

% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	3.3	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	29	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	96.7	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_St Joan of Arc Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_St Joan of Arc Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023

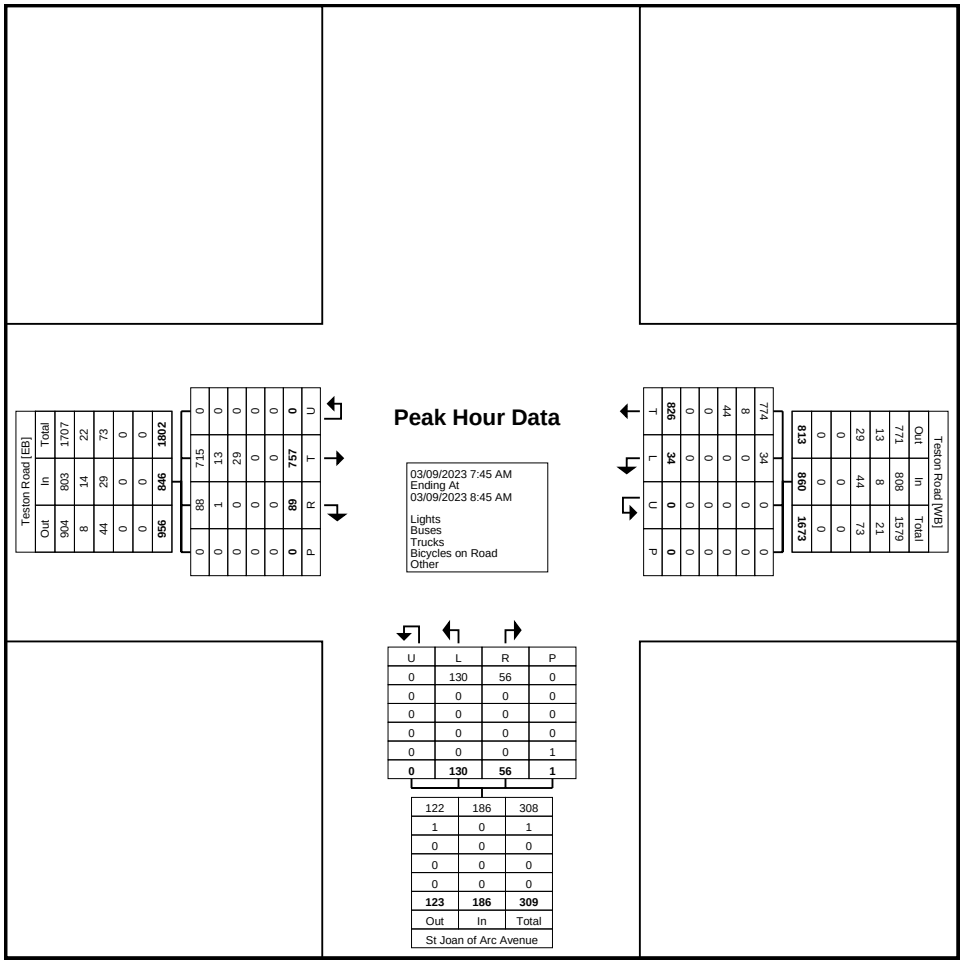
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Teston Road Westbound					St Joan of Arc Avenue Northbound					Teston Road Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	203	4	0	0	207	22	27	0	0	49	20	202	0	0	222	478
8:00 AM	185	13	0	0	198	14	33	0	0	47	23	212	0	0	235	480
8:15 AM	220	9	0	0	229	10	35	0	0	45	20	171	0	0	191	465
8:30 AM	218	8	0	0	226	10	35	0	1	45	26	172	0	0	198	469
Total	826	34	0	0	860	56	130	0	1	186	89	757	0	0	846	1892
Approach %	96.0	4.0	0.0	-	-	30.1	69.9	0.0	-	-	10.5	89.5	0.0	-	-	-
Total %	43.7	1.8	0.0	-	45.5	3.0	6.9	0.0	-	9.8	4.7	40.0	0.0	-	44.7	-
PHF	0.939	0.654	0.000	-	0.939	0.636	0.929	0.000	-	0.949	0.856	0.893	0.000	-	0.900	0.985
Lights	774	34	0	-	808	56	130	0	-	186	88	715	0	-	803	1797
% Lights	93.7	100.0	-	-	94.0	100.0	100.0	-	-	100.0	98.9	94.5	-	-	94.9	95.0
Buses	8	0	0	-	8	0	0	0	-	0	1	13	0	-	14	22
% Buses	1.0	0.0	-	-	0.9	0.0	0.0	-	-	0.0	1.1	1.7	-	-	1.7	1.2
Trucks	44	0	0	-	44	0	0	0	-	0	0	29	0	-	29	73
% Trucks	5.3	0.0	-	-	5.1	0.0	0.0	-	-	0.0	0.0	3.8	-	-	3.4	3.9
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_St Joan of Arc Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_St Joan of Arc Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023

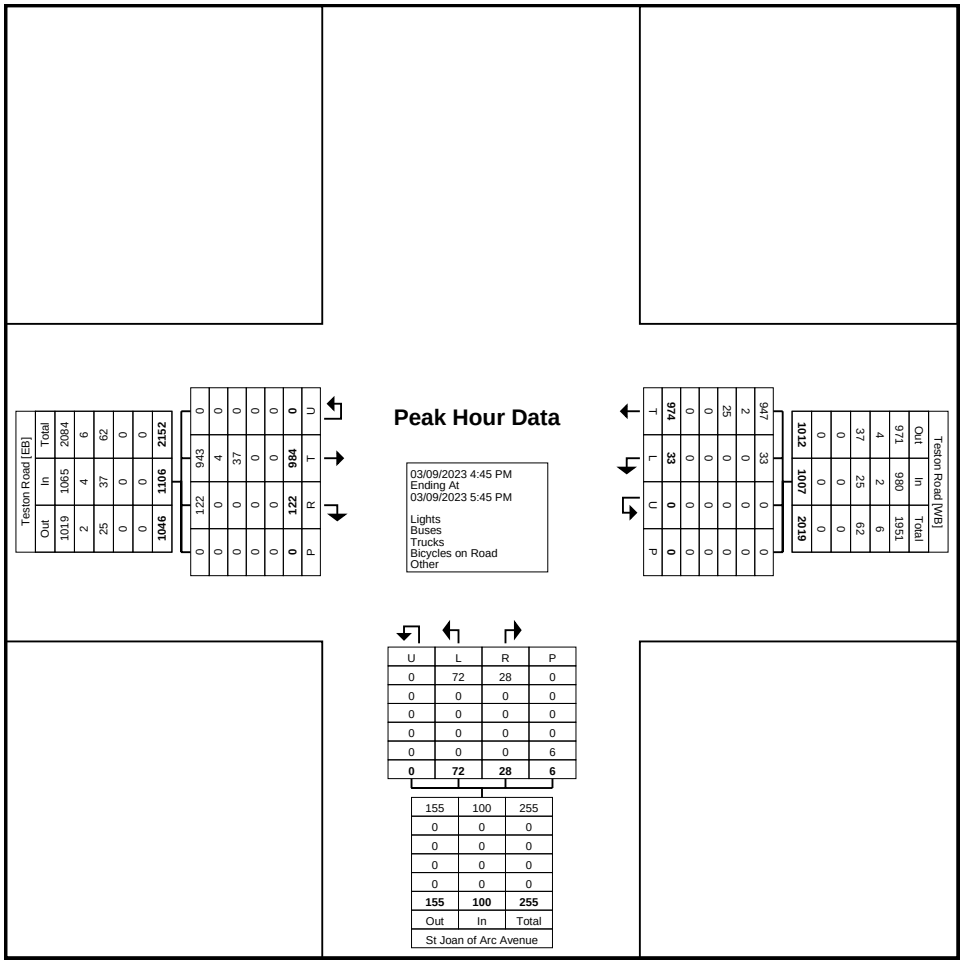
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Teston Road Westbound					St Joan of Arc Avenue Northbound					Teston Road Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	219	9	0	0	228	12	22	0	1	34	40	237	0	0	277	539
5:00 PM	246	1	0	0	247	9	14	0	5	23	31	255	0	0	286	556
5:15 PM	233	12	0	0	245	4	21	0	0	25	27	245	0	0	272	542
5:30 PM	276	11	0	0	287	3	15	0	0	18	24	247	0	0	271	576
Total	974	33	0	0	1007	28	72	0	6	100	122	984	0	0	1106	2213
Approach %	96.7	3.3	0.0	-	-	28.0	72.0	0.0	-	-	11.0	89.0	0.0	-	-	-
Total %	44.0	1.5	0.0	-	45.5	1.3	3.3	0.0	-	4.5	5.5	44.5	0.0	-	50.0	-
PHF	0.882	0.688	0.000	-	0.877	0.583	0.818	0.000	-	0.735	0.763	0.965	0.000	-	0.967	0.961
Lights	947	33	0	-	980	28	72	0	-	100	122	943	0	-	1065	2145
% Lights	97.2	100.0	-	-	97.3	100.0	100.0	-	-	100.0	100.0	95.8	-	-	96.3	96.9
Buses	2	0	0	-	2	0	0	0	-	0	0	4	0	-	4	6
% Buses	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.4	-	-	0.4	0.3
Trucks	25	0	0	-	25	0	0	0	-	0	0	37	0	-	37	62
% Trucks	2.6	0.0	-	-	2.5	0.0	0.0	-	-	0.0	0.0	3.8	-	-	3.3	2.8
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	6	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_St Joan of Arc Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Data

Start Time	Teston Road Westbound					Cranston Park Avenue Northbound					Teston Road Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
5:30 AM	50	0	0	0	50	3	14	0	1	17	2	65	0	0	67	134
5:45 AM	63	1	0	0	64	3	9	0	1	12	1	65	0	0	66	142
Hourly Total	113	1	0	0	114	6	23	0	2	29	3	130	0	0	133	276
6:00 AM	75	0	0	0	75	1	21	0	1	22	2	44	0	0	46	143
6:15 AM	81	0	0	0	81	9	26	0	0	35	3	68	0	0	71	187
6:30 AM	96	1	0	0	97	4	28	0	0	32	6	102	0	0	108	237
6:45 AM	120	0	0	0	120	12	22	0	1	34	9	115	0	0	124	278
Hourly Total	372	1	0	0	373	26	97	0	2	123	20	329	0	0	349	845
7:00 AM	164	3	0	0	167	13	18	0	2	31	10	125	0	0	135	333
7:15 AM	165	10	0	0	175	15	39	0	0	54	10	116	0	0	126	355
7:30 AM	190	5	0	0	195	12	46	0	0	58	15	163	1	0	179	432
7:45 AM	210	5	0	0	215	12	44	0	0	56	15	194	0	0	209	480
Hourly Total	729	23	0	0	752	52	147	0	2	199	50	598	1	0	649	1600
8:00 AM	207	4	0	0	211	20	56	0	1	76	22	210	0	0	232	519
8:15 AM	214	6	0	0	220	9	43	0	1	52	22	184	0	0	206	478
8:30 AM	235	5	0	0	240	10	30	0	3	40	19	178	0	0	197	477
8:45 AM	213	6	0	0	219	7	30	0	1	37	18	188	0	0	206	462
Hourly Total	869	21	0	0	890	46	159	0	6	205	81	760	0	0	841	1936
9:00 AM	173	2	0	0	175	13	18	0	1	31	12	128	0	0	140	346
9:15 AM	145	8	0	0	153	6	24	0	0	30	12	119	0	0	131	314
9:30 AM	172	6	0	0	178	7	27	0	1	34	12	124	0	0	136	348
9:45 AM	101	5	0	0	106	5	24	0	1	29	7	96	0	0	103	238
Hourly Total	591	21	0	0	612	31	93	0	3	124	43	467	0	0	510	1246
10:00 AM	96	4	0	0	100	8	18	0	0	26	16	81	0	0	97	223
10:15 AM	104	2	0	0	106	4	20	0	0	24	10	78	0	0	88	218
10:30 AM	97	4	0	0	101	3	19	0	0	22	9	92	0	0	101	224
10:45 AM	84	3	0	0	87	4	20	0	0	24	13	99	0	0	112	223
Hourly Total	381	13	0	0	394	19	77	0	0	96	48	350	0	0	398	888
11:00 AM	76	1	0	0	77	5	21	0	0	26	7	69	0	0	76	179
11:15 AM	96	3	0	0	99	4	14	0	0	18	18	92	0	0	110	227
11:30 AM	70	7	0	0	77	6	13	0	0	19	15	88	0	0	103	199
11:45 AM	103	4	0	0	107	1	10	0	0	11	12	101	0	0	113	231
Hourly Total	345	15	0	0	360	16	58	0	0	74	52	350	0	0	402	836
12:00 PM	105	5	0	0	110	5	16	0	0	21	20	111	0	0	131	262
12:15 PM	119	5	0	0	124	6	14	0	0	20	16	89	0	0	105	249
12:30 PM	96	5	0	0	101	5	19	0	0	24	15	89	0	0	104	229

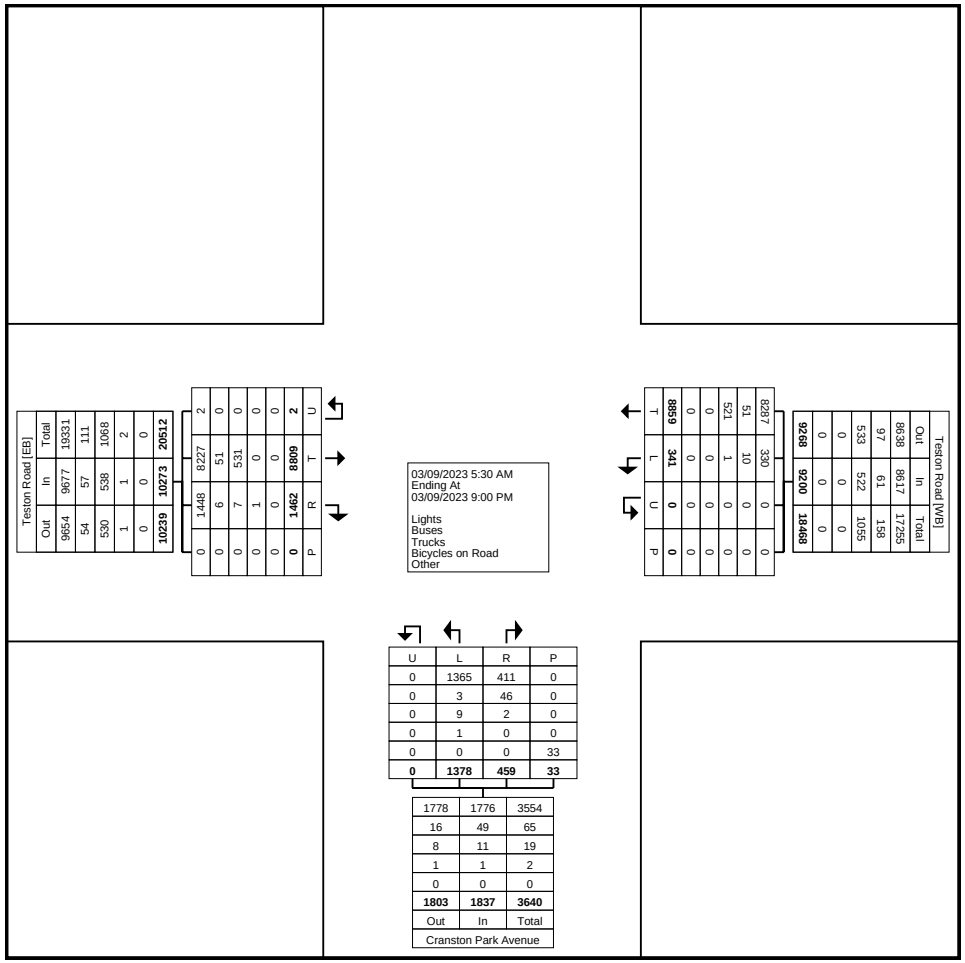
12:45 PM	87	8	0	0	95	8	13	0	1	21	15	80	0	0	95	211
Hourly Total	407	23	0	0	430	24	62	0	1	86	66	369	0	0	435	951
1:00 PM	107	4	0	0	111	6	14	0	1	20	18	112	0	0	130	261
1:15 PM	99	4	0	0	103	6	9	0	1	15	21	86	0	0	107	225
1:30 PM	96	5	0	0	101	4	15	0	0	19	16	105	0	0	121	241
1:45 PM	115	2	0	0	117	6	18	0	0	24	18	105	0	0	123	264
Hourly Total	417	15	0	0	432	22	56	0	2	78	73	408	0	0	481	991
2:00 PM	139	2	0	0	141	8	12	0	1	20	27	130	0	0	157	318
2:15 PM	117	4	0	0	121	7	16	0	1	23	22	149	0	0	171	315
2:30 PM	161	15	0	0	176	6	26	0	0	32	26	150	0	0	176	384
2:45 PM	175	5	0	0	180	10	24	0	0	34	31	167	0	0	198	412
Hourly Total	592	26	0	0	618	31	78	0	2	109	106	596	0	0	702	1429
3:00 PM	166	4	0	0	170	9	26	0	0	35	31	169	0	0	200	405
3:15 PM	181	5	0	0	186	11	18	0	1	29	33	208	0	0	241	456
3:30 PM	217	8	0	0	225	11	20	0	0	31	53	194	0	0	247	503
3:45 PM	209	15	0	0	224	13	30	0	0	43	45	233	1	0	279	546
Hourly Total	773	32	0	0	805	44	94	0	1	138	162	804	1	0	967	1910
4:00 PM	259	7	0	0	266	12	21	0	3	33	41	253	0	0	294	593
4:15 PM	224	11	0	0	235	12	26	0	0	38	31	215	0	0	246	519
4:30 PM	231	19	0	0	250	8	31	0	1	39	40	263	0	0	303	592
4:45 PM	219	9	0	0	228	10	22	0	1	32	46	271	0	0	317	577
Hourly Total	933	46	0	0	979	42	100	0	5	142	158	1002	0	0	1160	2281
5:00 PM	237	8	0	0	245	9	21	0	1	30	49	277	0	0	326	601
5:15 PM	222	6	0	0	228	10	30	0	1	40	52	273	0	0	325	593
5:30 PM	265	11	0	0	276	6	20	0	0	26	49	259	0	0	308	610
5:45 PM	215	7	0	0	222	10	21	0	1	31	52	260	0	0	312	565
Hourly Total	939	32	0	0	971	35	92	0	3	127	202	1069	0	0	1271	2369
6:00 PM	210	10	0	0	220	8	18	0	0	26	43	213	0	0	256	502
6:15 PM	182	7	0	0	189	6	29	0	0	35	37	213	0	0	250	474
6:30 PM	196	13	0	0	209	7	21	0	0	28	36	175	0	0	211	448
6:45 PM	117	4	0	0	121	5	25	0	1	30	33	150	0	0	183	334
Hourly Total	705	34	0	0	739	26	93	0	1	119	149	751	0	0	900	1758
7:00 PM	139	5	0	0	144	7	18	0	1	25	33	145	0	0	178	347
7:15 PM	111	5	0	0	116	6	34	0	0	40	35	140	0	0	175	331
7:30 PM	96	9	0	0	105	4	15	0	0	19	23	119	0	0	142	266
7:45 PM	65	3	0	0	68	5	21	0	0	26	40	75	0	0	115	209
Hourly Total	411	22	0	0	433	22	88	0	1	110	131	479	0	0	610	1153
8:00 PM	78	5	0	0	83	4	14	0	1	18	32	105	0	0	137	238
8:15 PM	72	3	0	0	75	5	19	0	0	24	34	88	0	0	122	221
8:30 PM	75	4	0	0	79	3	13	0	0	16	31	89	0	0	120	215
8:45 PM	57	4	0	0	61	5	15	0	1	20	21	65	0	0	86	167
Hourly Total	282	16	0	0	298	17	61	0	2	78	118	347	0	0	465	841
Grand Total	8859	341	0	0	9200	459	1378	0	33	1837	1462	8809	2	0	10273	21310
Approach %	96.3	3.7	0.0	-	-	25.0	75.0	0.0	-	-	14.2	85.7	0.0	-	-	-
Total %	41.6	1.6	0.0	-	43.2	2.2	6.5	0.0	-	8.6	6.9	41.3	0.0	-	48.2	-
Lights	8287	330	0	-	8617	411	1365	0	-	1776	1448	8227	2	-	9677	20070
% Lights	93.5	96.8	-	-	93.7	89.5	99.1	-	-	96.7	99.0	93.4	100.0	-	94.2	94.2
Buses	51	10	0	-	61	46	3	0	-	49	6	51	0	-	57	167
% Buses	0.6	2.9	-	-	0.7	10.0	0.2	-	-	2.7	0.4	0.6	0.0	-	0.6	0.8
Trucks	521	1	0	-	522	2	9	0	-	11	7	531	0	-	538	1071
% Trucks	5.9	0.3	-	-	5.7	0.4	0.7	-	-	0.6	0.5	6.0	0.0	-	5.2	5.0
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	1	0	0	-	1	2

% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.1	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	32	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	97.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Teston Road Westbound					Cranston Park Avenue Northbound					Teston Road Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	210	5	0	0	215	12	44	0	0	56	15	194	0	0	209	480
8:00 AM	207	4	0	0	211	20	56	0	1	76	22	210	0	0	232	519
8:15 AM	214	6	0	0	220	9	43	0	1	52	22	184	0	0	206	478
8:30 AM	235	5	0	0	240	10	30	0	3	40	19	178	0	0	197	477
Total	866	20	0	0	886	51	173	0	5	224	78	766	0	0	844	1954
Approach %	97.7	2.3	0.0	-	-	22.8	77.2	0.0	-	-	9.2	90.8	0.0	-	-	-
Total %	44.3	1.0	0.0	-	45.3	2.6	8.9	0.0	-	11.5	4.0	39.2	0.0	-	43.2	-
PHF	0.921	0.833	0.000	-	0.923	0.638	0.772	0.000	-	0.737	0.886	0.912	0.000	-	0.909	0.941
Lights	811	19	0	-	830	46	173	0	-	219	77	728	0	-	805	1854
% Lights	93.6	95.0	-	-	93.7	90.2	100.0	-	-	97.8	98.7	95.0	-	-	95.4	94.9
Buses	7	1	0	-	8	4	0	0	-	4	1	9	0	-	10	22
% Buses	0.8	5.0	-	-	0.9	7.8	0.0	-	-	1.8	1.3	1.2	-	-	1.2	1.1
Trucks	48	0	0	-	48	1	0	0	-	1	0	29	0	-	29	78
% Trucks	5.5	0.0	-	-	5.4	2.0	0.0	-	-	0.4	0.0	3.8	-	-	3.4	4.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	5	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

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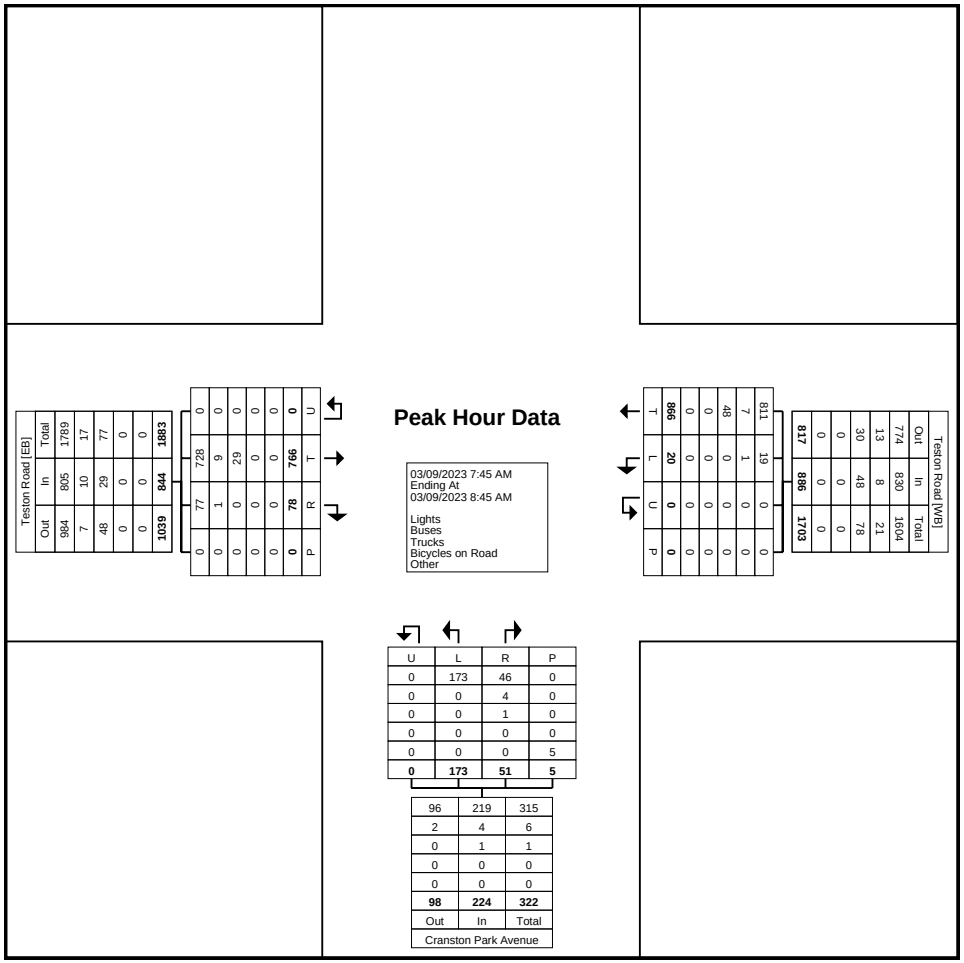
Count Name: 20009_Cranston Park Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Teston Road Westbound					Cranston Park Avenue Northbound					Teston Road Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	219	9	0	0	228	10	22	0	1	32	46	271	0	0	317	577
5:00 PM	237	8	0	0	245	9	21	0	1	30	49	277	0	0	326	601
5:15 PM	222	6	0	0	228	10	30	0	1	40	52	273	0	0	325	593
5:30 PM	265	11	0	0	276	6	20	0	0	26	49	259	0	0	308	610
Total	943	34	0	0	977	35	93	0	3	128	196	1080	0	0	1276	2381
Approach %	96.5	3.5	0.0	-	-	27.3	72.7	0.0	-	-	15.4	84.6	0.0	-	-	-
Total %	39.6	1.4	0.0	-	41.0	1.5	3.9	0.0	-	5.4	8.2	45.4	0.0	-	53.6	-
PHF	0.890	0.773	0.000	-	0.885	0.875	0.775	0.000	-	0.800	0.942	0.975	0.000	-	0.979	0.976
Lights	920	33	0	-	953	31	93	0	-	124	195	1045	0	-	1240	2317
% Lights	97.6	97.1	-	-	97.5	88.6	100.0	-	-	96.9	99.5	96.8	-	-	97.2	97.3
Buses	1	1	0	-	2	4	0	0	-	4	0	0	0	-	0	6
% Buses	0.1	2.9	-	-	0.2	11.4	0.0	-	-	3.1	0.0	0.0	-	-	0.0	0.3
Trucks	22	0	0	-	22	0	0	0	-	0	1	35	0	-	36	58
% Trucks	2.3	0.0	-	-	2.3	0.0	0.0	-	-	0.0	0.5	3.2	-	-	2.8	2.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
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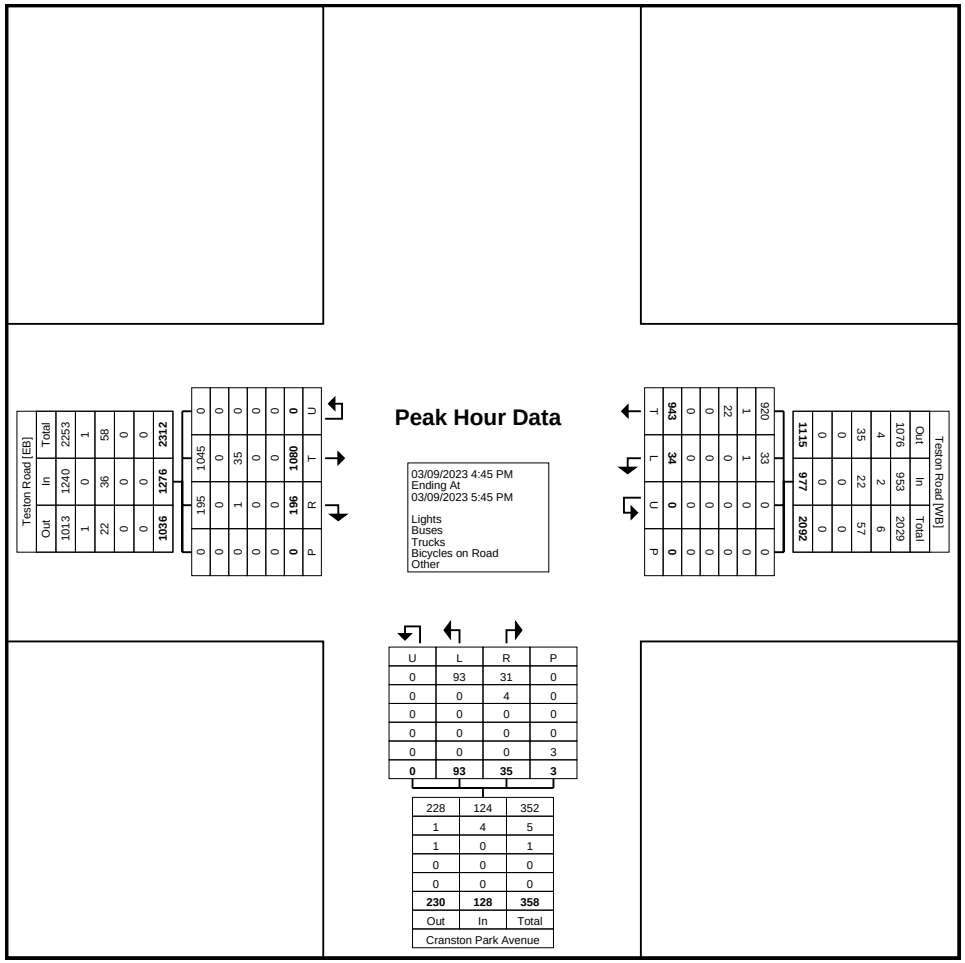
Count Name: 20009_Cranston Park Ave & Teston Rd
Site Code: 20009
Start Date: 03/09/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_ Jane St & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Data

Start Time	Jane Street Southbound						Teston Road Westbound						Jane Street Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:30 AM	13	28	3	0	0	44	1	46	6	0	0	53	8	7	5	1	2	21	7	55	6	0	0	68	186
5:45 AM	9	39	1	0	0	49	2	67	11	0	0	80	8	9	8	0	0	25	6	46	9	0	0	61	215
Hourly Total	22	67	4	0	0	93	3	113	17	0	0	133	16	16	13	1	2	46	13	101	15	0	0	129	401
6:00 AM	22	32	1	0	0	55	4	81	17	0	0	102	9	10	15	1	1	35	11	41	16	0	0	68	260
6:15 AM	21	40	6	0	0	67	1	84	17	0	2	102	10	17	25	1	0	53	8	38	17	1	0	64	286
6:30 AM	35	63	4	0	0	102	3	104	32	0	0	139	19	11	23	0	0	53	11	80	18	0	0	109	403
6:45 AM	28	65	8	0	0	101	7	106	27	0	0	140	13	15	36	1	0	65	12	122	20	0	0	154	460
Hourly Total	106	200	19	0	0	325	15	375	93	0	2	483	51	53	99	3	1	206	42	281	71	1	0	395	1409
7:00 AM	33	61	8	0	0	102	1	95	27	0	0	123	17	17	24	0	0	58	26	152	24	0	1	202	485
7:15 AM	40	60	3	0	0	103	2	149	36	0	0	187	16	23	34	0	0	73	26	117	19	0	0	162	525
7:30 AM	40	79	7	0	0	126	3	169	50	0	0	222	21	32	45	1	0	99	29	145	25	0	0	199	646
7:45 AM	45	108	14	0	0	167	4	152	48	0	0	204	28	32	48	1	0	109	60	184	30	0	0	274	754
Hourly Total	158	308	32	0	0	498	10	565	161	0	0	736	82	104	151	2	0	339	141	598	98	0	1	837	2410
8:00 AM	44	89	15	0	0	148	4	159	59	0	0	222	39	30	55	0	1	124	75	159	30	0	0	264	758
8:15 AM	52	114	21	0	0	187	3	164	46	0	1	213	24	33	55	0	1	112	76	160	31	0	0	267	779
8:30 AM	77	124	11	0	0	212	1	160	41	0	0	202	31	33	53	0	0	117	46	139	21	0	0	206	737
8:45 AM	63	89	12	0	0	164	3	169	56	0	0	228	23	23	61	2	0	109	46	133	20	0	0	199	700
Hourly Total	236	416	59	0	0	711	11	652	202	0	1	865	117	119	224	2	2	462	243	591	102	0	0	936	2974
9:00 AM	53	88	10	0	0	151	3	113	25	0	0	141	11	17	34	0	0	62	36	117	19	0	0	172	526
9:15 AM	38	59	2	0	0	99	2	98	27	0	0	127	18	20	34	1	0	73	29	91	19	0	0	139	438
9:30 AM	40	48	4	0	0	92	1	98	29	0	0	128	10	22	22	1	0	55	25	77	18	0	0	120	395
9:45 AM	23	61	3	0	0	87	2	79	25	0	0	106	14	23	35	0	0	72	30	86	25	0	0	141	406
Hourly Total	154	256	19	0	0	429	8	388	106	0	0	502	53	82	125	2	0	262	120	371	81	0	0	572	1765
10:00 AM	35	32	3	0	0	70	5	71	14	0	0	90	4	27	19	0	0	50	22	58	19	1	0	100	310
10:15 AM	22	39	2	0	0	63	3	77	15	0	0	95	13	20	24	1	0	58	23	77	16	1	0	117	333
10:30 AM	30	35	4	0	0	69	3	71	25	0	0	99	17	25	30	2	1	74	24	61	20	0	0	105	347
10:45 AM	25	41	0	0	0	66	6	64	16	0	0	86	18	22	33	0	0	73	25	63	16	2	0	106	331
Hourly Total	112	147	9	0	0	268	17	283	70	0	0	370	52	94	106	3	1	255	94	259	71	4	0	428	1321
11:00 AM	31	29	3	0	0	63	5	68	23	0	0	96	16	29	26	1	0	72	26	57	15	1	0	99	330
11:15 AM	21	29	3	0	0	53	5	73	19	0	0	97	19	28	31	2	0	80	23	79	22	1	0	125	355
11:30 AM	31	33	8	0	0	72	1	64	20	0	0	85	12	32	21	0	0	65	28	50	18	0	0	96	318
11:45 AM	30	39	0	0	0	69	2	73	29	0	0	104	20	23	18	1	0	62	39	74	22	0	0	135	370
Hourly Total	113	130	14	0	0	257	13	278	91	0	0	382	67	112	96	4	0	279	116	260	77	2	0	455	1373
12:00 PM	25	42	2	0	0	69	4	65	18	0	0	87	16	37	23	1	0	77	21	81	32	0	0	134	367
12:15 PM	25	39	4	0	0	68	3	64	19	0	0	86	17	29	26	0	0	72	31	88	16	0	0	135	361

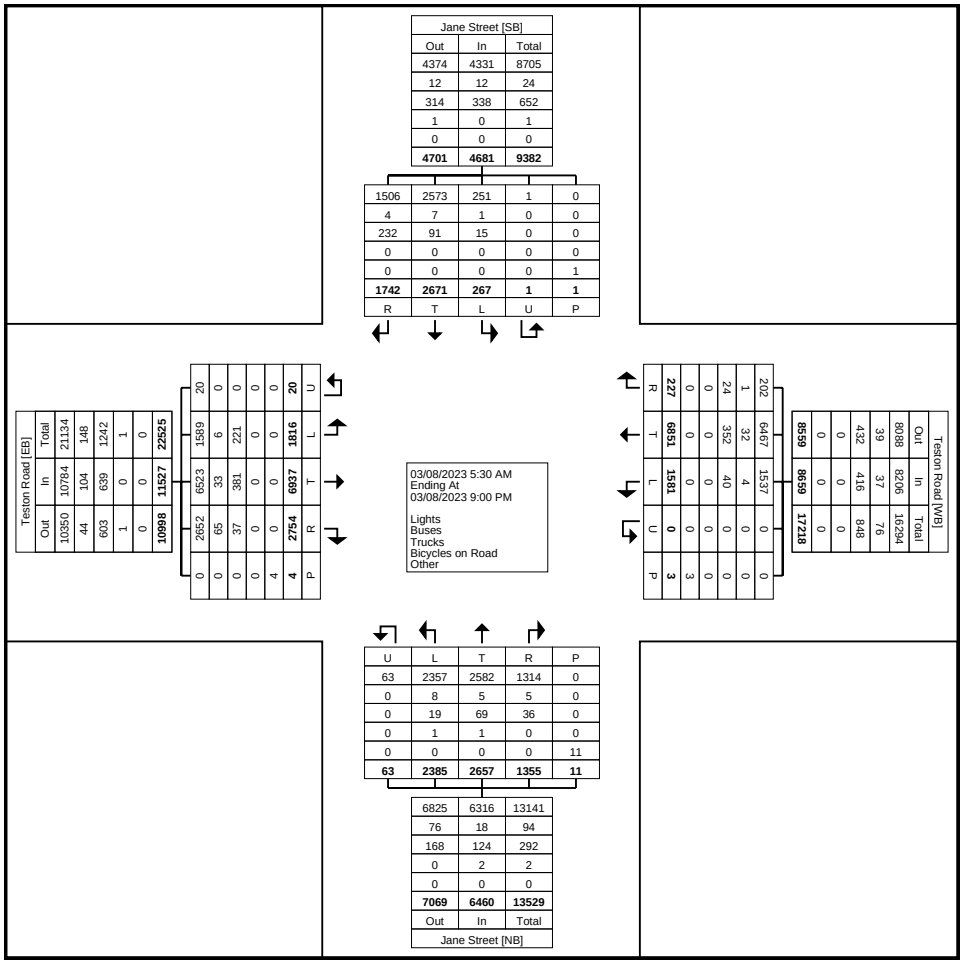
12:30 PM	24	25	1	0	0	50	4	74	30	0	0	108	19	39	28	3	0	89	41	67	20	1	0	129	376
12:45 PM	22	26	3	0	0	51	1	69	23	0	0	93	19	28	26	1	0	74	51	76	19	0	0	146	364
Hourly Total	96	132	10	0	0	238	12	272	90	0	0	374	71	133	103	5	0	312	144	312	87	1	0	544	1468
1:00 PM	18	26	1	0	0	45	3	67	23	0	0	93	18	36	22	1	0	77	38	102	32	0	0	172	387
1:15 PM	35	28	4	0	0	67	4	74	22	0	0	100	17	33	26	1	0	77	36	78	25	0	0	139	383
1:30 PM	16	25	3	0	0	44	1	87	19	0	0	107	18	36	32	1	0	87	37	76	31	0	0	144	382
1:45 PM	28	25	3	0	0	56	2	84	20	0	0	106	20	43	36	0	0	99	39	87	31	0	0	157	418
Hourly Total	97	104	11	0	0	212	10	312	84	0	0	406	73	148	116	3	0	340	150	343	119	0	0	612	1570
2:00 PM	22	39	3	0	0	64	6	92	19	0	0	117	19	56	29	0	0	104	30	92	36	0	0	158	443
2:15 PM	24	34	2	0	1	60	4	95	22	0	0	121	26	52	48	2	0	128	38	90	23	0	1	151	460
2:30 PM	21	40	4	0	0	65	2	108	25	0	0	135	28	59	44	6	0	137	62	96	40	0	0	198	535
2:45 PM	33	36	4	0	0	73	5	123	23	0	0	151	35	61	64	2	0	162	50	120	42	1	0	213	599
Hourly Total	100	149	13	0	1	262	17	418	89	0	0	524	108	228	185	10	0	531	180	398	141	1	1	720	2037
3:00 PM	30	32	2	0	0	64	5	127	23	0	0	155	31	61	68	1	1	161	47	139	44	0	1	230	610
3:15 PM	40	38	5	0	0	83	6	112	29	0	0	147	41	96	67	1	1	205	60	161	51	0	0	272	707
3:30 PM	35	35	1	0	0	71	3	136	27	0	0	166	23	72	62	0	0	157	77	175	52	0	1	304	698
3:45 PM	22	32	5	0	0	59	7	150	30	0	0	187	32	91	46	2	0	171	78	162	48	0	0	288	705
Hourly Total	127	137	13	0	0	277	21	525	109	0	0	655	127	320	243	4	2	694	262	637	195	0	2	1094	2720
4:00 PM	25	43	6	0	0	74	5	184	25	0	0	214	28	96	48	1	0	173	76	182	50	0	0	308	769
4:15 PM	30	54	11	0	0	95	6	178	32	0	0	216	46	119	53	1	0	219	68	185	54	2	0	309	839
4:30 PM	34	39	7	0	0	80	11	201	30	0	0	242	46	96	63	1	0	206	79	199	53	1	0	332	860
4:45 PM	27	50	1	1	0	79	7	223	31	0	0	261	34	112	62	0	0	208	64	167	52	1	0	284	832
Hourly Total	116	186	25	1	0	328	29	786	118	0	0	933	154	423	226	3	0	806	287	733	209	4	0	1233	3300
5:00 PM	24	45	2	0	0	71	5	186	36	0	0	227	31	106	66	1	0	204	83	178	37	1	0	299	801
5:15 PM	28	34	3	0	0	65	4	192	24	0	0	220	43	86	76	0	0	205	71	207	47	0	0	325	815
5:30 PM	39	44	8	0	0	91	7	243	32	0	0	282	34	100	79	1	0	214	109	239	35	0	0	383	970
5:45 PM	20	38	6	0	0	64	7	179	28	0	0	214	27	73	68	5	0	173	72	183	51	1	0	307	758
Hourly Total	111	161	19	0	0	291	23	800	120	0	0	943	135	365	289	7	0	796	335	807	170	2	0	1314	3344
6:00 PM	27	30	3	0	0	60	7	169	29	0	0	205	30	80	46	1	0	157	87	163	37	0	0	287	709
6:15 PM	14	31	3	0	0	48	4	136	30	0	0	170	26	53	56	1	0	136	61	153	50	0	0	264	618
6:30 PM	21	29	2	0	0	52	6	142	29	0	0	177	31	51	51	2	0	135	73	127	41	0	0	241	605
6:45 PM	28	32	4	0	0	64	3	82	18	0	0	103	16	46	42	1	0	105	50	138	37	0	0	225	497
Hourly Total	90	122	12	0	0	224	20	529	106	0	0	655	103	230	195	5	0	533	271	581	165	0	0	1017	2429
7:00 PM	9	22	1	0	0	32	3	77	25	0	0	105	19	33	30	2	0	84	42	109	31	0	0	182	403
7:15 PM	17	26	1	0	0	44	3	94	17	0	0	114	28	28	35	2	0	93	51	95	34	0	0	180	431
7:30 PM	14	24	1	0	0	39	3	85	19	0	0	107	24	43	30	0	0	97	43	102	37	4	0	186	429
7:45 PM	16	13	1	0	0	30	2	69	15	0	0	86	15	24	32	1	0	72	54	97	35	1	0	187	375
Hourly Total	56	85	4	0	0	145	11	325	76	0	0	412	86	128	127	5	0	346	190	403	137	5	0	735	1638
8:00 PM	11	22	2	0	0	35	4	68	11	0	0	83	15	32	28	1	0	76	46	72	24	0	0	142	336
8:15 PM	12	17	1	0	0	30	2	54	16	0	0	72	14	29	25	1	2	69	46	63	21	0	0	130	301
8:30 PM	9	17	1	0	0	27	1	56	10	0	0	67	12	18	27	1	0	58	31	71	14	0	0	116	268
8:45 PM	16	15	0	0	0	31	0	52	12	0	0	64	19	23	7	1	1	50	43	56	19	0	0	118	263
Hourly Total	48	71	4	0	0	123	7	230	49	0	0	286	60	102	87	4	3	253	166	262	78	0	0	506	1168
Grand Total	1742	2671	267	1	1	4681	227	6851	1581	0	3	8659	1355	2657	2385	63	11	6460	2754	6937	1816	20	4	11527	31327
Approach %	37.2	57.1	5.7	0.0	-	-	2.6	79.1	18.3	0.0	-	-	21.0	41.1	36.9	1.0	-	-	23.9	60.2	15.8	0.2	-	-	-
Total %	5.6	8.5	0.9	0.0	-	14.9	0.7	21.9	5.0	0.0	-	27.6	4.3	8.5	7.6	0.2	-	20.6	8.8	22.1	5.8	0.1	-	36.8	-
Lights	1506	2573	251	1	-	4331	202	6467	1537	0	-	8206	1314	2582	2357	63	-	6316	2652	6523	1589	20	-	10784	29637
% Lights	86.5	96.3	94.0	100.0	-	92.5	89.0	94.4	97.2	-	-	94.8	97.0	97.2	98.8	100.0	-	97.8	96.3	94.0	87.5	100.0	-	93.6	94.6
Buses	4	7	1	0	-	12	1	32	4	0	-	37	5	5	8	0	-	18	65	33	6	0	-	104	171
% Buses	0.2	0.3	0.4	0.0	-	0.3	0.4	0.5	0.3	-	-	0.4	0.4	0.2	0.3	0.0	-	0.3	2.4	0.5	0.3	0.0	-	0.9	0.5
Trucks	232	91	15	0	-	338	24	352	40	0	-	416	36	69	19	0	-	124	37	381	221	0	-	639	1517
% Trucks	13.3	3.4	5.6	0.0	-	7.2	10.6	5.1	2.5	-	-	4.8	2.7	2.6	0.8	0.0	-	1.9	1.3	5.5	12.2	0.0	-	5.5	4.8

Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	1	0	-	2	0	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	9.1	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	10	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	90.9	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_ Jane St & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_ Jane St & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

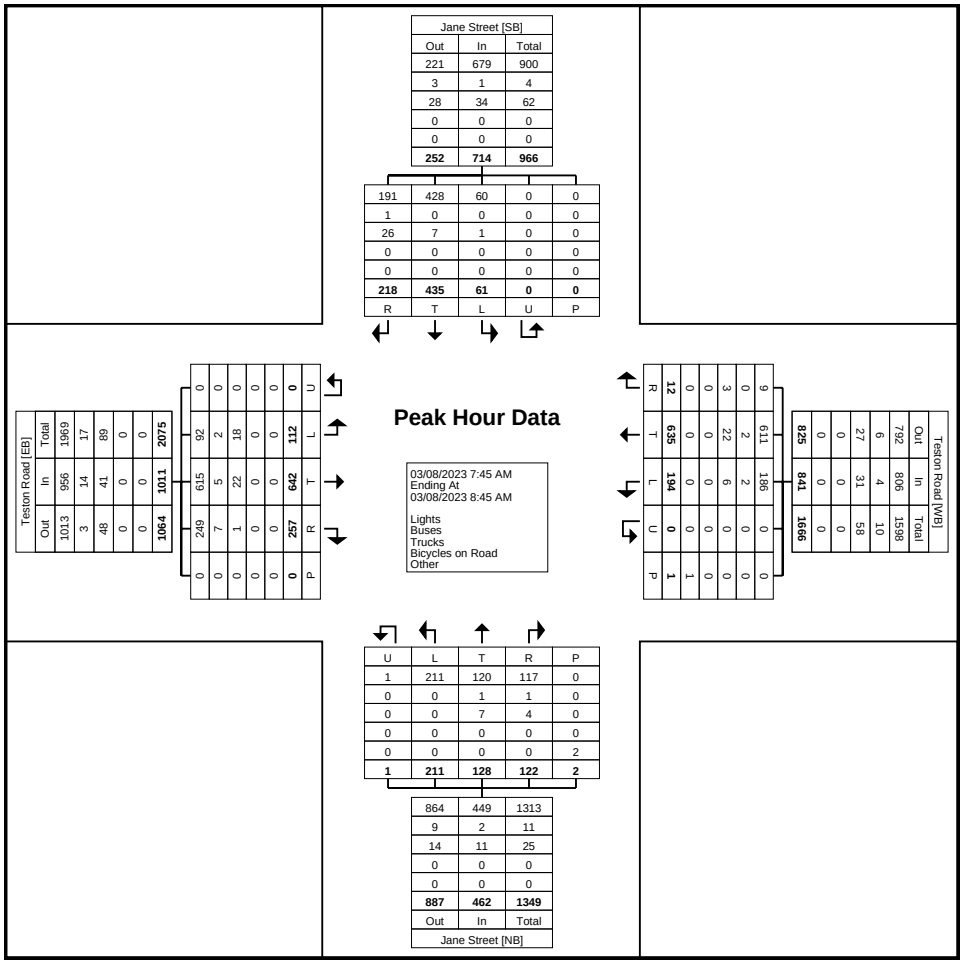
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Jane Street Southbound						Teston Road Westbound						Jane Street Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:45 AM	45	108	14	0	0	167	4	152	48	0	0	204	28	32	48	1	0	109	60	184	30	0	0	274	754
8:00 AM	44	89	15	0	0	148	4	159	59	0	0	222	39	30	55	0	1	124	75	159	30	0	0	264	758
8:15 AM	52	114	21	0	0	187	3	164	46	0	1	213	24	33	55	0	1	112	76	160	31	0	0	267	779
8:30 AM	77	124	11	0	0	212	1	160	41	0	0	202	31	33	53	0	0	117	46	139	21	0	0	206	737
Total	218	435	61	0	0	714	12	635	194	0	1	841	122	128	211	1	2	462	257	642	112	0	0	1011	3028
Approach %	30.5	60.9	8.5	0.0	-	-	1.4	75.5	23.1	0.0	-	-	26.4	27.7	45.7	0.2	-	-	25.4	63.5	11.1	0.0	-	-	-
Total %	7.2	14.4	2.0	0.0	-	23.6	0.4	21.0	6.4	0.0	-	27.8	4.0	4.2	7.0	0.0	-	15.3	8.5	21.2	3.7	0.0	-	33.4	-
PHF	0.708	0.877	0.726	0.000	-	0.842	0.750	0.968	0.822	0.000	-	0.947	0.782	0.970	0.959	0.250	-	0.931	0.845	0.872	0.903	0.000	-	0.922	0.972
Lights	191	428	60	0	-	679	9	611	186	0	-	806	117	120	211	1	-	449	249	615	92	0	-	956	2890
% Lights	87.6	98.4	98.4	-	-	95.1	75.0	96.2	95.9	-	-	95.8	95.9	93.8	100.0	100.0	-	97.2	96.9	95.8	82.1	-	-	94.6	95.4
Buses	1	0	0	0	-	1	0	2	2	0	-	4	1	1	0	0	-	2	7	5	2	0	-	14	21
% Buses	0.5	0.0	0.0	-	-	0.1	0.0	0.3	1.0	-	-	0.5	0.8	0.8	0.0	0.0	-	0.4	2.7	0.8	1.8	-	-	1.4	0.7
Trucks	26	7	1	0	-	34	3	22	6	0	-	31	4	7	0	0	-	11	1	22	18	0	-	41	117
% Trucks	11.9	1.6	1.6	-	-	4.8	25.0	3.5	3.1	-	-	3.7	3.3	5.5	0.0	0.0	-	2.4	0.4	3.4	16.1	-	-	4.1	3.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_ Jane St & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_ Jane St & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

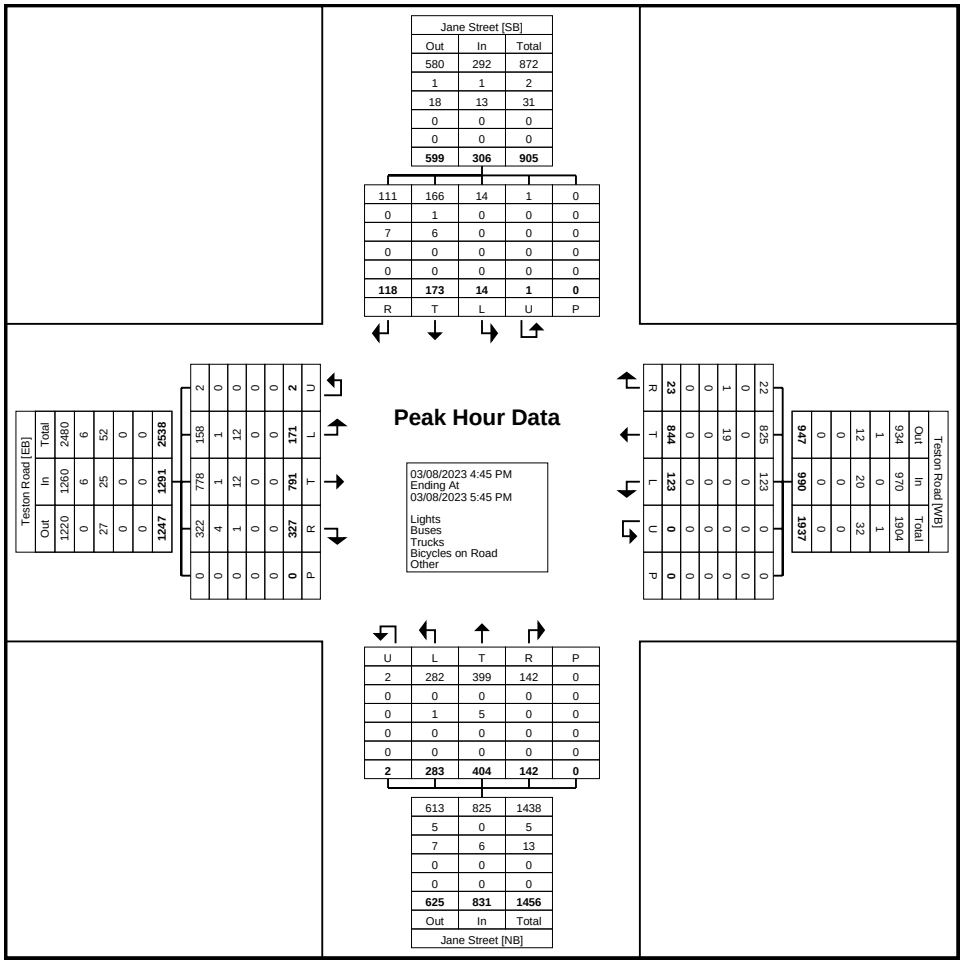
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Jane Street Southbound						Teston Road Westbound						Jane Street Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	27	50	1	1	0	79	7	223	31	0	0	261	34	112	62	0	0	208	64	167	52	1	0	284	832
5:00 PM	24	45	2	0	0	71	5	186	36	0	0	227	31	106	66	1	0	204	83	178	37	1	0	299	801
5:15 PM	28	34	3	0	0	65	4	192	24	0	0	220	43	86	76	0	0	205	71	207	47	0	0	325	815
5:30 PM	39	44	8	0	0	91	7	243	32	0	0	282	34	100	79	1	0	214	109	239	35	0	0	383	970
Total	118	173	14	1	0	306	23	844	123	0	0	990	142	404	283	2	0	831	327	791	171	2	0	1291	3418
Approach %	38.6	56.5	4.6	0.3	-	-	2.3	85.3	12.4	0.0	-	-	17.1	48.6	34.1	0.2	-	-	25.3	61.3	13.2	0.2	-	-	-
Total %	3.5	5.1	0.4	0.0	-	9.0	0.7	24.7	3.6	0.0	-	29.0	4.2	11.8	8.3	0.1	-	24.3	9.6	23.1	5.0	0.1	-	37.8	-
PHF	0.756	0.865	0.438	0.250	-	0.841	0.821	0.868	0.854	0.000	-	0.878	0.826	0.902	0.896	0.500	-	0.971	0.750	0.827	0.822	0.500	-	0.843	0.881
Lights	111	166	14	1	-	292	22	825	123	0	-	970	142	399	282	2	-	825	322	778	158	2	-	1260	3347
% Lights	94.1	96.0	100.0	100.0	-	95.4	95.7	97.7	100.0	-	-	98.0	100.0	98.8	99.6	100.0	-	99.3	98.5	98.4	92.4	100.0	-	97.6	97.9
Buses	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	4	1	1	0	-	6	7
% Buses	0.0	0.6	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	1.2	0.1	0.6	0.0	-	0.5	0.2
Trucks	7	6	0	0	-	13	1	19	0	0	-	20	0	5	1	0	-	6	1	12	12	0	-	25	64
% Trucks	5.9	3.5	0.0	0.0	-	4.2	4.3	2.3	0.0	-	-	2.0	0.0	1.2	0.4	0.0	-	0.7	0.3	1.5	7.0	0.0	-	1.9	1.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_ Jane St & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 20009
Intersection: Jane St & Kirby Rd
Weather: Clear
Surveyor(s): ID

File Name : Jane St & Kirby Rd
Site Code : 00020009
Start Date : 2023-03-08
Page No : 1

Groups Printed- Cars/lights - Trucks - Buses

	Jane Street Southbound					Kirby Road Westbound					Jane Street Northbound					Kirby Road Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
05:30	0	33	1	[0]	34	8	6	2	[0]	16	0	6	4	[0]	10	0	7	1	[0]	8	0	68	68
05:45	3	38	2	[0]	43	9	7	0	[0]	16	0	8	9	[0]	17	0	4	3	[0]	7	0	83	83
Total	3	71	3	[0]	77	17	13	2	[0]	32	0	14	13	[0]	27	0	11	4	[0]	15	0	151	151
06:00	4	42	2	[0]	48	11	13	3	[0]	27	2	11	13	[0]	26	3	10	1	[0]	14	0	115	115
06:15	3	59	3	[0]	65	15	25	2	[0]	42	1	18	4	[0]	23	3	9	3	[0]	15	0	145	145
06:30	8	82	3	[0]	93	30	18	1	[0]	49	3	15	9	[0]	27	1	19	4	[0]	24	0	193	193
06:45	7	82	5	[0]	94	19	11	4	[0]	34	4	20	13	[0]	37	1	15	6	[0]	22	0	187	187
Total	22	265	13	[0]	300	75	67	10	[0]	152	10	64	39	[0]	113	8	53	14	[0]	75	0	640	640
07:00	3	70	2	[0]	75	27	16	1	[0]	44	0	18	12	[0]	30	3	20	6	[0]	29	0	178	178
07:15	6	75	7	[0]	88	23	27	1	[0]	51	3	27	11	[0]	41	3	25	7	[0]	35	0	215	215
07:30	5	104	4	[0]	113	35	15	2	[0]	52	1	39	17	[0]	57	5	20	9	[0]	34	0	256	256
07:45	3	120	2	[0]	125	28	30	4	[0]	62	3	32	11	[0]	46	9	31	10	[0]	50	0	283	283
Total	17	369	15	[0]	401	113	88	8	[0]	209	7	116	51	[0]	174	20	96	32	[0]	148	0	932	932
08:00	11	112	6	[0]	129	30	30	6	[0]	66	0	38	21	[0]	59	10	45	14	[0]	69	0	323	323
08:15	10	155	4	[0]	169	25	31	2	[0]	58	6	36	17	[0]	59	7	38	13	[0]	58	0	344	344
08:30	8	150	1	[0]	159	35	44	2	[0]	81	0	36	7	[0]	43	8	35	12	[0]	55	0	338	338
08:45	4	122	3	[0]	129	37	29	5	[0]	71	4	28	13	[0]	45	3	15	6	[0]	24	0	269	269
Total	33	539	14	[0]	586	127	134	15	[0]	276	10	138	58	[0]	206	28	133	45	[0]	206	0	1274	1274
09:00	3	103	2	[0]	108	20	21	3	[0]	44	0	22	13	[0]	35	3	13	5	[0]	21	0	208	208
09:15	5	69	3	[0]	77	33	28	4	[0]	65	1	22	10	[0]	33	2	20	3	[0]	25	0	200	200
09:30	1	64	1	[0]	66	20	10	3	[0]	33	4	28	10	[0]	42	2	14	5	[0]	21	0	162	162
09:45	1	54	3	[0]	58	19	10	4	[0]	33	3	34	15	[0]	52	3	19	4	[0]	26	0	169	169
Total	10	290	9	[0]	309	92	69	14	[0]	175	8	106	48	[0]	162	10	66	17	[0]	93	0	739	739
10:00	1	48	0	[0]	49	22	16	2	[0]	40	2	32	11	[0]	45	0	8	2	[0]	10	0	144	144
10:15	5	51	2	[0]	58	11	19	1	[0]	31	0	25	9	[0]	34	1	11	0	[0]	12	0	135	135
10:30	3	38	1	[0]	42	12	19	3	[0]	34	2	23	10	[0]	35	0	9	6	[0]	15	0	126	126
10:45	2	42	3	[0]	47	19	8	3	[0]	30	1	34	9	[0]	44	0	10	0	[0]	10	0	131	131
Total	11	179	6	[0]	196	64	62	9	[0]	135	5	114	39	[0]	158	1	38	8	[0]	47	0	536	536
11:00	0	47	0	[0]	47	14	4	4	[0]	22	4	27	11	[0]	42	4	6	3	[0]	13	0	124	124
11:15	1	38	5	[0]	44	13	6	2	[0]	21	2	31	17	[0]	50	2	13	4	[0]	19	0	134	134
11:30	2	41	0	[0]	43	15	11	4	[0]	30	3	41	15	[0]	59	1	8	2	[0]	11	0	143	143
11:45	3	37	0	[0]	40	24	11	1	[0]	36	0	33	14	[0]	47	2	15	3	[0]	20	0	143	143
Total	6	163	5	[0]	174	66	32	11	[0]	109	9	132	57	[0]	198	9	42	12	[0]	63	0	544	544
12:00	2	37	0	[0]	39	21	10	6	[0]	37	1	32	21	[0]	54	5	9	3	[0]	17	0	147	147
12:15	1	52	2	[0]	55	10	9	3	[0]	22	1	36	12	[0]	49	1	14	5	[0]	20	0	146	146
12:30	5	30	3	[0]	38	13	17	6	[0]	36	2	33	18	[0]	53	3	12	2	[0]	17	0	144	144

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Jane St & Kirby Rd
Site Code : 00020009
Start Date : 2023-03-08
Page No : 2

Groups Printed- Cars/lights - Trucks - Buses

	Jane Street Southbound					Kirby Road Westbound					Jane Street Northbound					Kirby Road Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
12:45	4	38	1	[0]	43	10	11	4	[0]	25	2	39	16	[0]	57	4	11	1	[0]	16	0	141	141
Total	12	157	6	[0]	175	54	47	19	[0]	120	6	140	67	[0]	213	13	46	11	[0]	70	0	578	578
13:00	0	24	0	[0]	24	15	9	3	[0]	27	3	42	14	[0]	59	2	13	0	[0]	15	0	125	125
13:15	1	47	2	[0]	50	13	14	2	[0]	29	2	49	18	[0]	69	6	14	5	[0]	25	0	173	173
13:30	0	29	1	[0]	30	7	14	3	[0]	24	5	43	17	[0]	65	1	18	2	[0]	21	0	140	140
13:45	4	31	0	[0]	35	27	11	0	[0]	38	2	49	17	[0]	68	6	19	1	[0]	26	0	167	167
Total	5	131	3	[0]	139	62	48	8	[0]	118	12	183	66	[0]	261	15	64	8	[0]	87	0	605	605
14:00	4	37	3	[0]	44	19	9	7	[0]	35	6	56	23	[0]	85	2	18	5	[0]	25	0	189	189
14:15	5	38	4	[0]	47	11	31	8	[0]	50	2	54	21	[0]	77	3	15	3	[0]	21	0	195	195
14:30	3	42	0	[0]	45	15	23	4	[0]	42	2	66	23	[0]	91	5	23	2	[0]	30	0	208	208
14:45	6	52	5	[0]	63	16	21	9	[0]	46	5	74	27	[0]	106	2	24	1	[0]	27	0	242	242
Total	18	169	12	[0]	199	61	84	28	[0]	173	15	250	94	[0]	359	12	80	11	[0]	103	0	834	834
15:00	1	34	1	[0]	36	12	27	4	[0]	43	6	81	26	[0]	113	3	24	3	[0]	30	0	222	222
15:15	2	45	1	[0]	48	21	27	7	[0]	55	5	105	25	[0]	135	3	29	3	[0]	35	0	273	273
15:30	3	35	6	[0]	44	24	38	11	[0]	73	4	98	39	[0]	141	2	44	3	[0]	49	0	307	307
15:45	2	43	6	[0]	51	11	50	5	[0]	66	5	105	17	[0]	127	6	34	4	[0]	44	0	288	288
Total	8	157	14	[0]	179	68	142	27	[0]	237	20	389	107	[0]	516	14	131	13	[0]	158	0	1090	1090
16:00	2	36	2	[0]	40	32	38	8	[0]	78	4	97	39	[0]	140	6	38	3	[0]	47	0	305	305
16:15	1	63	3	[0]	67	17	39	11	[0]	67	7	120	44	[0]	171	14	54	10	[0]	78	0	383	383
16:30	1	39	5	[0]	45	27	36	8	[0]	71	3	125	32	[0]	160	13	59	5	[0]	77	0	353	353
16:45	5	53	6	[0]	64	20	39	10	[0]	69	10	124	41	[0]	175	7	36	1	[0]	44	0	352	352
Total	9	191	16	[0]	216	96	152	37	[0]	285	24	466	156	[0]	646	40	187	19	[0]	246	0	1393	1393
17:00	3	38	4	[0]	45	20	48	12	[0]	80	6	117	26	[0]	149	7	53	7	[0]	67	0	341	341
17:15	3	36	5	[0]	44	18	36	7	[0]	61	6	123	42	[0]	171	6	38	0	[0]	44	0	320	320
17:30	9	52	4	[0]	65	20	58	11	[0]	89	4	108	19	[0]	131	13	42	3	[0]	58	0	343	343
17:45	3	38	1	[0]	42	16	35	7	[0]	58	7	89	37	[0]	133	5	37	7	[0]	49	0	282	282
Total	18	164	14	[0]	196	74	177	37	[0]	288	23	437	124	[0]	584	31	170	17	[0]	218	0	1286	1286
18:00	4	30	3	[0]	37	19	33	3	[0]	55	4	94	20	[0]	118	4	34	2	[0]	40	0	250	250
18:15	0	43	2	[0]	45	10	32	9	[0]	51	1	72	33	[0]	106	3	36	2	[0]	41	0	243	243
18:30	3	35	2	[0]	40	23	18	7	[0]	48	0	66	31	[0]	97	0	19	0	[0]	19	0	204	204
18:45	1	24	4	[0]	29	15	21	5	[0]	41	0	53	35	[0]	88	3	21	1	[0]	25	0	183	183
Total	8	132	11	[0]	151	67	104	24	[0]	195	5	285	119	[0]	409	10	110	5	[0]	125	0	880	880
19:00	4	23	0	[0]	27	10	16	4	[0]	30	1	43	23	[0]	67	0	18	3	[0]	21	0	145	145
19:15	4	23	1	[0]	28	12	9	0	[0]	21	2	46	21	[0]	69	0	15	2	[0]	17	0	135	135
19:30	2	24	1	[0]	27	10	9	0	[0]	19	2	52	21	[0]	75	1	9	1	[0]	11	0	132	132
19:45	2	16	0	[0]	18	14	16	3	[0]	33	2	40	20	[0]	62	3	5	1	[0]	9	0	122	122
Total	12	86	2	[0]	100	46	50	7	[0]	103	7	181	85	[0]	273	4	47	7	[0]	58	0	534	534
20:00	1	15	1	[0]	17	16	7	2	[0]	25	2	46	13	[0]	61	2	19	1	[0]	22	0	125	125
20:15	2	17	0	[0]	19	9	7	0	[0]	16	2	28	12	[0]	42	0	13	0	[0]	13	0	90	90

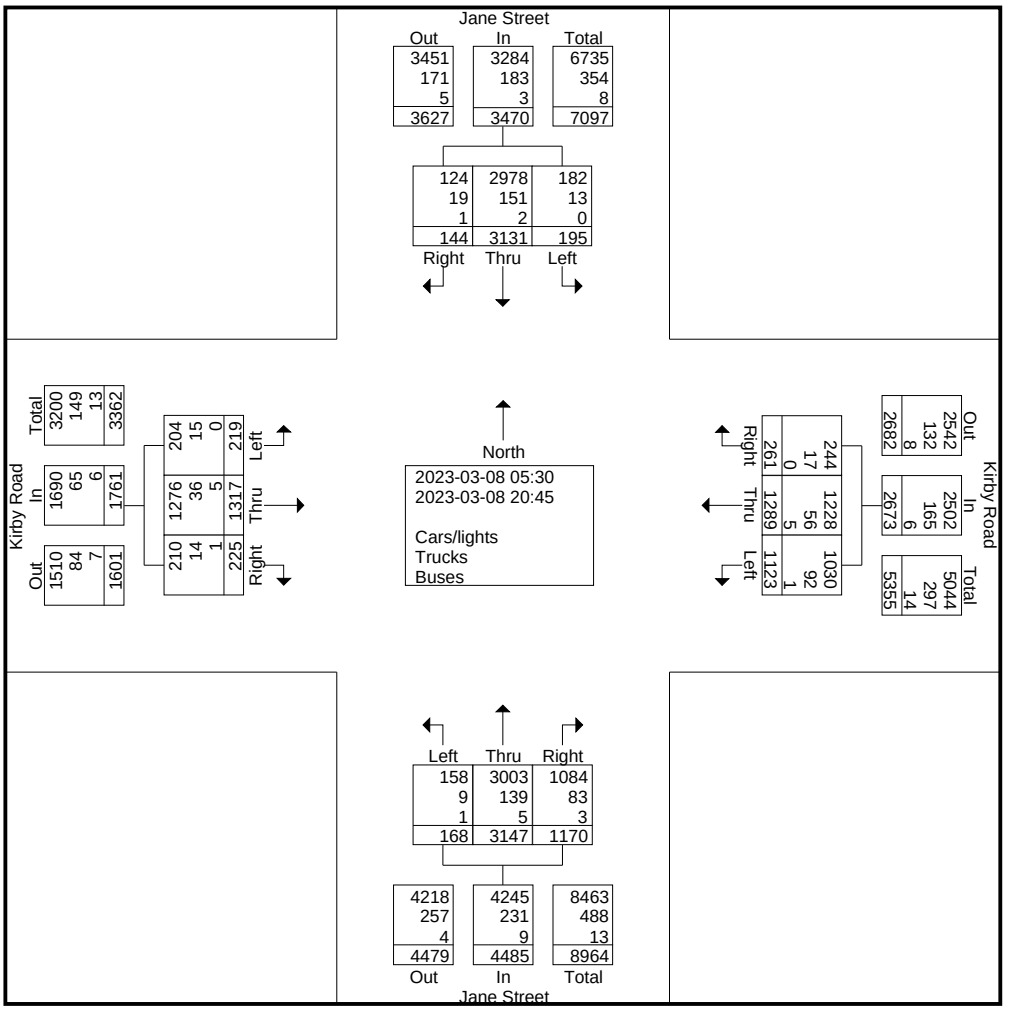
LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Jane St & Kirby Rd
Site Code : 00020009
Start Date : 2023-03-08
Page No : 3

Groups Printed- Cars/lights - Trucks - Buses

	Jane Street Southbound					Kirby Road Westbound					Jane Street Northbound					Kirby Road Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
20:30	0	19	0	[0]	19	7	4	2	[0]	13	1	28	11	[0]	40	1	6	1	[0]	8	0	80	80
20:45	0	17	0	[0]	17	9	2	1	[0]	12	2	30	11	[0]	43	1	5	0	[0]	6	0	78	78
Total	3	68	1	[0]	72	41	20	5	[0]	66	7	132	47	[0]	186	4	43	2	[0]	49	0	373	373
Grand Total	195	3131	144	[0]	3470	1123	1289	261	[0]	2673	168	3147	1170	[0]	4485	219	1317	225	[0]	1761	0	12389	12389
Apprch %	5.6	90.2	4.1			42	48.2	9.8			3.7	70.2	26.1			12.4	74.8	12.8					
Total %	1.6	25.3	1.2		28	9.1	10.4	2.1		21.6	1.4	25.4	9.4		36.2	1.8	10.6	1.8		14.2	0	100	
Cars/lights	182	2978	124		3284	1030	1228	244		2502	158	3003	1084		4245	204	1276	210		1690	0	0	11721
% Cars/lights	93.3	95.1	86.1	0	94.6	91.7	95.3	93.5	0	93.6	94	95.4	92.6	0	94.6	93.2	96.9	93.3	0	96	0	0	94.6
Trucks	13	151	19		183	92	56	17		165	9	139	83		231	15	36	14		65	0	0	644
% Trucks	6.7	4.8	13.2	0	5.3	8.2	4.3	6.5	0	6.2	5.4	4.4	7.1	0	5.2	6.8	2.7	6.2	0	3.7	0	0	5.2
Buses	0	2	1		3	1	5	0		6	1	5	3		9	0	5	1		6	0	0	24
% Buses	0	0.1	0.7	0	0.1	0.1	0.4	0	0	0.2	0.6	0.2	0.3	0	0.2	0	0.4	0.4	0	0.3	0	0	0.2

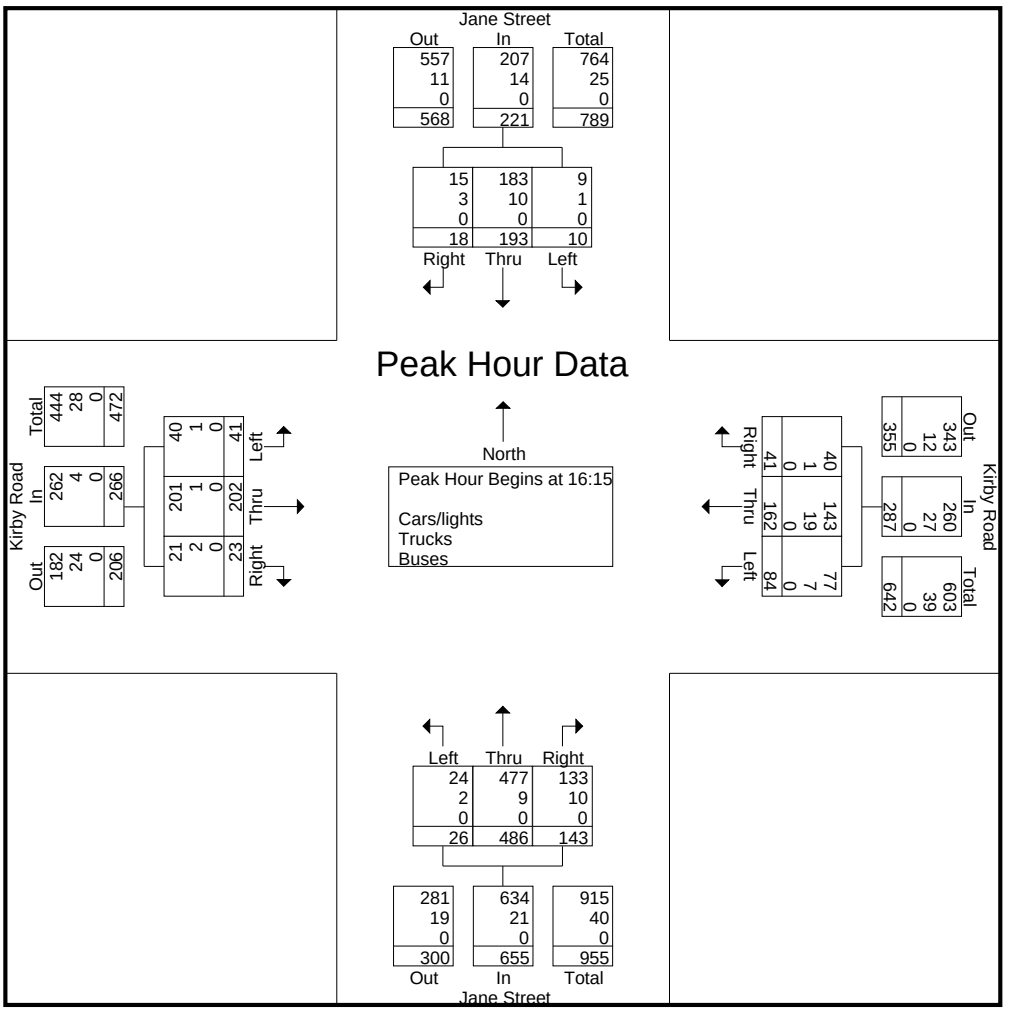


LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Jane St & Kirby Rd
Site Code : 00020009
Start Date : 2023-03-08
Page No : 4

	Jane Street Southbound				Kirby Road Westbound				Jane Street Northbound				Kirby Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:30 to 20:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:15																	
16:15	1	**63**	3	**67**	17	39	11	67	7	120	**44**	171	**14**	54	**10**	**78**	**383**
16:30	1	39	5	45	**27**	36	8	71	3	**125**	32	160	13	**59**	5	77	353
16:45	**5**	53	**6**	64	20	39	10	69	**10**	124	41	**175**	7	36	1	44	352
17:00	3	38	4	45	20	**48**	**12**	**80**	6	117	26	149	7	53	7	67	341
Total Volume	10	193	18	221	84	162	41	287	26	486	143	655	41	202	23	266	1429
% App. Total	4.5	87.3	8.1		29.3	56.4	14.3		4	74.2	21.8		15.4	75.9	8.6		
PHF	.500	.766	.750	.825	.778	.844	.854	.897	.650	.972	.813	.936	.732	.856	.575	.853	.933
Cars/lights	9	183	15	207	77	143	40	260	24	477	133	634	40	201	21	262	1363
% Cars/lights	90.0	94.8	83.3	93.7	91.7	88.3	97.6	90.6	92.3	98.1	93.0	96.8	97.6	99.5	91.3	98.5	95.4
Trucks	1	10	3	14	7	19	1	27	2	9	10	21	1	1	2	4	66
% Trucks	10.0	5.2	16.7	6.3	8.3	11.7	2.4	9.4	7.7	1.9	7.0	3.2	2.4	0.5	8.7	1.5	4.6
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Mosque Gate & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Data

Start Time	Construction Access Southbound						Teston Road Westbound						Mosque Gate Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:30 AM	0	0	0	0	0	0	0	70	0	0	0	70	0	0	2	0	0	2	5	71	0	0	0	76	148
5:45 AM	0	0	0	0	0	0	0	80	0	0	0	80	4	0	8	0	0	12	1	68	0	0	0	69	161
Hourly Total	0	0	0	0	0	0	0	150	0	0	0	150	4	0	10	0	0	14	6	139	0	0	0	145	309
6:00 AM	0	0	0	0	0	0	0	113	0	0	0	113	4	0	10	0	1	14	5	80	0	0	0	85	212
6:15 AM	0	0	1	0	0	1	2	129	0	0	0	131	9	0	14	0	0	23	3	79	2	0	0	84	239
6:30 AM	0	0	2	0	0	2	0	156	1	0	0	157	9	0	19	0	0	28	3	104	1	0	0	108	295
6:45 AM	0	0	0	0	3	0	2	171	0	0	0	173	4	0	6	0	0	10	4	158	0	0	0	162	345
Hourly Total	0	0	3	0	3	3	4	569	1	0	0	574	26	0	49	0	1	75	15	421	3	0	0	439	1091
7:00 AM	0	0	0	0	0	0	0	152	1	0	0	153	5	0	14	0	1	19	4	170	0	0	0	174	346
7:15 AM	0	0	0	0	0	0	1	216	1	0	0	218	7	0	16	0	0	23	6	168	0	0	0	174	415
7:30 AM	0	0	0	0	0	0	0	267	1	0	0	268	8	0	19	0	1	27	14	265	1	0	0	280	575
7:45 AM	0	0	1	0	0	1	0	243	1	0	0	244	5	0	23	0	0	28	12	334	1	0	0	347	620
Hourly Total	0	0	1	0	0	1	1	878	4	0	0	883	25	0	72	0	2	97	36	937	2	0	0	975	1956
8:00 AM	0	0	0	0	0	0	0	267	1	1	0	269	9	0	9	0	0	18	9	279	0	0	0	288	575
8:15 AM	0	0	1	0	0	1	0	274	2	0	0	276	13	0	11	0	2	24	5	295	0	1	0	301	602
8:30 AM	0	0	0	0	0	0	2	273	2	0	0	277	8	0	14	0	0	22	6	209	0	0	0	215	514
8:45 AM	0	0	0	0	0	0	0	270	1	0	0	271	6	0	21	0	2	27	8	189	0	0	0	197	495
Hourly Total	0	0	1	0	0	1	2	1084	6	1	0	1093	36	0	55	0	4	91	28	972	0	1	0	1001	2186
9:00 AM	0	0	0	0	0	0	0	203	2	0	0	205	5	0	9	0	0	14	11	175	0	0	0	186	405
9:15 AM	2	0	0	0	0	2	0	167	4	0	0	171	7	0	14	0	1	21	5	132	0	0	0	137	331
9:30 AM	1	0	0	0	0	1	0	150	2	0	0	152	4	0	12	0	0	16	4	122	1	0	0	127	296
9:45 AM	0	0	1	0	0	1	0	134	1	1	0	136	4	0	10	0	0	14	6	145	0	0	0	151	302
Hourly Total	3	0	1	0	0	4	0	654	9	1	0	664	20	0	45	0	1	65	26	574	1	0	0	601	1334
10:00 AM	2	0	1	0	0	3	1	128	1	0	0	130	8	0	9	0	1	17	7	102	2	0	0	111	261
10:15 AM	0	0	0	0	0	0	1	121	0	1	0	123	1	0	9	0	2	10	6	122	0	0	0	128	261
10:30 AM	1	0	0	0	0	1	0	125	2	0	0	127	7	0	9	0	1	16	12	108	0	0	0	120	264
10:45 AM	0	0	0	0	0	0	0	112	1	0	0	113	6	0	9	0	2	15	6	120	0	0	0	126	254
Hourly Total	3	0	1	0	0	4	2	486	4	1	0	493	22	0	36	0	6	58	31	452	2	0	0	485	1040
11:00 AM	0	0	0	0	0	0	1	125	1	0	0	127	4	0	5	0	0	9	11	103	0	0	0	114	250
11:15 AM	0	0	0	0	0	0	0	117	1	0	0	118	5	0	8	0	0	13	8	126	0	0	0	134	265
11:30 AM	0	0	0	0	0	0	0	117	0	0	0	117	7	0	6	0	3	13	7	112	0	0	0	119	249
11:45 AM	0	0	0	0	0	0	0	123	2	0	0	125	2	0	6	0	0	8	6	125	1	0	0	132	265
Hourly Total	0	0	0	0	0	0	1	482	4	0	0	487	18	0	25	0	3	43	32	466	1	0	0	499	1029
12:00 PM	0	0	1	0	0	1	0	110	1	0	0	111	6	0	9	0	1	15	16	140	1	0	0	157	284
12:15 PM	0	0	0	0	0	0	1	112	2	0	0	115	5	0	16	0	0	21	12	134	0	0	0	146	282

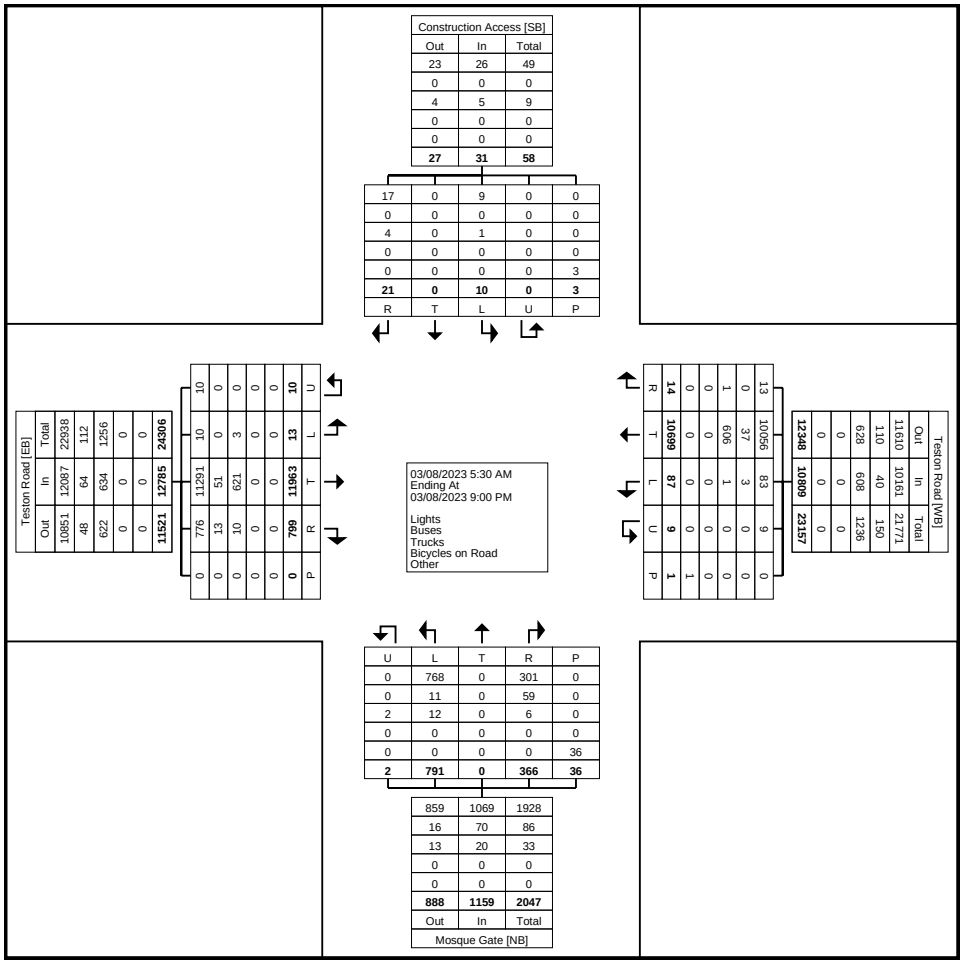
12:30 PM	0	0	0	0	0	0	0	118	0	0	0	118	0	0	14	0	0	14	10	123	0	1	0	134	266
12:45 PM	0	0	0	0	0	0	0	116	2	0	0	118	0	0	14	0	0	14	4	129	0	0	0	133	265
Hourly Total	0	0	1	0	0	1	1	456	5	0	0	462	11	0	53	0	1	64	42	526	1	1	0	570	1097
1:00 PM	1	0	0	0	0	1	0	108	1	1	0	110	1	0	11	0	0	12	12	137	0	1	0	150	273
1:15 PM	0	0	0	0	0	0	0	122	2	1	0	125	2	0	6	0	0	8	7	130	0	0	0	137	270
1:30 PM	0	0	0	0	0	0	1	128	2	0	0	131	5	0	15	0	0	20	13	156	0	0	0	169	320
1:45 PM	1	0	0	0	0	1	0	138	2	0	0	140	6	0	8	0	0	14	9	158	0	1	0	168	323
Hourly Total	2	0	0	0	0	2	1	496	7	2	0	506	14	0	40	0	0	54	41	581	0	2	0	624	1186
2:00 PM	1	0	0	0	0	1	0	152	0	0	0	152	5	0	8	0	0	13	10	166	0	0	0	176	342
2:15 PM	0	0	0	0	0	0	0	149	2	0	1	151	7	0	27	0	2	34	12	152	0	0	0	164	349
2:30 PM	1	0	0	0	0	1	0	164	3	1	0	168	9	0	14	0	0	23	14	212	0	1	0	227	419
2:45 PM	1	0	0	0	0	1	0	201	4	0	0	205	10	0	12	0	0	22	13	209	0	0	0	222	450
Hourly Total	3	0	0	0	0	3	0	666	9	1	1	676	31	0	61	0	2	92	49	739	0	1	0	789	1560
3:00 PM	0	0	1	0	0	1	1	210	1	0	0	212	9	0	16	0	1	25	20	234	0	0	0	254	492
3:15 PM	0	0	0	0	0	0	0	203	0	0	0	203	8	0	15	0	0	23	13	285	0	0	0	298	524
3:30 PM	1	0	0	0	0	1	0	203	0	0	0	203	2	0	9	0	0	11	25	315	1	0	0	341	556
3:45 PM	0	0	0	0	0	0	0	199	1	0	0	200	6	0	17	0	0	23	20	276	0	0	0	296	519
Hourly Total	1	0	1	0	0	2	1	815	2	0	0	818	25	0	57	0	1	82	78	1110	1	0	0	1189	2091
4:00 PM	0	0	0	0	0	0	0	276	1	0	0	277	8	0	12	0	0	20	25	339	0	0	0	364	661
4:15 PM	1	0	0	0	0	1	0	238	3	1	0	242	7	0	15	0	1	22	17	332	1	0	0	350	615
4:30 PM	0	0	0	0	0	0	1	291	3	1	0	296	9	0	11	1	0	21	19	339	0	2	0	360	677
4:45 PM	2	0	1	0	0	3	0	304	2	0	0	306	7	0	19	0	0	26	12	322	0	1	0	335	670
Hourly Total	3	0	1	0	0	4	1	1109	9	2	0	1121	31	0	57	1	1	89	73	1332	1	3	0	1409	2623
5:00 PM	4	0	0	0	0	4	0	267	0	0	0	267	9	0	9	1	4	19	20	325	0	0	0	345	635
5:15 PM	1	0	0	0	0	1	0	287	3	1	0	291	8	0	17	0	2	25	25	353	0	0	0	378	695
5:30 PM	1	0	0	0	0	1	0	348	2	0	0	350	7	0	14	0	0	21	38	398	1	0	0	437	809
5:45 PM	0	0	0	0	0	0	0	277	2	0	0	279	6	0	16	0	0	22	18	320	0	0	0	338	639
Hourly Total	6	0	0	0	0	6	0	1179	7	1	0	1187	30	0	56	1	6	87	101	1396	1	0	0	1498	2778
6:00 PM	0	0	0	0	0	0	0	231	0	0	0	231	7	0	11	0	1	18	26	304	0	0	0	330	579
6:15 PM	0	0	0	0	0	0	0	204	4	0	0	208	8	0	16	0	0	24	20	272	0	1	0	293	525
6:30 PM	0	0	0	0	0	0	0	220	0	0	0	220	8	0	14	0	3	22	15	250	0	0	0	265	507
6:45 PM	0	0	0	0	0	0	0	152	1	0	0	153	8	0	20	0	0	28	22	233	0	0	0	255	436
Hourly Total	0	0	0	0	0	0	0	807	5	0	0	812	31	0	61	0	4	92	83	1059	0	1	0	1143	2047
7:00 PM	0	0	0	0	0	0	0	113	1	0	0	114	1	0	17	0	0	18	17	184	0	0	0	201	333
7:15 PM	0	0	0	0	0	0	0	141	0	0	0	141	11	0	22	0	0	33	32	199	0	0	0	231	405
7:30 PM	0	0	0	0	0	0	0	133	4	0	0	137	6	0	17	0	2	23	21	186	0	0	0	207	367
7:45 PM	0	0	0	0	0	0	0	111	3	0	0	114	8	0	13	0	0	21	28	167	0	0	0	195	330
Hourly Total	0	0	0	0	0	0	0	498	8	0	0	506	26	0	69	0	2	95	98	736	0	0	0	834	1435
8:00 PM	0	0	0	0	0	0	0	106	1	0	0	107	1	0	12	0	0	13	21	152	0	0	0	173	293
8:15 PM	0	0	0	0	0	0	0	106	1	0	0	107	8	0	12	0	1	20	14	124	0	0	0	138	265
8:30 PM	0	0	0	0	0	0	0	71	4	0	0	75	4	0	10	0	0	14	10	126	0	1	0	137	226
8:45 PM	0	0	0	0	0	0	0	87	1	0	0	88	3	0	11	0	1	14	15	121	0	0	0	136	238
Hourly Total	0	0	0	0	0	0	0	370	7	0	0	377	16	0	45	0	2	61	60	523	0	1	0	584	1022
Grand Total	21	0	10	0	3	31	14	10699	87	9	1	10809	366	0	791	2	36	1159	799	11963	13	10	0	12785	24784
Approach %	67.7	0.0	32.3	0.0	-	-	0.1	99.0	0.8	0.1	-	-	31.6	0.0	68.2	0.2	-	-	6.2	93.6	0.1	0.1	-	-	-
Total %	0.1	0.0	0.0	0.0	-	0.1	0.1	43.2	0.4	0.0	-	43.6	1.5	0.0	3.2	0.0	-	4.7	3.2	48.3	0.1	0.0	-	51.6	-
Lights	17	0	9	0	-	26	13	10056	83	9	-	10161	301	0	768	0	-	1069	776	11291	10	10	-	12087	23343
% Lights	81.0	-	90.0	-	-	83.9	92.9	94.0	95.4	100.0	-	94.0	82.2	-	97.1	0.0	-	92.2	97.1	94.4	76.9	100.0	-	94.5	94.2
Buses	0	0	0	0	-	0	0	37	3	0	-	40	59	0	11	0	-	70	13	51	0	0	-	64	174
% Buses	0.0	-	0.0	-	-	0.0	0.0	0.3	3.4	0.0	-	0.4	16.1	-	1.4	0.0	-	6.0	1.6	0.4	0.0	0.0	-	0.5	0.7
Trucks	4	0	1	0	-	5	1	606	1	0	-	608	6	0	12	2	-	20	10	621	3	0	-	634	1267
% Trucks	19.0	-	10.0	-	-	16.1	7.1	5.7	1.1	0.0	-	5.6	1.6	-	1.5	100.0	-	1.7	1.3	5.2	23.1	0.0	-	5.0	5.1

Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	36	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Mosque Gate & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

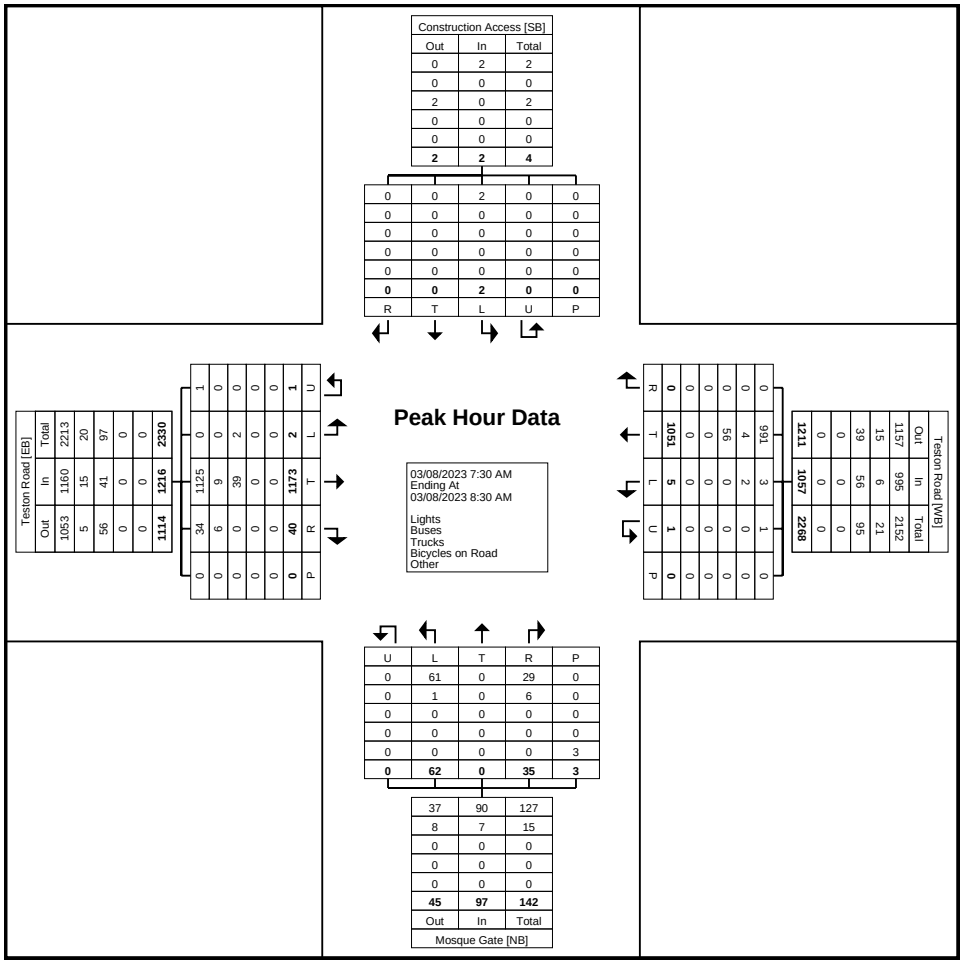
Count Name: 20009_Mosque Gate & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Construction Access Southbound						Teston Road Westbound						Mosque Gate Northbound						Teston Road Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:30 AM	0	0	0	0	0	0	0	267	1	0	0	268	8	0	19	0	1	27	14	265	1	0	0	280	575
7:45 AM	0	0	1	0	0	1	0	243	1	0	0	244	5	0	23	0	0	28	12	334	1	0	0	347	620
8:00 AM	0	0	0	0	0	0	0	267	1	1	0	269	9	0	9	0	0	18	9	279	0	0	0	288	575
8:15 AM	0	0	1	0	0	1	0	274	2	0	0	276	13	0	11	0	2	24	5	295	0	1	0	301	602
Total	0	0	2	0	0	2	0	1051	5	1	0	1057	35	0	62	0	3	97	40	1173	2	1	0	1216	2372
Approach %	0.0	0.0	100.0	0.0	-	-	0.0	99.4	0.5	0.1	-	-	36.1	0.0	63.9	0.0	-	-	3.3	96.5	0.2	0.1	-	-	-
Total %	0.0	0.0	0.1	0.0	-	0.1	0.0	44.3	0.2	0.0	-	44.6	1.5	0.0	2.6	0.0	-	4.1	1.7	49.5	0.1	0.0	-	51.3	-
PHF	0.000	0.000	0.500	0.000	-	0.500	0.000	0.959	0.625	0.250	-	0.957	0.673	0.000	0.674	0.000	-	0.866	0.714	0.878	0.500	0.250	-	0.876	0.956
Lights	0	0	2	0	-	2	0	991	3	1	-	995	29	0	61	0	-	90	34	1125	0	1	-	1160	2247
% Lights	-	-	100.0	-	-	100.0	-	94.3	60.0	100.0	-	94.1	82.9	-	98.4	-	-	92.8	85.0	95.9	0.0	100.0	-	95.4	94.7
Buses	0	0	0	0	-	0	0	4	2	0	-	6	6	0	1	0	-	7	6	9	0	0	-	15	28
% Buses	-	-	0.0	-	-	0.0	-	0.4	40.0	0.0	-	0.6	17.1	-	1.6	-	-	7.2	15.0	0.8	0.0	0.0	-	1.2	1.2
Trucks	0	0	0	0	-	0	0	56	0	0	-	56	0	0	0	0	-	0	0	39	2	0	-	41	97
% Trucks	-	-	0.0	-	-	0.0	-	5.3	0.0	0.0	-	5.3	0.0	-	0.0	-	-	0.0	0.0	3.3	100.0	0.0	-	3.4	4.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca



Turning Movement Peak Hour Data Plot (7:30 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Mosque Gate & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

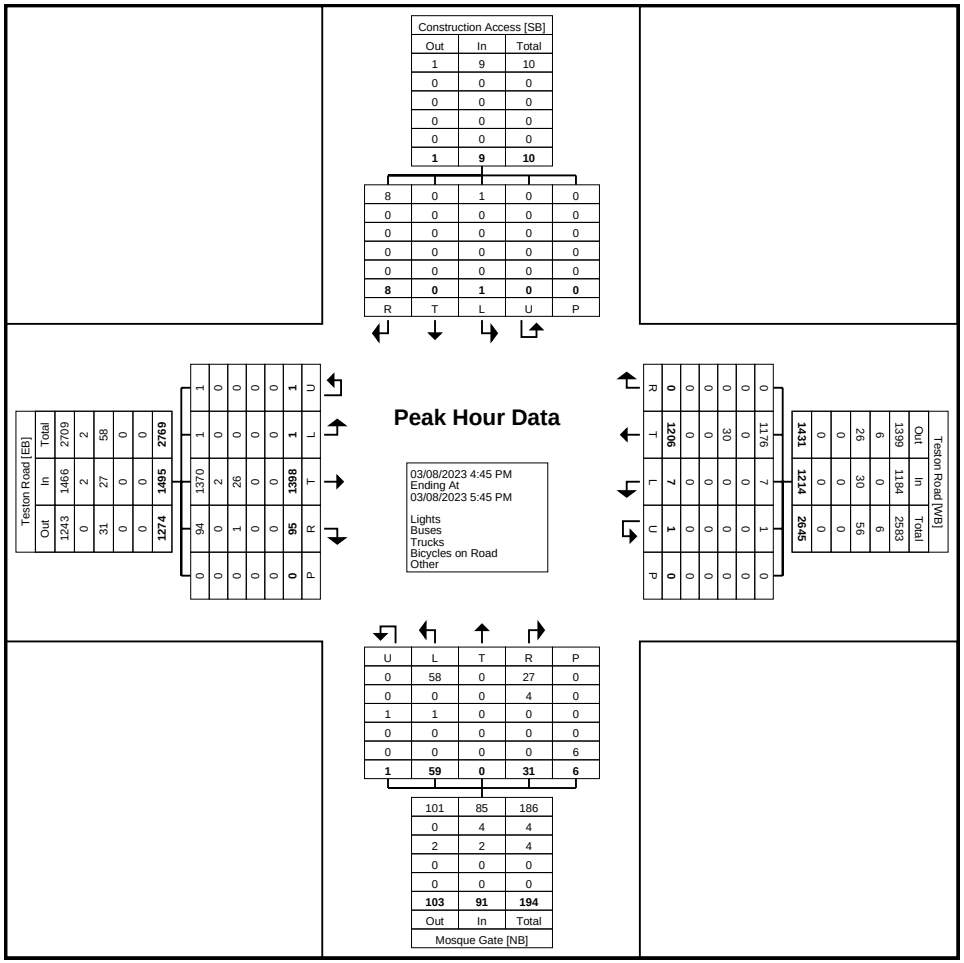
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Construction Access Southbound						Teston Road Westbound						Mosque Gate Northbound						Teston Road Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:45 PM	2	0	1	0	0	3	0	304	2	0	0	306	7	0	19	0	0	26	12	322	0	1	0	335	670
5:00 PM	4	0	0	0	0	4	0	267	0	0	0	267	9	0	9	1	4	19	20	325	0	0	0	345	635
5:15 PM	1	0	0	0	0	1	0	287	3	1	0	291	8	0	17	0	2	25	25	353	0	0	0	378	695
5:30 PM	1	0	0	0	0	1	0	348	2	0	0	350	7	0	14	0	0	21	38	398	1	0	0	437	809
Total	8	0	1	0	0	9	0	1206	7	1	0	1214	31	0	59	1	6	91	95	1398	1	1	0	1495	2809
Approach %	88.9	0.0	11.1	0.0	-	-	0.0	99.3	0.6	0.1	-	-	34.1	0.0	64.8	1.1	-	-	6.4	93.5	0.1	0.1	-	-	-
Total %	0.3	0.0	0.0	0.0	-	0.3	0.0	42.9	0.2	0.0	-	43.2	1.1	0.0	2.1	0.0	-	3.2	3.4	49.8	0.0	0.0	-	53.2	-
PHF	0.500	0.000	0.250	0.000	-	0.563	0.000	0.866	0.583	0.250	-	0.867	0.861	0.000	0.776	0.250	-	0.875	0.625	0.878	0.250	0.250	-	0.855	0.868
Lights	8	0	1	0	-	9	0	1176	7	1	-	1184	27	0	58	0	-	85	94	1370	1	1	-	1466	2744
% Lights	100.0	-	100.0	-	-	100.0	-	97.5	100.0	100.0	-	97.5	87.1	-	98.3	0.0	-	93.4	98.9	98.0	100.0	100.0	-	98.1	97.7
Buses	0	0	0	0	-	0	0	0	0	0	-	0	4	0	0	0	-	4	0	2	0	0	-	2	6
% Buses	0.0	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.0	12.9	-	0.0	0.0	-	4.4	0.0	0.1	0.0	0.0	-	0.1	0.2
Trucks	0	0	0	0	-	0	0	30	0	0	-	30	0	0	1	1	-	2	1	26	0	0	-	27	59
% Trucks	0.0	-	0.0	-	-	0.0	-	2.5	0.0	0.0	-	2.5	0.0	-	1.7	100.0	-	2.2	1.1	1.9	0.0	0.0	-	1.8	2.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Mosque Gate & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Hwy 400 NB Ramps & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Data

Start Time	Highway 400 NB On-Ramp Southbound		Teston Road Westbound						Highway 400 NB Off-Ramp Northbound					Teston Road Eastbound					
	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
5:30 AM	0	0	6	65	0	0	0	71	24	14	0	0	38	0	52	0	0	52	161
5:45 AM	0	0	11	67	0	0	0	78	31	11	0	0	42	0	42	0	0	42	162
Hourly Total	0	0	17	132	0	0	0	149	55	25	0	0	80	0	94	0	0	94	323
6:00 AM	0	0	14	103	0	0	0	117	45	8	0	0	53	0	41	0	0	41	211
6:15 AM	0	0	23	119	0	0	0	142	30	12	0	1	42	0	56	0	0	56	240
6:30 AM	0	0	20	156	0	0	0	176	44	28	0	0	72	0	70	0	0	70	318
6:45 AM	0	0	21	158	0	0	0	179	61	38	0	1	99	0	96	0	0	96	374
Hourly Total	0	0	78	536	0	0	0	614	180	86	0	2	266	0	263	0	0	263	1143
7:00 AM	0	0	26	129	0	0	0	155	61	22	0	0	83	0	115	0	0	115	353
7:15 AM	0	0	29	198	0	0	0	227	52	39	0	0	91	0	124	0	0	124	442
7:30 AM	0	0	36	240	0	0	0	276	75	23	0	0	98	0	187	0	0	187	561
7:45 AM	0	0	29	232	0	0	0	261	83	43	0	0	126	0	203	0	0	203	590
Hourly Total	0	0	120	799	0	0	0	919	271	127	0	0	398	0	629	0	0	629	1946
8:00 AM	0	0	33	219	0	0	0	252	81	43	0	0	124	0	187	0	0	187	563
8:15 AM	0	0	35	255	0	0	0	290	66	26	0	0	92	0	209	0	0	209	591
8:30 AM	0	0	42	263	0	0	0	305	51	29	0	1	80	0	175	0	0	175	560
8:45 AM	0	0	31	261	0	0	0	292	58	37	0	0	95	0	166	0	0	166	553
Hourly Total	0	0	141	998	0	0	0	1139	256	135	0	1	391	0	737	0	0	737	2267
9:00 AM	0	0	26	200	0	0	0	226	56	32	0	2	88	0	132	0	0	132	446
9:15 AM	0	0	25	166	0	0	0	191	50	32	0	1	82	0	87	0	0	87	360
9:30 AM	0	0	20	131	0	0	0	151	35	25	0	0	60	0	96	0	0	96	307
9:45 AM	0	0	19	127	0	0	0	146	60	23	0	1	83	0	94	0	0	94	323
Hourly Total	0	0	90	624	0	0	0	714	201	112	0	4	313	0	409	0	0	409	1436
10:00 AM	0	0	11	123	0	0	0	134	51	36	0	0	87	0	51	0	0	51	272
10:15 AM	0	0	12	114	0	0	0	126	51	27	0	0	78	0	81	0	0	81	285
10:30 AM	0	0	18	122	0	0	0	140	57	22	0	1	79	0	61	0	0	61	280
10:45 AM	0	0	15	103	0	0	0	118	52	30	0	0	82	0	75	0	0	75	275
Hourly Total	0	0	56	462	0	0	0	518	211	115	0	1	326	0	268	0	0	268	1112
11:00 AM	0	0	17	119	0	0	0	136	45	33	0	1	78	0	71	0	0	71	285
11:15 AM	0	0	12	112	0	0	0	124	58	26	0	0	84	0	81	0	0	81	289
11:30 AM	0	0	16	106	0	0	0	122	47	19	0	0	66	0	73	0	0	73	261
11:45 AM	0	0	17	111	0	0	0	128	57	25	0	0	82	0	75	0	0	75	285
Hourly Total	0	0	62	448	0	0	0	510	207	103	0	1	310	0	300	0	0	300	1120
12:00 PM	0	0	21	100	0	0	0	121	70	29	0	0	99	0	83	0	0	83	303
12:15 PM	0	0	19	104	0	0	0	123	59	29	0	0	88	0	89	0	0	89	300

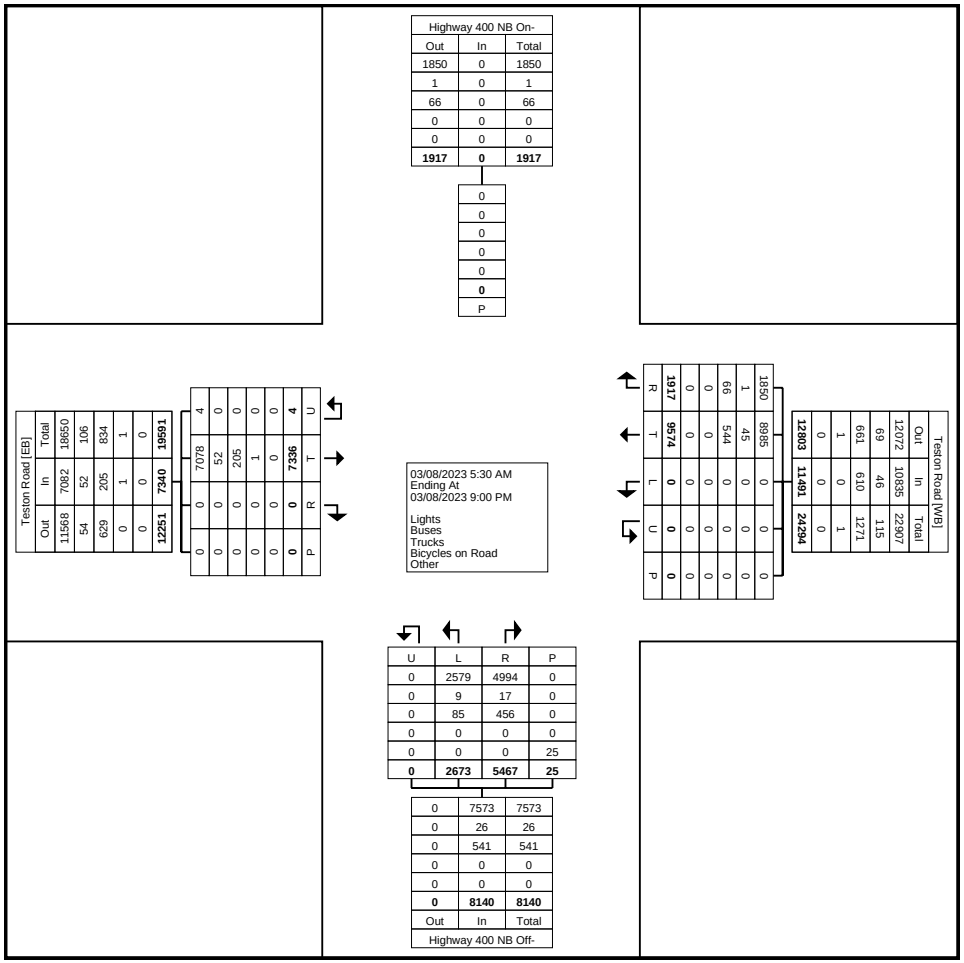
12:30 PM	0	0	20	127	0	0	0	147	56	33	0	0	89	0	95	0	0	95	331
12:45 PM	0	0	16	107	0	0	0	123	68	36	0	1	104	0	85	0	0	85	312
Hourly Total	0	0	76	438	0	0	0	514	253	127	0	1	380	0	352	0	0	352	1246
1:00 PM	0	0	26	92	0	0	0	118	69	36	0	1	105	0	101	0	0	101	324
1:15 PM	0	0	24	108	0	0	0	132	64	30	0	2	94	0	86	0	0	86	312
1:30 PM	0	0	19	124	0	0	0	143	78	35	0	0	113	0	91	0	0	91	347
1:45 PM	0	0	22	129	0	0	0	151	70	34	0	1	104	0	99	0	0	99	354
Hourly Total	0	0	91	453	0	0	0	544	281	135	0	4	416	0	377	0	0	377	1337
2:00 PM	0	0	31	128	0	0	0	159	70	34	0	0	104	0	101	0	0	101	364
2:15 PM	0	0	38	152	0	0	0	190	86	48	0	1	134	0	97	0	0	97	421
2:30 PM	0	0	37	151	0	0	0	188	96	35	0	0	131	0	119	1	0	120	439
2:45 PM	0	0	42	173	0	0	0	215	114	53	0	0	167	0	113	0	0	113	495
Hourly Total	0	0	148	604	0	0	0	752	366	170	0	1	536	0	430	1	0	431	1719
3:00 PM	0	0	48	175	0	0	0	223	119	58	0	0	177	0	134	0	0	134	534
3:15 PM	0	0	52	189	0	0	0	241	117	54	0	0	171	0	194	1	0	195	607
3:30 PM	0	0	54	160	0	0	0	214	163	63	0	0	226	0	186	0	0	186	626
3:45 PM	0	0	36	202	0	0	0	238	150	55	0	0	205	0	163	1	0	164	607
Hourly Total	0	0	190	726	0	0	0	916	549	230	0	0	779	0	677	2	0	679	2374
4:00 PM	0	0	35	228	0	0	0	263	179	71	0	0	250	0	178	0	0	178	691
4:15 PM	0	0	66	189	0	0	0	255	156	78	0	0	234	0	197	0	0	197	686
4:30 PM	0	0	56	240	0	0	0	296	157	81	0	0	238	0	204	0	0	204	738
4:45 PM	0	0	64	250	0	0	0	314	179	78	0	1	257	0	164	0	0	164	735
Hourly Total	0	0	221	907	0	0	0	1128	671	308	0	1	979	0	743	0	0	743	2850
5:00 PM	0	0	65	209	0	0	0	274	162	69	0	3	231	0	189	0	0	189	694
5:15 PM	0	0	65	232	0	0	0	297	195	57	0	4	252	0	190	0	0	190	739
5:30 PM	0	0	76	249	0	0	0	325	194	92	0	0	286	0	207	0	0	207	818
5:45 PM	0	0	58	248	0	0	0	306	167	94	0	0	261	0	155	0	0	155	722
Hourly Total	0	0	264	938	0	0	0	1202	718	312	0	7	1030	0	741	0	0	741	2973
6:00 PM	0	0	51	223	0	0	0	274	164	84	0	0	248	0	157	0	0	157	679
6:15 PM	0	0	55	163	0	0	0	218	144	73	0	0	217	0	147	0	0	147	582
6:30 PM	0	0	46	178	0	0	0	224	117	55	0	1	172	0	140	0	0	140	536
6:45 PM	0	0	45	130	0	0	0	175	122	59	0	0	181	0	133	0	0	133	489
Hourly Total	0	0	197	694	0	0	0	891	547	271	0	1	818	0	577	0	0	577	2286
7:00 PM	0	0	19	113	0	0	0	132	103	60	0	0	163	0	105	0	0	105	400
7:15 PM	0	0	37	119	0	0	0	156	104	64	0	0	168	0	117	0	0	117	441
7:30 PM	0	0	23	130	0	0	0	153	95	59	0	0	154	0	134	0	0	134	441
7:45 PM	0	0	17	110	0	0	0	127	98	38	0	0	136	0	93	0	0	93	356
Hourly Total	0	0	96	472	0	0	0	568	400	221	0	0	621	0	449	0	0	449	1638
8:00 PM	0	0	27	87	0	0	0	114	90	46	0	0	136	0	78	0	0	78	328
8:15 PM	0	0	21	86	0	0	0	107	63	50	0	1	113	0	78	0	0	78	298
8:30 PM	0	0	9	82	0	0	0	91	66	46	0	0	112	0	71	1	0	72	275
8:45 PM	0	0	13	88	0	0	0	101	82	54	0	0	136	0	63	0	0	63	300
Hourly Total	0	0	70	343	0	0	0	413	301	196	0	1	497	0	290	1	0	291	1201
Grand Total	0	0	1917	9574	0	0	0	11491	5467	2673	0	25	8140	0	7336	4	0	7340	26971
Approach %	-	-	16.7	83.3	0.0	0.0	-	-	67.2	32.8	0.0	-	-	0.0	99.9	0.1	-	-	-
Total %	-	0.0	7.1	35.5	0.0	0.0	-	42.6	20.3	9.9	0.0	-	30.2	0.0	27.2	0.0	-	27.2	-
Lights	-	0	1850	8985	0	0	-	10835	4994	2579	0	-	7573	0	7078	4	-	7082	25490
% Lights	-	-	96.5	93.8	-	-	-	94.3	91.3	96.5	-	-	93.0	-	96.5	100.0	-	96.5	94.5
Buses	-	0	1	45	0	0	-	46	17	9	0	-	26	0	52	0	-	52	124
% Buses	-	-	0.1	0.5	-	-	-	0.4	0.3	0.3	-	-	0.3	-	0.7	0.0	-	0.7	0.5
Trucks	-	0	66	544	0	0	-	610	456	85	0	-	541	0	205	0	-	205	1356
% Trucks	-	-	3.4	5.7	-	-	-	5.3	8.3	3.2	-	-	6.6	-	2.8	0.0	-	2.8	5.0

Bicycles on Road	-	0	0	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	-	-	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	0	-	-	-	-	-	0	-	-	-	-	6	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	24.0	-	-	-	-	-	-	-
Pedestrians	0	-	-	-	-	-	0	-	-	-	-	19	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	76.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Hwy 400 NB Ramps & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Hwy 400 NB Ramps & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

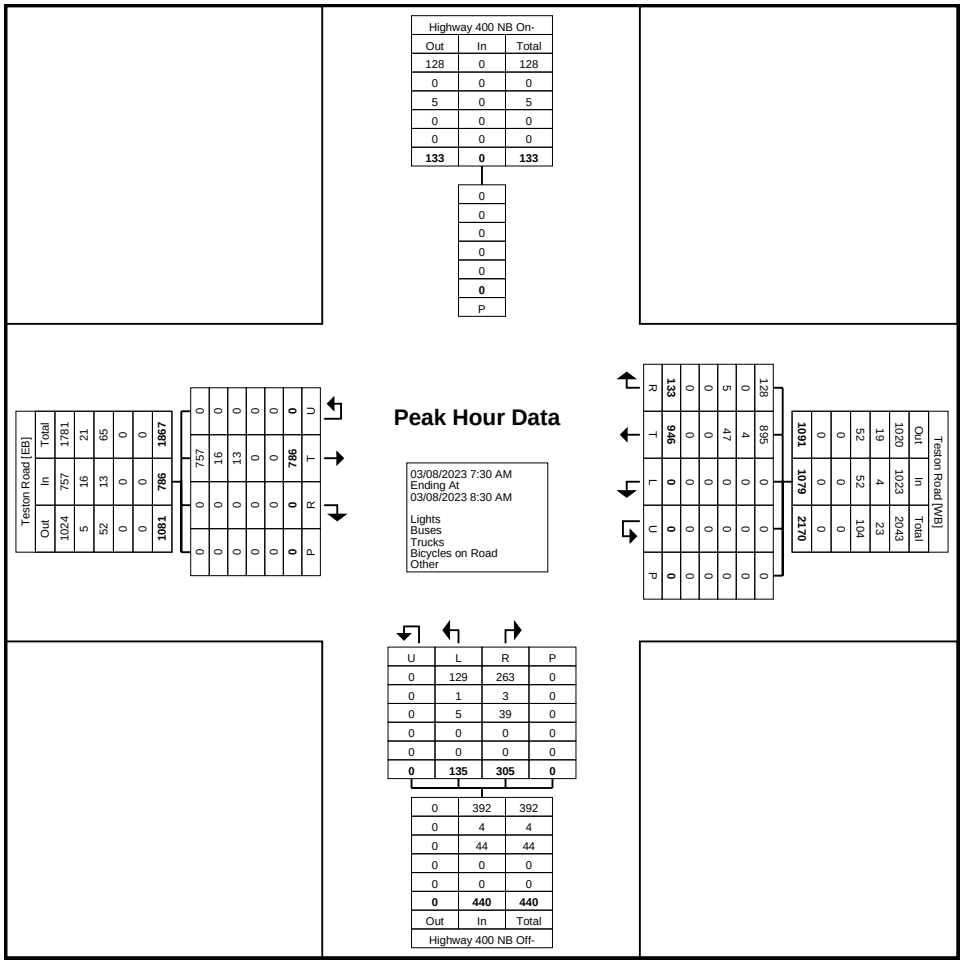
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Highway 400 NB On-Ramp Southbound		Teston Road Westbound						Highway 400 NB Off-Ramp Northbound					Teston Road Eastbound					
	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:30 AM	0	0	36	240	0	0	0	276	75	23	0	0	98	0	187	0	0	187	561
7:45 AM	0	0	29	232	0	0	0	261	83	43	0	0	126	0	203	0	0	203	590
8:00 AM	0	0	33	219	0	0	0	252	81	43	0	0	124	0	187	0	0	187	563
8:15 AM	0	0	35	255	0	0	0	290	66	26	0	0	92	0	209	0	0	209	591
Total	0	0	133	946	0	0	0	1079	305	135	0	0	440	0	786	0	0	786	2305
Approach %	-	-	12.3	87.7	0.0	0.0	-	-	69.3	30.7	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	-	0.0	5.8	41.0	0.0	0.0	-	46.8	13.2	5.9	0.0	-	19.1	0.0	34.1	0.0	-	34.1	-
PHF	-	0.000	0.924	0.927	0.000	0.000	-	0.930	0.919	0.785	0.000	-	0.873	0.000	0.940	0.000	-	0.940	0.975
Lights	-	0	128	895	0	0	-	1023	263	129	0	-	392	0	757	0	-	757	2172
% Lights	-	-	96.2	94.6	-	-	-	94.8	86.2	95.6	-	-	89.1	-	96.3	-	-	96.3	94.2
Buses	-	0	0	4	0	0	-	4	3	1	0	-	4	0	16	0	-	16	24
% Buses	-	-	0.0	0.4	-	-	-	0.4	1.0	0.7	-	-	0.9	-	2.0	-	-	2.0	1.0
Trucks	-	0	5	47	0	0	-	52	39	5	0	-	44	0	13	0	-	13	109
% Trucks	-	-	3.8	5.0	-	-	-	4.8	12.8	3.7	-	-	10.0	-	1.7	-	-	1.7	4.7
Bicycles on Road	-	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	-	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Hwy 400 NB Ramps & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (7:30 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Hwy 400 NB Ramps & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

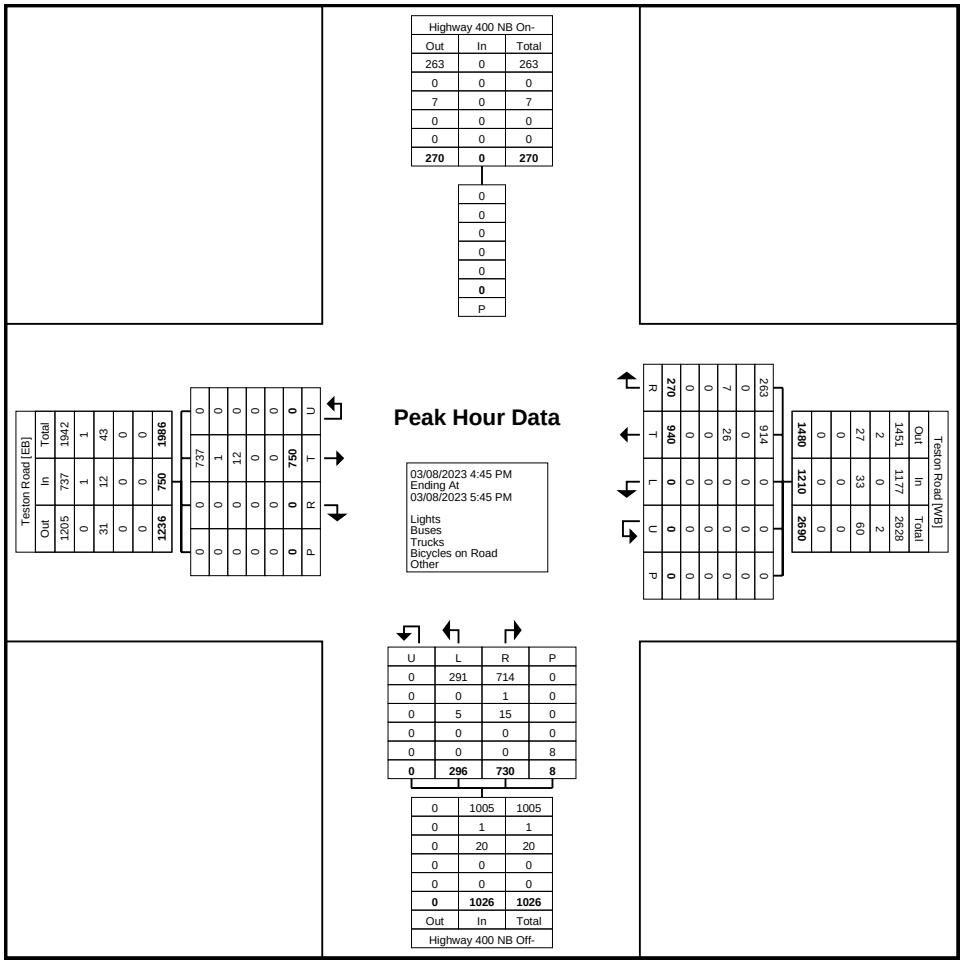
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Highway 400 NB On-Ramp Southbound		Teston Road Westbound						Highway 400 NB Off-Ramp Northbound					Teston Road Eastbound					
	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	0	0	64	250	0	0	0	314	179	78	0	1	257	0	164	0	0	164	735
5:00 PM	0	0	65	209	0	0	0	274	162	69	0	3	231	0	189	0	0	189	694
5:15 PM	0	0	65	232	0	0	0	297	195	57	0	4	252	0	190	0	0	190	739
5:30 PM	0	0	76	249	0	0	0	325	194	92	0	0	286	0	207	0	0	207	818
Total	0	0	270	940	0	0	0	1210	730	296	0	8	1026	0	750	0	0	750	2986
Approach %	-	-	22.3	77.7	0.0	0.0	-	-	71.2	28.8	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	-	0.0	9.0	31.5	0.0	0.0	-	40.5	24.4	9.9	0.0	-	34.4	0.0	25.1	0.0	-	25.1	-
PHF	-	0.000	0.888	0.940	0.000	0.000	-	0.931	0.936	0.804	0.000	-	0.897	0.000	0.906	0.000	-	0.906	0.913
Lights	-	0	263	914	0	0	-	1177	714	291	0	-	1005	0	737	0	-	737	2919
% Lights	-	-	97.4	97.2	-	-	-	97.3	97.8	98.3	-	-	98.0	-	98.3	-	-	98.3	97.8
Buses	-	0	0	0	0	0	-	0	1	0	0	-	1	0	1	0	-	1	2
% Buses	-	-	0.0	0.0	-	-	-	0.0	0.1	0.0	-	-	0.1	-	0.1	-	-	0.1	0.1
Trucks	-	0	7	26	0	0	-	33	15	5	0	-	20	0	12	0	-	12	65
% Trucks	-	-	2.6	2.8	-	-	-	2.7	2.1	1.7	-	-	1.9	-	1.6	-	-	1.6	2.2
Bicycles on Road	-	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	-	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	0	-	-	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	37.5	-	-	-	-	-	-	-
Pedestrians	0	-	-	-	-	-	0	-	-	-	-	5	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	62.5	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Hwy 400 NB Ramps & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Data

Start Time	Private Access Southbound						Teston Road Westbound						Cityview Boulevard Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:30 AM	0	0	0	0	0	0	0	19	60	0	0	79	36	0	2	0	0	38	13	23	0	0	0	36	153
5:45 AM	0	0	0	0	0	0	0	23	61	0	0	84	28	0	2	0	0	30	13	26	0	0	0	39	153
Hourly Total	0	0	0	0	0	0	0	42	121	0	0	163	64	0	4	0	0	68	26	49	0	0	0	75	306
6:00 AM	0	0	0	0	0	0	0	17	94	0	0	111	30	0	3	0	0	33	12	17	0	0	0	29	173
6:15 AM	0	0	0	0	0	0	0	31	100	0	0	131	46	0	2	0	0	48	20	29	0	0	0	49	228
6:30 AM	0	0	0	0	0	0	0	61	129	0	0	190	41	0	6	0	0	47	18	46	0	0	0	64	301
6:45 AM	0	0	0	0	0	0	0	62	123	0	0	185	63	0	9	0	1	72	26	54	0	0	0	80	337
Hourly Total	0	0	0	0	0	0	0	171	446	0	0	617	180	0	20	0	1	200	76	146	0	0	0	222	1039
7:00 AM	0	0	0	0	0	0	0	52	103	0	0	155	66	0	9	0	0	75	34	72	0	0	0	106	336
7:15 AM	0	0	0	0	0	0	0	85	159	0	0	244	68	0	8	0	0	76	50	94	0	0	0	144	464
7:30 AM	0	0	0	0	0	0	0	86	167	0	0	253	103	0	15	0	0	118	45	103	0	0	0	148	519
7:45 AM	0	0	0	0	0	0	0	98	165	0	0	263	89	0	16	0	0	105	53	134	0	0	0	187	555
Hourly Total	0	0	0	0	0	0	0	321	594	0	0	915	326	0	48	0	0	374	182	403	0	0	0	585	1874
8:00 AM	0	0	0	0	0	0	0	93	173	0	0	266	70	0	14	0	0	84	59	171	0	0	0	230	580
8:15 AM	0	0	0	0	0	0	0	99	176	0	0	275	94	0	14	0	0	108	67	153	0	0	0	220	603
8:30 AM	0	0	0	0	0	0	0	91	201	0	0	292	101	0	16	0	1	117	72	106	0	0	0	178	587
8:45 AM	0	0	0	0	0	0	0	100	218	0	0	318	90	0	20	0	0	110	73	123	0	0	0	196	624
Hourly Total	0	0	0	0	0	0	0	383	768	0	0	1151	355	0	64	0	1	419	271	553	0	0	0	824	2394
9:00 AM	0	0	0	0	0	0	0	70	152	0	0	222	70	0	17	0	0	87	48	80	0	0	0	128	437
9:15 AM	0	0	0	0	0	0	0	64	150	0	0	214	58	0	14	1	1	73	44	54	0	0	0	98	385
9:30 AM	0	0	0	0	0	0	0	42	109	0	0	151	52	0	10	0	0	62	35	62	0	0	0	97	310
9:45 AM	0	0	0	0	0	0	0	56	102	0	0	158	57	0	15	1	0	73	31	50	0	0	0	81	312
Hourly Total	0	0	0	0	0	0	0	232	513	0	0	745	237	0	56	2	1	295	158	246	0	0	0	404	1444
10:00 AM	0	0	0	0	0	0	0	46	118	0	0	164	37	0	7	0	0	44	35	37	0	0	0	72	280
10:15 AM	0	0	0	0	0	0	0	46	101	0	0	147	39	0	6	0	0	45	31	48	0	0	0	79	271
10:30 AM	0	0	0	0	0	0	0	49	94	0	0	143	47	0	9	0	0	56	32	25	0	0	0	57	256
10:45 AM	0	0	0	0	0	0	0	37	101	0	0	138	42	0	7	0	1	49	25	40	0	0	0	65	252
Hourly Total	0	0	0	0	0	0	0	178	414	0	0	592	165	0	29	0	1	194	123	150	0	0	0	273	1059
11:00 AM	0	0	0	0	0	0	0	46	111	0	0	157	51	0	10	0	0	61	36	40	0	0	0	76	294
11:15 AM	0	0	0	0	0	0	0	45	91	0	0	136	48	0	18	0	0	66	28	41	0	0	0	69	271
11:30 AM	0	0	0	0	0	0	0	39	85	0	0	124	44	0	6	0	0	50	20	49	0	0	0	69	243
11:45 AM	0	0	0	0	0	0	0	37	109	0	0	146	43	0	4	0	0	47	24	42	0	0	0	66	259
Hourly Total	0	0	0	0	0	0	0	167	396	0	0	563	186	0	38	0	0	224	108	172	0	0	0	280	1067
12:00 PM	0	0	0	0	0	0	0	46	82	1	0	129	52	0	15	0	0	67	32	42	0	0	0	74	270
12:15 PM	0	0	0	0	0	0	0	45	90	0	0	135	55	0	15	0	2	70	27	46	0	0	0	73	278

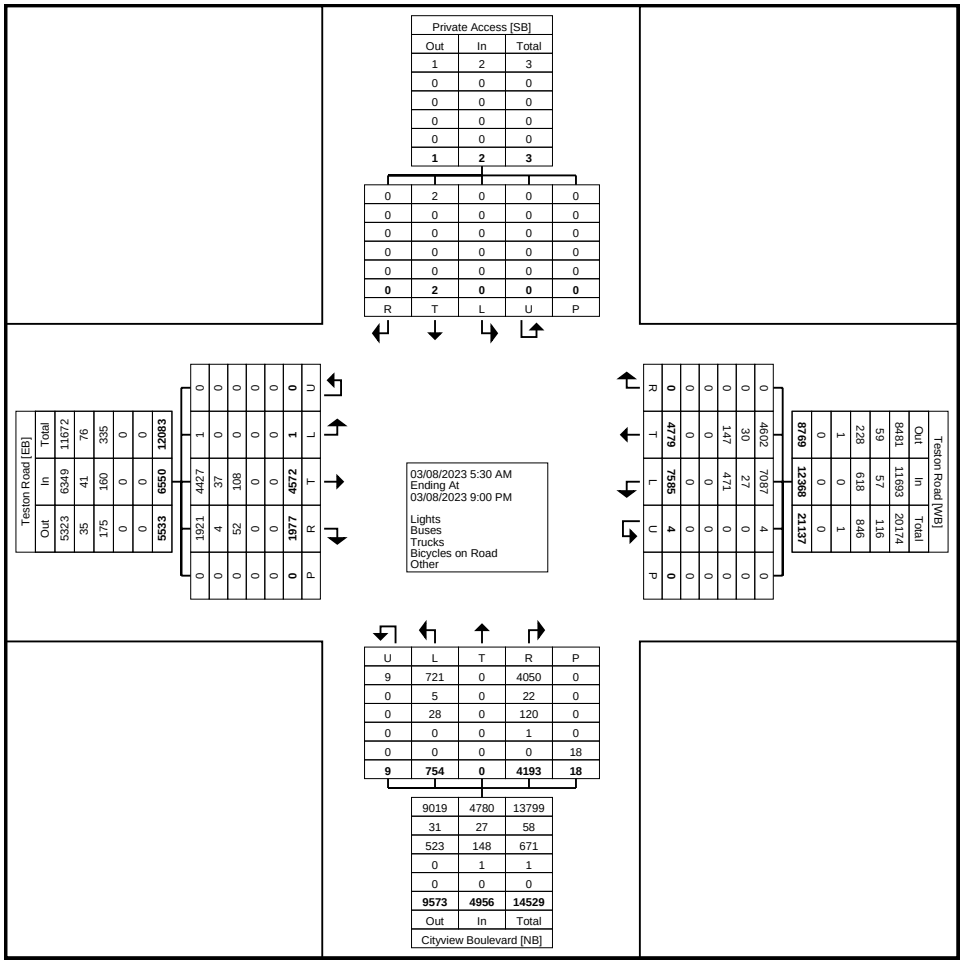
12:30 PM	0	0	0	0	0	0	0	51	102	0	0	153	53	0	12	0	0	65	26	54	0	0	0	80	298
12:45 PM	0	0	0	0	0	0	0	48	89	1	0	138	47	0	14	0	1	61	27	52	0	0	0	79	278
Hourly Total	0	0	0	0	0	0	0	190	363	2	0	555	207	0	56	0	3	263	112	194	0	0	0	306	1124
1:00 PM	0	0	0	0	0	0	0	49	89	0	0	138	68	0	3	0	3	71	26	53	0	0	0	79	288
1:15 PM	0	0	0	0	0	0	0	47	91	0	0	138	49	0	8	0	2	57	21	48	0	0	0	69	264
1:30 PM	0	0	0	0	0	0	0	70	97	0	0	167	50	0	15	0	0	65	17	53	0	0	0	70	302
1:45 PM	0	0	0	0	0	0	0	62	96	0	0	158	61	0	4	0	0	65	12	55	0	0	0	67	290
Hourly Total	0	0	0	0	0	0	0	228	373	0	0	601	228	0	30	0	5	258	76	209	0	0	0	285	1144
2:00 PM	0	0	0	0	0	0	0	68	92	0	0	160	55	0	10	0	0	65	31	63	0	0	0	94	319
2:15 PM	0	0	0	0	0	0	0	83	109	0	0	192	57	0	7	0	1	64	18	56	0	0	0	74	330
2:30 PM	0	0	0	0	0	0	0	72	111	0	0	183	59	0	16	0	0	75	30	89	0	0	0	119	377
2:45 PM	0	0	0	0	0	0	0	106	134	0	0	240	61	0	11	1	0	73	38	90	0	0	0	128	441
Hourly Total	0	0	0	0	0	0	0	329	446	0	0	775	232	0	44	1	1	277	117	298	0	0	0	415	1467
3:00 PM	0	0	0	0	0	0	0	99	123	0	0	222	73	0	20	0	0	93	34	121	0	0	0	155	470
3:15 PM	0	0	0	0	0	0	0	106	137	0	0	243	101	0	13	0	2	114	35	130	0	0	0	165	522
3:30 PM	0	0	0	0	0	0	0	122	116	0	0	238	110	0	24	1	0	135	43	129	0	0	0	172	545
3:45 PM	0	0	0	0	0	0	0	128	132	0	0	260	98	0	24	0	0	122	28	115	0	0	0	143	525
Hourly Total	0	0	0	0	0	0	0	455	508	0	0	963	382	0	81	1	2	464	140	495	0	0	0	635	2062
4:00 PM	0	0	0	0	0	0	0	143	148	0	0	291	118	0	18	1	0	137	30	121	0	0	0	151	579
4:15 PM	0	0	0	0	0	0	0	124	157	0	0	281	114	0	20	0	0	134	31	114	0	0	0	145	560
4:30 PM	0	0	0	0	0	0	0	160	161	0	0	321	112	0	23	0	0	135	45	98	0	0	0	143	599
4:45 PM	0	0	0	0	0	0	0	172	175	0	0	347	89	0	16	0	0	105	32	112	0	0	0	144	596
Hourly Total	0	0	0	0	0	0	0	599	641	0	0	1240	433	0	77	1	0	511	138	445	0	0	0	583	2334
5:00 PM	0	0	0	0	0	0	0	142	149	0	0	291	93	0	23	1	0	117	49	135	0	0	0	184	592
5:15 PM	0	0	0	0	0	0	0	141	146	0	0	287	108	0	15	0	2	123	44	126	0	0	0	170	580
5:30 PM	0	0	0	0	0	0	0	165	167	0	0	332	97	0	14	1	0	112	46	147	0	0	0	193	637
5:45 PM	0	0	0	0	0	0	0	162	210	0	0	372	73	0	14	0	0	87	46	114	0	0	0	160	619
Hourly Total	0	0	0	0	0	0	0	610	672	0	0	1282	371	0	66	2	2	439	185	522	0	0	0	707	2428
6:00 PM	0	0	0	0	0	0	0	135	169	0	0	304	91	0	26	0	0	117	30	97	0	0	0	127	548
6:15 PM	0	0	0	0	0	0	0	123	123	0	0	246	82	0	8	0	1	90	29	96	0	0	0	125	461
6:30 PM	0	0	0	0	0	0	0	99	127	0	0	226	81	0	13	1	0	95	21	88	0	0	0	109	430
6:45 PM	0	0	0	0	0	0	0	84	108	1	0	193	81	0	9	0	0	90	34	59	0	0	0	93	376
Hourly Total	0	0	0	0	0	0	0	441	527	1	0	969	335	0	56	1	1	392	114	340	0	0	0	454	1815
7:00 PM	0	1	0	0	0	1	0	52	121	0	0	173	78	0	18	0	0	96	21	53	0	0	0	74	344
7:15 PM	0	0	0	0	0	0	0	61	121	0	0	182	78	0	11	0	0	89	26	63	0	0	0	89	360
7:30 PM	0	0	0	0	0	0	0	71	120	0	0	191	88	0	15	1	0	104	21	61	1	0	0	83	378
7:45 PM	0	1	0	0	0	1	0	48	100	0	0	148	54	0	10	0	0	64	21	52	0	0	0	73	286
Hourly Total	0	2	0	0	0	2	0	232	462	0	0	694	298	0	54	1	0	353	89	229	1	0	0	319	1368
8:00 PM	0	0	0	0	0	0	0	51	81	1	0	133	51	0	12	0	0	63	19	41	0	0	0	60	256
8:15 PM	0	0	0	0	0	0	0	52	88	0	0	140	47	0	3	0	0	50	14	33	0	0	0	47	237
8:30 PM	0	0	0	0	0	0	0	53	76	0	0	129	48	0	9	0	0	57	9	25	0	0	0	34	220
8:45 PM	0	0	0	0	0	0	0	45	96	0	0	141	48	0	7	0	0	55	20	22	0	0	0	42	238
Hourly Total	0	0	0	0	0	0	0	201	341	1	0	543	194	0	31	0	0	225	62	121	0	0	0	183	951
Grand Total	0	2	0	0	0	2	0	4779	7585	4	0	12368	4193	0	754	9	18	4956	1977	4572	1	0	0	6550	23876
Approach %	0.0	100.0	0.0	0.0	-	-	0.0	38.6	61.3	0.0	-	-	84.6	0.0	15.2	0.2	-	-	30.2	69.8	0.0	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.0	20.0	31.8	0.0	-	51.8	17.6	0.0	3.2	0.0	-	20.8	8.3	19.1	0.0	0.0	-	27.4	-
Lights	0	2	0	0	-	2	0	4602	7087	4	-	11693	4050	0	721	9	-	4780	1921	4427	1	0	-	6349	22824
% Lights	-	100.0	-	-	-	100.0	-	96.3	93.4	100.0	-	94.5	96.6	-	95.6	100.0	-	96.4	97.2	96.8	100.0	-	-	96.9	95.6
Buses	0	0	0	0	-	0	0	30	27	0	-	57	22	0	5	0	-	27	4	37	0	0	-	41	125
% Buses	-	0.0	-	-	-	0.0	-	0.6	0.4	0.0	-	0.5	0.5	-	0.7	0.0	-	0.5	0.2	0.8	0.0	-	-	0.6	0.5
Trucks	0	0	0	0	-	0	0	147	471	0	-	618	120	0	28	0	-	148	52	108	0	0	-	160	926
% Trucks	-	0.0	-	-	-	0.0	-	3.1	6.2	0.0	-	5.0	2.9	-	3.7	0.0	-	3.0	2.6	2.4	0.0	-	-	2.4	3.9

Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	-	-	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22.2	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	14	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.8	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

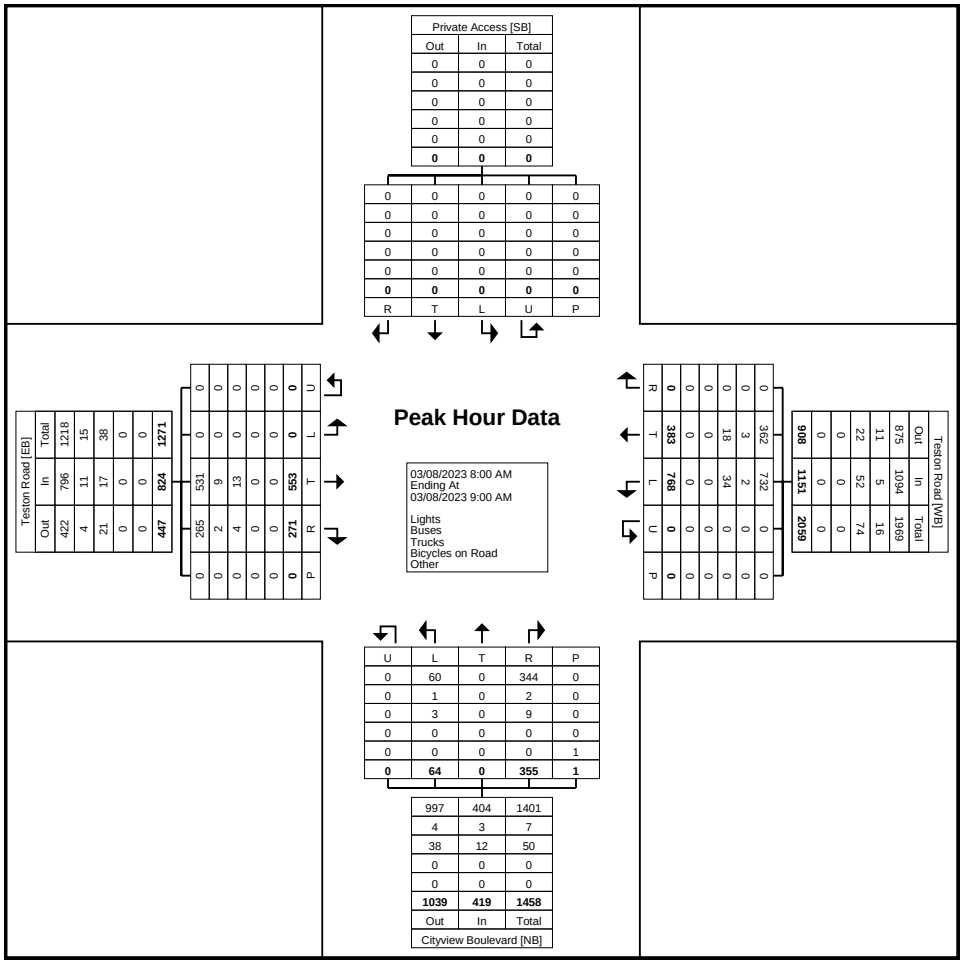
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Private Access Southbound						Teston Road Westbound						Cityview Boulevard Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	0	0	0	0	0	0	0	93	173	0	0	266	70	0	14	0	0	84	59	171	0	0	0	230	580
8:15 AM	0	0	0	0	0	0	0	99	176	0	0	275	94	0	14	0	0	108	67	153	0	0	0	220	603
8:30 AM	0	0	0	0	0	0	0	91	201	0	0	292	101	0	16	0	1	117	72	106	0	0	0	178	587
8:45 AM	0	0	0	0	0	0	0	100	218	0	0	318	90	0	20	0	0	110	73	123	0	0	0	196	624
Total	0	0	0	0	0	0	0	383	768	0	0	1151	355	0	64	0	1	419	271	553	0	0	0	824	2394
Approach %	0.0	0.0	0.0	0.0	-	-	0.0	33.3	66.7	0.0	-	-	84.7	0.0	15.3	0.0	-	-	32.9	67.1	0.0	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.0	16.0	32.1	0.0	-	48.1	14.8	0.0	2.7	0.0	-	17.5	11.3	23.1	0.0	0.0	-	34.4	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.000	0.958	0.881	0.000	-	0.905	0.879	0.000	0.800	0.000	-	0.895	0.928	0.808	0.000	0.000	-	0.896	0.959
Lights	0	0	0	0	-	0	0	362	732	0	-	1094	344	0	60	0	-	404	265	531	0	0	-	796	2294
% Lights	-	-	-	-	-	-	-	94.5	95.3	-	-	95.0	96.9	-	93.8	-	-	96.4	97.8	96.0	-	-	-	96.6	95.8
Buses	0	0	0	0	-	0	0	3	2	0	-	5	2	0	1	0	-	3	2	9	0	0	-	11	19
% Buses	-	-	-	-	-	-	-	0.8	0.3	-	-	0.4	0.6	-	1.6	-	-	0.7	0.7	1.6	-	-	-	1.3	0.8
Trucks	0	0	0	0	-	0	0	18	34	0	-	52	9	0	3	0	-	12	4	13	0	0	-	17	81
% Trucks	-	-	-	-	-	-	-	4.7	4.4	-	-	4.5	2.5	-	4.7	-	-	2.9	1.5	2.4	-	-	-	2.1	3.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	-	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & Teston Rd
Site Code: 20009
Start Date: 03/08/2023



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

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & Teston Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Private Access Southbound						Teston Road Westbound						Cityview Boulevard Northbound						Teston Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:00 PM	0	0	0	0	0	0	0	142	149	0	0	291	93	0	23	1	0	117	49	135	0	0	0	184	592
5:15 PM	0	0	0	0	0	0	0	141	146	0	0	287	108	0	15	0	2	123	44	126	0	0	0	170	580
5:30 PM	0	0	0	0	0	0	0	165	167	0	0	332	97	0	14	1	0	112	46	147	0	0	0	193	637
5:45 PM	0	0	0	0	0	0	0	162	210	0	0	372	73	0	14	0	0	87	46	114	0	0	0	160	619
Total	0	0	0	0	0	0	0	610	672	0	0	1282	371	0	66	2	2	439	185	522	0	0	0	707	2428
Approach %	0.0	0.0	0.0	0.0	-	-	0.0	47.6	52.4	0.0	-	-	84.5	0.0	15.0	0.5	-	-	26.2	73.8	0.0	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.0	25.1	27.7	0.0	-	52.8	15.3	0.0	2.7	0.1	-	18.1	7.6	21.5	0.0	0.0	-	29.1	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.000	0.924	0.800	0.000	-	0.862	0.859	0.000	0.717	0.500	-	0.892	0.944	0.888	0.000	0.000	-	0.916	0.953
Lights	0	0	0	0	-	0	0	605	656	0	-	1261	367	0	63	2	-	432	181	518	0	0	-	699	2392
% Lights	-	-	-	-	-	-	-	99.2	97.6	-	-	98.4	98.9	-	95.5	100.0	-	98.4	97.8	99.2	-	-	-	98.9	98.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Buses	-	-	-	-	-	-	-	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.2	-	-	-	0.1	0.0
Trucks	0	0	0	0	-	0	0	5	16	0	-	21	4	0	3	0	-	7	4	3	0	0	-	7	35
% Trucks	-	-	-	-	-	-	-	0.8	2.4	-	-	1.6	1.1	-	4.5	0.0	-	1.6	2.2	0.6	-	-	-	1.0	1.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	-	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & Teston Rd
Site Code: 20009
Start Date: 03/08/2023
Page No: 8

Peak Hour Data

03/08/2023 5:00 PM
Ending At
03/08/2023 6:00 PM

Lights
Buses
Trucks
Bicycles on Road
Other

Private Access [SB]

	Out	In	Total
Lights	0	0	0
Buses	0	0	0
Trucks	0	0	0
Bicycles on Road	0	0	0
Other	0	0	0
Total	**0**	**0**	**0**

	R	T	L	U	P
Lights	0	0	0	0	0
Buses	0	0	0	0	0
Trucks	0	0	0	0	0
Bicycles on Road	0	0	0	0	0
Other	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**

Teston Road [EB]

	Out	In	Total
Lights	668	699	1367
Buses	0	1	1
Trucks	8	7	15
Bicycles on Road	0	0	0
Other	0	0	0
Total	**676**	**707**	**1383**

	U	L	T	R	P
Lights	0	0	518	181	0
Buses	0	0	1	0	0
Trucks	0	0	3	4	0
Bicycles on Road	0	0	0	0	0
Other	0	0	0	0	0
Total	**0**	**0**	**522**	**185**	**0**

Teston Road [WB]

	Out	In	Total
Lights	885	1261	2146
Buses	1	0	1
Trucks	7	21	28
Bicycles on Road	0	0	0
Other	0	0	0
Total	**893**	**1282**	**2175**

	R	T	L	U	P
Lights	0	605	656	0	0
Buses	0	0	0	0	0
Trucks	0	5	16	0	0
Bicycles on Road	0	0	0	0	0
Other	0	0	0	0	0
Total	**0**	**610**	**672**	**0**	**0**

	U	L	T	R	P
Lights	2	63	0	367	0
Buses	0	0	0	0	0
Trucks	0	3	0	4	0
Bicycles on Road	0	0	0	0	0
Other	0	0	0	0	2
Total	**2**	**66**	**0**	**371**	**2**

	Out	In	Total
Lights	839	432	1271
Buses	0	0	0
Trucks	20	7	27
Bicycles on Road	0	0	0
Other	0	0	0
Total	**859**	**439**	**1298**

Cityview Boulevard [NB]

Turning Movement Peak Hour Data Plot (5:00 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & 400 SB Ramps
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Data

Start Time	Cityview Boulevard Southbound					Highway 400 SB Ramps Westbound					Cityview Boulevard Northbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
5:30 AM	12	58	0	0	70	23	5	0	0	28	31	13	0	0	44	142
5:45 AM	9	70	0	0	79	19	6	0	0	25	41	11	0	0	52	156
Hourly Total	21	128	0	0	149	42	11	0	0	53	72	24	0	0	96	298
6:00 AM	17	84	0	0	101	16	8	0	0	24	38	18	0	0	56	181
6:15 AM	9	115	0	0	124	28	6	0	0	34	44	22	0	0	66	224
6:30 AM	27	112	0	0	139	27	16	0	0	43	44	23	0	0	67	249
6:45 AM	33	110	0	0	143	40	12	0	0	52	47	29	0	0	76	271
Hourly Total	86	421	0	0	507	111	42	0	0	153	173	92	0	0	265	925
7:00 AM	29	112	0	0	141	36	10	0	0	46	70	41	0	0	111	298
7:15 AM	42	164	0	0	206	40	19	0	0	59	71	45	0	0	116	381
7:30 AM	45	160	0	0	205	55	20	0	0	75	84	72	0	0	156	436
7:45 AM	64	145	0	1	209	41	28	0	1	69	85	59	0	0	144	422
Hourly Total	180	581	0	1	761	172	77	0	1	249	310	217	0	0	527	1537
8:00 AM	76	152	0	0	228	38	30	0	0	68	77	62	1	0	140	436
8:15 AM	62	172	0	0	234	39	26	0	1	65	77	62	0	0	139	438
8:30 AM	80	171	0	0	251	41	28	0	0	69	93	86	0	0	179	499
8:45 AM	78	211	0	0	289	52	31	0	0	83	67	56	0	0	123	495
Hourly Total	296	706	0	0	1002	170	115	0	1	285	314	266	1	0	581	1868
9:00 AM	58	144	0	0	202	40	31	0	2	71	55	43	0	0	98	371
9:15 AM	55	123	0	0	178	28	18	0	0	46	55	43	0	0	98	322
9:30 AM	46	91	0	0	137	25	7	1	0	33	42	43	0	0	85	255
9:45 AM	39	89	0	0	128	32	9	0	1	41	36	32	1	0	69	238
Hourly Total	198	447	0	0	645	125	65	1	3	191	188	161	1	0	350	1186
10:00 AM	42	101	2	0	145	16	8	0	0	24	31	33	0	0	64	233
10:15 AM	43	96	0	1	139	18	11	0	0	29	37	28	0	0	65	233
10:30 AM	25	99	0	0	124	25	10	0	0	35	29	34	0	0	63	222
10:45 AM	42	102	0	0	144	18	4	0	1	22	39	29	1	0	69	235
Hourly Total	152	398	2	1	552	77	33	0	1	110	136	124	1	0	261	923
11:00 AM	42	102	0	0	144	24	4	0	0	28	25	39	0	0	64	236
11:15 AM	49	74	0	0	123	19	4	0	0	23	29	37	1	0	67	213
11:30 AM	38	76	0	0	114	17	6	0	1	23	37	30	1	0	68	205
11:45 AM	50	83	0	0	133	14	5	0	0	19	37	35	0	0	72	224
Hourly Total	179	335	0	0	514	74	19	0	1	93	128	141	2	0	271	878
12:00 PM	48	69	0	0	117	18	6	0	2	24	34	56	0	0	90	231
12:15 PM	44	88	0	0	132	25	7	0	2	32	35	49	0	0	84	248
12:30 PM	47	85	0	0	132	21	3	0	0	24	26	48	1	0	75	231

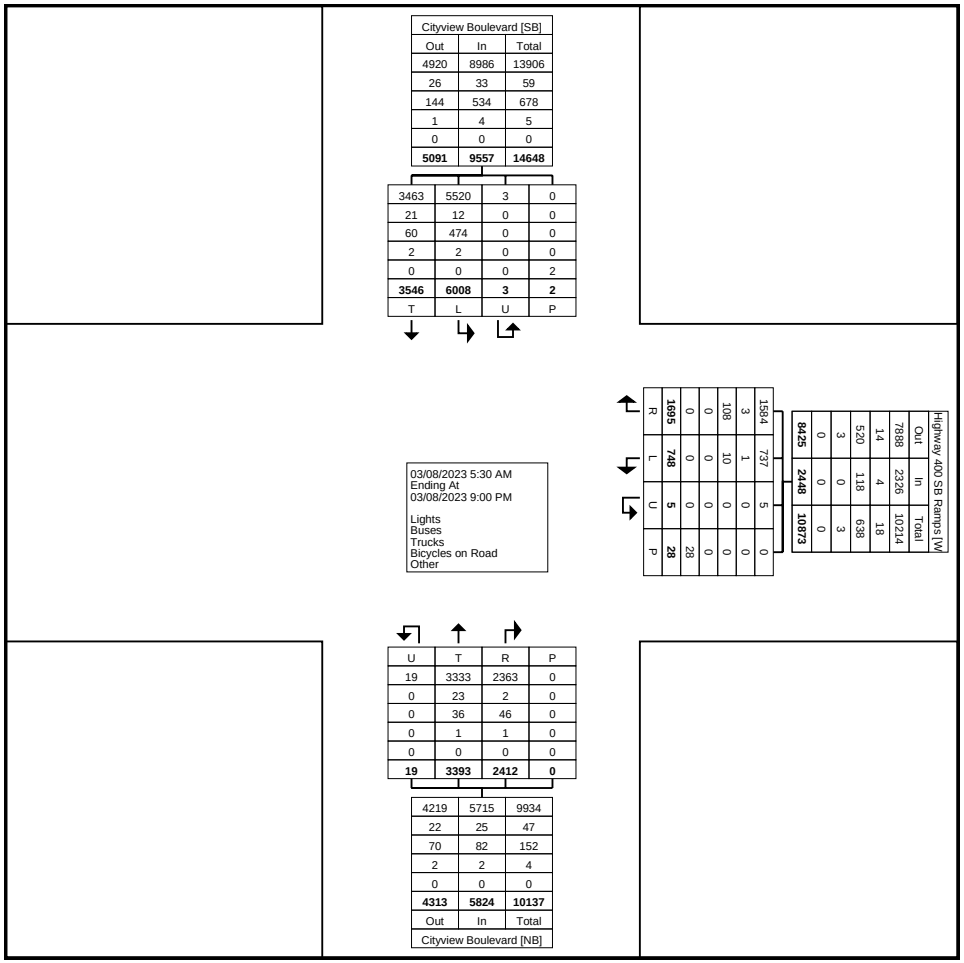
12:45 PM	47	75	0	0	122	18	3	0	0	21	23	50	1	0	74	217
Hourly Total	186	317	0	0	503	82	19	0	4	101	118	203	2	0	323	927
1:00 PM	42	74	0	0	116	23	6	0	0	29	37	48	0	0	85	230
1:15 PM	44	72	0	0	116	13	3	0	0	16	30	53	0	0	83	215
1:30 PM	52	63	0	0	115	23	11	0	1	34	24	47	0	0	71	220
1:45 PM	48	61	0	0	109	19	10	0	0	29	31	49	0	0	80	218
Hourly Total	186	270	0	0	456	78	30	0	1	108	122	197	0	0	319	883
2:00 PM	40	79	0	0	119	18	6	0	0	24	35	43	1	0	79	222
2:15 PM	50	83	0	0	133	24	9	0	0	33	22	33	1	0	56	222
2:30 PM	54	82	0	0	136	28	14	0	0	42	31	46	2	0	79	257
2:45 PM	73	93	0	0	166	25	12	0	0	37	27	56	1	0	84	287
Hourly Total	217	337	0	0	554	95	41	0	0	136	115	178	5	0	298	988
3:00 PM	73	95	0	0	168	21	10	0	0	31	36	72	0	0	108	307
3:15 PM	76	93	0	0	169	28	14	0	0	42	25	92	0	0	117	328
3:30 PM	74	83	1	0	158	29	17	0	0	46	39	96	0	0	135	339
3:45 PM	80	88	0	0	168	23	12	0	0	35	33	102	0	0	135	338
Hourly Total	303	359	1	0	663	101	53	0	0	154	133	362	0	0	495	1312
4:00 PM	86	91	0	0	177	36	13	0	0	49	37	93	2	0	132	358
4:15 PM	86	103	0	0	189	48	22	0	1	70	29	104	0	0	133	392
4:30 PM	95	113	0	0	208	33	18	0	0	51	32	94	0	0	126	385
4:45 PM	102	112	0	0	214	31	19	0	1	50	34	80	1	0	115	379
Hourly Total	369	419	0	0	788	148	72	0	2	220	132	371	3	0	506	1514
5:00 PM	71	134	0	0	205	39	19	0	0	58	29	66	0	0	95	358
5:15 PM	85	107	0	0	192	43	15	0	3	58	40	79	0	0	119	369
5:30 PM	85	118	0	0	203	51	14	0	1	65	45	79	0	0	124	392
5:45 PM	111	117	0	0	228	35	16	1	3	52	58	82	1	0	141	421
Hourly Total	352	476	0	0	828	168	64	1	7	233	172	306	1	0	479	1540
6:00 PM	101	119	0	0	220	27	10	0	2	37	27	79	2	0	108	365
6:15 PM	73	93	0	0	166	25	8	0	1	33	39	72	1	0	112	311
6:30 PM	87	81	0	0	168	31	5	0	0	36	32	64	0	0	96	300
6:45 PM	66	77	0	0	143	36	9	1	3	46	29	71	0	0	100	289
Hourly Total	327	370	0	0	697	119	32	1	6	152	127	286	3	0	416	1265
7:00 PM	80	66	0	0	146	19	14	0	0	33	33	56	0	0	89	268
7:15 PM	74	68	0	0	142	17	6	1	0	24	35	94	0	0	129	295
7:30 PM	86	92	0	0	178	18	8	1	0	27	32	59	0	0	91	296
7:45 PM	56	65	0	0	121	20	8	0	0	28	15	52	0	0	67	216
Hourly Total	296	291	0	0	587	74	36	2	0	112	115	261	0	0	376	1075
8:00 PM	55	54	0	0	109	14	5	0	1	19	15	53	0	0	68	196
8:15 PM	47	44	0	0	91	11	12	0	0	23	16	50	0	0	66	180
8:30 PM	48	19	0	0	67	14	14	0	0	28	12	50	0	0	62	157
8:45 PM	48	36	0	0	84	20	8	0	0	28	14	51	0	0	65	177
Hourly Total	198	153	0	0	351	59	39	0	1	98	57	204	0	0	261	710
Grand Total	3546	6008	3	2	9557	1695	748	5	28	2448	2412	3393	19	0	5824	17829
Approach %	37.1	62.9	0.0	-	-	69.2	30.6	0.2	-	-	41.4	58.3	0.3	-	-	-
Total %	19.9	33.7	0.0	-	53.6	9.5	4.2	0.0	-	13.7	13.5	19.0	0.1	-	32.7	-
Lights	3463	5520	3	-	8986	1584	737	5	-	2326	2363	3333	19	-	5715	17027
% Lights	97.7	91.9	100.0	-	94.0	93.5	98.5	100.0	-	95.0	98.0	98.2	100.0	-	98.1	95.5
Buses	21	12	0	-	33	3	1	0	-	4	2	23	0	-	25	62
% Buses	0.6	0.2	0.0	-	0.3	0.2	0.1	0.0	-	0.2	0.1	0.7	0.0	-	0.4	0.3
Trucks	60	474	0	-	534	108	10	0	-	118	46	36	0	-	82	734
% Trucks	1.7	7.9	0.0	-	5.6	6.4	1.3	0.0	-	4.8	1.9	1.1	0.0	-	1.4	4.1
Bicycles on Road	2	2	0	-	4	0	0	0	-	0	1	1	0	-	2	6

% Bicycles on Road	0.1	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	3.6	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	2	-	-	-	-	27	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	96.4	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & 400 SB Ramps
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & 400 SB Ramps
Site Code: 20009
Start Date: 03/08/2023

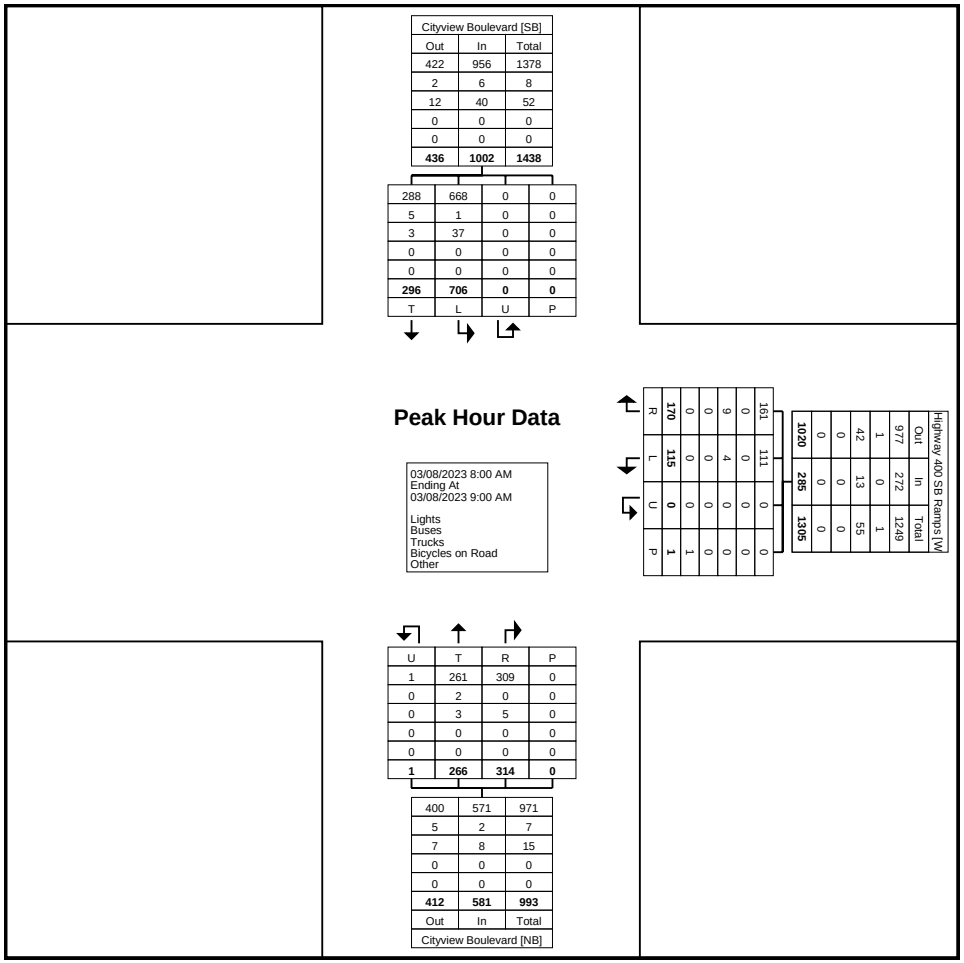
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Cityview Boulevard Southbound					Highway 400 SB Ramps Westbound					Cityview Boulevard Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
8:00 AM	76	152	0	0	228	38	30	0	0	68	77	62	1	0	140	436
8:15 AM	62	172	0	0	234	39	26	0	1	65	77	62	0	0	139	438
8:30 AM	80	171	0	0	251	41	28	0	0	69	93	86	0	0	179	499
8:45 AM	78	211	0	0	289	52	31	0	0	83	67	56	0	0	123	495
Total	296	706	0	0	1002	170	115	0	1	285	314	266	1	0	581	1868
Approach %	29.5	70.5	0.0	-	-	59.6	40.4	0.0	-	-	54.0	45.8	0.2	-	-	-
Total %	15.8	37.8	0.0	-	53.6	9.1	6.2	0.0	-	15.3	16.8	14.2	0.1	-	31.1	-
PHF	0.925	0.836	0.000	-	0.867	0.817	0.927	0.000	-	0.858	0.844	0.773	0.250	-	0.811	0.936
Lights	288	668	0	-	956	161	111	0	-	272	309	261	1	-	571	1799
% Lights	97.3	94.6	-	-	95.4	94.7	96.5	-	-	95.4	98.4	98.1	100.0	-	98.3	96.3
Buses	5	1	0	-	6	0	0	0	-	0	0	2	0	-	2	8
% Buses	1.7	0.1	-	-	0.6	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	0.3	0.4
Trucks	3	37	0	-	40	9	4	0	-	13	5	3	0	-	8	61
% Trucks	1.0	5.2	-	-	4.0	5.3	3.5	-	-	4.6	1.6	1.1	0.0	-	1.4	3.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & 400 SB Ramps
Site Code: 20009
Start Date: 03/08/2023



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

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & 400 SB Ramps
Site Code: 20009
Start Date: 03/08/2023

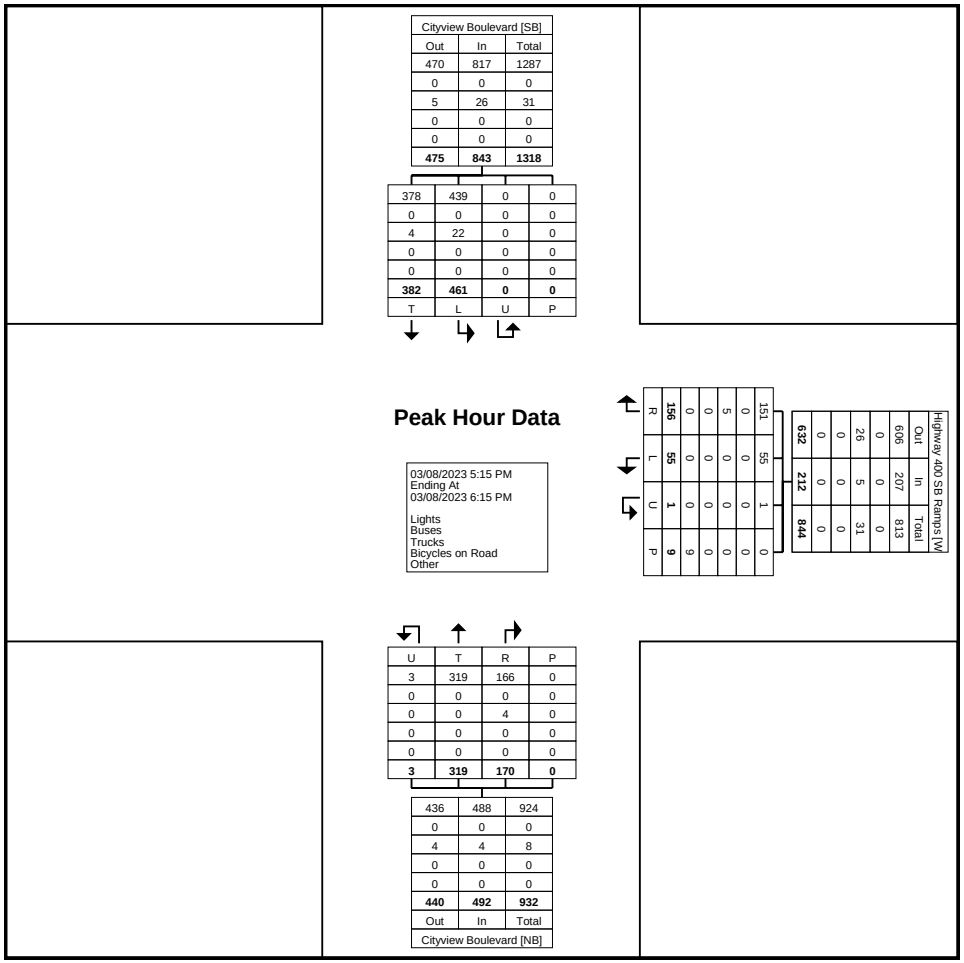
Turning Movement Peak Hour Data (5:15 PM)

Start Time	Cityview Boulevard Southbound					Highway 400 SB Ramps Westbound					Cityview Boulevard Northbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
5:15 PM	85	107	0	0	192	43	15	0	3	58	40	79	0	0	119	369
5:30 PM	85	118	0	0	203	51	14	0	1	65	45	79	0	0	124	392
5:45 PM	111	117	0	0	228	35	16	1	3	52	58	82	1	0	141	421
6:00 PM	101	119	0	0	220	27	10	0	2	37	27	79	2	0	108	365
Total	382	461	0	0	843	156	55	1	9	212	170	319	3	0	492	1547
Approach %	45.3	54.7	0.0	-	-	73.6	25.9	0.5	-	-	34.6	64.8	0.6	-	-	-
Total %	24.7	29.8	0.0	-	54.5	10.1	3.6	0.1	-	13.7	11.0	20.6	0.2	-	31.8	-
PHF	0.860	0.968	0.000	-	0.924	0.765	0.859	0.250	-	0.815	0.733	0.973	0.375	-	0.872	0.919
Lights	378	439	0	-	817	151	55	1	-	207	166	319	3	-	488	1512
% Lights	99.0	95.2	-	-	96.9	96.8	100.0	100.0	-	97.6	97.6	100.0	100.0	-	99.2	97.7
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	4	22	0	-	26	5	0	0	-	5	4	0	0	-	4	35
% Trucks	1.0	4.8	-	-	3.1	3.2	0.0	0.0	-	2.4	2.4	0.0	0.0	-	0.8	2.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	9	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cityview Blvd & 400 SB Ramps
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (5:15 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & McNaughton Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Data

Start Time	Cranston Park Avenue Southbound					McNaughton Road Westbound					McNaughton Road Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
5:30 AM	4	7	0	0	11	0	18	0	0	18	15	0	0	0	15	44
5:45 AM	6	5	0	0	11	2	22	0	0	24	24	1	0	0	25	60
Hourly Total	10	12	0	0	22	2	40	0	0	42	39	1	0	0	40	104
6:00 AM	3	8	0	1	11	0	34	0	0	34	16	1	0	0	17	62
6:15 AM	7	7	0	0	14	5	42	0	0	47	12	3	0	0	15	76
6:30 AM	8	17	0	0	25	3	57	0	0	60	30	3	0	0	33	118
6:45 AM	14	21	0	0	35	4	57	0	0	61	36	3	0	0	39	135
Hourly Total	32	53	0	1	85	12	190	0	0	202	94	10	0	0	104	391
7:00 AM	7	37	0	0	44	9	60	0	0	69	37	9	0	0	46	159
7:15 AM	21	37	0	0	58	8	70	0	0	78	34	6	0	0	40	176
7:30 AM	17	36	0	0	53	24	66	0	0	90	32	8	0	0	40	183
7:45 AM	25	39	0	0	64	34	107	0	0	141	64	12	0	0	76	281
Hourly Total	70	149	0	0	219	75	303	0	0	378	167	35	0	0	202	799
8:00 AM	37	46	0	3	83	35	146	0	0	181	97	18	0	0	115	379
8:15 AM	65	45	0	2	110	33	137	0	0	170	75	12	0	0	87	367
8:30 AM	28	30	0	0	58	15	99	0	0	114	60	15	0	0	75	247
8:45 AM	24	34	0	1	58	20	110	0	0	130	56	11	0	0	67	255
Hourly Total	154	155	0	6	309	103	492	0	0	595	288	56	0	0	344	1248
9:00 AM	27	21	0	5	48	22	104	0	0	126	54	13	0	0	67	241
9:15 AM	17	12	0	0	29	18	85	0	0	103	45	10	0	0	55	187
9:30 AM	11	15	0	0	26	15	67	0	0	82	34	12	0	0	46	154
9:45 AM	10	8	0	0	18	12	60	0	0	72	35	13	0	0	48	138
Hourly Total	65	56	0	5	121	67	316	0	0	383	168	48	0	0	216	720
10:00 AM	13	19	0	0	32	16	45	0	0	61	51	9	0	0	60	153
10:15 AM	5	20	0	1	25	12	60	0	0	72	28	10	0	0	38	135
10:30 AM	15	18	0	0	33	6	53	0	0	59	47	9	0	0	56	148
10:45 AM	13	16	1	1	30	15	50	0	0	65	50	15	0	0	65	160
Hourly Total	46	73	1	2	120	49	208	0	0	257	176	43	0	0	219	596
11:00 AM	12	15	0	0	27	5	63	0	0	68	47	10	0	0	57	152
11:15 AM	14	16	1	3	31	15	49	0	0	64	32	7	0	0	39	134
11:30 AM	18	17	0	0	35	17	72	0	0	89	45	21	0	0	66	190
11:45 AM	10	17	0	1	27	19	63	0	0	82	55	11	0	0	66	175
Hourly Total	54	65	1	4	120	56	247	0	0	303	179	49	0	0	228	651
12:00 PM	17	22	0	1	39	12	50	0	0	62	55	13	0	0	68	169
12:15 PM	15	13	0	1	28	9	69	1	0	79	55	12	0	0	67	174
12:30 PM	13	9	0	4	22	20	63	0	0	83	49	11	0	0	60	165

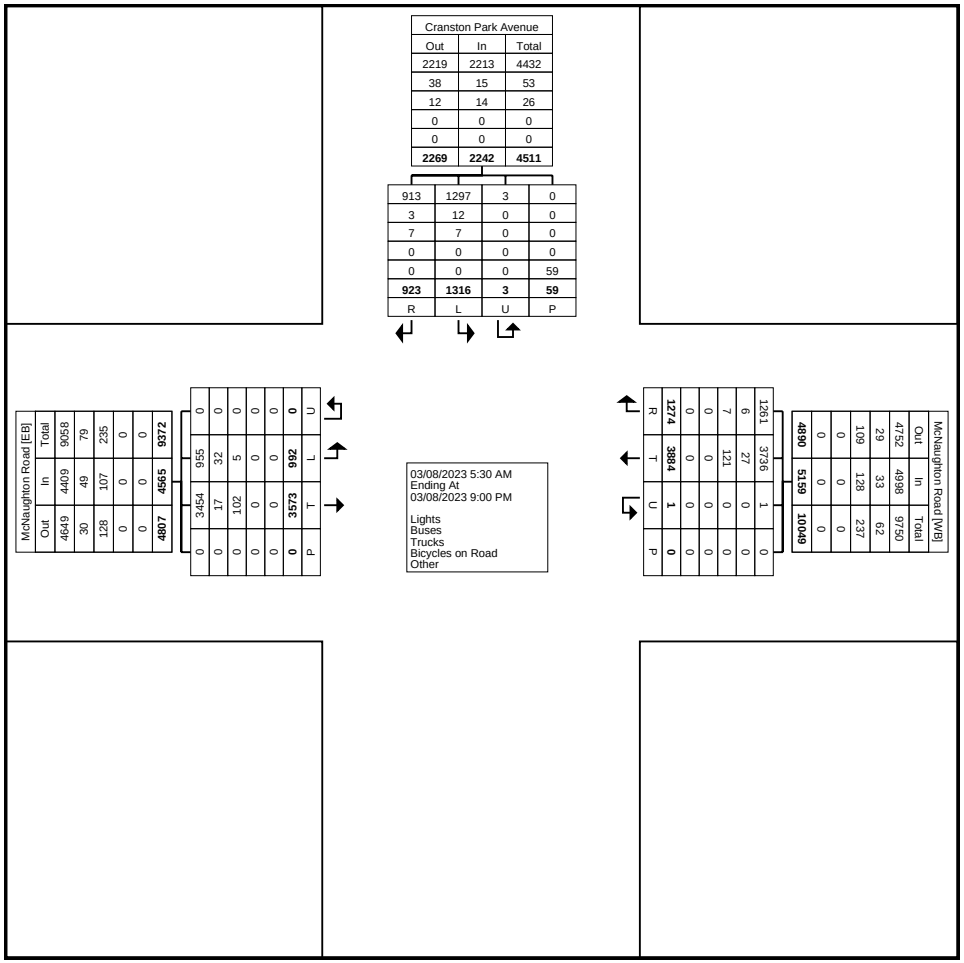
12:45 PM	12	21	0	4	33	19	53	0	0	72	50	14	0	0	64	169
Hourly Total	57	65	0	10	122	60	235	1	0	296	209	50	0	0	259	677
1:00 PM	10	11	0	2	21	15	75	0	0	90	70	12	0	0	82	193
1:15 PM	17	5	0	0	22	14	57	0	0	71	47	15	0	0	62	155
1:30 PM	16	19	0	1	35	9	47	0	0	56	51	14	0	0	65	156
1:45 PM	17	14	0	0	31	16	65	0	0	81	52	11	0	0	63	175
Hourly Total	60	49	0	3	109	54	244	0	0	298	220	52	0	0	272	679
2:00 PM	10	16	0	1	26	22	64	0	0	86	73	14	0	0	87	199
2:15 PM	11	14	0	1	25	27	74	0	0	101	76	16	0	0	92	218
2:30 PM	15	25	1	11	41	22	81	0	0	103	47	15	0	0	62	206
2:45 PM	20	40	0	1	60	20	71	0	0	91	49	18	0	0	67	218
Hourly Total	56	95	1	14	152	91	290	0	0	381	245	63	0	0	308	841
3:00 PM	17	18	0	1	35	27	68	0	0	95	62	19	0	0	81	211
3:15 PM	10	22	0	2	32	20	67	0	0	87	62	24	0	0	86	205
3:30 PM	12	23	0	2	35	25	74	0	0	99	77	23	0	0	100	234
3:45 PM	11	19	0	0	30	31	75	0	0	106	91	39	0	0	130	266
Hourly Total	50	82	0	5	132	103	284	0	0	387	292	105	0	0	397	916
4:00 PM	18	20	0	0	38	30	63	0	0	93	98	28	0	0	126	257
4:15 PM	14	26	0	1	40	37	67	0	0	104	90	32	0	0	122	266
4:30 PM	11	21	0	0	32	53	70	0	0	123	91	34	0	0	125	280
4:45 PM	13	31	0	0	44	42	67	0	0	109	113	34	0	0	147	300
Hourly Total	56	98	0	1	154	162	267	0	0	429	392	128	0	0	520	1103
5:00 PM	11	34	0	0	45	33	66	0	0	99	90	39	0	0	129	273
5:15 PM	15	31	0	2	46	51	35	0	0	86	107	24	0	0	131	263
5:30 PM	12	47	0	3	59	54	67	0	0	121	98	36	0	0	134	314
5:45 PM	14	30	0	0	44	32	75	0	0	107	78	33	0	0	111	262
Hourly Total	52	142	0	5	194	170	243	0	0	413	373	132	0	0	505	1112
6:00 PM	13	16	0	0	29	37	56	0	0	93	81	27	0	0	108	230
6:15 PM	14	26	0	0	40	21	50	0	0	71	72	22	0	0	94	205
6:30 PM	8	22	0	1	30	23	46	0	0	69	78	20	0	0	98	197
6:45 PM	21	20	0	0	41	25	56	0	0	81	71	24	0	0	95	217
Hourly Total	56	84	0	1	140	106	208	0	0	314	302	93	0	0	395	849
7:00 PM	24	13	0	1	37	27	51	0	0	78	66	16	0	0	82	197
7:15 PM	12	25	0	0	37	18	45	0	0	63	65	14	0	0	79	179
7:30 PM	12	21	0	0	33	26	56	0	0	82	45	15	0	0	60	175
7:45 PM	18	17	0	0	35	25	48	0	0	73	63	14	0	0	77	185
Hourly Total	66	76	0	1	142	96	200	0	0	296	239	59	0	0	298	736
8:00 PM	13	21	0	1	34	17	43	0	0	60	56	16	0	0	72	166
8:15 PM	12	14	0	0	26	16	30	0	0	46	41	18	0	0	59	131
8:30 PM	8	16	0	0	24	17	22	0	0	39	46	14	0	0	60	123
8:45 PM	6	11	0	0	17	18	22	0	0	40	47	20	0	0	67	124
Hourly Total	39	62	0	1	101	68	117	0	0	185	190	68	0	0	258	544
Grand Total	923	1316	3	59	2242	1274	3884	1	0	5159	3573	992	0	0	4565	11966
Approach %	41.2	58.7	0.1	-	-	24.7	75.3	0.0	-	-	78.3	21.7	0.0	-	-	-
Total %	7.7	11.0	0.0	-	18.7	10.6	32.5	0.0	-	43.1	29.9	8.3	0.0	-	38.1	-
Lights	913	1297	3	-	2213	1261	3736	1	-	4998	3454	955	0	-	4409	11620
% Lights	98.9	98.6	100.0	-	98.7	99.0	96.2	100.0	-	96.9	96.7	96.3	-	-	96.6	97.1
Buses	3	12	0	-	15	6	27	0	-	33	17	32	0	-	49	97
% Buses	0.3	0.9	0.0	-	0.7	0.5	0.7	0.0	-	0.6	0.5	3.2	-	-	1.1	0.8
Trucks	7	7	0	-	14	7	121	0	-	128	102	5	0	-	107	249
% Trucks	0.8	0.5	0.0	-	0.6	0.5	3.1	0.0	-	2.5	2.9	0.5	-	-	2.3	2.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0

% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	59	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & McNaughton Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & McNaughton Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Cranston Park Avenue Southbound					McNaughton Road Westbound					McNaughton Road Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:45 AM	25	39	0	0	64	34	107	0	0	141	64	12	0	0	76	281
8:00 AM	37	46	0	3	83	35	146	0	0	181	97	18	0	0	115	379
8:15 AM	65	45	0	2	110	33	137	0	0	170	75	12	0	0	87	367
8:30 AM	28	30	0	0	58	15	99	0	0	114	60	15	0	0	75	247
Total	155	160	0	5	315	117	489	0	0	606	296	57	0	0	353	1274
Approach %	49.2	50.8	0.0	-	-	19.3	80.7	0.0	-	-	83.9	16.1	0.0	-	-	-
Total %	12.2	12.6	0.0	-	24.7	9.2	38.4	0.0	-	47.6	23.2	4.5	0.0	-	27.7	-
PHF	0.596	0.870	0.000	-	0.716	0.836	0.837	0.000	-	0.837	0.763	0.792	0.000	-	0.767	0.840
Lights	155	156	0	-	311	115	476	0	-	591	282	55	0	-	337	1239
% Lights	100.0	97.5	-	-	98.7	98.3	97.3	-	-	97.5	95.3	96.5	-	-	95.5	97.3
Buses	0	4	0	-	4	2	4	0	-	6	3	2	0	-	5	15
% Buses	0.0	2.5	-	-	1.3	1.7	0.8	-	-	1.0	1.0	3.5	-	-	1.4	1.2
Trucks	0	0	0	-	0	0	9	0	-	9	11	0	0	-	11	20
% Trucks	0.0	0.0	-	-	0.0	0.0	1.8	-	-	1.5	3.7	0.0	-	-	3.1	1.6
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	5	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

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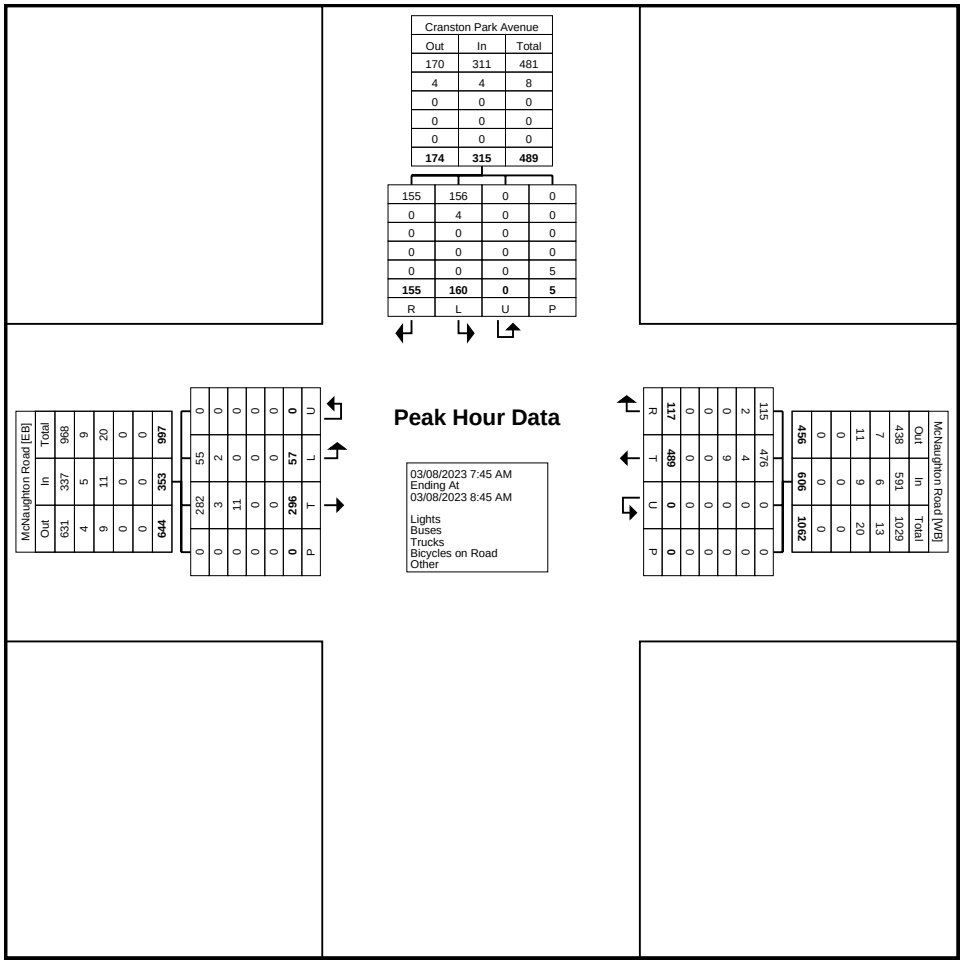
Count Name: 20009_Cranston Park Ave & McNaughton Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (7:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & McNaughton Rd
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Cranston Park Avenue Southbound					McNaughton Road Westbound					McNaughton Road Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:45 PM	13	31	0	0	44	42	67	0	0	109	113	34	0	0	147	300
5:00 PM	11	34	0	0	45	33	66	0	0	99	90	39	0	0	129	273
5:15 PM	15	31	0	2	46	51	35	0	0	86	107	24	0	0	131	263
5:30 PM	12	47	0	3	59	54	67	0	0	121	98	36	0	0	134	314
Total	51	143	0	5	194	180	235	0	0	415	408	133	0	0	541	1150
Approach %	26.3	73.7	0.0	-	-	43.4	56.6	0.0	-	-	75.4	24.6	0.0	-	-	-
Total %	4.4	12.4	0.0	-	16.9	15.7	20.4	0.0	-	36.1	35.5	11.6	0.0	-	47.0	-
PHF	0.850	0.761	0.000	-	0.822	0.833	0.877	0.000	-	0.857	0.903	0.853	0.000	-	0.920	0.916
Lights	51	143	0	-	194	180	229	0	-	409	408	131	0	-	539	1142
% Lights	100.0	100.0	-	-	100.0	100.0	97.4	-	-	98.6	100.0	98.5	-	-	99.6	99.3
Buses	0	0	0	-	0	0	0	0	-	0	0	2	0	-	2	2
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	1.5	-	-	0.4	0.2
Trucks	0	0	0	-	0	0	6	0	-	6	0	0	0	-	0	6
% Trucks	0.0	0.0	-	-	0.0	0.0	2.6	-	-	1.4	0.0	0.0	-	-	0.0	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	5	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
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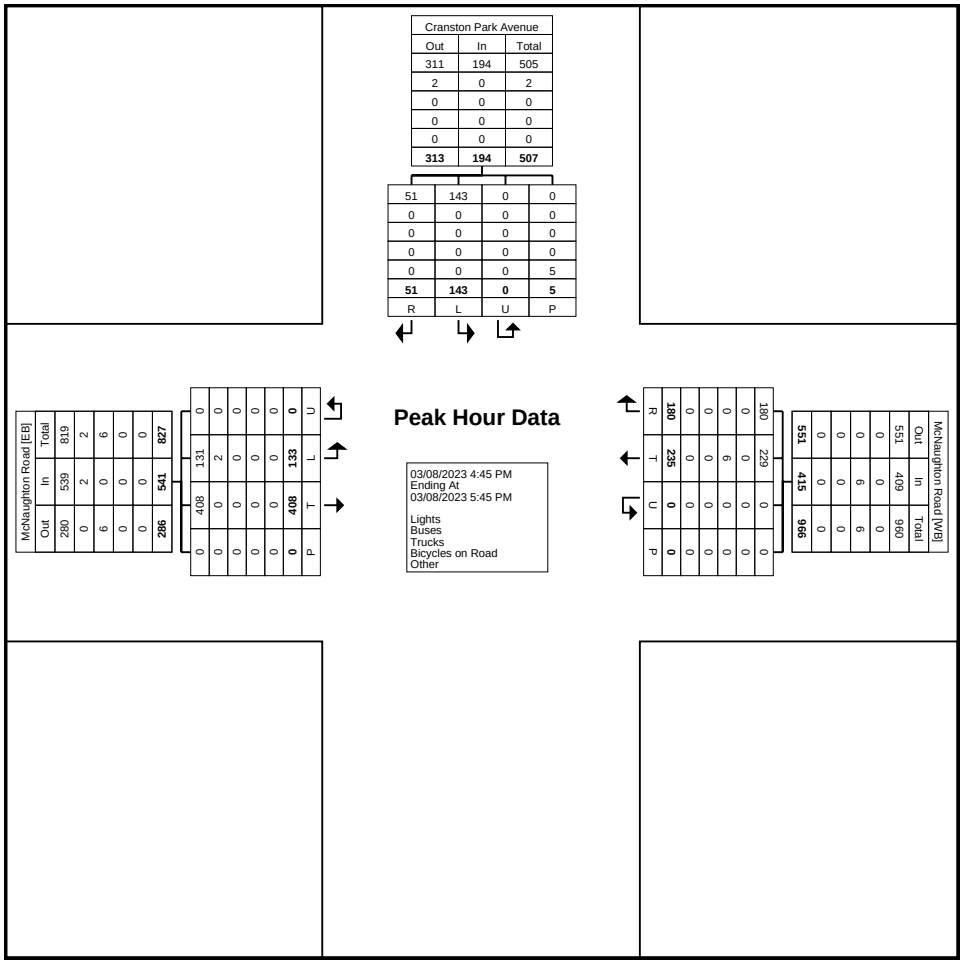
Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_Cranston Park Ave & McNaughton Rd
Site Code: 20009
Start Date: 03/08/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 20009_McNaughton Rd & Major Mackenzie Dr W
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Data

Start Time	McNaughton Road Southbound						Major Mackenzie Drive West Westbound						Avro Road Northbound						Major Mackenzie Drive West Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:30 AM	24	0	1	0	0	25	0	115	2	0	0	117	5	2	0	0	0	7	0	83	11	0	0	94	243
5:45 AM	30	2	0	0	1	32	0	131	1	0	0	132	2	2	0	0	0	4	0	96	23	0	0	119	287
Hourly Total	54	2	1	0	1	57	0	246	3	0	0	249	7	4	0	0	0	11	0	179	34	0	0	213	530
6:00 AM	41	1	0	0	1	42	0	158	2	0	1	160	6	1	0	0	0	7	0	110	16	0	1	126	335
6:15 AM	42	0	1	0	2	43	1	227	6	0	0	234	7	0	1	0	0	8	0	132	14	0	1	146	431
6:30 AM	57	5	3	0	0	65	2	267	4	0	0	273	11	7	0	0	0	18	1	226	27	0	0	254	610
6:45 AM	62	6	3	0	1	71	3	292	6	0	0	301	8	4	1	0	1	13	2	207	34	0	0	243	628
Hourly Total	202	12	7	0	4	221	6	944	18	0	1	968	32	12	2	0	1	46	3	675	91	0	2	769	2004
7:00 AM	56	9	3	0	0	68	8	286	4	0	0	298	16	12	2	0	0	30	1	227	23	0	0	251	647
7:15 AM	72	19	10	0	2	101	3	296	7	0	1	306	12	11	3	0	0	26	2	267	35	0	1	304	737
7:30 AM	56	24	3	0	1	83	2	354	18	0	0	374	19	2	3	0	0	24	4	246	26	0	0	276	757
7:45 AM	82	36	6	0	1	124	6	318	16	0	1	340	23	25	2	0	2	50	2	287	49	0	2	338	852
Hourly Total	266	88	22	0	4	376	19	1254	45	0	2	1318	70	50	10	0	2	130	9	1027	133	0	3	1169	2993
8:00 AM	104	53	17	0	1	174	15	342	29	0	0	386	23	48	2	0	1	73	1	266	51	0	3	318	951
8:15 AM	95	68	30	0	0	193	12	320	30	0	0	362	33	23	0	0	0	56	2	243	54	0	3	299	910
8:30 AM	77	52	22	0	1	151	6	322	45	0	2	373	24	28	2	0	0	54	8	250	44	0	0	302	880
8:45 AM	63	43	10	0	1	116	6	316	38	0	1	360	30	26	2	0	0	58	7	314	26	0	1	347	881
Hourly Total	339	216	79	0	3	634	39	1300	142	0	3	1481	110	125	6	0	1	241	18	1073	175	0	7	1266	3622
9:00 AM	83	36	22	0	3	141	2	257	21	0	0	280	26	17	7	0	1	50	11	267	46	0	0	324	795
9:15 AM	77	22	8	0	1	107	3	305	18	0	0	326	21	15	7	0	1	43	3	251	35	0	0	289	765
9:30 AM	49	13	7	0	0	69	5	298	12	0	1	315	13	7	2	0	1	22	3	223	39	0	0	265	671
9:45 AM	48	16	10	0	1	74	1	247	6	0	0	254	14	10	0	0	2	24	1	234	35	0	1	270	622
Hourly Total	257	87	47	0	5	391	11	1107	57	0	1	1175	74	49	16	0	5	139	18	975	155	0	1	1148	2853
10:00 AM	46	11	5	0	0	62	4	253	15	0	0	272	11	8	3	0	1	22	1	216	47	0	0	264	620
10:15 AM	48	11	5	0	0	64	5	276	14	0	0	295	10	7	0	0	0	17	0	233	21	1	0	255	631
10:30 AM	60	4	7	0	0	71	7	209	9	0	0	225	8	14	1	0	0	23	2	195	32	0	1	229	548
10:45 AM	47	11	3	0	0	61	4	285	8	0	0	297	8	9	3	0	5	20	3	240	44	0	1	287	665
Hourly Total	201	37	20	0	0	258	20	1023	46	0	0	1089	37	38	7	0	6	82	6	884	144	1	2	1035	2464
11:00 AM	53	17	8	0	0	78	7	210	9	0	2	226	9	16	3	0	2	28	2	240	27	0	1	269	601
11:15 AM	56	5	4	0	0	65	0	221	9	1	1	231	17	5	1	0	3	23	2	229	28	0	1	259	578
11:30 AM	64	14	4	0	1	82	7	268	10	0	2	285	13	12	1	0	3	26	0	248	47	0	1	295	688
11:45 AM	59	11	8	0	0	78	4	242	14	0	0	260	11	17	1	0	1	29	1	227	52	0	0	280	647
Hourly Total	232	47	24	0	1	303	18	941	42	1	5	1002	50	50	6	0	9	106	5	944	154	0	3	1103	2514
12:00 PM	50	16	7	0	3	73	5	251	10	0	0	266	20	16	3	0	1	39	1	241	40	0	0	282	660
12:15 PM	64	8	4	0	0	76	4	256	17	0	0	277	16	12	2	0	0	30	2	229	48	0	0	279	662

12:30 PM	63	18	9	0	3	90	6	239	8	0	2	253	8	12	1	0	2	21	2	249	48	2	0	301	665
12:45 PM	43	13	3	0	1	59	9	292	7	0	1	308	12	10	1	0	0	23	2	244	55	2	0	303	693
Hourly Total	220	55	23	0	7	298	24	1038	42	0	3	1104	56	50	7	0	3	113	7	963	191	4	0	1165	2680
1:00 PM	63	19	5	0	4	87	6	239	18	1	0	264	15	15	0	0	0	30	1	243	42	0	0	286	667
1:15 PM	57	12	7	0	1	76	4	216	23	0	1	243	13	14	0	0	6	27	3	263	37	0	1	303	649
1:30 PM	45	11	5	0	0	61	5	249	14	0	0	268	14	5	2	0	1	21	3	244	48	0	1	295	645
1:45 PM	60	15	8	0	0	83	8	215	16	0	1	239	12	15	0	0	1	27	2	263	50	0	1	315	664
Hourly Total	225	57	25	0	5	307	23	919	71	1	2	1014	54	49	2	0	8	105	9	1013	177	0	3	1199	2625
2:00 PM	64	12	3	0	2	79	8	291	14	0	0	313	15	17	1	0	0	33	1	264	61	0	0	326	751
2:15 PM	56	13	7	0	0	76	14	283	8	0	0	305	12	18	1	0	0	31	3	284	51	0	0	338	750
2:30 PM	59	32	12	0	0	103	4	276	20	0	0	300	9	10	1	0	0	20	2	253	52	0	0	307	730
2:45 PM	52	27	9	0	0	88	3	275	24	0	1	302	21	9	3	0	0	33	0	282	52	0	0	334	757
Hourly Total	231	84	31	0	2	346	29	1125	66	0	1	1220	57	54	6	0	0	117	6	1083	216	0	0	1305	2988
3:00 PM	59	19	9	0	0	87	13	260	27	0	0	300	31	29	4	0	0	64	4	297	48	0	0	349	800
3:15 PM	52	21	6	0	0	79	9	285	17	0	0	311	32	24	3	0	3	59	11	316	47	0	0	374	823
3:30 PM	46	28	11	0	1	85	11	339	24	0	0	374	24	20	1	0	2	45	4	307	70	1	1	382	886
3:45 PM	46	28	8	0	0	82	18	271	30	0	1	319	55	50	11	0	4	116	1	319	68	0	1	388	905
Hourly Total	203	96	34	0	1	333	51	1155	98	0	1	1304	142	123	19	0	9	284	20	1239	233	1	2	1493	3414
4:00 PM	42	32	5	1	1	80	15	256	35	0	0	306	22	46	2	0	0	70	4	330	62	0	1	396	852
4:15 PM	58	18	5	0	0	81	9	235	32	0	1	276	30	38	0	0	3	68	1	374	58	0	0	433	858
4:30 PM	109	39	7	0	0	155	16	280	34	0	1	330	30	49	3	0	1	82	3	310	56	0	1	369	936
4:45 PM	73	24	1	0	0	98	29	346	42	0	0	417	22	45	1	0	2	68	4	380	72	0	0	456	1039
Hourly Total	282	113	18	1	1	414	69	1117	143	0	2	1329	104	178	6	0	6	288	12	1394	248	0	2	1654	3685
5:00 PM	55	33	10	0	0	98	18	317	29	0	0	364	29	51	2	0	0	82	3	357	62	1	0	423	967
5:15 PM	36	25	3	0	0	64	12	306	26	0	0	344	32	50	3	0	0	85	1	298	64	0	2	363	856
5:30 PM	47	20	4	0	3	71	19	320	25	0	0	364	38	36	0	0	2	74	3	390	63	0	2	456	965
5:45 PM	56	32	10	0	2	98	21	304	47	0	0	372	26	41	2	0	2	69	2	349	55	0	1	406	945
Hourly Total	194	110	27	0	5	331	70	1247	127	0	0	1444	125	178	7	0	4	310	9	1394	244	1	5	1648	3733
6:00 PM	46	22	10	0	0	78	14	290	22	1	2	327	21	36	0	0	2	57	1	370	61	0	0	432	894
6:15 PM	50	11	7	0	3	68	8	258	15	0	0	281	16	19	0	0	0	35	2	336	59	0	1	397	781
6:30 PM	52	11	5	0	0	68	7	238	23	0	0	268	25	29	1	0	2	55	4	305	72	0	1	381	772
6:45 PM	49	19	6	0	0	74	6	274	7	0	1	287	8	16	0	1	0	25	3	303	63	0	0	369	755
Hourly Total	197	63	28	0	3	288	35	1060	67	1	3	1163	70	100	1	1	4	172	10	1314	255	0	2	1579	3202
7:00 PM	57	10	11	0	0	78	7	261	14	0	0	282	20	25	2	0	1	47	1	298	47	0	0	346	753
7:15 PM	47	12	5	0	0	64	4	246	7	0	0	257	11	18	0	0	1	29	2	288	57	0	0	347	697
7:30 PM	46	8	10	0	0	64	5	194	10	0	0	209	12	0	1	0	0	13	3	249	37	0	0	289	575
7:45 PM	40	9	18	0	0	67	5	150	5	0	0	160	13	8	4	0	0	25	6	223	48	0	0	277	529
Hourly Total	190	39	44	0	0	273	21	851	36	0	0	908	56	51	7	0	2	114	12	1058	189	0	0	1259	2554
8:00 PM	42	9	5	0	0	56	7	187	10	0	0	204	13	14	1	0	1	28	4	264	58	0	0	326	614
8:15 PM	41	3	6	0	0	50	4	205	11	1	0	221	9	4	0	0	0	13	1	231	40	0	0	272	556
8:30 PM	27	5	6	0	4	38	10	187	7	0	2	204	5	12	1	0	2	18	1	185	44	0	4	230	490
8:45 PM	21	8	5	0	0	34	6	192	7	0	0	205	3	6	1	0	0	10	2	196	55	1	0	254	503
Hourly Total	131	25	22	0	4	178	27	771	35	1	2	834	30	36	3	0	3	69	8	876	197	1	4	1082	2163
Grand Total	3424	1131	452	1	46	5008	462	16098	1038	4	26	17602	1074	1147	105	1	63	2327	152	16091	2836	8	36	19087	44024
Approach %	68.4	22.6	9.0	0.0	-	-	2.6	91.5	5.9	0.0	-	-	46.2	49.3	4.5	0.0	-	-	0.8	84.3	14.9	0.0	-	-	-
Total %	7.8	2.6	1.0	0.0	-	11.4	1.0	36.6	2.4	0.0	-	40.0	2.4	2.6	0.2	0.0	-	5.3	0.3	36.6	6.4	0.0	-	43.4	-
Lights	3288	1113	444	1	-	4846	454	15574	1007	4	-	17039	1044	1135	100	1	-	2280	146	15571	2695	8	-	18420	42585
% Lights	96.0	98.4	98.2	100.0	-	96.8	98.3	96.7	97.0	100.0	-	96.8	97.2	99.0	95.2	100.0	-	98.0	96.1	96.8	95.0	100.0	-	96.5	96.7
Buses	19	8	3	0	-	30	3	121	24	0	-	148	26	10	5	0	-	41	4	130	43	0	-	177	396
% Buses	0.6	0.7	0.7	0.0	-	0.6	0.6	0.8	2.3	0.0	-	0.8	2.4	0.9	4.8	0.0	-	1.8	2.6	0.8	1.5	0.0	-	0.9	0.9
Trucks	116	9	5	0	-	130	5	402	5	0	-	412	4	2	0	0	-	6	1	389	98	0	-	488	1036
% Trucks	3.4	0.8	1.1	0.0	-	2.6	1.1	2.5	0.5	0.0	-	2.3	0.4	0.2	0.0	0.0	-	0.3	0.7	2.4	3.5	0.0	-	2.6	2.4

Bicycles on Road	1	1	0	0	-	2	0	1	2	0	-	3	0	0	0	0	-	0	1	1	0	0	-	2	7
% Bicycles on Road	0.0	0.1	0.0	0.0	-	0.0	0.0	0.0	0.2	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.7	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	2.2	-	-	-	-	-	3.8	-	-	-	-	-	1.6	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	45	-	-	-	-	-	25	-	-	-	-	-	62	-	-	-	-	-	36	-	-
% Pedestrians	-	-	-	-	97.8	-	-	-	-	-	96.2	-	-	-	-	-	98.4	-	-	-	-	-	100.0	-	-

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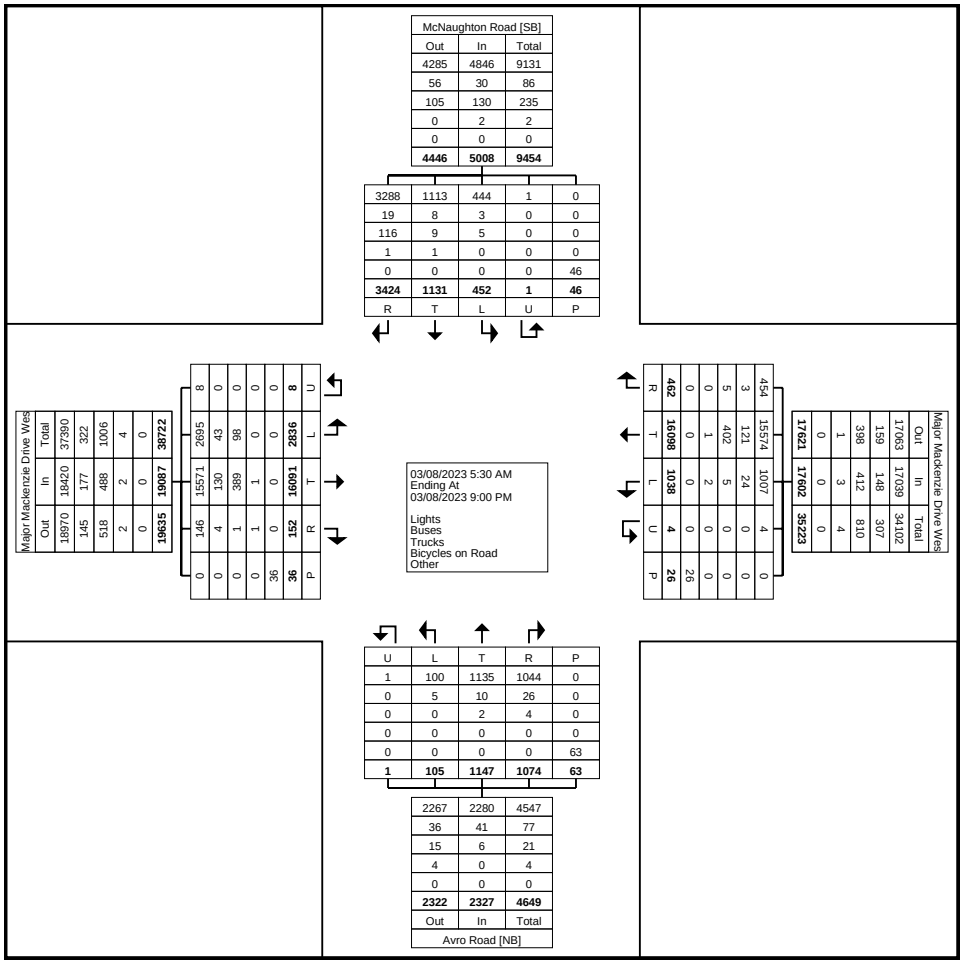
Count Name: 20009_McNaughton Rd & Major Mackenzie Dr W
Site Code: 20009
Start Date: 03/08/2023
Page No: 4



Turning Movement Data Plot

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625 Cochrane Drive

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Count Name: 20009_McNaughton Rd & Major Mackenzie Dr W
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Peak Hour Data (8:00 AM)

Start Time	McNaughton Road Southbound						Major Mackenzie Drive West Westbound						Avro Road Northbound						Major Mackenzie Drive West Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	104	53	17	0	1	174	15	342	29	0	0	386	23	48	2	0	1	73	1	266	51	0	3	318	951
8:15 AM	95	68	30	0	0	193	12	320	30	0	0	362	33	23	0	0	0	56	2	243	54	0	3	299	910
8:30 AM	77	52	22	0	1	151	6	322	45	0	2	373	24	28	2	0	0	54	8	250	44	0	0	302	880
8:45 AM	63	43	10	0	1	116	6	316	38	0	1	360	30	26	2	0	0	58	7	314	26	0	1	347	881
Total	339	216	79	0	3	634	39	1300	142	0	3	1481	110	125	6	0	1	241	18	1073	175	0	7	1266	3622
Approach %	53.5	34.1	12.5	0.0	-	-	2.6	87.8	9.6	0.0	-	-	45.6	51.9	2.5	0.0	-	-	1.4	84.8	13.8	0.0	-	-	-
Total %	9.4	6.0	2.2	0.0	-	17.5	1.1	35.9	3.9	0.0	-	40.9	3.0	3.5	0.2	0.0	-	6.7	0.5	29.6	4.8	0.0	-	35.0	-
PHF	0.815	0.794	0.658	0.000	-	0.821	0.650	0.950	0.789	0.000	-	0.959	0.833	0.651	0.750	0.000	-	0.825	0.563	0.854	0.810	0.000	-	0.912	0.952
Lights	329	215	79	0	-	623	39	1251	136	0	-	1426	106	123	6	0	-	235	17	1030	160	0	-	1207	3491
% Lights	97.1	99.5	100.0	-	-	98.3	100.0	96.2	95.8	-	-	96.3	96.4	98.4	100.0	-	-	97.5	94.4	96.0	91.4	-	-	95.3	96.4
Buses	1	0	0	0	-	1	0	11	4	0	-	15	3	1	0	0	-	4	1	18	5	0	-	24	44
% Buses	0.3	0.0	0.0	-	-	0.2	0.0	0.8	2.8	-	-	1.0	2.7	0.8	0.0	-	-	1.7	5.6	1.7	2.9	-	-	1.9	1.2
Trucks	9	1	0	0	-	10	0	38	0	0	-	38	1	1	0	0	-	2	0	25	10	0	-	35	85
% Trucks	2.7	0.5	0.0	-	-	1.6	0.0	2.9	0.0	-	-	2.6	0.9	0.8	0.0	-	-	0.8	0.0	2.3	5.7	-	-	2.8	2.3
Bicycles on Road	0	0	0	0	-	0	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.4	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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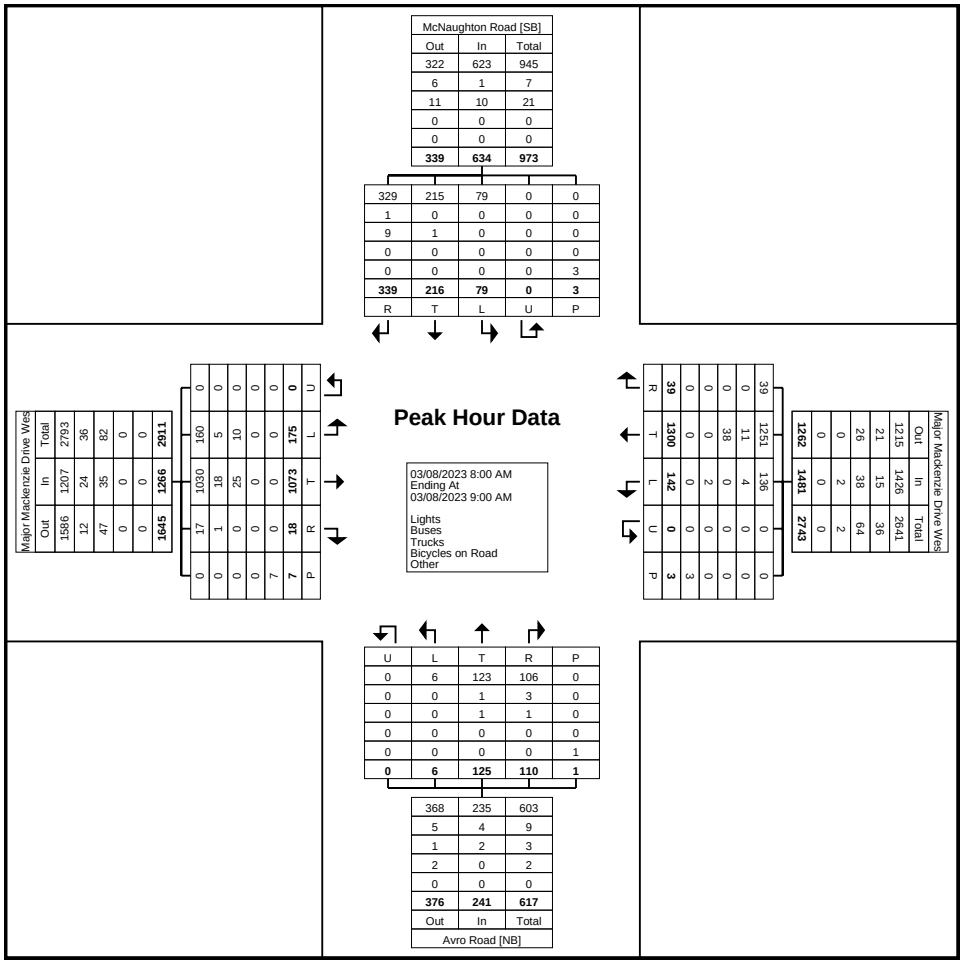
Site Code: 20009
Start Date: 03/08/2023



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

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Count Name: 20009_McNaughton Rd & Major Mackenzie Dr W
Site Code: 20009
Start Date: 03/08/2023

Turning Movement Peak Hour Data (4:45 PM)

Start Time	McNaughton Road Southbound						Major Mackenzie Drive West Westbound						Avro Road Northbound						Major Mackenzie Drive West Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	73	24	1	0	0	98	29	346	42	0	0	417	22	45	1	0	2	68	4	380	72	0	0	456	1039
5:00 PM	55	33	10	0	0	98	18	317	29	0	0	364	29	51	2	0	0	82	3	357	62	1	0	423	967
5:15 PM	36	25	3	0	0	64	12	306	26	0	0	344	32	50	3	0	0	85	1	298	64	0	2	363	856
5:30 PM	47	20	4	0	3	71	19	320	25	0	0	364	38	36	0	0	2	74	3	390	63	0	2	456	965
Total	211	102	18	0	3	331	78	1289	122	0	0	1489	121	182	6	0	4	309	11	1425	261	1	4	1698	3827
Approach %	63.7	30.8	5.4	0.0	-	-	5.2	86.6	8.2	0.0	-	-	39.2	58.9	1.9	0.0	-	-	0.6	83.9	15.4	0.1	-	-	-
Total %	5.5	2.7	0.5	0.0	-	8.6	2.0	33.7	3.2	0.0	-	38.9	3.2	4.8	0.2	0.0	-	8.1	0.3	37.2	6.8	0.0	-	44.4	-
PHF	0.723	0.773	0.450	0.000	-	0.844	0.672	0.931	0.726	0.000	-	0.893	0.796	0.892	0.500	0.000	-	0.909	0.688	0.913	0.906	0.250	-	0.931	0.921
Lights	206	99	18	0	-	323	78	1261	120	0	-	1459	121	182	6	0	-	309	11	1406	259	1	-	1677	3768
% Lights	97.6	97.1	100.0	-	-	97.6	100.0	97.8	98.4	-	-	98.0	100.0	100.0	100.0	-	-	100.0	100.0	98.7	99.2	100.0	-	98.8	98.5
Buses	0	0	0	0	-	0	0	4	2	0	-	6	0	0	0	0	-	0	0	3	2	0	-	5	11
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.3	1.6	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.8	0.0	-	0.3	0.3
Trucks	5	2	0	0	-	7	0	24	0	0	-	24	0	0	0	0	-	0	0	16	0	0	-	16	47
% Trucks	2.4	2.0	0.0	-	-	2.1	0.0	1.9	0.0	-	-	1.6	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.0	0.0	-	0.9	1.2
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	1.0	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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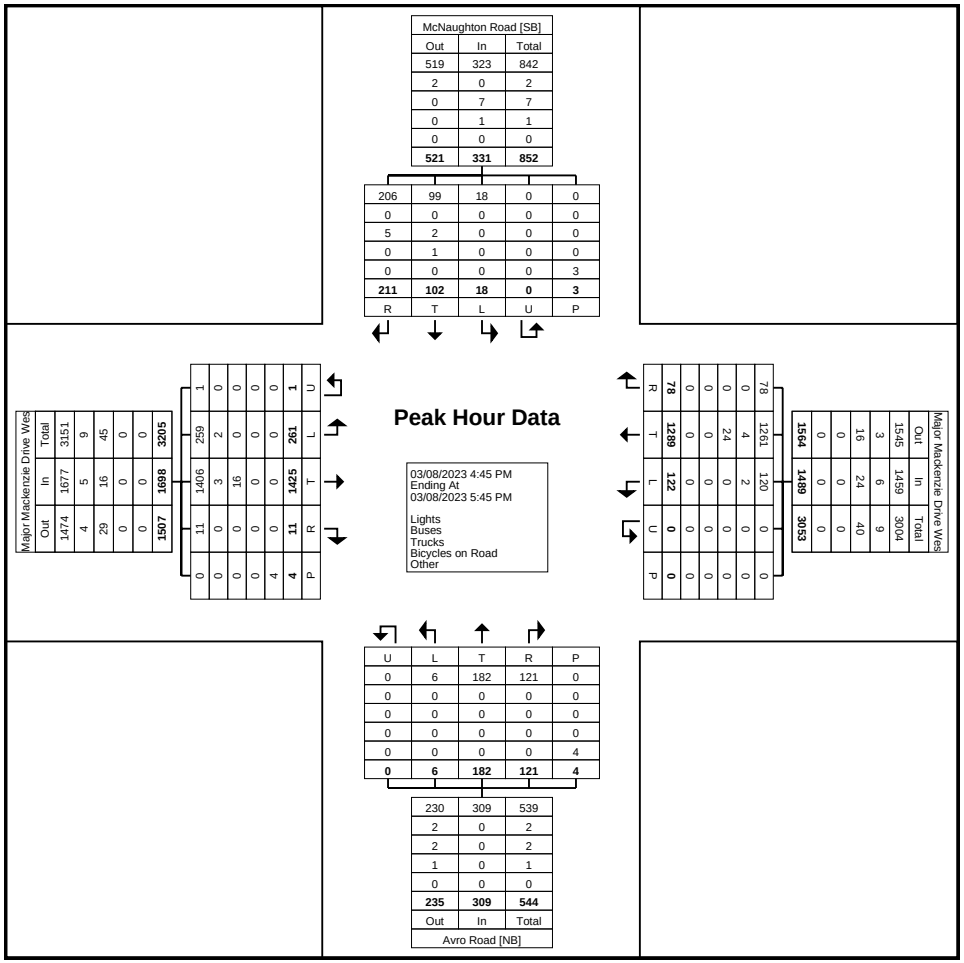


Turning Movement Peak Hour Data Plot (4:45 PM)

APPENDIX Bii

STPs

TIMING CHART/PROGRAMMING DATA

INTERSECTION NAME	McNaughton Rd @ Cranston Park	NUMBER	
CONTROLLER MAKE: Eagle	MODEL: EPAC - Genesis	TYPE OF OPERATION: Full Phase.	

NO	DATE Y	M	D	REVISION DESCRIPTION	CHECKED BY	APPROVED BY
	99	02	08	turn on signals		

ø1	EB - Left Turn Advance	ø5	not in use	TURN ON DATE	Y 99, M 02, D 08
ø2	EB - McNaughton	ø6	WB - McNaughton	TIME	1 : 00 (A.M. / P.M.)
ø3	not in use	ø7	not in use.	FINAL	✓
ø4	SB - Cranston	ø8	SB - Cranston	TEMPORARY	

UTILITIES - ACCESS

CODE .....: ____ CODES: Four Digits (0000-9999)

PHASE DATA - VEHICLE TIMINGS

		PHASE 1	2	3	4	5	6	7	8
Basic Times	Minimum Green	6	16	0	8	0	16	0	8
	Passage	2.0	0	0	5.0	0	0	0	5.0
	Maximum No. 1	10	24	0	16	0	24	0	16
	Maximum No. 2	10	24	0	16	0	24	0	16
	Yellow Change	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
	Red Clearance	0	2.0	0	2.0	0	2.0	0	2.0
Density Times	Seconds/Actuation	0	0	0	0	0	0	0	0
	Maximum Initial	0	0	0	0	0	0	0	0
	Time B4 Reduction	0	0	0	0	0	0	0	0
	Cars B4 REduction	0	0	0	0	0	0	0	0
	Time To Reduce	0	0	0	0	0	0	0	0
	Minimum Gap	0	0	0	0	0	0	0	0

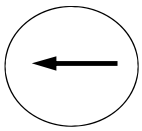
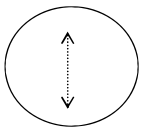
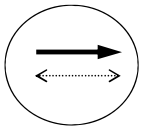
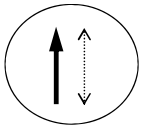
PHASE DATA - PEDESTRIAN & VEHICLE CONTROL

		PHASE 1	2	3	4	5	6	7	8
Ped. Times	Walk	0	13	0	16	0	13	0	16
	Pedest. Clearance	0	8	0	10	0	8	0	10
Ped. Cont.	Flashing Walk	0	0	0	0	0	0	0	0
	Ext Ped Clear	0	0	0	0	0	0	0	0
	Act Rest In Walk	0	0	0	0	0	0	0	0
Veh. Cont.	Non-Lock Memory	1	1	1	1	1	1	1	1
	Dual Entry	0	1	0	1	0	1	0	1
	Last Car Passage	0	0	0	0	0	0	0	0
	Conditional Serv	0	0	0	0	0	0	0	0

Pedestrian & Vehicle Control Entry: "1" = Yes & "0" = No

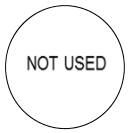
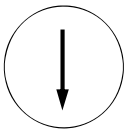
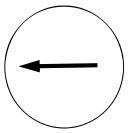
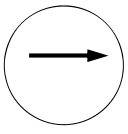
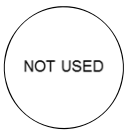
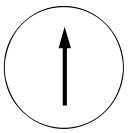
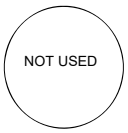
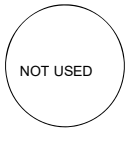
LOCATION:	**Teston Rd (YR 49) & Cranston Park**	*MUNICIPALITY:*	**Vanghan**
CTCS:	**825**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA with APS**	*CONTROLLER/CABINET TYPE:*	**Econolite ASC/3-1000 / TS2T1**
PREPARED/CHECKED BY:	**ML**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**Aug. 18,2020**	*CHANNEL/DROP:*	

N

NEMA Phase (York)		All Day 7:00-18:00 M-F	Free 18:00-07:00 M-F & Sat. & Sun.	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 99		
	System Plan	Plan 1	Plan 99		
1. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				Pedestrian Minimums: EWWK = 7 sec., EWFD = 18 sec. NSWK = 7 sec., NSFD = 20 sec. **Emergency vehicle pre-emption 3:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
2. Westbound  Teston Rd	WLK 7 FDW 18 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**70**	**0**	Fixed	NB phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NBG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the NBG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 19 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
3. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.
4. SB (Ped only) 	WLK 7 FDW 20 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 3.0 SPLIT	**50**	**0**	Callable by pushbutton;	During free plan, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle or pedestrian demand. EWFD reverts to EWWK if there is no side street demand at the end of the EWFD.
5. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				APS Extended Push Activation = 3 sec When activated, APS is on for 7 seconds.
6. Eastbound  Teston Rd	WLK 7 FDW 18 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**70**	**0**	Fixed	
7. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
8. Northbound  Cranston Park	WLK 7 FDW 20 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 3.0 SPLIT	**50**	**0**	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL OF VP	**120** **0** 18	**0 (FREE)** **0 (FREE)** 0 (FREE)		

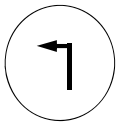
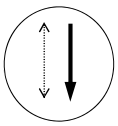
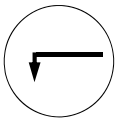
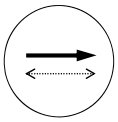
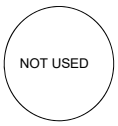
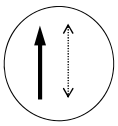
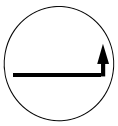
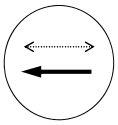
NOTES: T-intersection, no north leg.

LOCATION:	**Jane Street (YR 55) & Kirby Road**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**887**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**M.L.**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**July 13,2020**	*CHANNEL/DROP:*	

NEMA Phase (York)		Free 24 Hrs Daily	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 99		
	System Plan	Plan 99		
	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT		NOT USED	**Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
2. Southbound  Jane Street	WLK FDW MIN 40 EXT 0 MAX1 40 MAX2 120 AMB 5.0 ALR 3.5 SPLIT	**0**	Fixed	EB and WB phases are callable and skippable but not switchable. If EB and WB detectors are both active at the end of the NS phase, the WB phase is served first followed by the EB phase. If only the EB detector is active at the end of the NS phase, only the EB phase is served (and any late WB demand will only be served the following cycle). EB and WB phases are only permitted once per cycle.
3. Westbound  Kirby Road	WLK FDW MIN 10 EXT 3 MAX1 40 MAX2 40 AMB 4.5 ALR 2 SPLIT	**0**		
4. Eastbound  Kirby Road	WLK FDW MIN 10 EXT 3 MAX1 40 MAX2 40 AMB 4.5 ALR 2.0 SPLIT	**0**	Callable by stopbar loop Extendable by stopbar loop.	
	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT		NOT USED	
6. Northbound  Jane Street	WLK FDW MIN 40 EXT 0 MAX1 40 MAX2 120 AMB 5.0 ALR 3.5 SPLIT	**0**	Fixed	
	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT		Not Used	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT		Not Used	
	CL OF VP	**0 (FREE)** **0 (FREE)** 0 (FREE)		

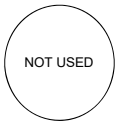
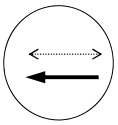
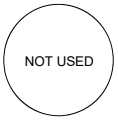
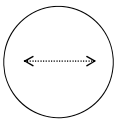
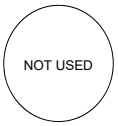
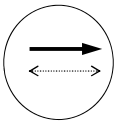
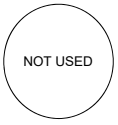
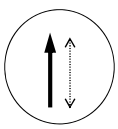
NOTES: Offset intersection

LOCATION:	**Teston Rd (YR 49) & Jane St. (YR 55)**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**690**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER/CABINET TYPE:*	**Econolite ASC/3-1000 / TS2T1**
PREPARED/CHECKED BY:	**M.L.**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**June 18, 2019**	*CHANNEL/DROP:*	

NEMA Phase (York)		AM 6:00-10:00 M-F	PM 15:00-20:00 M-F	OFF 10:00-15:00, 20:00-22:00 M-F ; & 9:00-22:00 Sat & Sun	Free 22:00-6:00 M-F & 22:00-9:00 Sat&Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 99		Changes were made due to closure at Major Mackeinzie Drive and McNaughton Road
	System Plan	Plan 1	Plan 2	Plan 3	Plan 99		
1. N/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 20 MAX2 0 AMB 3 ALR 1 SPLIT	12	12	12	0	Permissive/Protected Callable/Extendable by Setback Loop	Pedestrian Minimums: NSWK = 7 sec., NSFD = 27 sec. EWWK = 7 sec., EWFD = 25 sec.
2. Southbound  Jane St.	WLK 7 FDW 27 MIN 35 EXT 0 MAX1 35 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	58	50	53	0	Fixed	**Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
3. W/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT	25	20	12	0	Permissive/Protected Callable/Extendable by Setback Loop	**Emergency vehicle pre-emption 4:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
4. Eastbound  Teston Rd	WLK 7 FDW 25 MIN 10 EXT 3 MAX1 35 MAX2 0 AMB 5.5 ALR 3.0 SPLIT	55	68	53	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green Free operation . If a pedestrian call is received, the pedestrian minimum will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG.
5. S/B Left Turn Arrow  NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT						During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand. During free plan, signal rests in NSWK and does not cycle through NSFD unless there is side street vehicle or pedestrian demand. NSFD reverts to NSWK if there is no side street demand at the end of the NSFD.
6. Northbound  Jane St.	WLK 7 FDW 27 MIN 35 EXT 0 MAX1 35 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	70	62	65	0	Fixed	
7. Eastbound Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 20 MAX2 0 AMB 3 ALR 1 SPLIT	12	20	12	0	Permissive/Protected Callable/Extendable by Setback Loop	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
8. Westbound  Teston Rd	WLK 7 FDW 25 MIN 10 EXT 3 MAX1 35 MAX2 0 AMB 5.5 ALR 3.0 SPLIT	68	68	53	0	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL	150	150	130	0 (FREE)		
	OF	0	35	0	0 (FREE)		
	VP	27	27	27	0 (FREE)		

NOTES:

LOCATION:	**Teston Road (YR 49) at St. Joan of Arc Avenue**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**899**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA with APS**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**M.L.**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**Aug. 18,2020**	*CHANNEL/DROP:*	

NEMA Phase (York)		All Day 07:00-18:00, M-F	Free 18:00-07:00 M-F & Sat&Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 3	Pattern 99		
	System Plan	Plan 3	Plan 99		
1. 	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				
2. Westbound  Teston Road	WLK 7 FDW 15 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**70**	**0**	Fixed	
3. 	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				
4. Southbound  Ped Only	WLK 7 FDW 17 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 3.0 SPLIT		**0**	callable by pushbutton	
5. 	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				
6. Eastbound  Teston Road	WLK 7 FDW 15 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**70**	**0**	Fixed	
7. 	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				
8. Northbound  St. Joan of Arck Avnue	WLK 7 FDW 17 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 3.0 SPLIT	**50**	**0**	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL OF VP	**120** **0** 15	**0 (FREE)** **0 (FREE)** 0 (FREE)		

Emergency vehicle pre-emption 3:

Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.

NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 19 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.

During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.

During free plan, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle or pedestrian demand.

EWFD reverts to EWWK if there is no side street demand at the end of the EWFD.

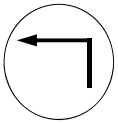
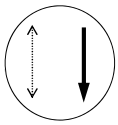
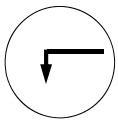
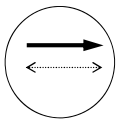
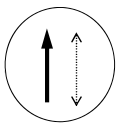
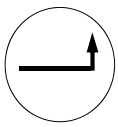
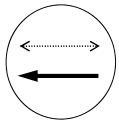
APS Extended Push Activation = 3 sec
When activated, APS is on for 7 seconds.

LEGEND:

SA - Semi-Actuated signal
WLK - Walk time
FDW - Flashing Don't Walk time
MIN - Minimum green time
EXT - Extension time
MAX1 - Maximum green time 1
MAX2 - Maximum green time 2
AMB - Amber
ALR -All Red
CL - Cycle Length
OF - Offset
VP - Vehicle Permissive
NSWK - North/South Walk
EWWK - East/West Walk
NSG - North/South Green
EWG - East/West Green
NSFD - North/South Flashing Don't Walk
EWFD - East/West Flashing Don't Walk
TSP - Transit Priority
APS - Audible Pedestrian Signal
RLC - Red Light Camera

NOTES: T- intersection

LOCATION:	**Keele St (YR 6) & Teston Road (YR 49)**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**490**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**M.L.**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**June 26, 2019**	*CHANNEL/DROP:*	

NEMA Phase (York)		AM 6:00-10:00 M-F	PM 15:00-20:00 M-F	OFF 10:00-15:00, 20:00-22:00 M-F ; & 9:00-22:00 Sat & Sun	Free 22:00-6:00 M-F & 22:00-9:00 Sat&Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 99		Changes were made due to closure at Major Mackeinzie Drive and McNaughton Road
	System Plan	Plan 1	Plan 2	Plan 3	Plan 99		
1. N/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT	**20**	**37**	**20**	**0**	Callable/Extendable by Setback Loop	Pedestrian Minimums: NSWK = 7 sec., NSFD = 21 sec. EWWK = 7 sec., EWFD = 22 sec.
2. Southbound  Keele Street	WLK 7 FDW 21 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.0 ALR 3.5 SPLIT	**73**	**38**	**47**	**0**	Fixed	**Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
3.W/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT	**12**	**14**	**12**	**0**	Callable/Extendable by Setback Loop	**Emergency vehicle pre-emption 4:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
4. Eastbound  Teston Road	WLK 7 FDW 22 MIN 10 EXT 3 MAX1 40 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**45**	**61**	**51**	**0**	Callable by stobarloop and or push button; Extendable by stopbar loop	
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**	**0**		
6. Northbound  Keele Street	WLK 7 FDW 21 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.0 ALR 3.5 SPLIT	**93**	**75**	**67**	**0**	Fixed	
7. E/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 0 AMB 3 ALR 1 SPLIT	**17**	**37**	**20**	**0**	Callable/Extendable by Setback Loop	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
8. Westbound  Teston Road	WLK 7 FDW 22 MIN 10 EXT 3 MAX1 40 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**40**	**38**	**43**	**0**	Callable by stobarloop and or push button ;Extendable by stopbar loop	
	CL	**150**	**150**	**130**	**0 (FREE)**		
	OF	**0**	**120**	**0**	**0 (FREE)**		
	VP	21	21	21	0 (FREE)		

NOTES:

LOCATION:	**Teston Road (YR 49) at Cityview Blvd.**			*MUNICIPALITY:*	**Vaughan**
CTCS:	**747**			*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**			*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**M.L.**			*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:				*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**June 26, 2019**			*CHANNEL/DROP:*	

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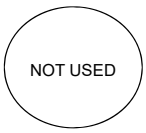
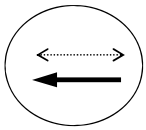
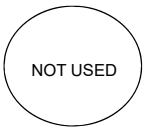
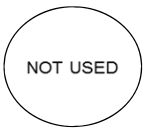
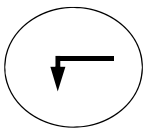
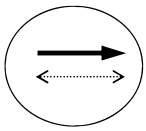
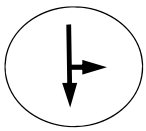
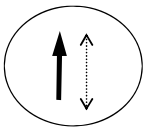
NEMA Phase (York)		**AM** **6:00-10:0 M-F**		**Free** **10:00-6:00 M-F & 24 hrs Sat & Sun**	**Phase Mode** **(Fixed/Demanded/Callable)**	**Remarks**
	Local Plan	Pattern 98		Pattern 99		
	System Plan	Plan 98		Plan 99		
1. 	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT					Pedestrian Minimums: EWWK = 7 sec., EWFD = 20 sec. NSWK = 7 sec., NSFD = 25 sec.
						Emergency vehicle pre-emption 3: Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
2. Westbound  Teston Road	WLK 7 FDW 20 MIN 30 EXT 0 MAX1 50 MAX2 120 AMB 5.0 ALR 2.0 SPLIT	**USE MAX 2**			Fixed	NB phase is callable by vehicle actuation. If a vehicle call is received, the minimum NBG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the NBG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or MAX1 during Free operation. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT					SB phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum SBG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the SBG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or MAX1 during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT					
5. W/B Left Turn Arrow 	WLK FDW MIN 7 EXT 3 MAX1 50 MAX2 90 AMB 3 ALR 1 SPLIT	**USE MAX 2**			Callable/Extendable by Setback Loop	During free plan, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle or pedestrian demand.
6. Eastbound  Teston Road	WLK 7 FDW 20 MIN 30 EXT 0 MAX1 50 MAX2 30 AMB 5.0 ALR 2.0 SPLIT	**USE MAX 2**			Fixed	EWFD reverts to EWWK if there is no side street demand at the end of the EWFD.
7. Southbound Split Phase  Private Rd	WLK FDW MIN 7 EXT 3 MAX1 7 MAX2 10 AMB 3 ALR 2 SPLIT	**USE MAX 2**			Callable by stopbar loop Split phase	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal
8. Northbound Split Phase  Cityview Blvd.	WLK 7 FDW 25 MIN 10 EXT 3 MAX1 25 MAX2 20 AMB 4.0 ALR 2.0 SPLIT	**USE MAX 2**			Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop. Split phase	
	CL OF VP	**0** 0	**0**	**0 (FREE)** **0 (FREE)** 0 (FREE)		

NOTES:

LOCATION:	**Hwy 400 NB & Teston Rd**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**753 (MTO Signal)**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**MQL**		
PREPARATION DATE:	**April 10, 2019**	*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**June 27, 2019**	*CHANNEL/DROP:*	

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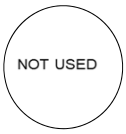
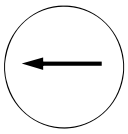
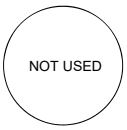
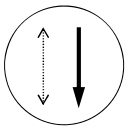
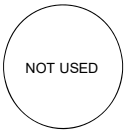
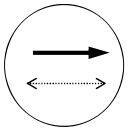
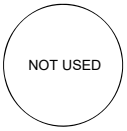
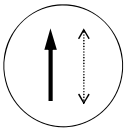
NEMA Phase (MTO)	Normal Time	PM 16:30-18:30, M-F Pattern 98 Plan 98	Free All Other Times Pattern 99 Plan 99	Phase Mode (Fixed/Demanded/Callable)	Remarks
1. W/B Left Turn Arrow NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				Pedestrian Minimums: EWWK = 7 sec., EWFD = 13 sec. NSWK = 7 sec., NSFD = 22 sec. **Emergency vehicle pre-emption 3/4:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
2. Eastbound Teston Rd	WLK 7 FDW 13 MIN 20 EXT 4 MAX1 47 MAX2 37 AMB 4.5 ALR 3.0 SPLIT	**Use MAX2** **0**	**0**	Ped Recall, Veh Max Recall	NB phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NBG is 15 seconds. If ongoing vehicle demand exists on the stopbar loop, the NBG is capable of providing vehicle extensions up to the maximum green. If a pedestrian call is received, the pedestrian minimum will be served.
3. S/B Left Turn Arrow NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				**Please see reverse page for Pretime.**
4. Northbound Hwy 400 NB	WLK 7 FDW 22 MIN 15 EXT 3 MAX1 31 MAX2 41 AMB 4.5 ALR 3.0 SPLIT	**Use MAX2** **0**	**0**	Callable by stopbar loop and/or pushbutton Extendable by stopbar loop	
5. N/B Left Turn Arrow NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				
6. Westbound Teston Rd	WLK 0 FDW 0 MIN 20 EXT 4 MAX1 47 MAX2 37 AMB 4.5 ALR 3.0 SPLIT	**Use MAX2** **0**	**0**	Veh Max Recall	
7. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal
8. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				
	CL OF VP	**0 (FREE)** **0 (FREE)** **0 (FREE)**	**0 (FREE)** **0 (FREE)** **0 (FREE)**		

NOTES:

LOCATION:	**Teston Road (YR 49) at Mosque Gate**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**915**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA with APS**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**ML**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**Aug. 18, 2020**	*CHANNEL/DROP:*	

NEMA Phase (York)		All Day 07:00-18:00, M-F	Free 18:00-7:00 M-F & Sat&Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 3	Pattern 99		
	System Plan	Plan 3	Plan 99		
1.  NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				Pedestrian Minimums EWWK=7sec EWFD= 17 sec NSWK= 7 sec, NSFD= 20sec **Emergency vehicle pre-emption 3:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
2. Westbound  Teston Road	WLK 7 FDW 17 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**70**	**0**	Fixed	NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 19 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
3.  NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.
4. Southbound 	WLK 7 FDW 20 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 3.0 SPLIT	**50**	**0**	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	During free plan, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle or pedestrian demand. EWFD reverts to EWWK if there is no side street demand at the end of the EWFD.
5.  NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				APS Extended Push Activation = 3 sec When activated, APS is on for 7 seconds.
6. Eastbound  Teston Road	WLK 7 FDW 17 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.5 ALR 3.0 SPLIT	**70**	**0**	Fixed	**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
7.  NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT				
8. Northbound  Masque Gate	WLK 7 FDW 20 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 3.0 SPLIT	**50**	**0**	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL OF VP	**120** **0** 17	**0 (FREE)** **0 (FREE)** 0 (FREE)		

NOTES:

LOCATION:	**Keele St (YR 6) & Kirby Road**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**633**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**M.L.**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**March 24, 2020**	*CHANNEL/DROP:*	

NEMA Phase (York)		AM 6:30-09:30, M-F	PM 16:00-19:00 M-F; 10:00-22:00 Sat & Sun	Free 09:30-16:00 & 19:00-6:30 M-F & 22:00-10:00 Sat-Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 99		
	System Plan	Plan 1	Plan 2	Plan 99		
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		Pedestrian Minimums: NSWK=7 sec, NSFD=18sec EWWK=7sec, EWFD=21sec **Emergency vehicle pre-emption 3:** Serve NSG/NSDW min 20 secs and up to 100 secs if there are continuous emergency calls in NS direction.
2. Southbound Keele St	WLK 7 FDW 18 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 5.0 ALR 2.5 SPLIT	**80**	**80**	**0**	Fixed	EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG will be served. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green split. If a pedestrian call is received, the pedestrian minimum will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG during coordinated operation.
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.
4. Eastbound Kirby	WLK 7 FDW 21 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	**40**	**40**	**0**	Callable by stobarloop and or push button ;Extendable by stopbar loop	During free plan, signal rests in NSWK and does not cycle through NSFD unless there is side street vehicle or pedestrian demand. NSFD reverts to NSWK if there is no side street demand at the end of the NSFD.
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		
6. Northbound Keele St	WLK 7 FDW 18 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 5.0 ALR 2.5 SPLIT	**80**	**80**	**0**	Fixed	
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		
8. Westbound Kirby	WLK 7 FDW 21 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.5 ALR 2.5 SPLIT	**40**	**40**	**0**	Callable by stobarloop and or push button; Extendable by stopbar loop	
	CL OF VP	**120** **0** 18	**120** **0** 18	**0 (FREE)** **0 (FREE)** 0 (FREE)		

LEGEND:

SA - Semi-Actuated signal
WLK - Walk time
FDW - Flashing Don't Walk time
MIN - Minimum green time
EXT - Extension time
MAX1 - Maximum green time 1
MAX2 - Maximum green time 2
AMB - Amber
ALR -All Red
CL - Cycle Length
OF - Offset
VP - Vehicle Permissive
NSWK - North/South Walk
EWWK - East/West Walk
NSG - North/South Green
EWG - East/West Green
NSFD - North/South Flashing Don't Walk
EWFD - East/West Flashing Don't Walk
TSP - Transit Priority
APS - Audible Pedestrian Signal
RLC - Red Light Camera

NOTES:

LOCATION:	**Keele St (YR 6) & Peak Point Blvd**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**782**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**AM**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**March 24, 2020**	*CHANNEL/DROP:*	

NEMA Phase (York)		AM 7:00-09:00 M-F	PM 16:00-19:00 M-F; 10:00-22:00 Sat & Sun	Free 09:00-16:00 & 19:00-7:00 M-F & 22:00-10:00 Sat&Sun	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 99		
	System Plan	Plan 1	Plan 2	Plan 99		
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		Pedestrian Minimums: NSWK=7 sec, NSFD=20sec EWWK=7sec, EWFD=20sec **Emergency vehicle pre-emption 3:** Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
2. Southbound Keele St	WLK FDW MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 5.0 ALR 2.5 SPLIT	**80**	**80**	**0**	Fixed	EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG will be served. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum green split. If a pedestrian call is received, the pedestrian minimum will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG during coordinated operation.
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.
4. Eastbound	WLK 7 FDW 20 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 2.5 SPLIT	**40**	**40**	**0**	Callable by push button	During free plan, signal rests in NSWK and does not cycle through NSFD unless there is side street vehicle or pedestrian demand. NSFD reverts to NSWK if there is no side street demand at the end of the NSFD.
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		
6. Northbound Keele St	WLK 7 FDW 20 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 5.0 ALR 2.5 SPLIT	**80**	**80**	**0**	Fixed	
NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		**LEGEND:** SA - Semi-Actuated signal WLK - Walk time FDW - Flashing Don't Walk time MIN - Minimum green time EXT - Extension time MAX1 - Maximum green time 1 MAX2 - Maximum green time 2 AMB - Amber ALR -All Red CL - Cycle Length OF - Offset VP - Vehicle Permissive NSWK - North/South Walk EWWK - East/West Walk NSG - North/South Green EWG - East/West Green NSFD - North/South Flashing Don't Walk EWFD - East/West Flashing Don't Walk TSP - Transit Priority APS - Audible Pedestrian Signal RLC - Red Light Camera
8. Westbound Peak Point Blvd	WLK 7 FDW 20 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 4.0 ALR 2.5 SPLIT	**40**	**40**	**0**	Callable by stobarloop and or push button ;Extendable by stopbar loop	
	CL OF VP	**120** **0** 20	**120** **0** 20	**0 (FREE)** **0 (FREE)** 0 (FREE)		

NOTES: T-Intersection

LOCATION:	**Major Mackenzie Dr (YR 25) & Avro Rd/McNaughton Rd**			*MUNICIPALITY:*	**Vaughan**	
CTCS:	**122**			*COMPUTER SYSTEM:*	**Centracs**	
MODE/COMMENT:	**SA**			*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**	
PREPARED/CHECKED BY:	**ML**			*CONFLICT FLASH:*	**Red & Red**	
PREPARATION DATE:				*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**	
IMPLEMENTATION DATE:	**Mar. 9,2023**			*CHANNEL/DROP:*		

NEMA Phase (York)		AM/OFF,ALL WKND 6:00-15:00; 19:00-22:00 M-F;08:00-22:00 Sat. & Sun.	PM 15:00-19:00 M-F	Free 22:00-06:00-M-F 22:00-08:00 Sat. & Sun.	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 99		
	System Plan	Plan 1	Plan 2	Plan 99		Changes were applied to accommodate the construction along MMD.
1. E/B Left Turn Arrow NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**	Callable/Extendable by Setback Loop	Pedestrian Minimums: EWWK = 7 sec., EWFD = 23 sec. NSWK = 7 sec., NSFD = 26 sec.
						Emergency vehicle pre-emption 3: Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
2. Westbound Major Mackenzie Dr	WLK 7 FDW 23 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.0 ALR 3.0 SPLIT	**115**	**120**	**0**	Fixed	NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 19 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
3. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT					
						During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.
4. Southbound McNaughton Rd	WLK 7 FDW 26 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 3.5 ALR 4.0 SPLIT	**45**	**60**	**0**	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
						During free plan, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle or pedestrian demand.
5. W/B Left Turn Arrow NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT	**0**	**0**	**0**		
						EWFD reverts to EWWK if there is no side street demand at the end of the EWFD.
6. Eastbound Major Mackenzie Dr	WLK 7 FDW 23 MIN 30 EXT 0 MAX1 30 MAX2 0 AMB 4.0 ALR 3.0 SPLIT	**115**	**120**	**0**	Fixed	
7. NOT USED	WLK FDW MIN EXT MAX1 MAX2 AMB ALR SPLIT					
8. Northbound Avro Rd	WLK 7 FDW 26 MIN 10 EXT 3 MAX1 19 MAX2 0 AMB 3.5 ALR 4.0 SPLIT	**45**	**60**	**0**	Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	
	CL	**160**	**180**	**0 (FREE)**		
	OF	**0**	**1**	**0 (FREE)**		
	VP	23	23	0 (FREE)		

LEGEND:

SA - Semi-Actuated signal
WLK - Walk time
FDW - Flashing Don't Walk time
MIN - Minimum green time
EXT - Extension time
MAX1 - Maximum green time 1
MAX2 - Maximum green time 2
AMB - Amber
ALR -All Red
CL - Cycle Length
OF - Offset
VP - Vehicle Permissive
NSWK - North/South Walk
EWWK - East/West Walk
NSG - North/South Green
EWG - East/West Green
NSFD - North/South Flashing Don't Walk
EWFD - East/West Flashing Don't Walk
TSP - Transit Priority
APS - Audible Pedestrian Signal
RLC - Red Light Camera

NOTES:

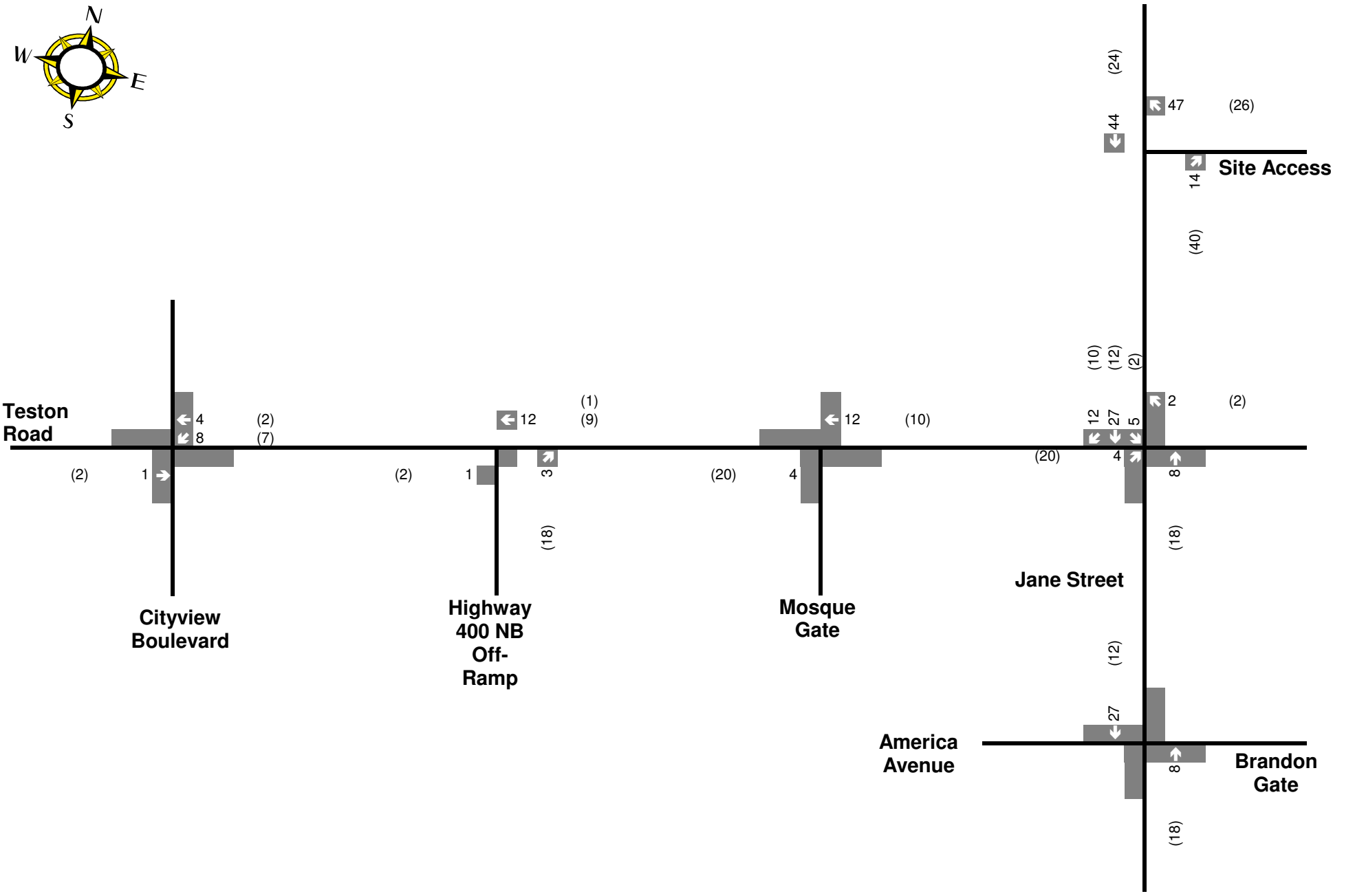
LOCATION:	**Major Mackenzie Dr (YR 25) & Avro Rd/McNaughton R**	*MUNICIPALITY:*	**Vaughan**
CTCS:	**122**	*COMPUTER SYSTEM:*	**Centracs**
MODE/COMMENT:	**SA**	*CONTROLLER/CABINET TYPE:*	**Econolite Cobalt / TS2T1**
PREPARED/CHECKED BY:	**ML**	*CONFLICT FLASH:*	**Red & Red**
PREPARATION DATE:		*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**Nov. 1,2022**	*CHANNEL/DROP:*	

NEMA Phase (York)		ALL WEEK 6:00-22:00 M-F;08:00-20:00 Sat. & Sun.	Free 22:00-06:00-M-F 20:00-08:00 Sat. & Sun.	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 99		
	System Plan	Plan 1	Plan 99		
1. E/B Left Turn Arrow	WLK			Callable/Extendable by Setback Loop	Pedestrian Minimums: EWWK = 7 sec., EWFD = 23 sec. NSWK = 7 sec., NSFD = 26 sec.
	FDW				
	MIN 7				**Emergency vehicle pre-emption 3:**
	EXT 3				Serve EWG/EWDW min 20 secs and up to 100 secs if there are continuous emergency calls in EW direction.
	MAX1 7				
	MAX2 0				
	AMB 3				
	ALR 1				
	SPLIT	**20**	**0**		
2. Westbound	WLK 7			Fixed	NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 10 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum green split during coordinated operation or 19 secs during Free operation. If a pedestrian call is received, the pedestrian minimum will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
	FDW 23				
	MIN 30				
	EXT 0				
	MAX1 30				
	MAX2 0				
	AMB 4.0				
	ALR 3.0				
Major Mackenzie Dr	SPLIT	**70**	**0**		
3. NOT USED	WLK				During coordinated operation, the signal constantly cycles through main street FDW to improve response time to side street vehicle and pedestrian demand.
	FDW				
	MIN				
	EXT				
	MAX1				
	MAX2				
	AMB				
	ALR				
	SPLIT				
4. Southbound	WLK 7			Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	During free plan, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle or pedestrian demand.
	FDW 26				
	MIN 10				
	EXT 3				
	MAX1 19				
	MAX2 0				
	AMB 3.5				
	ALR 4.0				
McNaughton Rd	SPLIT	**70**	**0**		
5. W/B Left Turn Arrow	WLK				EWFD reverts to EWWK if there is no side street demand at the end of the EWFD.
	FDW				
	MIN 7				
	EXT 3				
	MAX1 7				
	MAX2 0				
	AMB 3				
	ALR 1				
	SPLIT	**20**	**0**		
6. Eastbound	WLK 7			Fixed	
	FDW 23				
	MIN 30				
	EXT 0				
	MAX1 30				
	MAX2 0				
	AMB 4.0				
	ALR 3.0				
Major Mackenzie Dr	SPLIT	**70**	**0**		
7. NOT USED	WLK				**LEGEND:**
	FDW				
	MIN				SA - Semi-Actuated signal
	EXT				WLK - Walk time
	MAX1				FDW - Flashing Don't Walk time
	MAX2				MIN - Minimum green time
	AMB				EXT - Extension time
	ALR				MAX1 - Maximum green time 1
	SPLIT				MAX2 - Maximum green time 2
8. Northbound	WLK 7			Callable by stopbar loop and/or pushbutton; Extendable by stopbar loop.	AMB - Amber
	FDW 26				ALR -All Red
	MIN 10				CL - Cycle Length
	EXT 3				OF - Offset
	MAX1 19				VP - Vehicle Permissive
	MAX2 0				NSWK - North/South Walk
	AMB 3.5				EWWK - East/West Walk
	ALR 4.0				NSG - North/South Green
Avro Rd	SPLIT	**70**	**0**		EWG - East/West Green
	CL	**160**	**0 (FREE)**		NSFD - North/South Flashing Don't Walk
	OF	**0**	**0 (FREE)**		EWFD - East/West Flashing Don't Walk
	VP	23	0 (FREE)		TSP - Transit Priority
					APS - Audible Pedestrian Signal
					RLC - Red Light Camera

NOTES:

APPENDIX C

Background Developments



Legend

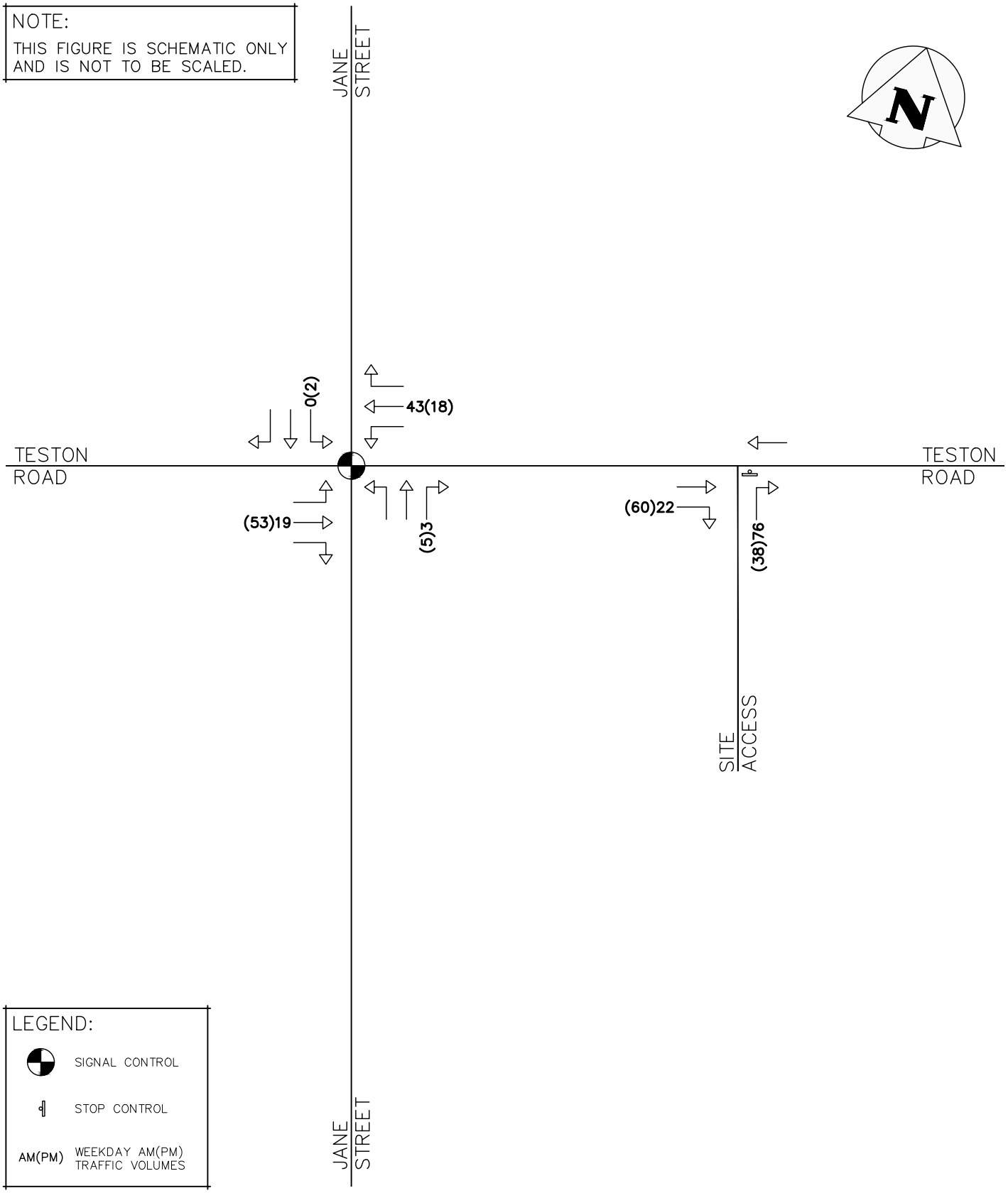
xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 4-1

Site Generated Traffic Volumes - Existing Road Conditions

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



LEGEND:

- SIGNAL CONTROL
- STOP CONTROL
- AM(PM) WEEKDAY AM(PM) TRAFFIC VOLUMES

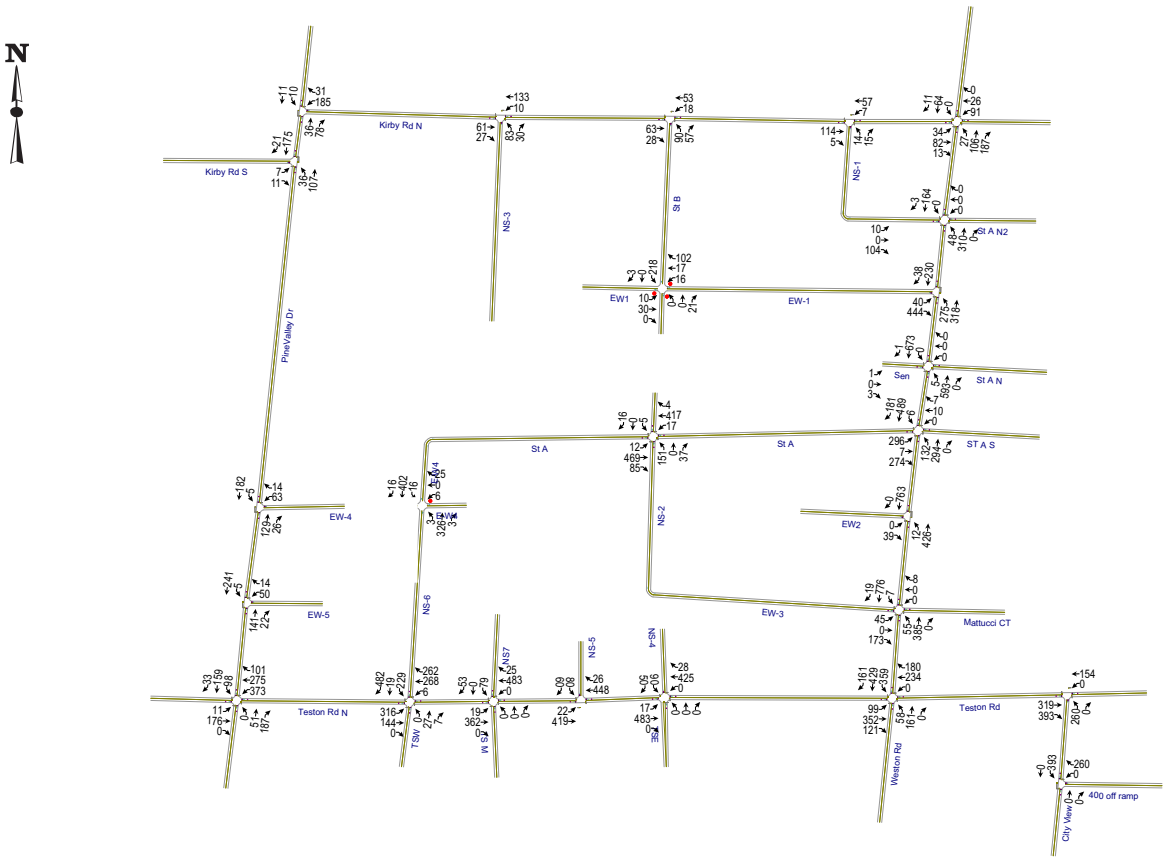
JANE STREET & TESTON ROAD
CITY OF VAUGHAN

TRIP ASSIGNMENT

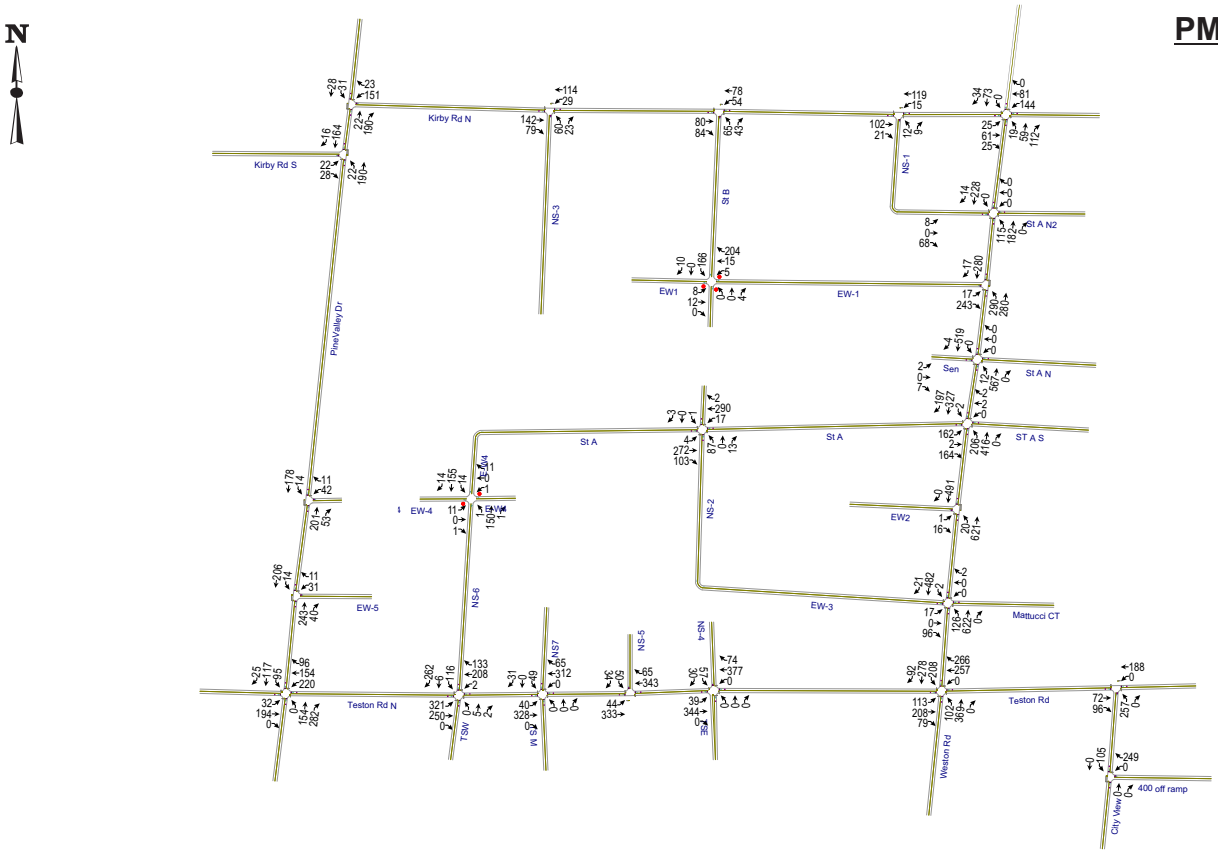
CROZIER CONSULTING ENGINEERS
211 YONGE STREET
SUITE 600
TORONTO, ON M5B 1M4
416-477-3392 T
WWW.CFCROZIER.CA

Drawn	Design	Project No.	
R.L.	M.I.		1149-4212
Date	Check	Scale	Dwg.
2022/05/06	M.I.	N.T.S	FIG. 09

AM Peak Hour



PM Peak Hour



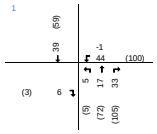
Poulos Chung

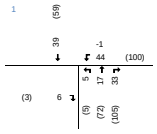
2033 Block 41 Traffic

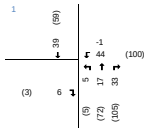
Figure 6.6

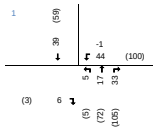
Street Name

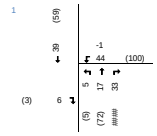
Subject Site

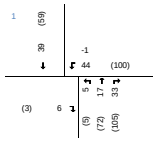


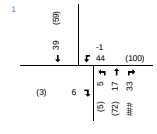


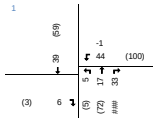


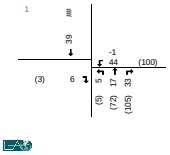


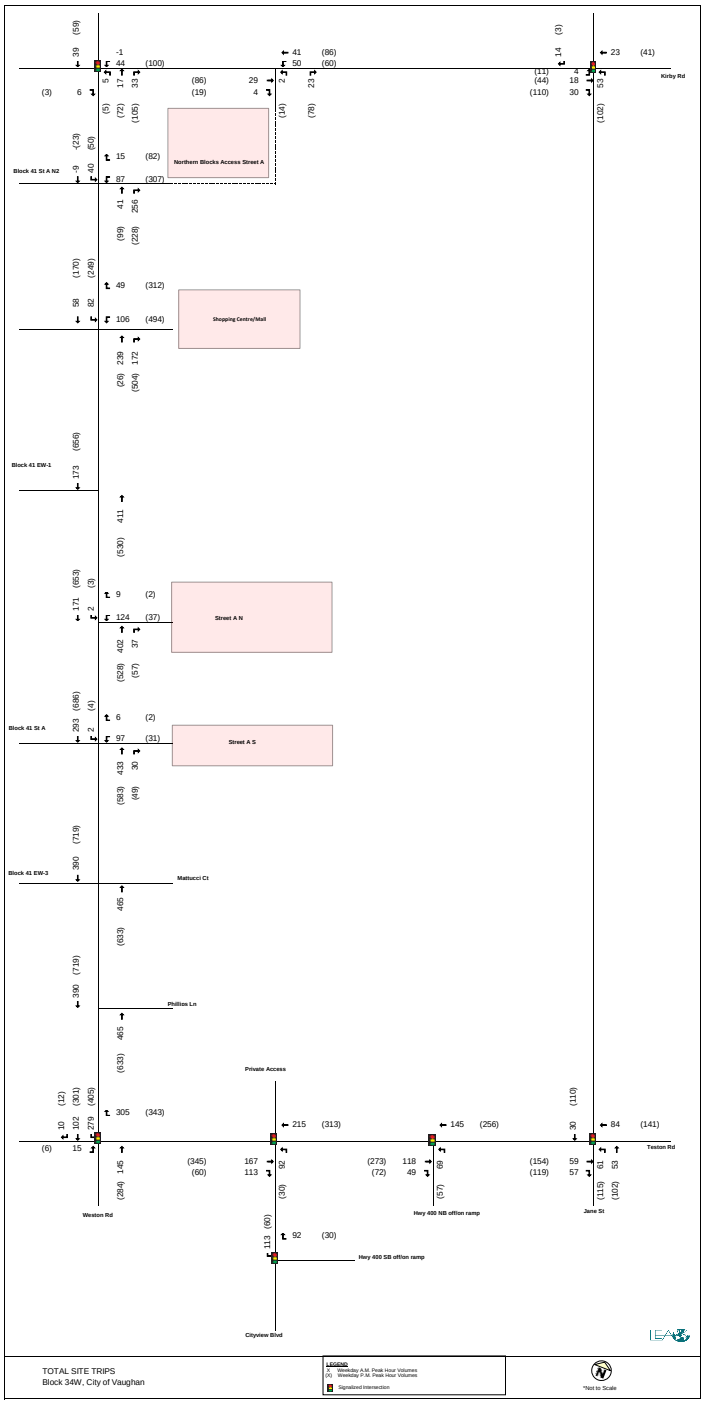








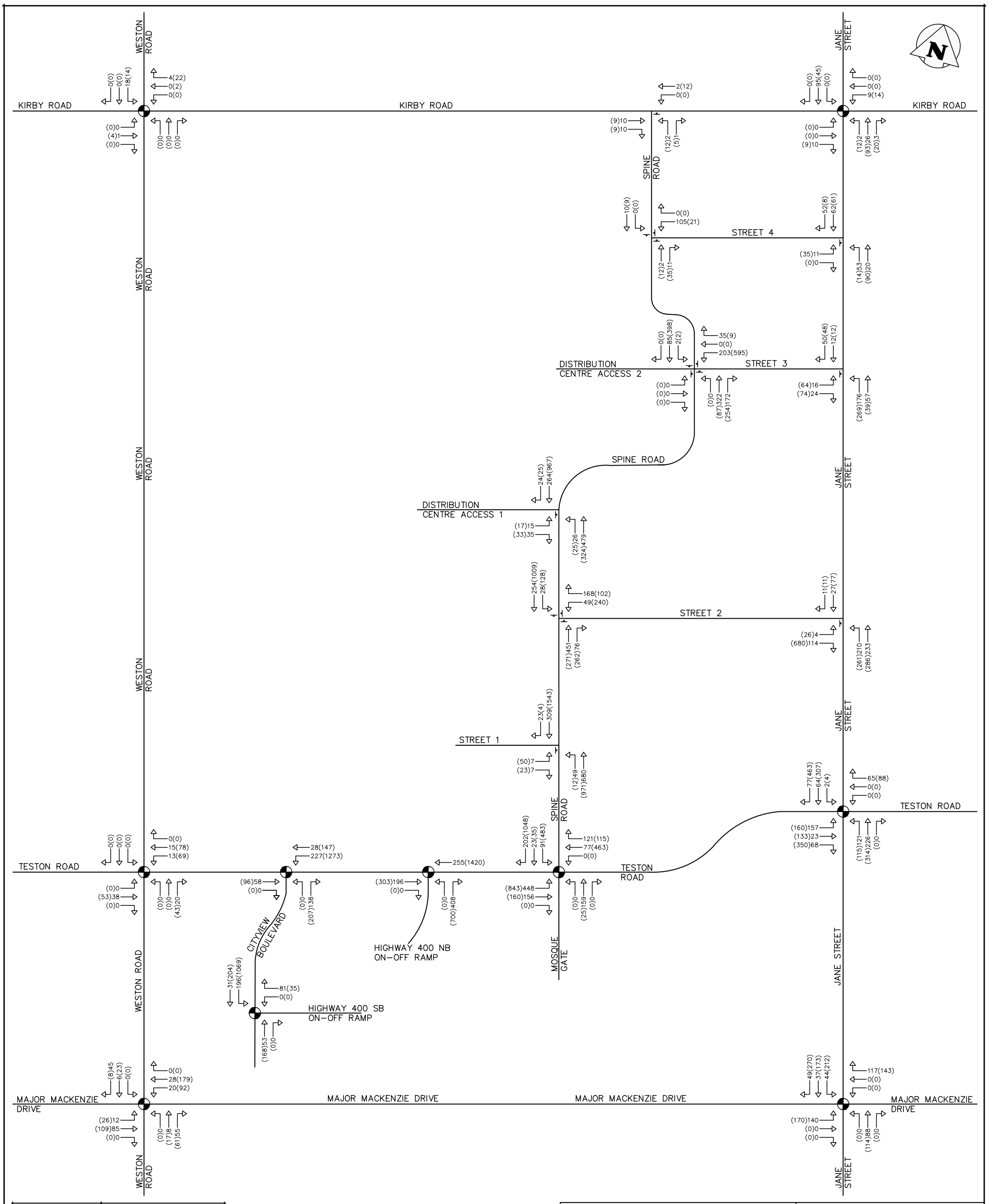




TOTAL SITE TRIPS
Block 34W, City of Vaughan

LEGEND
X Weekday A.M. Peak Hour Volumes
(X) Weekday P.M. Peak Hour Volumes
Signalized Intersection

*Not to Scale



LEGEND:

- SIGNAL CONTROL
- STOP CONTROL
- AM(PM) WEEKDAY AM(PM) PEAK HOUR VOLUMES

NOTE:

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

BLOCK 34 EAST
CITY OF VAUGHAN

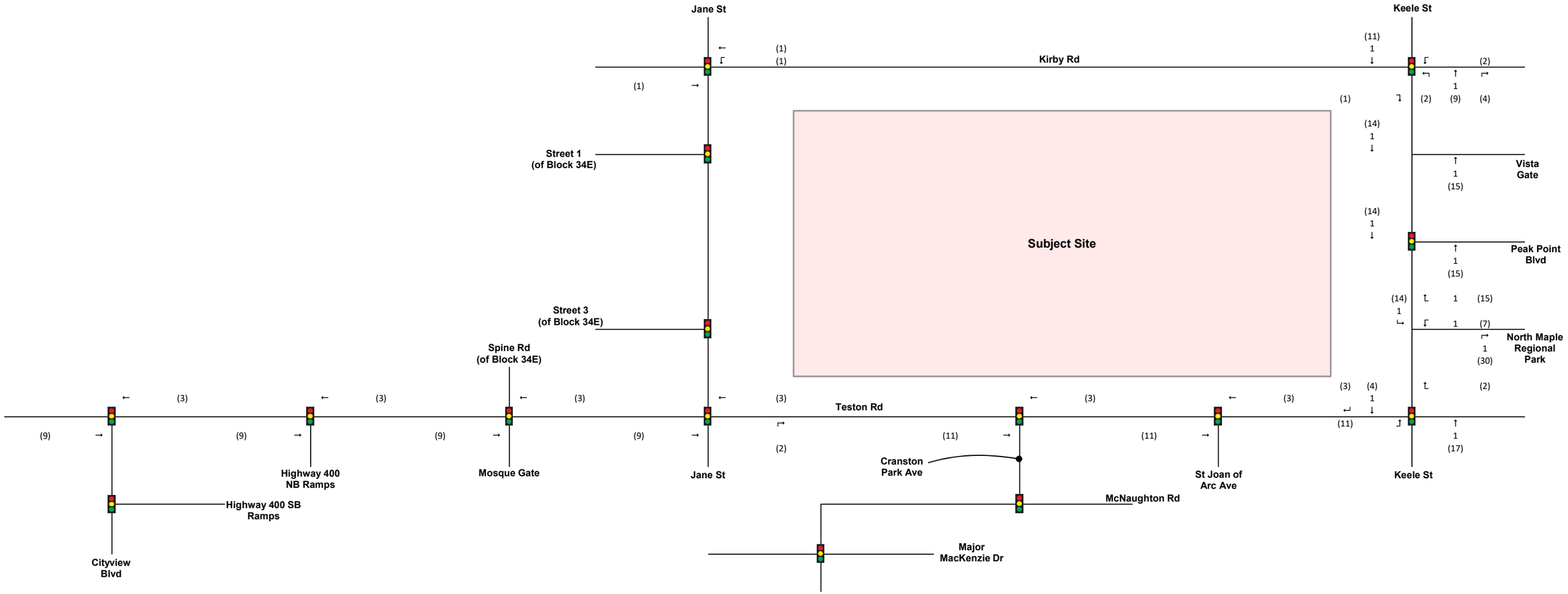
2031 TRIP ASSIGNMENT – PRESENT CONDITIONS

CROZIER CONSULTING ENGINEERS
211 YONGE STREET
SUITE 301
TORONTO, ON M5B 1M4
416-477-3392 T
WWW.CFCROZIER.CA

Drawn	Design	Project No.
T.D.S.	K.S.	1483–5885
Date	Check	Scale	Dwg.
2021/04/28	K.S.	N.T.S	FIG. 17A

North Maple Regional Park

Statistics:	ITE LUC 488 - Soccer Complex	In	Out	Total	In	Out	Total
4	ITE Distribution (Vehicle)	61%	39%	100%	66%	34%	100%
Soccer	ITE Trip Rates	0.60	0.39	0.99	10.84	5.59	16.43
Fields	ITE Vehicle Trips	2	2	4	44	22	66
	Auto Split	100%	100%		100%	100%	
	Avg Veh Occupancy	1.00	1.00		1.00	1.00	
	Conversion to Person Trips	2	2	4	44	22	66
	Interaction Trip Reduction	0	0	0	0	0	0
	Total External Person Trips	2	2	4	44	22	66
	Non-Auto Mode Split Reduction	0	0	0	0	0	0
	Proposed Park - External Auto Trips	**2**	**2**	**4**	**44**	**22**	**66**



NMRP
Block 27
F:\20009\Traffic\20009 Turn Diagram v22.xlsx

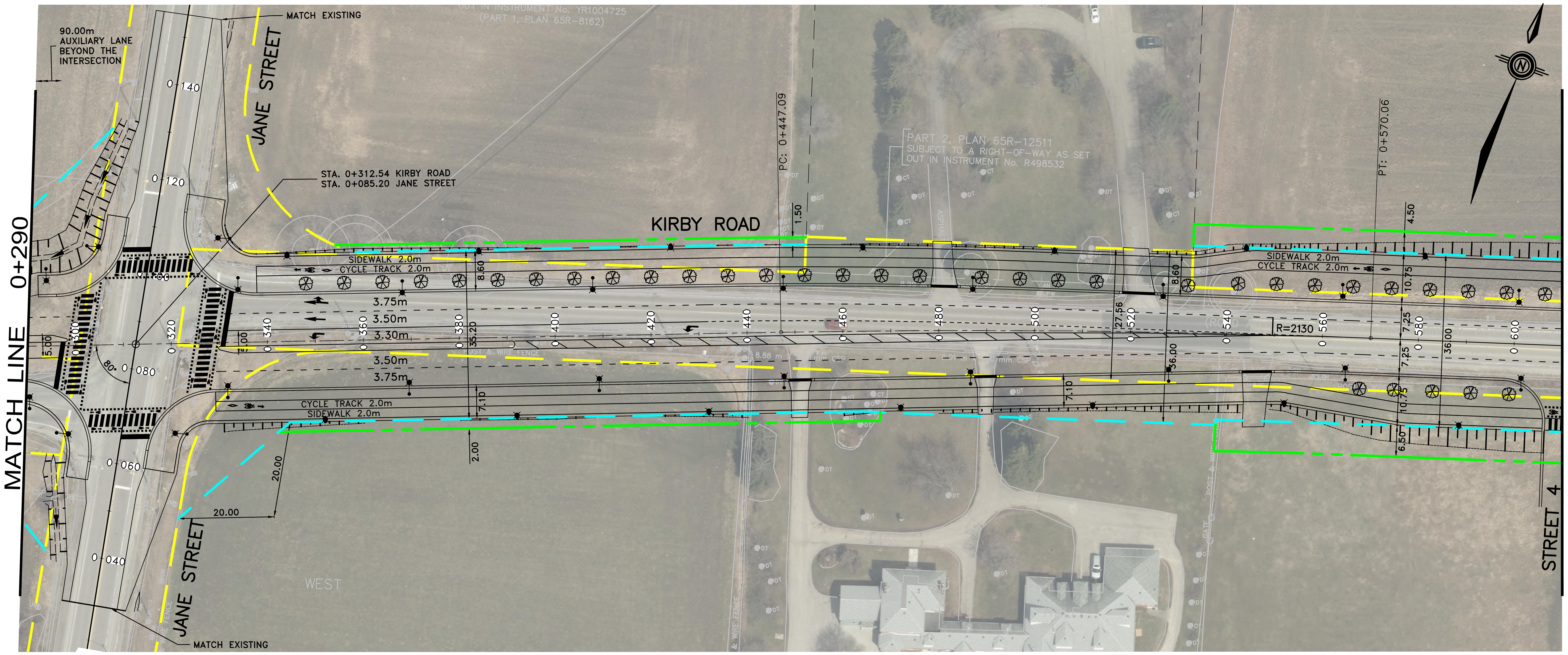
LEGEND
X AM Peak Hour Traffic
(X) PM Peak Hour Traffic

Signalized Intersection

*Not to Scale

APPENDIX D

Kirby Road Widening EA Design



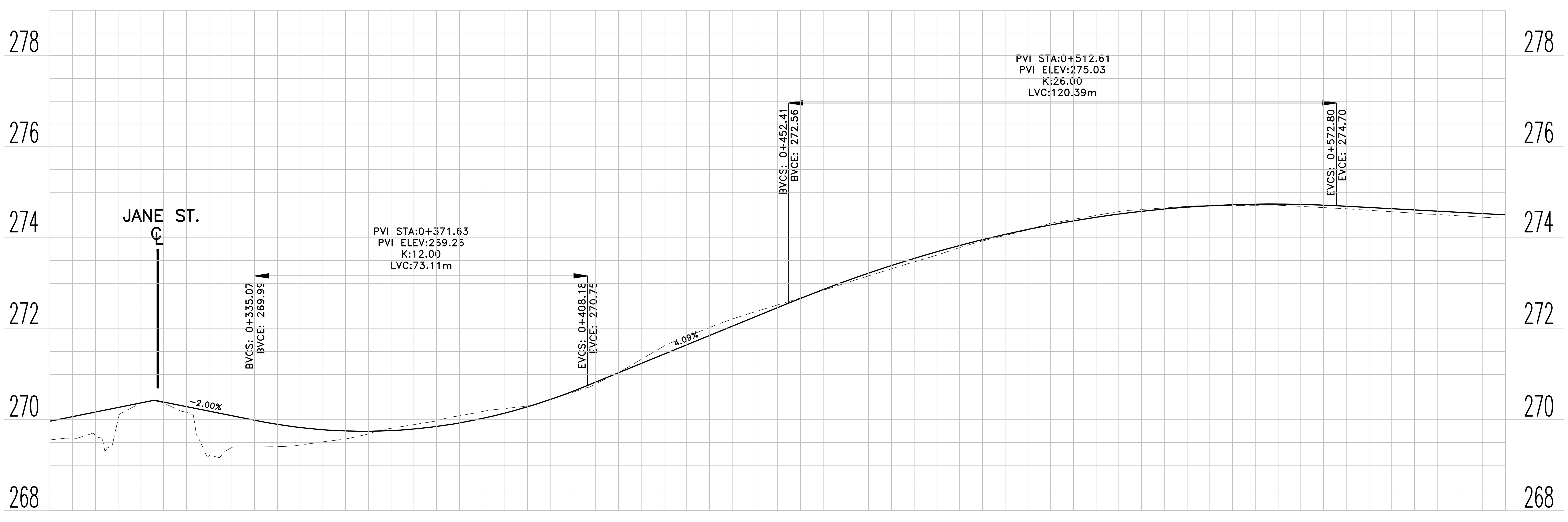
NOTES:

1. ALL DIMENSIONS ARE IN METRES AND / OR MILLIMETRES UNLESS OTHERWISE INDICATED.
2. LOCATIONS OF STREET 4, 5, 6, AND 8 TO BE CONFIRMED THROUGH SECONDARY PLAN.
3. STREET TREE PLANTING AND SPACING IS CONCEPTUAL AND TO BE CONFIRMED DURING DETAILED DESIGN STAGE.

LEGEND

- EXISTING ROW
- PROPOSED ROW
- TEMPORARY/PERMANENT EASEMENT
- CL PROPOSED ALIGNMENT
- PROPOSED RETAINING WALL
- GRADING LIMIT (FILL)
- GRADING LIMIT (CUT)
- EXISTING ROAD PROFILE
- PROPOSED ROAD PROFILE
- PROPOSED LIGHTING

PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
BVCE	BEGINNING OF VERTICAL CURVE ELEV
BVCS	BEGINNING OF VERTICAL CURVE STATION
ELEV.	ELEVATION
EVCE	END OF VERTICAL CURVE ELEVATION
EVCS	END OF VERTICAL CURVE STATION
LVC	LENGTH OF VERTICAL CURVE
PVI	POINT OF VERTICAL INTERSECTION
STA.	STATION



C/L CHAINAGE	0+300	0+320	0+340	0+360	0+380	0+400	0+420	0+440	0+460	0+480	0+500	0+520	0+540	0+560	0+580	0+600
C/L ELEVATION	270.17 269.647	270.29 270.163	269.90 269.415	269.75 269.691	269.93 270.088	270.45 270.446	271.24 271.328	272.05 272.213	272.86 272.843	273.55 273.470	274.07 274.051	274.45 274.490	274.67 274.688	274.74 274.714	274.66 274.603	274.56 274.481

NO.	DESCRIPTION	BY	DATE
8			
7			
6			
5			
4			
3			
2			
1			

UPDATES & REVISIONS

HDR

SCALES

HORIZONTAL: 0 5 25 50m

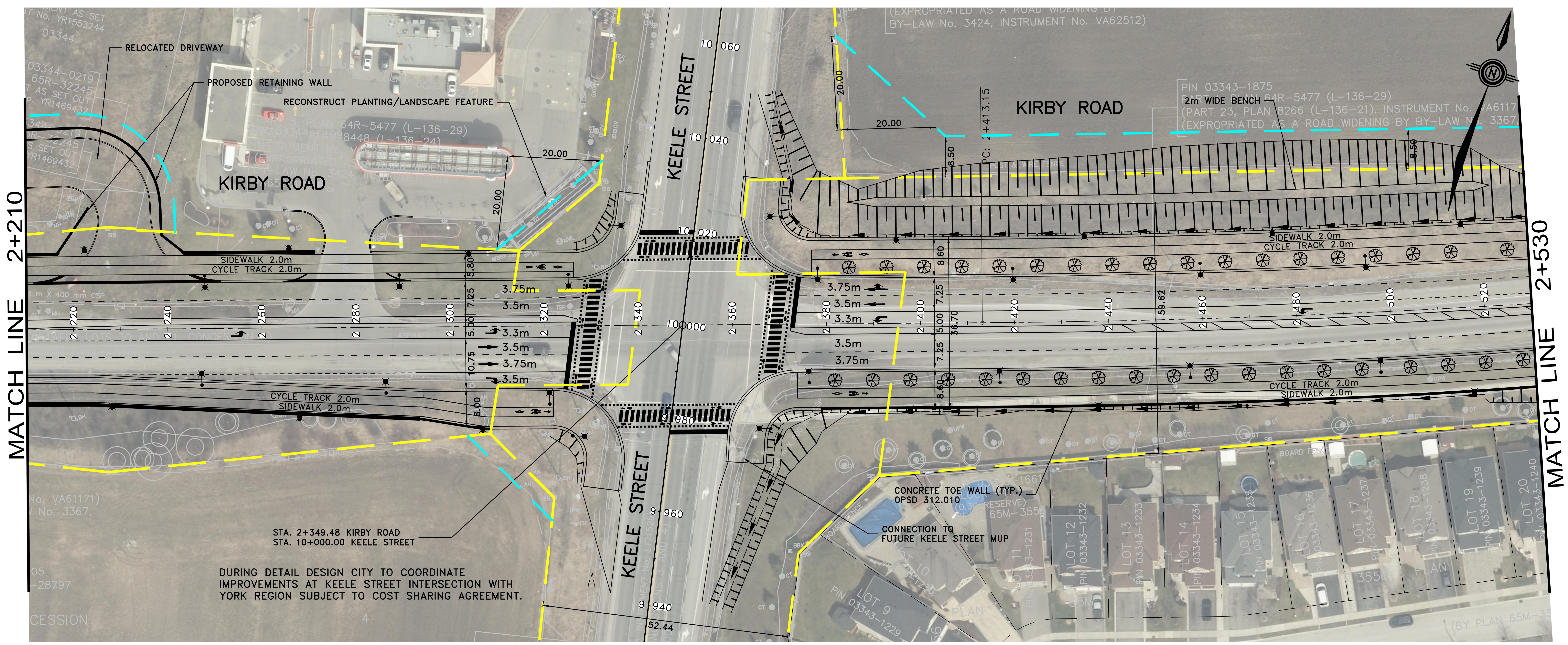
VERTICAL: 0 0.5 2.5 5m

KIRBY ROAD WIDENING ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE

VAUGHAN Infrastructure Delivery

DESIGNED & DRAWN BY: JF	CHECKED BY: YC	TENDER No. T18-___
SURVEYED BY: ___	APPROVED BY: ___	
SCALE: HORIZONTAL: 1:500 VERTICAL: 1:50	PROJ. No. 18-______	DWG. No. 2 of 15

Printed: May. 25, 2022



NOTES:

1. ALL DIMENSIONS ARE IN METRES AND / OR MILLIMETRES UNLESS OTHERWISE INDICATED.
2. LOCATIONS OF STREET 4, 5, 6, AND 8 TO BE CONFIRMED THROUGH SECONDARY PLAN.
3. STREET TREE PLANTING AND SPACING IS CONCEPTUAL AND TO BE CONFIRMED DURING DETAILED DESIGN STAGE.

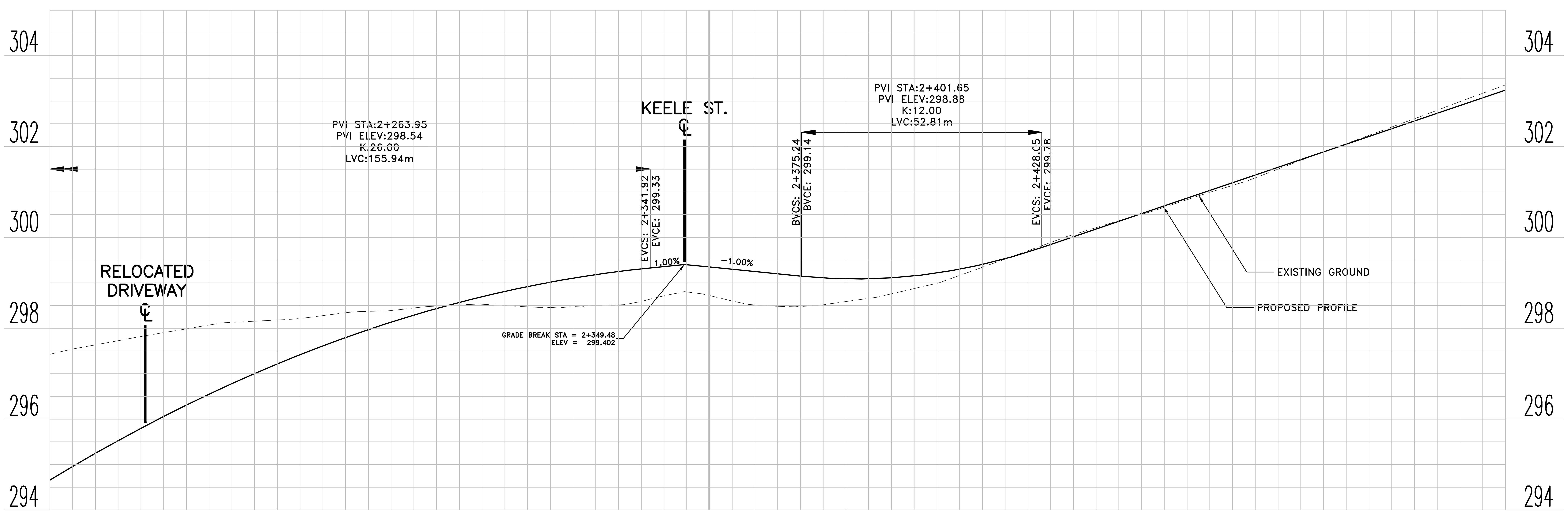
LEGEND

- EXISTING ROW
- PROPOSED ROW
- TEMPORARY/PERMANENT EASEMENT
- CL PROPOSED ALIGNMENT
- PROPOSED RETAINING WALL
- GRADING LIMIT (FILL)
- GRADING LIMIT (CUT)
- EXISTING ROAD PROFILE
- PROPOSED ROAD PROFILE
- PROPOSED LIGHTING

PC POINT OF CURVATURE
PT POINT OF TANGENCY
BVCE BEGINNING OF VERTICAL CURVE ELEV
BVCS BEGINNING OF VERTICAL CURVE STATION
ELEV. ELEVATION
EVCE END OF VERTICAL CURVE ELEVATION
EVCS END OF VERTICAL CURVE STATION
LVC LENGTH OF VERTICAL CURVE
PVI POINT OF VERTICAL INTERSECTION
STA. STATION

NO.	DESCRIPTION	BY	DATE
8			
7			
6			
5			
4			
3			
2			
1			

UPDATES & REVISIONS



C/L ELEVATION	295.25 / 297.634	296.31 / 297.986	297.21 / 298.182	297.97 / 298.370	298.57 / 298.513	299.01 / 298.457	299.31 / 298.592	299.30 / 298.600	299.11 / 298.516	299.15 / 298.873	299.53 / 299.523	300.18 / 300.214	300.86 / 300.830	301.54 / 301.503	302.22 / 302.246	302.90 / 302.987
C/L CHAINAGE	2+220	2+240	2+260	2+280	2+300	2+320	2+340	2+360	2+380	2+400	2+420	2+440	2+460	2+480	2+500	2+520

HDR

SCALES
HORIZONTAL: 0 5 25 50m
VERTICAL: 0 0.5 2.5 5m

KIRBY ROAD WIDENING
ENVIRONMENTAL ASSESSMENT
PLAN AND PROFILE

VAUGHAN
Infrastructure Delivery

DESIGNED & DRAWN BY: JF	CHECKED BY: YC	TENDER No. T18-____
SURVEYED BY: ___	APPROVED BY: ___	
SCALE: HORIZONTAL: 1:500 VERTICAL: 1:50	PROJ. No. 18-______	DWG. No. 8 of 15

Printed: May. 25, 2022

Acad File: C:\pwworking\canada01\d0106880\10195722-C01-1

APPENDIX E

TTS Data

Residential - AM Out

Mon Apr 10 2023 15:08:16 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2586ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 600-1000
and
2006 GTA zone of origin - gta06_orig In 2100, 2101
and
Trip purpose of origin - purp_orig In h, f

Trip 2016
Table:

Zone	Transit excl	Cycle	Auto driver	GO rail only	Joint GO ra	Auto passe	School bus	Walk	Total
25	0	0	0	0	44	0	0	0	44
37	0	0	37	0	0	0	0	0	37
38	0	0	0	36	0	0	0	0	36
47	0	0	28	0	0	0	0	0	28
51	88	0	101	0	0	29	0	0	218
52	0	0	0	14	0	0	0	0	14
53	0	0	49	0	0	0	0	0	49
55	0	0	0	25	0	0	0	0	25
56	0	0	0	35	0	0	0	0	35
57	0	0	0	28	0	0	0	0	28
58	0	0	0	12	0	0	0	0	12
62	0	0	20	0	0	0	0	0	20
63	0	0	0	10	0	0	0	0	10
65	0	0	23	85	0	0	0	0	108
67	46	0	0	0	0	0	0	0	46
68	34	0	0	0	6	0	0	0	40
69	43	0	0	0	0	0	0	0	43
74	0	0	24	0	0	0	0	0	24
145	0	0	20	0	0	0	0	0	20
156	0	0	19	0	0	0	0	0	19
157	0	0	31	0	0	0	0	0	31
158	0	0	31	0	0	0	0	0	31
177	0	0	30	0	0	0	0	0	30
180	0	0	12	0	0	0	0	0	12
184	0	0	11	0	0	0	0	0	11
196	0	0	28	0	0	0	0	0	28
201	0	0	10	0	0	0	0	0	10
218	0	0	29	0	0	0	0	0	29
221	0	0	26	0	0	0	0	0	26
230	0	0	14	0	0	0	0	0	14
232	0	0	22	0	0	0	0	0	22
290	0	0	6	0	0	0	0	0	6
353	0	0	13	0	0	0	0	0	13
358	0	0	87	0	0	20	0	0	107
369	0	0	36	0	0	0	0	0	36
374	0	0	35	0	0	0	0	0	35
376	0	0	10	0	0	0	0	0	10
388	0	0	161	0	0	43	0	0	204
391	144	0	35	0	0	27	0	0	206
392	0	0	48	0	0	0	0	0	48
393	18	0	29	0	0	0	0	0	47
394	0	0	57	0	0	0	0	0	57
395	0	0	17	0	0	0	0	0	17
402	0	0	51	0	0	0	0	0	51
406	0	0	28	0	0	0	0	0	28
415	0	0	29	0	0	0	0	0	29
422	0	0	23	0	0	0	0	0	23
430	0	0	15	0	0	0	0	0	15
443	0	0	50	0	0	0	0	0	50
444	0	0	14	0	0	14	0	0	28
452	0	0	65	0	0	0	0	0	65
454	0	0	10	0	0	0	0	0	10
459	0	0	24	0	0	24	0	0	48
463	0	0	19	0	0	0	0	0	19
472	0	0	36	0	0	0	0	0	36
473	0	0	25	0	0	0	0	0	25
476	0	0	68	0	0	0	0	0	68
492	0	0	39	0	0	0	0	0	39
526	0	0	18	0	0	0	0	0	18
530	0	0	14	0	0	0	0	0	14
571	0	0	26	0	0	0	0	0	26
578	0	0	14	0	0	0	0	0	14
2019	0	0	30	0	0	0	0	0	30
2022	0	0	10	0	0	0	0	0	10
2024	0	0	49	0	0	0	0	0	49
2030	0	0	23	0	0	0	0	0	23
2039	0	0	43	0	0	0	0	0	43
2040	0	0	72	0	0	0	0	0	72
2042	0	0	31	0	0	0	0	0	31
2045	0	0	38	0	0	0	0	0	38
2051	0	0	27	0	0	0	0	0	27
2053	0	0	20	0	0	31	0	0	51
2057	0	0	38	0	0	14	0	0	52
2060	0	0	22	0	0	0	0	0	22
2062	25	0	0	0	0	0	0	0	25
2063	0	0	47	0	0	0	0	0	47
2070	0	0	80	0	0	0	0	0	80
2071	0	0	53	0	0	0	0	0	53
2072	0	0	37	0	0	24	0	0	61
2077	0	0	26	0	0	0	0	0	26
2078	0	0	31	0	0	0	0	0	31
2079	0	0	19	0	0	0	0	0	19
2080	0	0	25	0	0	25	15	0	65
2081	0	0	117	0	0	0	0	27	144
2082	0	0	171	0	0	0	0	0	171
2083	0	0	59	0	0	0	0	0	59
2085	0	0	68	0	0	0	0	0	68

Residential - PM In

Mon Apr 10 2023 15:13:14 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2516ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 1300-1700
and
2006 GTA zone of destination - gta06_dest In 2100, 2101
and
Trip purpose of destination - purp_dest In h, f

Trip 2016
Table:

Zone	Transit excl	Cycle	Auto driver	GO rail only	Joint GO ra	Auto passe	School bus	Taxi passer	Walk	Total
25	0	0	0	0	36	0	0	0	0	36
37	0	0	37	0	0	0	0	0	0	37
38	19	0	0	0	0	0	0	0	0	19
45	20	0	0	0	0	0	0	0	0	20
47	0	0	28	0	0	0	0	0	0	28
51	88	0	101	0	0	0	0	0	0	189
52	0	0	0	14	0	0	0	0	0	14
54	0	0	0	11	0	0	0	0	0	11
55	0	0	29	11	0	0	0	0	0	40
57	0	0	0	26	0	0	0	0	0	26
58	0	0	0	12	0	0	0	0	0	12
62	0	0	20	0	0	0	0	0	0	20
63	0	0	0	10	0	0	0	0	0	10
65	0	0	23	54	0	0	0	0	0	77
67	46	0	0	0	0	0	0	0	0	46
68	34	0	0	0	0	0	0	0	0	34
69	13	0	0	0	0	0	0	0	0	13
74	0	0	24	0	0	0	0	0	0	24
89	0	0	17	0	0	0	0	0	0	17
145	0	0	20	0	0	0	0	0	0	20
156	0	0	25	0	0	0	0	0	0	25
180	0	0	12	0	0	0	0	0	0	12
202	0	0	14	0	0	0	0	0	0	14
221	0	0	26	0	0	0	0	0	0	26
232	0	0	22	0	0	0	0	0	0	22
272	0	0	22	0	0	0	0	0	0	22
353	0	0	13	0	0	0	0	0	0	13
358	0	0	20	0	0	20	0	0	0	40
388	0	0	109	0	0	43	0	0	0	152
391	79	0	0	0	0	0	0	0	0	79
392	0	0	48	0	0	0	0	0	0	48
393	0	0	18	0	0	0	0	0	0	18
394	0	0	57	0	0	0	0	0	0	57
397	0	0	0	0	0	0	0	14	0	14
402	0	0	51	0	0	0	0	0	0	51
405	0	0	32	0	0	0	0	0	0	32
415	0	0	29	0	0	0	0	0	0	29
422	0	0	23	0	0	0	0	0	0	23
428	0	0	23	0	0	0	0	0	0	23
430	0	0	15	0	0	0	0	0	0	15
443	0	0	51	0	0	0	0	0	0	51
444	0	0	14	0	0	0	0	0	0	14
452	0	0	14	0	0	0	0	0	0	14
462	0	0	6	0	0	0	0	0	0	6
463	0	0	19	0	0	0	0	0	0	19
466	0	0	5	0	0	5	0	0	0	10
470	0	0	14	0	0	0	0	0	0	14
473	0	0	25	0	0	0	0	0	0	25
476	0	0	46	0	0	0	0	0	0	46
486	0	0	11	0	0	0	0	0	0	11
492	0	0	39	0	0	0	0	0	0	39
530	0	0	14	0	0	0	0	0	0	14
578	0	0	14	0	0	0	0	0	0	14
2005	0	0	35	0	0	0	0	0	0	35
2019	0	0	30	0	0	0	0	0	0	30
2021	0	0	12	0	0	0	0	0	0	12
2024	0	0	49	0	0	0	0	0	0	49
2030	0	0	23	0	0	0	0	0	0	23
2044	0	0	20	0	0	0	0	0	0	20
2045	0	0	38	0	0	0	0	0	0	38
2051	0	0	27	0	0	0	0	0	0	27
2053	0	0	24	0	0	24	0	0	0	48
2057	0	0	38	0	0	14	0	0	0	52
2062	25	0	0	0	0	0	0	0	0	25
2068	0	0	39	0	0	23	0	0	0	62
2070	0	0	106	0	0	0	0	0	0	106
2071	0	0	30	0	0	0	0	0	0	30
2072	0	0	36	0	0	36	0	0	0	72
2073	0	0	30	0	0	0	0	0	0	30
2077	0	0	26	0	0	0	0	0	0	26
2078	0	0	0	0	0	38	0	0	0	38
2080	0	0	27	0	0	48	40	0	0	115
2081	0	0	114	0	0	0	0	0	58	172
2082	72	0	168	0	0	0	0	0	0	240
2083	0	0	32	0	0	0	0	0	0	32
2085	0	0	50	0	0	0	0	0	0	50
2090	0	0	13	0	0	0	0	0	0	13
2093	0	0	35	0	0	0	0	0	0	35
2094	0	0	25	0	0	0	0	0	0	25
2096	0	0	31	0	0	0	0	0	0	31
2097	0	0	20	0	0	0	0	0	0	20
2098	0	0	167	0	0	76	0	0	23	266
2099	0	0	73	0	0	0	0	0	0	73
2100	0	0	293	0	0	20	36	0	157	506
2101	0	29	335	0	0	121	0	0	498	983
2105	0	0	55	0	0	14	0	0	0	69
2106	0	0	92	0	0	20	0	0	0	112

2092	0	0	94	0	0	0	0	0	94
2093	0	0	57	0	0	0	0	0	57
2095	0	0	86	0	0	0	0	0	86
2096	0	0	31	0	0	0	0	0	31
2097	0	0	62	0	0	0	0	0	62
2098	0	0	222	0	0	312	0	0	534
2099	0	0	124	0	0	0	0	0	124
2100	0	0	361	0	0	128	36	65	590
2101	0	29	512	0	0	304	0	352	1197
2104	0	0	22	0	0	0	0	0	22
2105	0	0	158	0	0	50	0	0	208
2106	0	0	143	0	0	17	0	0	160
2107	0	0	145	0	0	0	42	0	187
2108	0	0	139	0	0	31	0	0	170
2109	0	0	95	0	0	0	0	0	95
2110	0	0	43	0	0	0	0	0	43
2111	0	0	42	0	0	0	0	0	42
2113	0	0	14	0	0	0	0	0	14
2114	0	0	67	0	0	0	0	0	67
2116	0	0	43	0	0	0	0	0	43
2118	0	0	31	0	0	0	0	0	31
2122	0	0	20	0	0	20	0	0	40
2124	25	0	67	0	0	0	34	0	126
2125	0	0	14	0	0	0	0	0	14
2127	0	0	0	0	0	35	0	0	35
2130	0	0	39	0	0	0	0	0	39
2131	0	0	29	0	0	0	0	0	29
2132	0	0	21	0	0	0	0	0	21
2133	0	0	63	0	0	28	0	0	91
2139	0	0	111	0	0	0	0	0	111
2207	0	0	21	0	0	0	0	0	21
2213	0	0	55	0	0	0	0	0	55
2214	0	0	31	0	0	31	0	0	62
2224	0	0	28	0	0	0	0	0	28
2237	0	0	16	0	0	0	0	0	16
2251	0	0	0	0	0	0	61	0	61
2268	0	0	33	0	0	0	0	0	33
2272	0	0	33	0	0	0	0	0	33
2353	0	0	25	0	0	25	0	0	50
2358	0	0	27	0	0	0	0	0	27
2359	0	0	32	0	0	0	0	0	32
2369	0	0	30	0	0	0	0	0	30
2376	0	0	14	0	0	0	0	0	14
2378	0	0	42	0	0	0	0	0	42
2386	0	0	26	0	0	0	0	0	26
2390	0	0	64	0	0	0	0	0	64
2395	0	0	34	0	0	0	0	0	34
2405	0	0	16	0	0	0	0	0	16
2441	0	0	111	0	0	0	0	0	111
2454	0	0	18	0	0	0	0	0	18
2551	0	0	20	0	0	0	47	0	67
2559	0	0	78	0	0	0	0	0	78
2611	0	0	19	0	0	0	0	0	19
2659	0	0	30	0	0	0	0	0	30
2666	0	0	30	0	0	0	0	0	30
2667	30	0	0	0	0	31	0	0	61
2672	0	0	55	0	0	19	0	0	74
3331	0	0	18	0	0	0	0	0	18
3375	0	0	33	0	0	0	0	0	33
3383	0	0	31	0	0	0	0	0	31
3508	0	0	17	0	0	0	0	0	17
3605	0	0	55	0	0	0	0	0	55
3609	0	0	47	0	0	0	0	0	47
3612	0	0	19	0	0	0	0	0	19
3633	0	0	69	0	0	0	0	0	69
3646	0	0	20	0	0	0	0	0	20
3696	0	0	31	0	0	0	0	0	31
3698	0	0	16	0	0	0	0	0	16
3704	0	0	27	0	0	0	0	0	27
3706	0	0	27	0	0	27	0	0	54
3707	0	0	27	0	0	0	0	0	27
3709	0	0	11	0	0	0	0	0	11
3711	0	0	31	0	0	0	0	0	31
3721	0	0	27	0	0	0	0	0	27
3816	0	0	62	0	0	0	0	0	62
3821	0	0	40	0	0	0	0	0	40
3835	0	0	18	0	0	0	0	0	18
3857	0	0	33	0	0	0	0	0	33
3877	0	0	31	0	0	0	0	0	31
4023	0	0	33	0	0	0	0	0	33
4024	0	0	22	0	0	0	0	0	22
4027	0	0	18	0	0	0	0	0	18
4185	0	0	18	0	0	0	0	0	18
4186	0	0	0	0	0	0	0	21	21
5198	0	0	32	0	0	0	0	0	32
Total	453	29	7359	245	50	1309	235	465	10145
	4%	0%	73%	2%	0%	13%	2%	5%	

2107	0	0	10	0	0	0	42	0	52
2108	0	0	149	0	0	31	0	0	180
2109	0	0	40	0	0	0	0	0	40
2111	0	0	56	0	0	0	0	0	56
2113	0	0	14	0	0	0	0	0	14
2114	0	0	67	0	0	0	0	0	67
2116	0	0	43	0	0	0	0	0	43
2118	0	0	31	0	0	0	0	0	31
2122	0	0	20	0	0	20	0	0	40
2124	25	0	67	0	0	0	20	0	112
2127	0	0	35	0	0	35	0	0	70
2131	0	0	29	0	0	0	0	0	29
2132	0	0	28	0	0	0	0	0	28
2133	0	0	35	0	0	0	0	0	35
2134	0	0	37	0	0	37	0	0	74
2139	0	0	111	0	0	0	0	0	111
2207	0	0	26	0	0	52	0	0	78
2211	0	0	22	0	0	22	0	0	44
2213	0	0	55	0	0	0	0	0	55
2214	0	0	31	0	0	31	0	0	62
2224	0	0	28	0	0	0	0	0	28
2231	0	0	30	0	0	0	0	0	30
2237	0	0	16	0	0	0	0	0	16
2251	0	0	0	0	0	0	61	0	61
2268	0	0	33	0	0	0	0	0	33
2358	0	0	27	0	0	0	0	0	27
2359	0	0	32	0	0	0	0	0	32
2372	0	0	18	0	0	0	0	0	18
2376	0	0	14	0	0	0	0	0	14
2378	0	0	42	0	0	0	0	0	42
2386	0	0	26	0	0	0	0	0	26
2390	0	0	25	0	0	0	0	0	25
2405	0	0	16	0	0	0	0	0	16
2441	0	0	111	0	0	0	0	0	111
2551	0	0	20	0	0	0	47	0	67
2559	0	0	20	0	0	0	0	0	20
2611	0	0	27	0	0	9	0	0	36
2659	0	0	30	0	0	0	0	0	30
2666	0	0	30	0	0	0	0	0	30
2667	30	0	8	0	0	31	0	0	69
2672	0	0	55	0	0	19	0	0	74
3191	0	0	8	0	0	8	0	0	16
3335	0	0	10	0	0	0	0	0	10
3375	0	0	33	0	0	0	0	0	33
3383	0	0	31	0	0	0	0	0	31
3425	0	0	25	0	0	25	0	0	50
3505	0	0	31	0	0	0	0	0	31
3508	0	0	17	0	0	0	0	0	17
3510	0	0	20	0	0	0	0	0	20
3605	0	0	42	0	0	0	0	0	42
3609	0	0	22	0	0	0	0	0	22
3633	0	0	69	0	0	0	0	0	69
3646	0	0	20	0	0	0	0	0	20
3660	0	0	22	0	0	0	0	0	22
3696	0	0	31	0	0	0	0	0	31
3698	0	0	16	0	0	0	0	0	16
3702	0	0	33	0	0	0	0	0	33
3721	0	0	27	0	0	0	0	0	27
3857	0	0	33	0	0	0	0	0	33
3877	0	0	31	0	0	0	0	0	31
4024	0	0	22	0	0	0	0	0	22
4186	0	0	0	0	0	0	0	21	21
5198	0	0	32	0	0	0	0	0	32
Total	451	29	5312	138	36	822	246	14	757	7805
	6%	0%	68%	2%	0%	11%	3%	0%	10%	

Combined Mode Split

Transit	Driver	Passenger	Taxi	School bus	Walk	Cycle
1323	12671	2131	14	481	1222	58
7%	71%	12%	0%	3%	7%	0%

Retail - PM In

Mon Apr 10 2023 15:23:40 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2499ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 1300-1700
and
2006 GTA zone of destination - gta06_dest In 2100, 2101, 2078, 2105, 2106
and
Trip purpose of destination - purp_dest In m

Trip 2016
Table:

Zone	Auto driver	Auto passenger	Total
570	12	0	12
2003	28	0	28
2053	11	0	11
2073	32	13	45
2078	35	0	35
2080	7	0	7
2081	14	0	14
2083	27	0	27
2095	43	0	43
2098	27	0	27
2099	10	0	10
2100	75	17	92
2101	149	20	169
2107	15	0	15
2108	40	0	40
2119	22	0	22
2129	40	0	40
2135	17	0	17
2211	43	0	43
2236	14	0	14
2257	18	18	36
2399	11	0	11
2670	10	0	10
3609	14	0	14
4041	15	0	15
Total	729	68	797
	91%	9%	

Combined

Driver	Passenger
88%	12%

Retail - PM Out

Mon Apr 10 2023 15:24:41 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 23

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 1300-1700
and
2006 GTA zone of origin - gta06_orig In 2100, 2101, 2078, 2105, 2106
and
Trip purpose of origin - purp_orig In m

Trip 2016
Table:

Zone	Auto driver	Auto passenger	Total
2022	0	24	24
2053	23	0	23
2057	7	0	7
2072	27	0	27
2073	0	13	13
2078	18	0	18
2097	28	0	28
2098	17	17	34
2099	10	0	10
2100	62	17	79
2101	105	20	125
2104	72	0	72
2106	12	0	12
2107	47	0	47
2108	39	0	39
2127	35	0	35
2129	25	0	25
2133	27	0	27
2209	18	0	18
2214	17	0	17
2215	14	0	14
2257	18	18	36
2670	18	0	18
2672	14	0	14
4041	15	0	15
8564	7	7	14
Total	675	116	791
	85%	15%	

Work - AM In

Mon Apr 10 2023 15:29:04 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2568ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 600-1000
and
2006 GTA zone of destination - gta06_dest In 2100, 2101, 2078
and
Trip purpose of destination - purp_dest In w

Trip 2016
Table:

Zone	Auto driver	Auto passenger	Walk	Total
153	0	31	0	31
263	12	0	0	12
278	37	0	0	37
428	23	0	0	23
460	27	0	0	27
2014	9	0	0	9
2017	16	0	0	16
2028	38	0	0	38
2055	39	0	0	39
2057	45	0	0	45
2060	20	0	0	20
2072	22	0	0	22
2078	0	0	24	24
2098	53	0	0	53
2100	11	0	0	11
2101	63	0	17	80
2105	16	33	0	49
2107	28	0	0	28
2108	13	0	0	13
2110	18	0	0	18
2120	22	0	0	22
2134	15	0	0	15
2141	46	0	0	46
2206	16	0	0	16
2210	13	0	0	13
2232	36	0	0	36
2244	18	0	0	18
2248	14	0	0	14
2419	28	0	0	28
2560	13	0	0	13
2659	26	0	0	26
2669	22	0	0	22
2671	15	0	0	15
2783	12	0	0	12
3197	50	0	0	50
3351	19	0	0	19
3676	17	0	0	17
4108	34	0	0	34
8523	16	0	0	16
8529	24	0	0	24
8563	14	0	0	14
Total	960	64	41	1065
	90%	6%	4%	

Work - PM Out

Mon Apr 10 2023 15:30:53 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2423m

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 1300-1700
and
2006 GTA zone of origin - gta06_orig In 2100, 2101, 2078
and
Trip purpose of origin - purp_orig In w

Trip 2016
Table:

Zone	Auto driver	Auto passenger	Walk	Total
153	0	31	0	31
173	21	0	0	21
259	12	0	0	12
278	37	0	0	37
428	23	0	0	23
601	13	0	0	13
2014	9	0	0	9
2017	16	0	0	16
2028	38	0	0	38
2036	26	0	0	26
2055	39	0	0	39
2057	45	0	0	45
2060	20	0	0	20
2071	22	0	0	22
2078	0	0	24	24
2098	53	53	0	106
2100	11	0	44	55
2101	78	0	17	95
2105	38	0	0	38
2106	18	0	0	18
2107	28	0	0	28
2108	31	0	0	31
2110	18	0	18	36
2120	22	0	0	22
2132	13	0	0	13
2134	15	0	0	15
2141	46	0	0	46
2206	16	0	0	16
2213	15	0	0	15
2232	36	0	0	36
2244	18	0	0	18
2248	14	0	0	14
2419	28	0	0	28
2560	13	0	0	13
2659	26	0	0	26
2671	15	0	0	15
2783	12	0	0	12
3676	17	0	0	17
4108	34	0	0	34
7366	20	0	0	20
8523	16	0	0	16
8529	24	0	0	24
8563	14	0	0	14
Total	1010	84	103	1197
	84%	7%	9%	

Combined

Driver	Passenger	Walk
87%	7%	6%

School

Thu Sep 21 2023 16:23:44 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 3441ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 500-1200
and
2006 GTA zone of destination - gta06_dest In 2100, 2101
and
Trip purpose of destination - purp_dest In S

Trip 2016
Table:

Zone	t excluding	Cycle	Auto driver	to passeng	School bus	axi passeng	Walk	
Zone	Transit	Cycle	Driver	Passenger	School Bus	Taxi	Walk	Sum
406	0	0	0	6	0	0	0	6
2055	0	0	0	14	54	0	0	68
2078	0	0	0	154	0	0	43	197
2080	0	0	0	0	55	0	0	55
2098	22	0	0	71	0	0	0	93
2099	0	0	0	19	0	0	19	38
2100	0	0	18	207	0	0	31	256
2101	0	29	0	174	36	0	324	563
2105	0	0	0	33	29	0	0	62
2107	0	0	0	77	0	32	0	109
2108	0	0	0	16	32	0	0	48
2125	0	0	0	0	0	7	0	7
2126	0	0	0	0	0	14	0	14
2132	0	0	0	0	13	0	0	13
2135	0	0	0	7	0	0	0	7
2213	0	0	0	55	0	0	0	55
Sum	22	29	18	833	219	53	417	1591
Internal	0	29	18	381	36	0	355	819
External	22	0	0	452	183	53	62	772
Internal	0%	4%	2%	47%	4%	0%	43%	100%
External	3%	0%	0%	59%	24%	7%	8%	100%

Combined

	Transit	Cycle	Driver	Passenger	School Bus	Taxi	Walk	Sum
Internal	0	58	36	546	72	0	950	1662
External	22	0	0	772	385	74	208	1461
								53%
Internal	0%	3%	2%	33%	4%	0%	57%	100%
External	2%	0%	0%	53%	26%	5%	14%	100%
Internal	0%	61%	2%	33%	4%			100%
External	2%	14%	0%	58%	26%			100%

School

Thu Sep 21 2023 16:28:16 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2465ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
Start time of trip - start_time In 1200-2400
and
2006 GTA zone of origin - gta06_orig In 2100, 2101
and
Trip purpose of origin - purp_orig In S

Trip 2016
Table:

Zone	t excluding	Cycle	Auto driver	to passeng	School bus	axi passeng	Walk	
Zone	Transit	Cycle	Driver	Passenger	School Bus	Taxi	Walk	Sum
290	0	0	0	6	0	0	0	6
2055	0	0	0	0	54	0	0	54
2078	0	0	0	67	0	0	105	172
2080	0	0	0	0	55	0	0	55
2098	0	0	0	47	0	0	22	69
2099	0	0	0	19	0	0	19	38
2100	0	0	18	50	0	0	187	255
2101	0	29	0	115	36	0	408	588
2105	0	0	0	0	29	0	0	29
2107	0	0	0	91	32	0	0	123
2108	0	0	0	28	19	0	0	47
2125	0	0	0	0	0	7	0	7
2126	0	0	0	0	0	14	0	14
2132	0	0	0	0	13	0	0	13
2135	0	0	0	7	0	0	0	7
2213	0	0	0	55	0	0	0	55
Sum	0	29	18	485	238	21	741	1532
Internal	0	29	18	165	36	0	595	843
External	0	0	0	320	202	21	146	689
Internal	0%	3%	2%	20%	4%	0%	71%	100%
External	0%	0%	0%	46%	29%	3%	21%	100%

Internal Trips (2 km or shorter, for any purpose)

Out

Mon Apr 10 2023 15:37:02 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2443ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA zone of origin - gta06_orig In 2100-2101
and
Manhattan distance of trip in metre - trip_man_m In 0-2000

Trip 2016
Table:

Zone	Cycle	Auto drive	Auto passe	School bus	Walk	Total
2073	0	23	23	0	0	46
2078	0	93	67	0	85	245
2079	0	0	72	0	0	72
2098	0	423	101	0	0	524
2099	34	169	10	0	19	232
2100	0	936	191	36	322	1485
2101	57	1438	588	36	819	2938
2105	0	234	96	0	33	363
2106	0	149	54	0	0	203
2107	0	185	65	0	0	250
2108	0	80	15	0	0	95
Total	91	3730	1282	72	1278	6453
	1%	58%	20%	1%	20%	

In

Mon Apr 10 2023 15:42:11 GMT-0400 (Eastern Daylight Saving Time) - Run Time

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
2006 GTA zone of destination - gta06_dest In 2100-2101
and
Manhattan distance of trip in metre - trip_man_m In 0-2000

Trip 2016
Table:

Zone	Cycle	Auto drive	Auto passe	School bus	Walk	Total
2073	0	23	23	0	0	46
2078	0	99	284	0	24	407
2079	0	0	72	0	0	72
2098	0	566	107	0	0	673
2099	34	134	10	0	19	197
2100	0	888	276	36	236	1436
2101	57	1487	502	36	905	2987
2105	0	279	162	0	0	441
2106	0	108	37	0	0	145
2107	0	98	51	0	0	149
2108	0	72	0	0	0	72
Total	91	3754	1524	72	1184	6625
	1%	57%	23%	1%	18%	

Combined

Cycle	Driver	Passenger	School bus	Walk
182	7484	2806		2462
1.4%	57.9%	21.7%	0.0%	19.0%

Internal Trip Characteristics
Internal Trip Proportions
Thu Apr 06 2023 19:22:21 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2618ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Manhattan distance of trip in metre - trip_man_m
Column: Trip purpose of destination - purp_dest

RowG:(0-2000)(2001-999999999999)
ColG:
TblG:

Filters:
2006 GTA zone of destination - gta06_dest In 2100, 2101

Trip 2016
Table:

	Daycare	Facilitate p	Home	Market/Sh	Other	Subsequen	School	Work	
<= 2	138	1130	3061	343	730	31	952	240	6625
> 2	313	805	12135	555	1448	116	639	962	16973
	451	1935	15196	898	2178	147	1591	1202	23598
									28%

Thu Apr 06 2023 19:23:24 GMT-0400 (Eastern Daylight Saving Time) - Run Time: 2512ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Manhattan distance of trip in metre - trip_man_m
Column: Trip purpose of origin - purp_orig

RowG:(0-2000)(2001-999999999999)
ColG:
TblG:

Filters:
2006 GTA zone of origin - gta06_orig In 2100, 2101

Trip 2016
Table:

	Daycare	Facilitate p	Home	Market/Sh	Other		School	Work	
<=2	140	730	3278	377	722		908	299	6454
>2	311	1204	12081	521	1608		683	1051	17459
	451	1934	15359	898	2330	0	1591	1350	23913
									27%

	Internal:	External:
From Home:	21%	79%
To Home	20%	80%
From Non-Home	37%	63%
To Non-Home	42%	42%

APPENDIX F

Detailed Trip Generation Calculations

Proposed Development Statistics

Land Use #1 - Proposed
Residential (Mid-Rise) 2,809 Units
ITE LUC 221 - Multifamily Housing (Mid-Rise)
Weekday, __ Peak Hour of Adjacent Street Traffic; General Urban/Suburban; Not Close to Rail Transit

Average Rates
ITE Person Trips

ITE LUC 221 - Multifamily Housing (Mid-Rise)	In	Out	Total	In	Out	Total
ITE Distribution (Person)	23%	77%	100%	59%	41%	100%
ITE Trip Rates	0.11	0.37	0.48	0.31	0.22	0.53
ITE Person Trips	310	1038	1348	879	610	1489
Auto Split	100%	100%		100%	100%	
Avg Veh Occupancy	1.00	1.00		1.00	1.00	
Conversion to Person Trips	310	1038	1348	879	610	1489
Interaction Trip Reduction	-63	-206	-269	-229	-139	-368
Total External Person Trips	247	832	1079	650	471	1121
Non-Auto Mode Split Reduction	-72	-242	-314	-189	-137	-326
Proposed Residential - External Auto Trips	**175**	**590**	**765**	**461**	**334**	**795**

Land Use #2 - Proposed
Residential (Low-Rise) 1,228 Units
ITE LUC 220 - Multifamily Housing (Low-Rise)
Weekday, __ Peak Hour of Adjacent Street Traffic; General Urban/Suburban; Not Close to Rail Transit
(low-rise apartments)

Average Rates
ITE Person Trips

ITE LUC 220 - Multifamily Housing (Low-Rise)	In	Out	Total	In	Out	Total
ITE Distribution (Person)	22%	78%	100%	63%	37%	100%
ITE Trip Rates	0.08	0.30	0.38	0.34	0.20	0.54
ITE Person Trips	103	364	467	418	245	663
Auto Split	100%	100%		100%	100%	
Avg Veh Occupancy	1.00	1.00		1.00	1.00	
Conversion to Person Trips	103	364	467	418	245	663
Interaction Trip Reduction	-21	-72	-93	-109	-56	-165
Total External Person Trips	82	292	374	309	189	498
Non-Auto Mode Split Reduction	-24	-85	-109	-90	-55	-145
Proposed Residential - External Auto Trips	**58**	**207**	**265**	**219**	**134**	**353**

Land Use #3 - Proposed
Residential (Attached) 1,925 Units
ITE LUC 215 - Single-Family Attached Housing
Weekday, __ Peak Hour of Adjacent Street Traffic; General Urban/Suburban
(townhouses and semi-detached)

Average Rates
ITE Vehicle Trips

ITE LUC 215 - Single-Family Attached Housing	In	Out	Total	In	Out	Total
ITE Distribution (Vehicle)	25%	75%	100%	59%	41%	100%
ITE Trip Rates	0.12	0.36	0.48	0.34	0.23	0.57
Baseline Auto Trips	231	693	924	647	450	1097
Auto Split	89%	97%		96%	95%	
Avg Veh Occupancy	1.13	1.09		1.15	1.21	
Conversion to Person Trips	293	779	1072	775	573	1348
Interaction Trip Reduction	-59	-155	-214	-202	-131	-333
Total External Person Trips	234	624	858	573	442	1015
Non-Auto Mode Split Reduction	-68	-182	-250	-167	-129	-296
Proposed Residential - External Auto Trips	**166**	**442**	**608**	**406**	**313**	**719**

Land Use #3 - Proposed
Residential (Detached) 1,105 Units
ITE LUC 210 - Single-Family Detached Housing
Weekday, __ Peak Hour of Adjacent Street Traffic; General Urban/Suburban

Average Rates
ITE Vehicle Trips

ITE LUC 210 - Single-Family Detached Housing	In	Out	Total	In	Out	Total
ITE Distribution (Vehicle)	25%	75%	100%	63%	37%	100%
ITE Trip Rates	0.18	0.53	0.70	0.59	0.35	0.94
Baseline Auto Trips	194	580	774	655	384	1039
Auto Split	89%	97%		96%	95%	
Avg Veh Occupancy	1.13	1.09		1.15	1.21	
Conversion to Person Trips	246	652	898	785	489	1274
Interaction Trip Reduction	-50	-130	-180	-205	-112	-317
Total External Person Trips	196	522	718	580	377	957
Non-Auto Mode Split Reduction	-57	-152	-209	-169	-110	-279
Proposed Residential - External Auto Trips	**139**	**370**	**509**	**411**	**267**	**678**

Land Use #4 - Proposed
Retail 513,000 ft²
ITE LUC 821 - Shopping Plaza (40-150k)
Weekday, Peak Hour of Adjacent Street Traffic; General Urban/Suburban

A typical grocery store is about 65,000 ft2, so 2 grocery stores is about 25% of the retail here. Using a weighted average of 821 with and without a grocery store gives the following:

25%

	AM	PM
821 with grocery:	3.53	9.03
821 without grocery:	1.73	5.19
Weighted Trip Rate:	2.19	6.16

Average Rates
ITE Vehicle Trips

ITE LUC 821 - Shopping Plaza (40-150k)	In	Out	Total	In	Out	Total
ITE Distribution (Vehicle)	62%	38%	100%	49%	51%	100%
ITE Trip Rates	1.36	0.83	2.19	3.02	3.14	6.16
Baseline Auto Trips	695	426	1121	1549	1613	3162
Auto Split	100%	100%		100%	100%	
Avg Veh Occupancy	1.17	1.16		1.21	1.18	
Conversion to Person Trips	813	494	1307	1874	1903	3777
Interaction Trip Reduction	-355	-355	-710	-561	-604	-1165
Total External Person Trips	458	139	597	1313	1299	2612
Non-Auto Mode Split Reduction	-53	-16	-69	-152	-151	-303
Proposed Retail - External Auto Trips	**405**	**123**	**528**	**1161**	**1148**	**2309**
Passby Percentage	0%	0%		0%	0%	
Passby Trips	0	0	0	0	0	0
Proposed Retail - Primary External Auto Trips	**405**	**123**	**528**	**1161**	**1148**	**2309**

Land Use #5 - Proposed

Office — 80,000 ft²

ITE LUC 712 - Small Office Building

Weekday, __ Peak Hour of Adjacent Street Traffic; General Urban/Suburban

Office + School Employees

School Employees: 286 — 70%

Average Rates

ITE Vehicle Trips

ITE LUC 712 - Small Office Building	In	Out	Total	In	Out	Total
ITE Distribution (Vehicle)	82%	18%	100%	34%	66%	100%
ITE Trip Rates	1.37	0.30	1.67	0.73	1.43	2.16
Baseline Auto Trips	110	24	134	59	114	173
Auto Split	97%	90%		96%	98%	
Avg Veh Occupancy	1.06	1.06		1.11	1.07	
Conversion to Person Trips	406	28	434	68	410	478
Interaction Trip Reduction	-344	-20	-364	-58	-304	-362
Total External Person Trips	62	8	70	10	106	116
Non-Auto Mode Split Reduction	-8	-1	-9	-1	-14	-15
Proposed Office - External Auto Trips	**54**	**7**	**61**	**9**	**92**	**101**
Passby Percentage	0%	0%		0%	0%	
Passby Trips	0	0	0	0	0	0
Proposed Office - Primary External Auto Trips	**54**	**7**	**61**	**9**	**92**	**101**

Land Use #6 - Proposed

School (students) — 4,000 Students

Schools (students only) - First Principles

See "School Tab"

Proxy

ITE Vehicle Trips

Schools (students only) - First Principles	In	Out	Total	In	Out	Total
All Modes Trips	4862	862	5724	344	1944	2288
Auto Trips	908	862	1770	344	362	706
External						
All Modes Trips	2395	524	2919	209	957	1166
Auto Trips	524	524	1048	209	209	418
Internal						
All Modes Trips	2467	338	2805	135	987	1122
Auto Trips	384	338	722	135	153	288
Non-PUDO Auto Trips	46	0	46	0	18	18
Proposed School - Primary External Auto Trips	**0**	**0**	**0**	**0**	**0**	**0**

Land Use #7 - To Remove

Retail — 0 ft²

ITE LUC

Weekday, __ Peak Hour of Adjacent Street Traffic; General Urban/Suburban

Average Rates

ITE Vehicle Trips

ITE LUC	In	Out	Total	In	Out	Total
ITE Distribution (Vehicle)	60%	40%	100%	50%	50%	100%
ITE Trip Rates	1.42	0.94	2.36	3.30	3.30	6.59
Baseline Auto Trips	0	0	0	0	0	0
Auto Split	95%	95%		95%	95%	
Avg Veh Occupancy	1.17	1.16		1.21	1.18	
Conversion to Person Trips	0	0	0	0	0	0
Interaction Trip Reduction	0	0	0	0	0	0
Total External Person Trips	0	0	0	0	0	0
Non-Auto Mode Split Reduction	0	0	0	0	0	0
Existing Retail - External Auto Trips	**0**	**0**	**0**	**0**	**0**	**0**
Passby Percentage	0%	0%		0%	0%	
Passby Trips	0	0	0	0	0	0
Existing Retail - Primary External Auto Trips	**0**	**0**	**0**	**0**	**0**	**0**

Land Use #8

Land Use — ft²

ITE LUC

Weekday, __ Peak Hour of Adjacent Street Traffic; General Urban/Suburban

Average Rates

ITE Vehicle Trips

ITE LUC	In	Out	Total	In	Out	Total
ITE Distribution (Vehicle)	60%	40%	100%	50%	50%	100%
ITE Trip Rates	1.42	0.94	2.36	3.30	3.30	6.59
Baseline Auto Trips	0	0	0	0	0	0
Auto Split	95%	95%		95%	95%	
Avg Veh Occupancy	1.17	1.16		1.21	1.18	
Conversion to Person Trips	0	0	0	0	0	0
Interaction Trip Reduction	0	0	0	0	0	0
Total External Person Trips	0	0	0	0	0	0
Non-Auto Mode Split Reduction	0	0	0	0	0	0
Existing Retail - External Auto Trips	**0**	**0**	**0**	**0**	**0**	**0**
Passby Percentage	0%	0%		0%	0%	
Passby Trips	0	0	0	0	0	0
Existing Retail - Primary External Auto Trips	**0**	**0**	**0**	**0**	**0**	**0**

Total Site Trip Generation By Mode

External

Total Residential Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	759	2270	3029	2112	1479	3591
Auto Driver	538	1609	2147	1497	1048	2545
Auto Passenger	111	331	442	308	216	524
Transit	56	168	224	156	109	265
Walk	52	155	207	144	101	245
Cycle	2	7	9	7	5	12
Total Person Check	759	2270	3029	2112	1479	3591

Total Retail Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	458	139	597	1313	1299	2612
Auto Driver	405	123	528	1161	1148	2309
Auto Passenger	53	16	69	152	151	303
Transit	0	0	0	0	0	0
Walk	0	0	0	0	0	0
Cycle	0	0	0	0	0	0
Total Person Check	458	139	597	1313	1299	2612

Total Office Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	62	8	70	10	106	116
Auto Driver	54	7	61	9	92	101
Auto Passenger	4	0	4	0	7	7
Transit	0	0	0	0	0	0
Walk	4	1	5	1	7	8
Cycle	0	0	0	0	0	0
Total Person Check	62	8	70	10	106	116

Total School Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	2395	524	2919	209	957	1166
Auto Driver	524	524	1048	209	209	418
Auto Passenger	1576	0	1576	0	630	630
Transit	28	0	28	0	11	11
Walk	267	0	267	0	107	107
Cycle	0	0	0	0	0	0
Total Person Check	2395	524	2919	209	957	1166

Full Block Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	3674	2941	6615	3644	3841	7485
Auto Driver	1521	2263	3784	2876	2497	5373
Auto Passenger	1744	347	2091	460	1004	1464
Transit	84	168	252	156	120	276
Walk	323	156	479	145	215	360
Cycle	2	7	9	7	5	12
Total Person Check	3674	2941	6615	3644	3841	7485

Internal

Total Residential Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	193	564	756	745	437	1183
Auto Driver	112	346	458	439	254	693
Auto Passenger	41	111	152	158	94	252
Transit	0	0	0	0	0	0
Walk	37	99	136	138	84	222
Cycle	3	7	10	10	6	16
Total Person Check	193	563	756	745	438	1183

Total Retail Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	355	355	710	561	604	1165
Auto Driver	206	206	412	325	350	675
Auto Passenger	76	76	152	121	131	252
Transit	0	0	0	0	0	0
Walk	68	68	136	107	115	222
Cycle	5	5	10	8	8	16
Total Person Check	355	355	710	561	604	1165

Total Office Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	344	20	364	58	304	362
Auto Driver	200	12	212	34	176	210
Auto Passenger	74	4	78	12	66	78
Transit	0	0	0	0	0	0
Walk	66	4	70	12	58	70
Cycle	4	0	4	0	4	4
Total Person Check	344	20	364	58	304	362

Total School Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	2467	338	2805	135	987	1122
Auto Driver	46	0	46	0	18	18
Auto Passenger	0	0	0	0	0	0
Transit	0	0	0	0	0	0
Walk	0	0	0	0	0	0
Cycle	0	0	0	0	0	0
Total Person Check	46	0	46	0	18	18

Full Block Site Trip by Mode	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Total Person	3359	1277	4635	1499	2332	3832
Auto Driver	564	564	1128	798	798	1596
Auto Passenger	191	191	382	291	291	582
Transit	0	0	0	0	0	0
Walk	171	171	342	257	257	514
Cycle	12	12	24	18	18	36
Total Person Check	938	938	1876	1364	1364	2728

	338	338		135	135	

Proposed Uses:

From	To	AM%	PM%	Description	Origin/Destination	Total Trips_AM	Total Trips_PM	Interaction_AM	Interaction_PM	All Modes Balanced_AM	All Modes Balanced_PM
Residential	Retail	21%	21%	Residential Out	Origin	2833	1917	605	409	345	409
		42%	42%	Retail In	Destination	813	1874	345	795	345	409
Retail	Residential	37%	37%	Retail Out	Origin	494	1903	183	707	183	575
		20%	20%	Residential In	Destination	952	2857	192	575	183	575
Residential	Office	21%	21%	Residential Out	Origin	2833	1917	605	409	172	29
		42%	42%	Office In	Destination	406	68	172	29	172	29
Office	Residential	37%	37%	Office Out	Origin	28	410	10	152	10	152
		20%	20%	Residential In	Destination	952	2857	192	575	10	152
Retail	Office	37%	37%	Retail Out	Origin	494	1903	183	707	172	29
		42%	42%	Office In	Destination	406	68	172	29	172	29
Office	Retail	37%	37%	Office Out	Origin	28	410	10	152	10	152
		42%	42%	Retail In	Destination	813	1874	345	795	10	152
Residential	School			Residential Out	Origin					46	0
				School In	Destination					46	0
School	Residential			School Out	Origin					0	18
				Residential In	Destination					0	18

Summary	All Modes AM	All Modes PM
Residential In	193	745
Residential Out	563	438
Retail In	355	561
Retail Out	355	604
Office In	344	58
Office Out	20	304
School In	46	0
School Out	0	18
TOTAL	**1876**	**2728**

Drivers		Passengers		Transit		Walk		Cycle	
Balanced_AM	Balanced_PM	Balanced_AM	Balanced_PM	Balanced_AM	Balanced_PM	Balanced_AM	Balanced_PM	Balanced_AM	Balanced_PM
200	237	74	88	0	0	66	78	5	6
200	237	74	88	0	0	66	78	5	6
106	333	39	125	0	0	35	109	3	8
106	333	39	125	0	0	35	109	3	8
100	17	37	6	0	0	33	6	2	0
100	17	37	6	0	0	33	6	2	0
6	88	2	33	0	0	2	29	0	2
6	88	2	33	0	0	2	29	0	2
100	17	37	6	0	0	33	6	2	0
100	17	37	6	0	0	33	6	2	0
6	88	2	33	0	0	2	29	0	2
6	88	2	33	0	0	2	29	0	2
46	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0
0	18	0	0	0	0	0	0	0	0
0	18	0	0	0	0	0	0	0	0

Drivers		Passengers		Transit		Walk		Cycle	
AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
112	439	41	158	0	0	37	138	3	10
346	254	111	94	0	0	99	84	7	6
206	325	76	121	0	0	68	107	5	8
206	350	76	131	0	0	68	115	5	8
200	34	74	12	0	0	66	12	4	0
12	176	4	66	0	0	4	58	0	4
46	0	0	0	0	0	0	0	0	0
0	18	0	0	0	0	0	0	0	0
1128	**1596**	**382**	**582**	**0**	**0**	**342**	**514**	**24**	**36**

Number of Students:	1	4,000	(elementary + secondary)
Number of Staff:	0.07	286	

Arrivals (Total):		
Students	1.00	4000
Internal (B 27)	0.53	2129
External	0.47	1871

Mode Split:	Internal	External		
Transit	0.0%	1.5%	0.0%	2.0%
Driver	2.2%	0.0%	2.0%	0.0%
Passenger (PUDO)	32.9%	57.9%	33.0%	58.0%
School Bus	4.3%	26.4%	4.0%	26.0%
Active	60.6%	14.2%	61.0%	14.0%

STUDENTS

	Total		External		Internal	
	AM	PM	AM	PM	AM	PM
Arrivals	4000	344	1871	209	2129	135
-> personal driver	46	0	0	0	46	0
-> with above	0	0	0	0	0	0
-> PUDO driver	862	344	524	209	338	135
-> PUDO passenger	1782	0	1083	0	699	0
-> school bus	585	0	493	0	92	0
-> city bus	28	0	28	0	0	0
-> active	1559	0	267	0	1292	0
Departures	862	1600	524	748	338	852
-> personal driver	0	18	0	0	0	18
-> with above	0	0	0	0	0	0
-> PUDO driver	862	344	524	209	338	135
-> PUDO passenger	0	713	0	433	0	280
-> school bus	0	234	0	197	0	37
-> city bus	0	11	0	11	0	0
-> active	0	624	0	107	0	517

APPENDIX G

Modelling Memo

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MEMORANDUM

August 29, 2024 Reference No.: 20009.04

TO: Paul Grove / Transportation Engineering Lead / City of Vaughan
Pirooz Davoodnia / Acting Manager, Development Transportation Engineering / City of Vaughan

FROM: Trevor Vanderwoerd / Transportation Analyst / LEA Consulting Ltd.

CC: Christopher Sidlar / Vice President, Transportation / LEA Consulting Ltd.
Christy Leung / Transportation Planner / LEA Consulting Ltd.

RE: Block 27 Transportation Mobility Plan Update, Modeling Memorandum

1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by the Block 27 Landowners Group Inc. to conduct a Transportation Mobility Plan for the proposed subdivision development located at Block 27 in the City of Vaughan. Block 27 consists of approximately 800 hectares of predominantly agricultural land, with small amounts of residential and commercial uses. The proposed development includes a mix of low-rise and mid-rise residential and mixed-use designations consisting of approximately 7,000 residential units, 55,000 m^2 of commercial GFA, 6 schools, and a proposed GO station near the intersection of Keele Street & Kirby Street.

In order to aid in the traffic modelling and traffic assignment for the study, LEA has elected to develop an Aimsun model. The combination of future large-scale development at Block 34, the high generated site trips, the anticipated congestion, and the need for assignment to new proposed streets make the Aimsun traffic assignment models ideal for this application. While the Aimsun model can also provide insight into anticipated traffic operations, its primary purpose was to assign traffic generated by Block 34E and Block 27.

This memorandum includes details on the Aimsun model, the modelling process, and the assumptions made during the modelling process. The purpose of this memorandum is to support the analysis provided in the Transportation Mobility Plan Update prepared by LEA Consulting in August 2024 (herein referred to as the "Block 27 Transportation Mobility Plan Update") and will not discuss the operational results of that analysis.

2 EXISTING MODEL

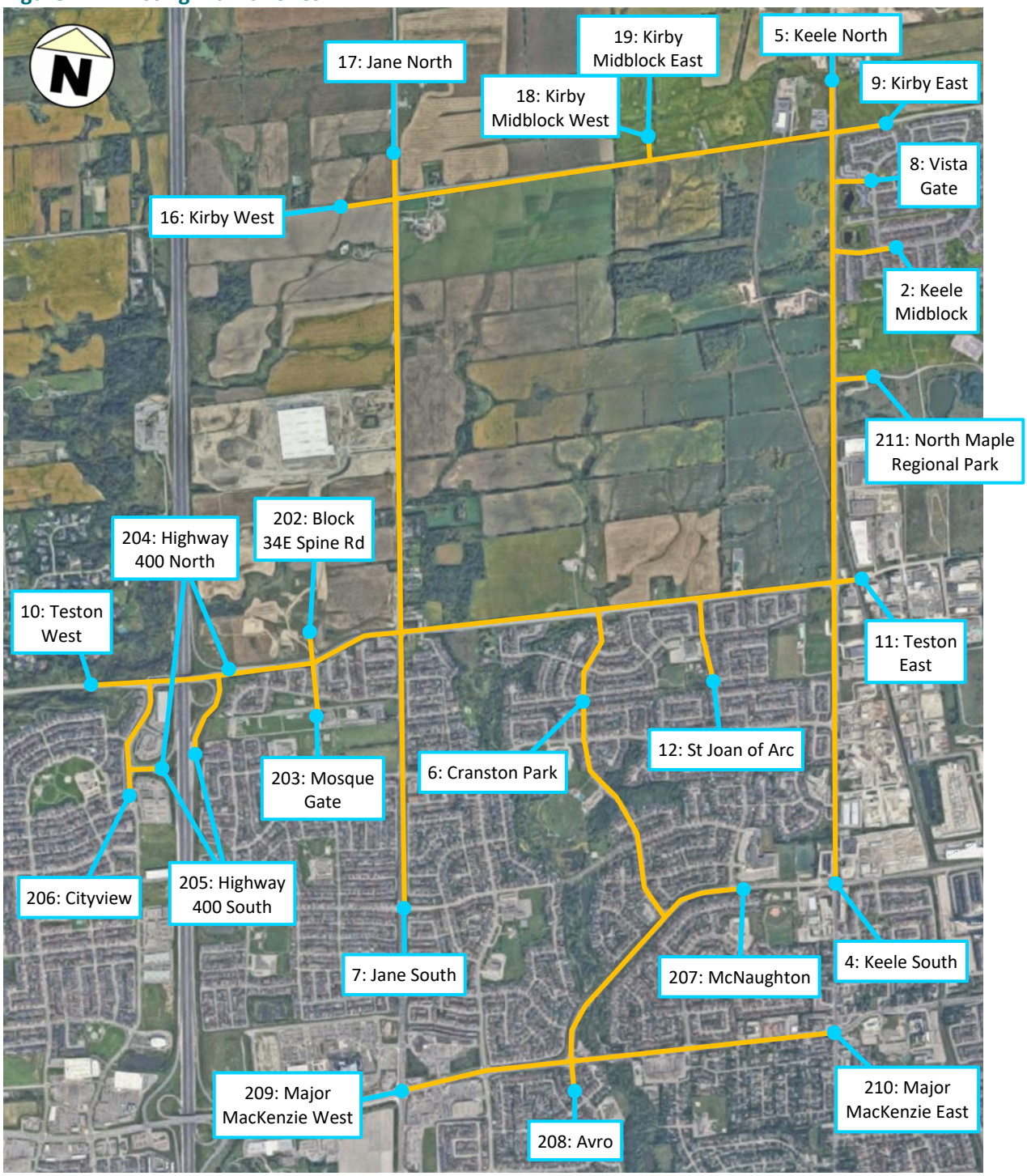
2.1 TRAFFIC ANALYSIS ZONES

The traffic analysis zones used in the Aimsun model are shown below in **Figure 2-1** and summarized in **Table 2-1**. Note that **Figure 2-1** only shows the zones used in the existing model.

Table 2-1: Traffic Analysis Zones

Existing Zones		Future Zones	
Zone ID	Name	Zone ID	Name
2	Keele Midblock	1	Jane Midblock North / Block 34E North
4	Keele South	15	Jane Midblock South / Block 34E South
5	Keele North	201	Block 34E Central
6	Cranston Park	101	External North
7	Jane South	102	External South (Local)
8	Vista Gate	103	External South (Far)
9	Kirby East	104	External Southwest (Local)
10	Teston West	105	External Southeast (Local)
11	Teston East	106	External West
12	St. Joan of Arc	107	External East
16	Kirby West	27001	Block 27 Zone 1
17	Jane North	27002	Block 27 Zone 2
18	Kirby Midblock West	27003	Block 27 Zone 3
19	Kirby Midblock East	27004	Block 27 Zone 4
202	Block 34E Spine Rd	27005	Block 27 Zone 5
203	Mosque Gate	27006	Block 27 Zone 6
204	Highway 400 North		
205	Highway 400 South		
206	Cityview		
207	NcNaughton		
208	Avro		
209	Major MacKenzie West		
210	Major MacKenzie East		
211	North Maple Regional Park		

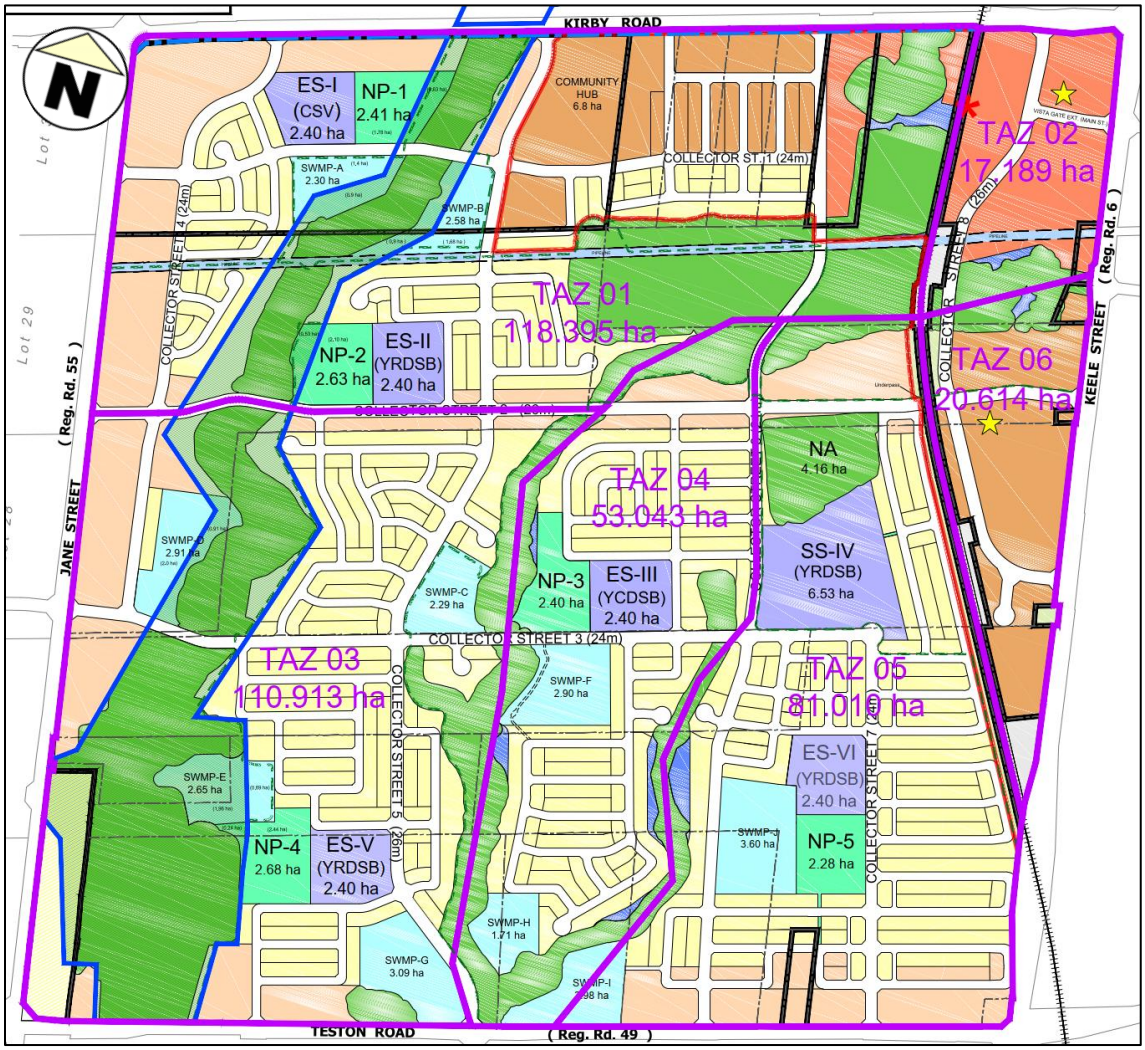
Figure 2-1: Existing Traffic Zones



2.1.1 Block 27 Zones

Figure 2-2 shows the division of Block 27 into traffic analysis zones. Zone boundaries were determined based on the location of internal collector roadways and barriers such as rail corridors, waterways, and natural heritage areas.

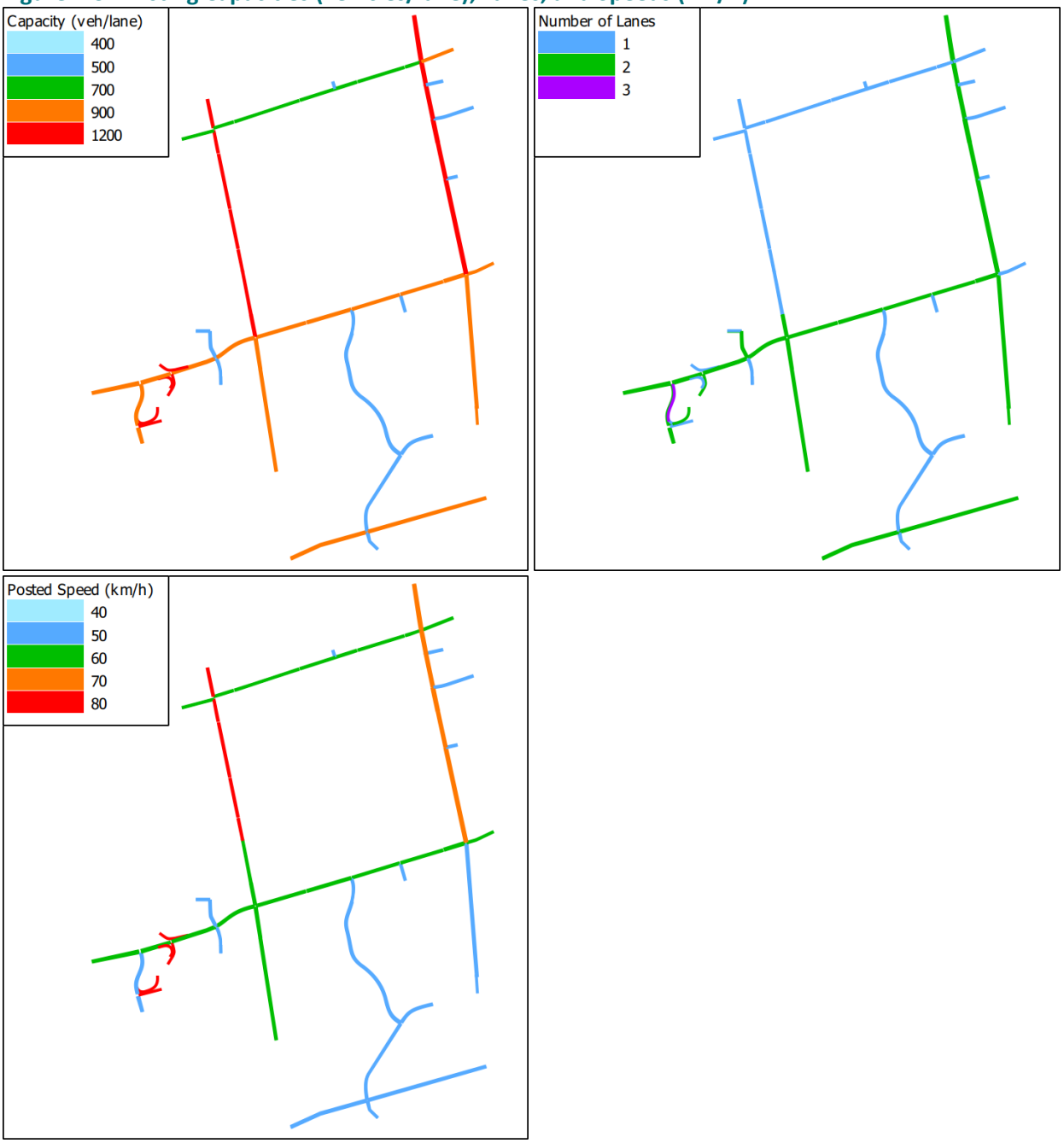
Figure 2-2: Block 27 with Traffic Analysis Zones
(Note that when these zones are used in Aimsun, they are appended with "2700")



2.2 ROAD NETWORK

The existing road network was developed using aerial photography, a subarea of the North Vaughan and New Communities Emme model provided by the City of Vaughan, and typical road classification assumptions from the University of Toronto Travel Model Group's Emme Network Coding Standard. **Figure 2-3** shows the existing Aimsun network.

Figure 2-3: Existing Capacities (vehicles/lane), Lanes, and Speeds (km/h)



2.3 ORIGIN-DESTINATION MATRICES

To create an accurate baseline simulation of existing conditions, travel demand matrices (also known as origin-destination matrices, or OD matrices) were required to input into the model. These were developed using turning movement counts (TMC) collected by LEA in March 2023 and through the use of two matrix calibration processes. First, a matrix balancing method was used to create preliminary demand matrices that contain the correct number of trips going to and from the existing external zones shown in **Figure 2-1**. Second, these preliminary demand matrices were refined through an origin-destination matrix adjustment tool within Aimsun to ensure that the assignment of the demand matrix produces a traffic pattern similar to the observed patterns in the TMC.

2.3.1 Iterative Matrix Balancing

The matrix balancing method focuses on developing a matrix with the correct number of trips in and out of each zone. The method requires an initial matrix that is typically created manually. For the most part, the value for each OD pair is a uniform value chosen such that the total matrix sum is equal to the sum of the observed trips in (or trips out). Some OD pairs were given more specific values due to their relationship within the network:

1. All zone-to-itself pairs were given a value of zero.
2. Some OD pairs would not experience any travel within the study area. For example, travel between Jane South (7) and Major MacKenzie West (209) or McNaughton (207) would not use the study area network to complete that trip. These OD pairs were set to zero.
3. Some OD pairs have one obvious turning movement that fulfills that trip, and that turning movement can only be used for that OD pair. Two examples are Highway 400 South (205) & Cityview (206), and Major MacKenzie West (209) & Major MacKenzie East (210). These OD pairs were given a value equal to the appropriate observed TMC.

Goal values for the column and row sums (which are the total trips into and out of each zone) are set to match the TMC. Some TMC had to be manually adjusted due to variations in the data. Finally, an iterative matrix balancing process was used to adjust so that the column and rows sums match the goals. This process applies a multiplicative factor to all elements in each row to make the row sums equal to the goal values, then applies a factor for each column, and repeatedly alternates between row and column until a relatively stable matrix is found.

2.3.2 OD Adjustment

While the matrices resulting from the process described above have the correct number of trips going to and from the correct locations within the network, there is no guarantee that the resulting route choice will create a traffic pattern that fits the observations in the TMC. Therefore, Aimsun's Static OD Adjustment procedure was used to refine the matrices.

The Static OD Adjustment procedure is included within Aimsun. Given an input OD matrix, it uses a standard macroscopic traffic assignment algorithm to assign the traffic in the input matrix to the network, check the

assignment against observed data, then iteratively adjusts the matrix to produce an assignment that more closely matches the observed data. The Conjugate Frank-Wolfe assignment algorithm was chosen as the assignment algorithm, with the following parameters:

- Conjugate Frank-Wolfe assignment
  - 50 iteration limit,
  - relative gap of 0.05%.
- OD matrix adjustment
  - 150 iteration limit,
  - target R^2 of 0.99,
  - target slope of 1+/-0.01.
- Gradient Descent algorithm (determines how to adjust the OD matrix)
  - 5 iteration limit.

The OD matrix adjustment algorithm converged in 8 iterations for the AM peak hour model. Comparing the observed turning movement volumes to the statically-assigned turning movement volumes using the GEH statistic showed that 95% of turning movements had a GEH statistic below 5, and 98% had a GEH statistic below 10. This indicates that the OD adjustment algorithm was able to create an input OD matrix that is expected to result in a traffic assignment that closely matches the observed conditions.

For the PM peak hour, the OD matrix adjustment algorithm did not converge, as the R^2 never exceeded 0.989 and the slope was never more accurate than 0.982. However, the convergence thresholds were set ambitiously high, which can be seen in the GEH statistic. 90% of turning movements had a GEH statistic below 5, and 97% had a GEH statistic below 10. As in the AM peak hour, this indicates that the resulting OD matrix is expected to result in a traffic assignment that closely matches the observed conditions.

The resulting OD matrices are detailed in **Table 2-2** and **Table 2-3** for the AM and PM peak hour, respectively.

Table 2-2: Existing Vehicle Demand Matrix, AM Peak Hour

Zone	2	4	5	6	7	8	9	10	11	12	16	17	18	19	202	203	204	205	206	207	208	209	210	Total
2			8.5	0.1	18.3	1.3	1.8	7.6	2	1.2	1.7	0.4			0.1	0.6	3	11.2	2.9	1.4	0.2	0.4	0.5	63
4			160.5	0.7		25.5	38.1	105.8	23.4	12.4	34.2	8	0.4	0.4	0.7	9.1	45.1	149.8	43.1		2.9	5.3		665
5	2.1	374.5		0.5	104.4	14.2	28.9	28.9	13.8	8.6	11	2.4	0.1	0.1	0.2	2.5	11.7	41.7	11.3	11.7	2.1	3.7	4.6	679
6	0.4	6.2	11.6		12.7	1.8	2.5	7.2	0.9		0.8	4.5			0.1	0.6	2.7	10.8	2.7	52.3	10.2	17.5	22.1	168
7	23.9		11.6	0.8		7.3	29.1	62.6	59.4	40.5	11.1	56.4	0.2	0.2	0.4		24.5	93.5	25.7		3.1		6.8	457
8	0.4	66.8	8.9	0.1	20.2		2	6	2.5	1.5	1.9	0.4				0.5	2.4	8.6	2.4	2.1	0.4	0.7	0.8	129
9	0.1	26.5	26.3		45.1	1		12.6	0.9	0.5	86.2	22.5	1.3	1.3	0.1	1.1	5.1	18.3	4.9	0.6	0.1	0.2	0.2	255
10	10.6	185.6	4.7	0.3	111.6	3	12		27	18.8	4.5	23.6	0.1	0.1	0.2	6.5	124.7	205	57.7	7.6	1.2	2.3	2.7	810
11	0.3	14.2	10.6	0.1	21.8	1.8	2.5	10.1		1.2	2.2	0.5				0.8	4.3	14.3	4.2	1.6	0.3	0.5	0.6	92
12	0.8	13.4	23.4		51.8	3.5	5.3	24.7	2		2	5.3	0.1	0.1		2.2	10.6	35.3	10.4	4	0.7	1.3	1.6	199
16	0.2	40.1	11.7	0.1	33.7	1.5	56	4.6	1.4	2		7.9	0.3	0.3		0.4	1.7	7	1.8	2.2	0.4	0.7	0.8	175
17		12.5	3.7	1.2	330.8	0.4	20.7	46.6	0.4	4.7	11.4		0.1	0.1	0.2	3.6	18.9	68.3	19.5	27.5	5	8.9	11.1	596
18		0.3	0.1		1.7		0.3	0.2			0.3	0.1					0.1	0.3	0.1					4
19		0.3	0.1		1.7		0.3	0.2			0.3	0.1					0.1	0.3	0.1					4
202		0.2			0.1			0.1										0.2						1
203	1.2	20.5	0.5			0.3	1.3	13.5	3	2	0.5	2.4					5.3	20.6	5.8	0.8	0.1	0.3	0.3	78
204	3.4	59	1.5	0.1	35.2	0.9	3.8	28.3	8.5	6	1.4	7.4			0.1	2.1			83.5	2.4	0.4	0.7	0.8	246
205	6.2	109	2.8	0.2	64.2	1.8	7	30.2	15.6	10.8	2.6	13.5			0.2	3.7			106	4.8	0.8	1.5	1.8	383
206	4.4	75.6	1.9	0.1	46.5	1.2	4.9	36	10.7	7.5	1.9	9.7				2.5	49.4	314		3.5	0.6	1.1	1.3	573
207	0.7		24.6	5		3.8	4.9	15.2	2	1.3	1.6	9.5	0.1	0.1	0.1	1.2	5.5	23.4	5.5		191	297.3		593
208	0.1	1.5	2.9	0.6	3	0.5	0.6	1.8	0.2	0.2	0.2	1.1				0.1	0.6	2.8	0.6	115.8		10.3	68.3	211
209	0.1	2.2	4.3	0.9		0.7	0.9	2.7	0.3	0.2	0.3	1.7				0.2	1	4.1	1	163	15.3		1073	1272
210	0.1		4.2	0.9	4.2	0.7	0.8	2.6	0.3	0.2	0.3	1.6				0.2	0.9	4.1	0.9		108.7	1300		1431
Total	55	1008	324	12	907	71	224	448	174	120	176	179	3	3	2	38	318	1034	390	401	344	1653	1197	9080

Table 2-3: Existing Vehicle Demand Matrix, PM Peak Hour

Zone	2	4	5	6	7	8	9	10	11	12	16	17	18	19	202	203	204	205	206	207	208	209	210	Total
2					29.5			18.2								0.7	10.6	13.8	5.3					78
4			352.1			71.7	165.2	197.7	19		40.7	8.1	4.7	4.7	2.8	7.6	118.4	149.1	56.8					1199
5		201.9		12.9	5.3	26.5	36	1.2		35.7	13.1	2.5	1.5	1.5			0.7	1	0.3	31.3	2.6	5.2	3.5	383
6			1.7		0.3	0.3	0.7	0.3				0.6					0.1	0.2	0.1	4.5	0.4	0.8	0.5	11
7	71.6		8.3	16.5			33.1	107.2	46.2	58.2	12.7	292.2			1.7		61	82.4	30.9		3.2		4.2	829
8		54.7	15	3.4	4.6		6.8	1.9		9.4	1.7	0.3	0.2	0.2		0.1	1.1	1.4	0.5	8.3	0.7	1.4	0.9	113
9		37.5	29	2.2	23.7	4.8		5.8		6.5	116.2	25.6	13.8	13.8		0.2	3.4	4.4	1.6	5.1	0.4	0.8	0.5	295
10	25.6	152.8	1.4	9.1	90.3		5.6		23.3	30.2	1	26.7				25.2	102	129.3	49.5	22	1.8	3.7	2.4	702
11		14	53.3		93.7	10.7	24.5	65.6			6.1	1.2	0.6	0.6		2.5	39.3	49.5	19.1					381
12			62.3		18.6	12	28.3	13.5			1	9.1	0.9	0.9		0.5	8	10.3	4					169
16			14.6	0.5	13.8		155.7	2.7		1.2		31	0.1	0.1		0.1	1.5	2	0.8	1.1	0.1	0.2	0.1	226
17			1.4	3.6	97.2		17.2	19.5		6.4	14					0.7	11.1	15.1	5.6	8.8	0.7	1.5	1	204
18			2				22.4				0.1													25
19			2				22.4				0.1													25
202	1.3	6.2	0.1	0.4	3.2		0.2	0.1		1.2		1				0.1		0.1		0.9	0.1	0.1	0.1	15
203	3.7	22.7	0.2	1.3			0.8	18	3.3	4.5	0.1	3.8					10.2	13.9	5.3	3.3	0.3	0.6	0.4	92
204	7.8	47.2	0.4	2.8	27.8		1.7	29.3	7.3	9.3	0.3	8.2				7.7			64	6.7	0.5	1.1	0.7	223
205	45.2	265.8	2.4	16.1	155.3		9.8	141.5	40.4	52.1	1.8	46.2				42.5			174.8	39.4	3.3	6.6	4.4	1048
206	12.4	73.1	0.7	4.4	43.5		2.7	45.7	11.3	14.5	0.5	12.9				12	48.9	172		10.7	0.9	1.8	1.2	469
207			48.7	51.1		9.6	20.5	7.5			0.7	18.7	0.3	0.3	0.1	0.3	4.3	5.8	2.1		86.8	163.2		420
208			6.7	7.2	1.3	1.3	2.6	0.9			0.1	2.5					0.5	0.7	0.3	156.3		7	125	312
209			9.4	10.2		1.8	3.8	1.3			0.1	3.5	0.1	0.1			0.8	1	0.4	214.1	9		1394	1650
210			20	21.8	3.8	3.8	7.8	2.8			0.3	7.5	0.1	0.1		0.1	1.6	2.2	0.8		127	1247		1447
Total	168	876	632	164	612	143	568	681	151	229	211	502	22	22	5	100	424	654	422	513	238	1441	1539	10313

2.4 SIMULATION METHODOLOGY

The modelling of traffic conditions was carried out by a microscopic vehicle simulation, with a Dynamic User Equilibrium (DUE) for route choice and traffic assignment. The microscopic simulation models vehicles and their interactions with each other, the street network, and traffic controls by updating each vehicle's position and behaviour at each 0.8 second time step. Different sub-modules of the microsimulation control the various decisions involved in driving, including two-lane car-following, lane choice, lane changing, gap acceptance, merging, and overtaking. As the microsimulation makes use of randomness, the DUE microsimulation was repeated three times to ensure that unusual behaviours would not be mistaken as typical.

The DUE model determines which routes traffic would take in order to accomplish the desired trips contained as input in the OD matrices. It follows the *dynamic user equilibrium* principle: that for each OD pair, the travel times experienced by vehicles departing at the same time are equal and minimal. A consequence of this principle is that no single vehicle can shorten its' travel time by changing to an alternative route. The DUE model accomplishes this equilibrium by carrying out multiple iterations of the microsimulation. Both during each microsimulation and between simulations, the travel times of alternative paths between each OD pair are checked, and route choice is adjusted depending on the proportions of travel time differences.

This combination of models is particularly appropriate when a large amount of the modelled area is new streets, such as all of Block 34E and Block 27's internal streets, as it can take advantage of the detailed microsimulation to assign vehicles instead of relying on assumed capacities of new streets and intersections. Additionally, it can allow for the complexity of intersection operations to impact route choice, such as favouring routes with many through-movements and especially coordinated through-movements over routes with left turns.

Figure 2-4, **Figure 2-5**, and **Figure 2-6** detail the parameters used in these models.

Figure 2-4: Aimsun Parameters: Microsimulation Behaviour

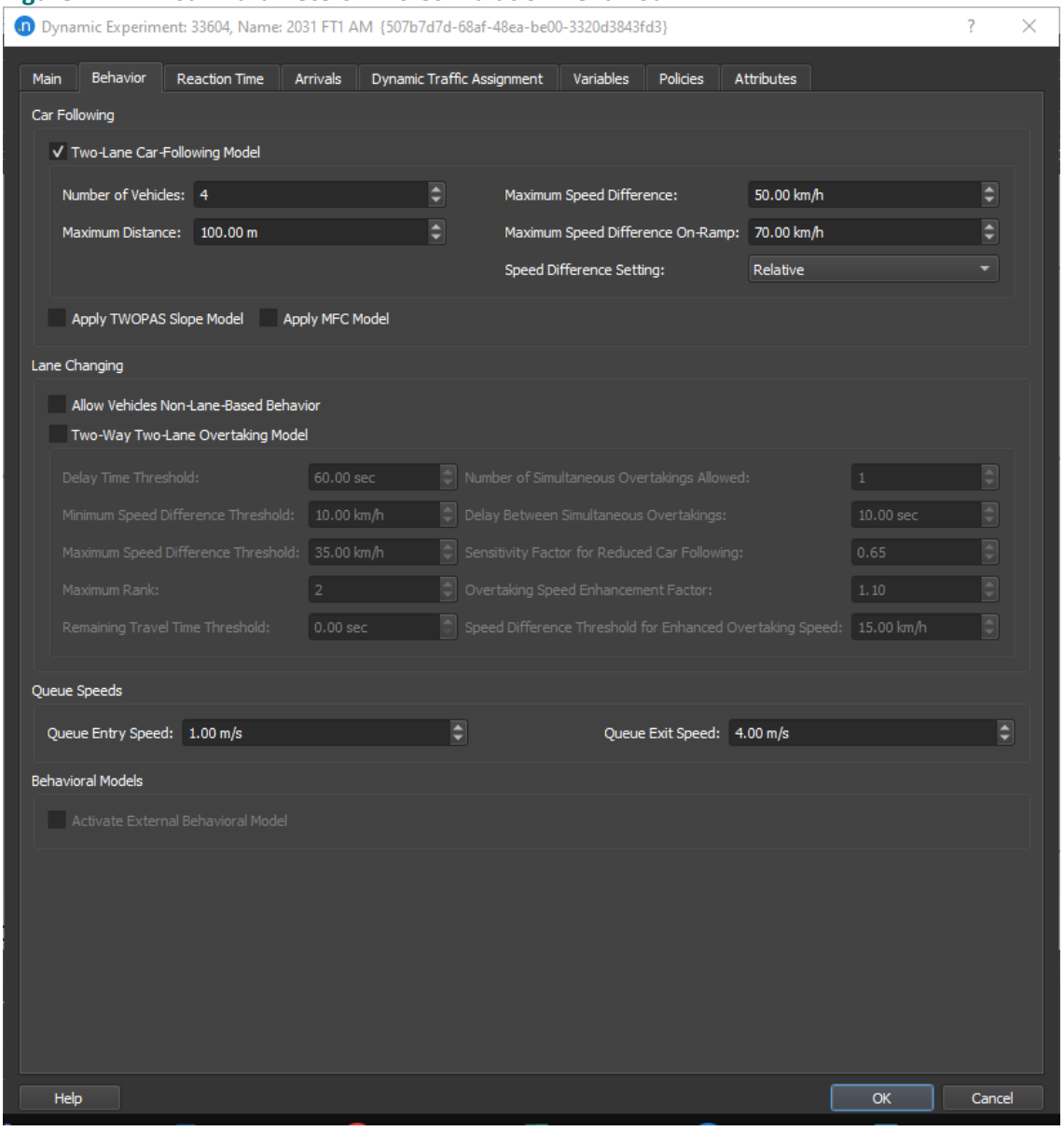


Figure 2-5: Aimsun Parameters: Microsimulation Timing

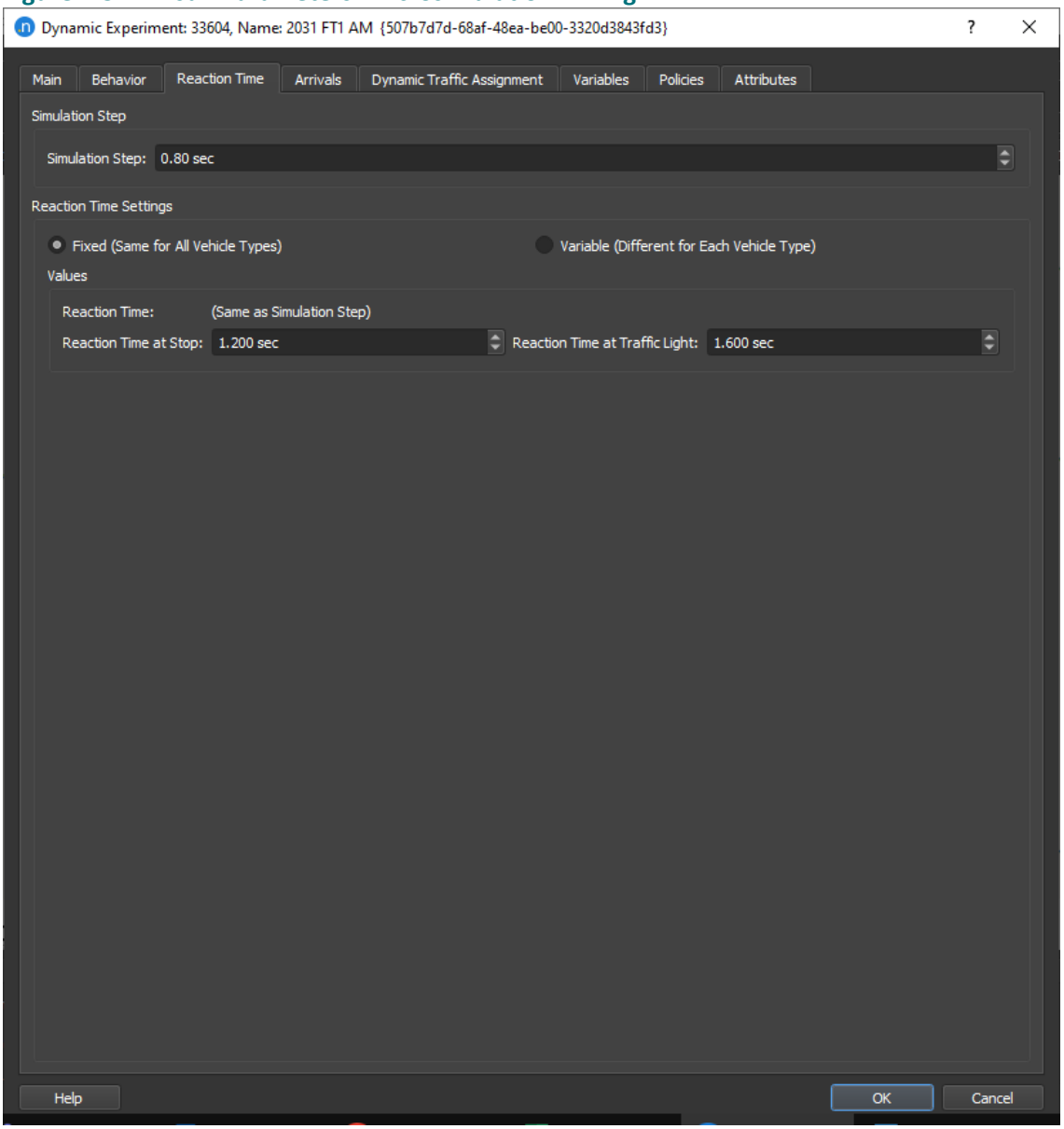
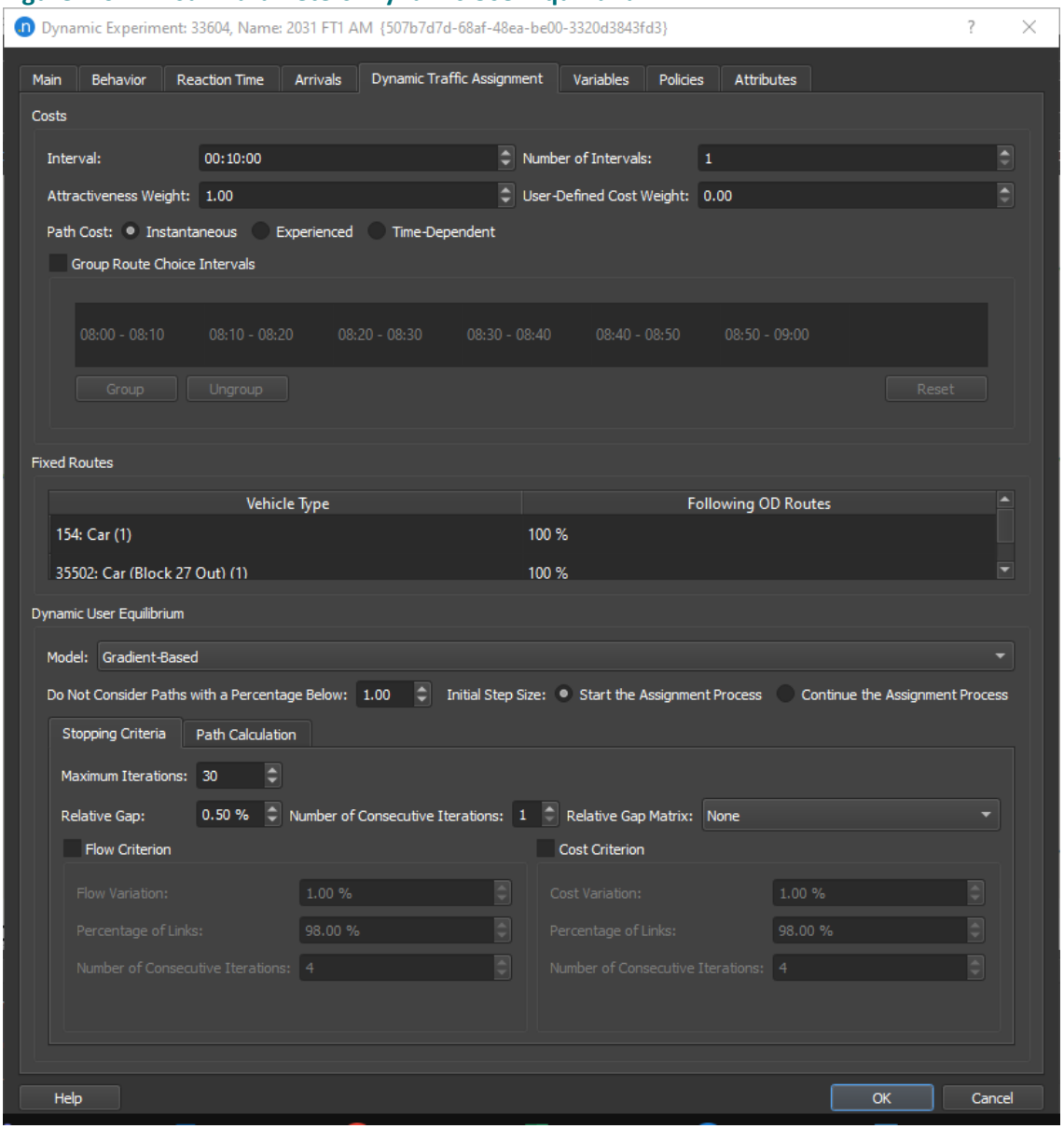


Figure 2-6: Aimsun Parameters: Dynamic User Equilibrium



2.5 VALIDATION

To validate that the constructed OD matrices were an appropriate representation of existing traffic, microsimulations were conducted using the parameters discussed in **Section 2.4**. The resulting traffic assignment was compared to the observed TMC data using the GEH statistic. The GEH statistic is a commonly-used measure of error between modelled and observed traffic data which has a non-linear nature to account for the typical range of values found in traffic data. The GEH statistic is calculated for a given observed traffic volume as:

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

where M and C are the modelled and observed volumes, respectively.

Appropriate validation thresholds were determined using the *Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modelling Software (US Department of Transportation, July 2004)*. The chosen thresholds are at least 85% of turning movements with a GEH statistic below 5, and at least 95% of turning movements with a GEH statistic below 10. **Table 2-4** summarizes the result of validation.

Table 2-4: Validation Results

GEH Category	Threshold	AM Simulation Runs			PM Simulation Runs		
		33139	33140	33141	33329	33330	33331
< 5	85%	88%	90%	90%	89%	90%	86%
< 10	95%	98%	99%	98%	99%	98%	97%

All six simulations, covering both the AM and PM peak hours, meet the threshold. The number of turning movements with a high deviation from observed data is very low, less than 2 turning movements in all but one of the simulations. Therefore, it can be concluded that the OD matrices shown in **Table 2-2** and **Table 2-3** in conjunction with the simulation methodology described in **Section 2.4** are an accurate representation of existing traffic conditions.

3 FUTURE MODEL

The Aimsun model described in **Section 2** was modified to reflect the anticipated future conditions in the study area, including modifications to the road network and to the travel demand.

3.1 AIMSUN MODEL AND NETWORK

Modifications to the road network included those associated with the North Vaughan and New Communities Transportation Master Plan (NVNCTMP), those associated with Block 34E, and those associated with Block 27. The regional roads (Jane Street, Keele Street, Kirby Road, and Teston Road) are all planned to have improvements as detailed in Table 8-4 of the *NVNCTMP, Appendix D* (February 2018). These improvements are summarized in **Table 3-1**.

Table 3-1: Road Network Improvements According to the NVNCTMP

Location	Description	Dates
Teston Road (from Keele Street to Dufferin Street)	New connection	By 2026
Jane Street (from Kirby Road to Teston Road)	Widening to a 4-lane cross-section	2027-2031
Jane Street & Kirby Road	Jog elimination	2027-2031
Kirby Road (from Weston Road to Bathurst Street)	Widening to a 4-lane cross-section, including improvements of the Keele Street & Kirby Road intersection	2027-2031

Block 34E includes an internal street network consisting of a single north-south collector road between Teston Road and Kirby Road, and three east-west collector roads that run between Jane Street and the above-mentioned north-south collector. Two of the east-west collectors align with two of the Block 27 east-west collectors. The Transportation Mobility Plan for Block 34E, prepared by Crozier in May 2021, was used as a reference for Block 34E, in particular Figure 2, which shows the collector streets to scale, and Figure 25, which shows the lane configurations recommended in that document. These recommendations were the starting point for the lane configurations in the Aimsun model, which were further adjusted through the modelling process as a result of the analysis.

Finally, Block 27 consists of 8 collector roads and many local roads. Of these, the collector roads were added to the Aimsun model. In addition, the intersection of Teston Road & Cranston Park Avenue/Street 5 was modified to allow the northbound leg to transition to two through lanes about 35 metres before the intersection. The northbound left turn lane was retained, and one of the through lanes was modified to a shared right-turn lane.

For the complete details of lane configuration, see the Block 27 Transportation Mobility Plan Update. **Figure 3-1** shows the future Aimsun network.

Figure 3-1: Future Capacities (vehicles/lane), Lanes, and Speeds (km/h)

3.1.1 Traffic Calming

The combination of increased traffic and the new internal collector networks of Block 34E and Block 27 introduce the potential for traffic infiltration into those blocks as well as into the surrounding neighbourhoods. The potential for traffic infiltration was identified in the following locations:

- Mosque Gate and Ahmadiyya Avenue: As a result of high volumes and particularly high turning volumes into and out of Block 34E using Jane Street, Teston Road, and Spine Road, infiltration was observed using Mosque Gate and Ahmadiyya Avenue. Infiltration was done by through traffic to avoid the Jane Street & Teston Road intersection, and by Block 34E traffic to make use of the northbound and southbound through movements at the Teston Road & Spine Road intersection.
- Jane Street & Street 3: Due to the high volume of traffic at the Jane Street & Teston Road intersection, some traffic from Block 34E uses the east or westbound through movements at Jane Street & Street 3. This results in travelling along Street 3 and either Streets 5 or 6 through Block 27. Most of the vehicles are expected to be light vehicles (approximately 100 vehicles in the PM peak hour and zero in the AM peak hour), and the traffic is local to the area.
- Jane Street & Street 1/Block 34E Street 4: Similar to at Jane Street & Street 3, there is potential for infiltration using the east and westbound through movements from Block 34E Street 4 to or from Block 27 Street 1. However, due to the lower volume of traffic further north in the network and along Kirby Road, no significant traffic was observed to use these routes.

To manage these potential instances of traffic infiltration, the following movements were restricted within the Aimsun model:

- The SBT movement at Teston Road & Mosque Gate/Spine Road: this limits Block 34E traffic from using Mosque Gate and Ahmadiyya Avenue to access Jane Street.
- The NBL movement at Jane Street & Ahmadiyya Avenue: this limits Block 34E traffic or through traffic from using Ahmadiyya Avenue and Mosque Gate to access Teston Road or Block 34E. This works in conjunction with the restriction of the SBT above, as it still allows for local traffic from the Mosque Gate neighbourhood to travel to the Block 34E development via Mosque Gate northbound, then return via Jane Street southbound.

Potential traffic infiltration across Jane Street was allowed to continue. As part of the Synchro analysis in the Block 27 Transportation Mobility Plan Update, which is not discussed in this memorandum, the heavy vehicle traffic making this infiltration was manually rerouted.

Note that these restrictions only apply to the Aimsun model. For the full description of the recommended traffic calming measures, refer to the Block 27 Transportation Mobility Plan Update.

3.2 NEW TRAFFIC ANALYSIS ZONE STRUCTURE

The zonal structure as illustrated in **Figure 2-1** is optimized to accurately reproduce existing conditions. For example, most of the zones have a one-to-one relationship with the existing streets. However, this one-to-one relationship limits the flexibility of the dynamic route choice model to reassign traffic flows whenever alternative portions of the route lie outside of the study area. For example, traffic that would leave the study area on the southbound Highway 400 may either use the Cityview Boulevard on-ramp or travel down Jane Street, leave the study area, and use the interchange at Major MacKenzie Drive to access Highway 400. With the existing traffic analysis zones, the choice of which location to leave the network would be locked

into the OD matrix. Additionally, the existing zonal structure does not include the internal regions of Block 27 and 34E. For these reasons, the future traffic model adds 16 new zones to the model. Seven of the new zones are aggregated "external" zones, which allow travel to or from a general direction to choose between parallel arterial routes, or other similar decisions. The remaining nine represent Block 27 and Block 34E lands.

Figure 3-2 and **Figure 3-3** show how the aggregated zones connect to the study area. Note that the existing zones in **Figure 2-1** are still present in the model, despite not being shown in the future zone figures.

Figure 3-2: Future Traffic Zones (External Zones)

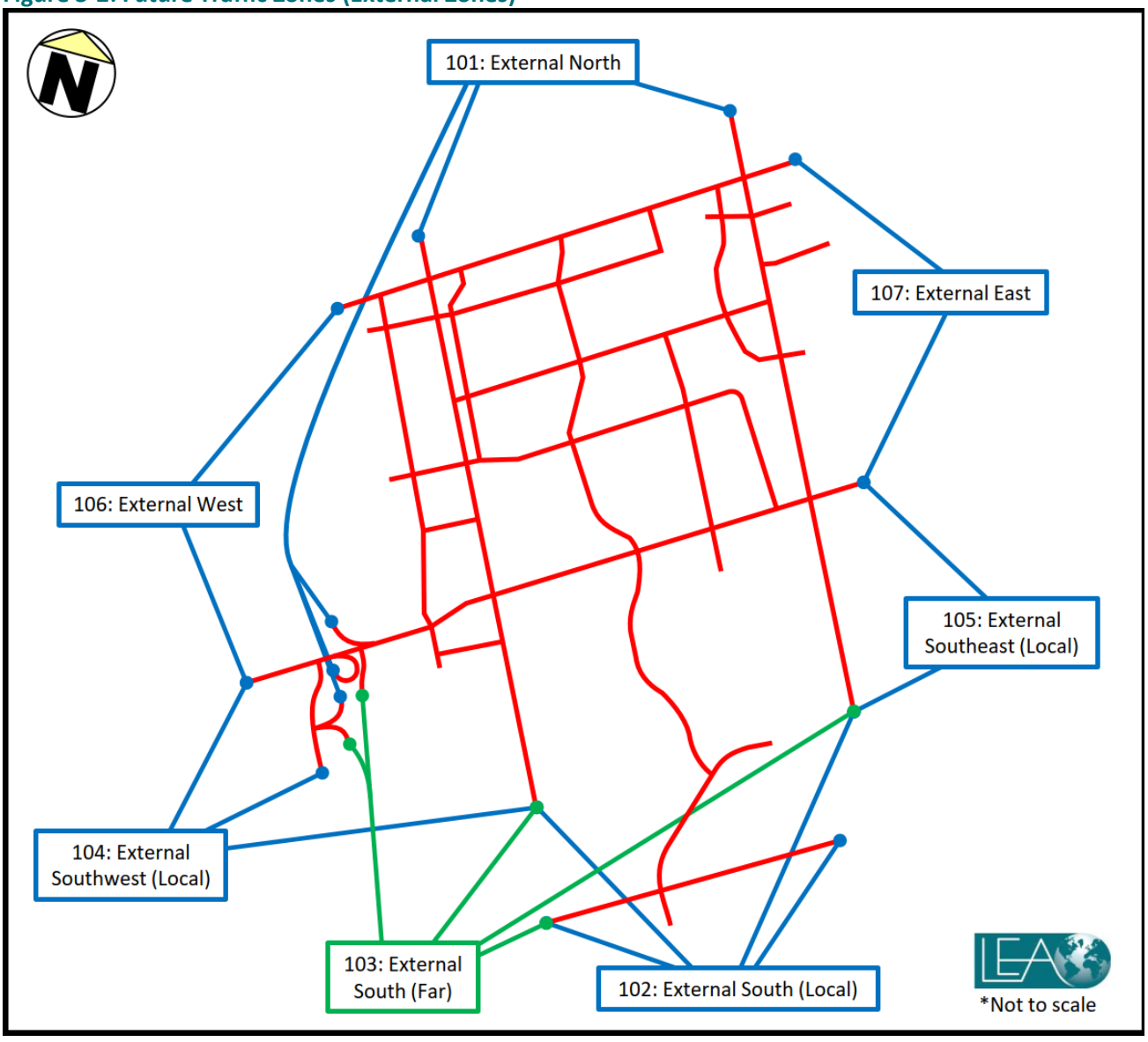
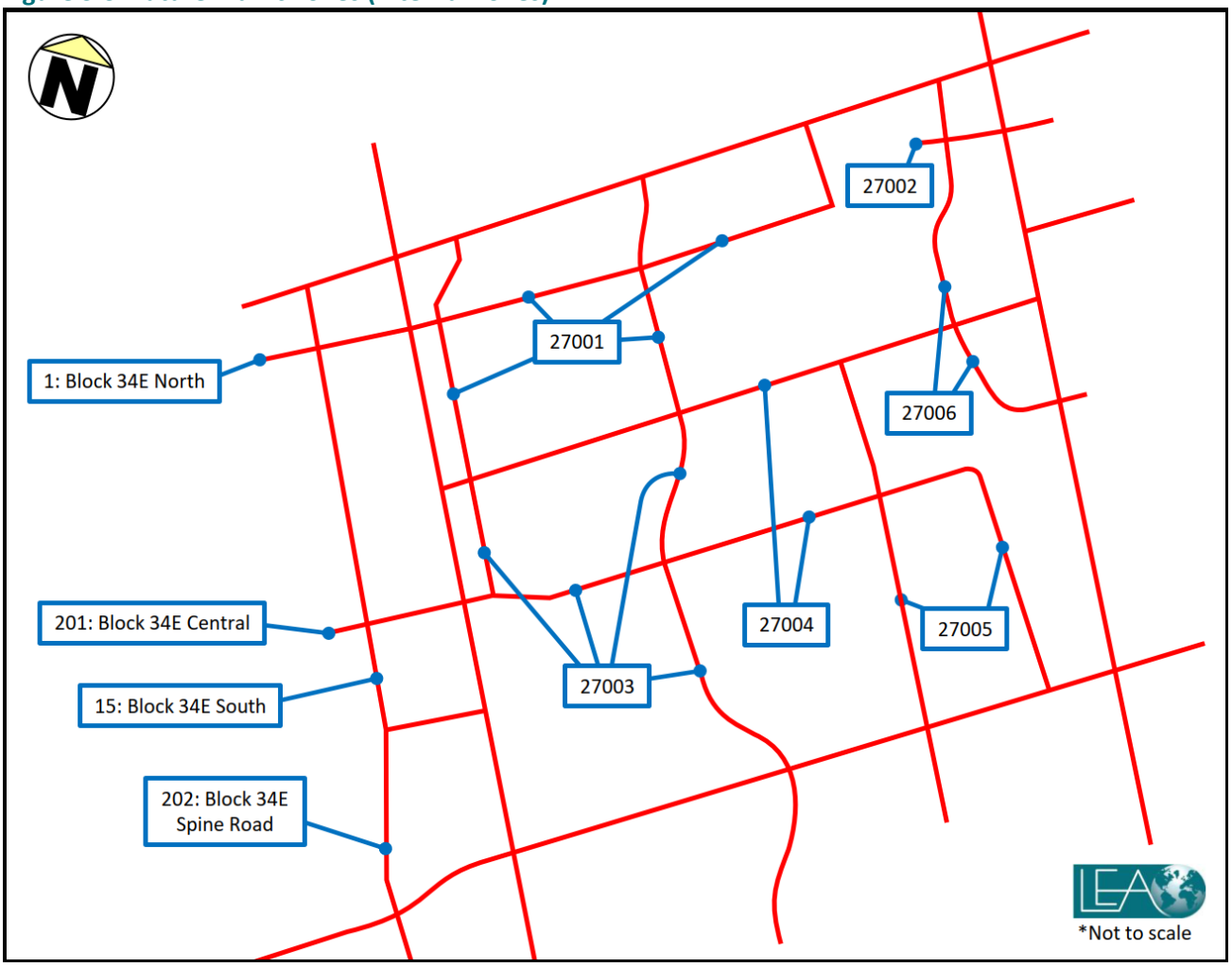


Figure 3-3: Future Traffic Zones (Internal Zones)



3.3 BACKGROUND TRAFFIC

The increases in traffic during the future horizons are associated with growth in through traffic, with background developments including Kirby GO station and Block 34E, and with the Block 27 site traffic. Each of these components of traffic was represented as an OD matrix, and all the resulting matrices were added to the existing matrix to get the resulting future traffic demand OD matrix inputs.

Note that the Block 27 Transportation Mobility Plan Update also includes Block 41 and 34W as background developments. These were not included in the Aimsun model as the traffic impact from these developments occurs at the Teston & Highway 400 interchange. The Aimsun model is primarily being used to determine an appropriate assignment of Block 27 site traffic to the network, and doesn't assign significant traffic to the Teston & Highway 400 interchange due to the Block 34E traffic. The addition of the Block 41 and 34W traffic would not impact this assignment.

3.3.1 Growth

Historical data was compared to the 2023 collected data to identify corridors that showed a consistent increase in traffic. Historical data was available for the existing intersections along Keele Street, Kirby Road, Teston Road, Jane Street, and Cityview Boulevard and ranged from 2010 to 2019.

From the AM peak hour, no consistent patterns of growth were identified. For the PM peak hour, one corridor showed consistent growth: from the northbound Highway 400 off-ramp, turning right onto Teston Road, then turning right onto Keele St. Depending on the location along this corridor, the growth rates range from -0.39 to 5.946. Applying the various growth rates to the existing traffic along the corridor results in increases of traffic ranging from 0 to 473 vehicles per hour. These values were averaged in order to express this growth as a single value for the appropriate OD pair in the OD matrices. **Table 3-2** details the modification of the OD matrix due to corridor growth.

Table 3-2: Growth Vehicle Demand Matrix, AM and PM Peak Hours Respectively

Zone	4	205	Total
4			0
205			0
Total	0	0	0

Zone	4	205	Total
4			0
205	325		325
Total	325	0	325

3.3.2 Kirby GO Station

A *Transportation and Traffic Impact Analysis* for the Kirby GO Station was completed by Metrolinx and 4Transit (a consortium of Hatch, Parsons, and WSP). This document can be found as Appendix I (August 2018) of the *Barrie Rail Corridor Expansion, Transit Project Assessment Process, Volume 4: Kirby GO Station Design and Technical Studies.* For the purpose of this memo, this study will be referred to as the TTIA.

In the TTIA, Kirby GO station includes amenities such as a 1,000 space parking lot, a bus loop, bicycle parking, a pick-up and drop-off area, and connections to multi-use paths. Vehicular access is provided by three driveways, one off Kirby Road and two off Keele Street.

The travel behaviour of Kirby GO vehicle trips can be summarized by the mode split, shown in Table 5-2 in the TTIA and in **Table 3-3** below, the distribution shown on page 34 in the TTIA and in **Table 3-4** below, and the traffic assignment provided in Sketch 12a. The TTIA does not include Block 27 in its analysis, and therefore the trips to and from the GO station are all from existing neighbourhoods. Traffic between Block 27 and the GO station is considered part of site traffic and is addressed in **Section 3.4**.

Table 3-3: Kirby GO Station Mode Split

Mode Used to Access Kirby GO Station	2030 Horizon		
	Mode Share	Peak Hour Trips	Daily Trips
Walk	12%	138	576
Bicycle	3%	34	144
Transit	15%	172	720
Auto Drivers	42%	482	2015
Auto Passengers	5%	29	240
PUDO	23%	264	1103
Vehicle Sub-Total	**70%**	**775**	**3358**
Total	**100%**	**1119**	**4797**

Table 3-4: Kirby GO Station Distribution (2030)

Direction	Percentage
North	36%
South	23%
East	6%
West	35%
Total	**100%**

Using the guidance of Sketch 12a and Sketch 8, the Kirby GO Station trips were formatted as origin-destination matrices. Traffic Analysis Zone 27002 was used as the access to the GO station, and five boundary zones into the study area were identified: zones 2, 101, 102, 106, and 107. The boundary zones are generally part of the new zonal structure described in **Section 3.2** to allow the model to flexibly assign trips to the network. It should be noted that in the Synchro analysis described in the Block 27 Transportation Mobility Plan Update, the Kirby GO Station traffic was assigned as given in the TTIA. **Table 3-5** and **Table 3-6** detail the OD matrices used for Kirby GO Station traffic. Since all trips are either to or from zone 27002, the OD pairs between that zone and the boundary zones can be directly filled with the appropriate values from the TTIA sketches.

Table 3-5: Kirby GO Vehicle Demand Matrix, AM Peak Hour

Zone	2	101	102	106	107	27001	27002	27003	27004	27005	27006	Total
2							14					14
101							472					472
102							161					161
106							27					27
107							101					101
27001												0
27002	7	183	57	2	15							264
27003												0
27004												0
27005												0
27006												0
Total	7	183	57	2	15	0	775	0	0	0	0	1039

Table 3-6: Kirby GO Vehicle Demand Matrix, PM Peak Hour

Zone	2	101	102	106	107	27001	27002	27003	27004	27005	27006	Total
2							7					7
101							183					183
102							57					57
106							2					2
107							15					15
27001												0
27002	14	473	161	27	100							775
27003												0
27004												0
27005												0
27006												0
Total	14	473	161	27	100	0	264	0	0	0	0	1039

3.3.3 Minor Background Developments

Three small background developments were included in the Aimsun model: two residential developments at 10811 Jane Street and 2975 Teston Road, and the North Maple Regional Park redevelopment. Traffic associated with the residential developments were formatted as origin-destination matrices using the site traffic figures in their respective traffic studies. As the accesses for these developments were not part of the Aimsun model, zones 27003 and 6 were chosen as stand-ins for the accesses of 10811 Jane Street and 2975 Teston Road, respectively.

For the North Maple Regional Park, which did not have a traffic study available, a trip generation and traffic assignment was carried out as part of the Block 27 Transportation Mobility Plan Update study and reformatted as OD matrices. **Table 3-7** and **Table 3-8** contain the resulting OD matrices for these developments.

Table 3-7: Minor Background Developments Vehicle Demand Matrix, AM Peak Hour

Zone	4	5	6	7	9	10	11	16	17	211	27003	Total
4										1	2	3
5										1		1
6	33					43						76
7			3								8	11
9												0
10			19								4	23
11												0
16												0
17												0
211	1	1										2
27003	5			27		12			3			47
Total	39	1	22	27	0	55	0	0	3	2	14	163

Table 3-8: Minor Background Developments Vehicle Demand Matrix, PM Peak Hour

Zone	4	5	6	7	9	10	11	16	17	211	27003	Total
4										17	2	19
5										11		11
6	20					18						38
7			5							2	18	25
9										2		2
10			53							9	20	82
11										2		2
16										1		1
17			2									2
211	4	9			4	3		2				22
27003	2			12		10			2			26
Total	26	9	60	12	4	31	0	2	2	44	40	230

3.3.4 Block 34E

The Block 34E development covers a large land area and is a major trip generator. As a result, the traffic generated was handled separately from the other sources of traffic in the study area. The Transportation Mobility Plan prepared by Crozier in May 2021 was used as a reference for this development. That traffic study assessed Block 34E under different scenarios, which mostly differed based on the potential future interchanges for Highway 400 in the study area. Figure 17A from Crozier's Block 34E traffic study shows the volumes under the following assumptions:

- There is no interchange at Highway 400 and Kirby Road.
- There is no Highway 413 (GTA West).
- Spine Road has a 4-lane cross section (two in each direction), while the other roads within Block 34E have 2-lane cross sections (one in each direction).
- Jane Street is widened to a 4-lane cross section (two in each direction), and NBL turn lanes are provided for the southern two collector roads into Block 34E. A SBR turn lane is provided for the southernmost collector road into Block 34E.
- Kirby Road is widened to a 4-lane cross section.
- The jog at the intersection of Jane Street and Kirby Road is eliminated, and the new intersection has left turn lanes in all directions.
- A double EBL turn lane and a single WBR turn lane are added along Teston Road at Spine Road.
- A double EBL turn lane is added along Teston Road at Jane Street.
- A double WBL turn lane is added along Teston Road at Cityview Boulevard.
- 5% of Block 34E traffic is heavy vehicles.

To adapt the volumes shown in Figure 17A of Crozier's Block 34E traffic study to an origin-destination matrix, a matrix balancing method similar to the one described in **Section 2.3.1** was used. Four access points from Block 34E were identified corresponding to zones 1, 15, 201, and 202, and seven boundary zones into the study area were identified corresponding to zones 101-107. The total traffic in and out of these zones was identified from Figure 17A and used to set the goal values for the row and column sums of the OD

matrix. Some adjustment was needed to ensure that the total traffic in and out of Block 34E was equal. For OD pairs that didn't involve the access and boundary zones listed above, a value of zero was used. The other OD pair values were found by using the iterative matrix balancing procedure. Finally, to account for the relatively high heavy vehicle traffic generated by Block 34E, the matrix was divided into two matrices, one for light vehicles and the other for heavy vehicles. Each OD pair in the heavy vehicle matrix was 5% of the corresponding OD pair in the total matrix. The remaining 95% formed the light vehicle matrix.

Table 3-9 and **Table 3-10** detail the OD matrices used for Block 34E.

Table 3-9: Block 34E Vehicle Demand Matrix, AM Peak Hour (automobiles + heavy vehicles)

Zone	1	15	201	202	101	102	103	104	105	106	107	Total
1					1.4	3	5.6	2.7	0.7	0.5	0.1	14
15					12.1	24.9	46.9	22.5	6	4.6	1	118
201					4.1	8.4	15.9	7.6	2	1.6	0.3	40
202					32.4	66.7	125.6	60.2	16.2	12.3	2.6	316
101	15.7	30.2	30.8	99.3								176
102	32.4	62.2	63.6	204.9								363
103	36.3	69.7	71.3	229.7								407
104	19	36.5	37.3	120.2								213
105	5.8	11.1	11.4	36.7								65
106	5.1	9.8	10	32.2								57
107	0.8	1.5	1.6	5.1								9
Total	115	221	226	728	50	103	194	93	25	19	4	1778

Table 3-10: Block 34E Vehicle Demand Matrix, PM Peak Hour (automobiles + heavy vehicles)

Zone	1	15	201	202	101	102	103	104	105	106	107	Total
1					3.9	8.8	22.4	11.4	2.9	2.2	0.5	52
15					52.8	119.3	304	154.3	39.3	29.2	7.2	706
201					10.3	23.3	59.4	30.2	7.7	5.7	1.4	138
202					117	264.6	674.2	342.2	87.1	64.9	15.9	1566
101	1.5	13.6	15.8	49.1								80
102	5.4	47.5	55.4	171.7								280
103	13.4	117.4	136.8	424.4								692
104	7.3	64.1	74.8	231.8								378
105	1.7	14.9	17.4	54								88
106	1.4	12	14	43.5								71
107	0.3	2.4	2.8	8.6								14
Total	31	272	317	983	184	416	1060	538	137	102	25	4065

3.4 SITE TRAFFIC

Traffic associated with Block 27 was generated predominantly with ITE methodologies, along with a first-principles approach for the school trips. The total generated person-trips were split into external trips, i.e., those that have a trip end outside the study area, and internal trips using an internal capture rate. TTS data was used to obtain the internal capture rate by comparing the proportion of trips made that were below 2 km in distance between the starting and ending location. A separate internal capture rate was found for home-based trips and for non-home based trips. Similar to the internal trip capture methodology in the 3rd

Edition of the ITE Trip Generation Handbook, the capture rates were applied to each end of the trip and the lower trip value was retained for that trip purpose pairing.

Separate mode splits were applied to the generated trips depending on trip purpose and trip distance. A mode split was developed for external residential trips, external work trips, external retail trips, external school trips, internal school trips, and general internal trips, all using TTS data as the basis for the mode split. Finally, the external trips were distributed using zones 101 to 107 as the potential destinations in order to align with the Aimsun model, again with separate distributions for residential, retail, work, and school trip purposes. The methodologies to this point are described in the Block 27 Transportation Mobility Plan Update.

As Block 27 has six traffic analysis zones within the Aimsun model, the generated Block 27 trips needed to be split among them. For the external trips, the trips for each purpose were split into zones in proportion to the trip generation variable for each zone. For residential trip purposes, this is the proportion of residential units in each zone. For office and retail trip purposes, the gross floor area (GFA) in each zone was used. School trips were divided according to the number of student spaces in each zone. The traffic from each Block 27 zone was then distributed to the external zones using the distributions.

For the internal trips, the iterative matrix balancing method described in **Section 2.3.1** was used. The total internal vehicle trips were assigned to the zones in proportion to the total external vehicle trips into and out of each zone. These trips formed the goal values for the iterative balancing process.

The OD matrices for all Block 27 trips can be found in **Table 3-11** and **Table 3-12**.

Table 3-11: Block 27 Vehicle Demand Matrix, AM Peak Hour

Zone	101	102	103	104	105	106	107	27001	27002	27003	27004	27005	27006	Total
101								18.3	8.9	11.2	4.1	13.7	3.1	59
102								167.7	55.4	108.6	38.8	144.2	20.7	535
103								56.9	23.3	32.7	14.3	37.4	15.9	180
104								61	10	33.1	24.8	93.4	4.9	227
105								92	20	52.5	32.4	119.7	9.8	326
106								20.5	8.2	13.4	4	13.1	3.7	63
107								36.7	7.2	21.5	12.7	48.5	3.1	130
27001	18.3	253.2	159.6	79.8	118.3	17.7	46.2	12.9	19.9	56.3	33.2	145.7	12.9	974
27002	7.5	91.7	64	16.6	30	7.1	11	32.4	0.5	14.3	8.8	39	3.1	326
27003	10.8	144.3	89.5	43.5	65.3	10.4	26.3	58.9	9.3	2.7	15.4	67.6	6.1	550
27004	4.3	67.3	40.3	29.5	40.1	4.1	15.3	26.4	4.2	11.8	0.7	30.1	2.7	277
27005	10.3	176.4	89	101.2	129.7	9.8	52.7	101.7	16.9	45.6	26.2	11.6	11	782
27006	5.5	72.8	54.6	12.7	23.7	5.5	7.3	23.7	3.1	10.4	6.7	30	0.2	256
Total	57	806	497	283	407	55	159	709	187	414	222	794	97	4686

Table 3-12: Block 27 Vehicle Demand Matrix, PM Peak Hour

Zone	101	102	103	104	105	106	107	27001	27002	27003	27004	27005	27006	Total
101								44.2	17.4	28.9	8.6	27.4	8.5	135
102								404.4	150.5	274.3	73.7	271.8	57.5	1232
103								146.3	58.7	86.1	34.1	82.9	43.9	452
104								72.4	22.5	43.3	19.8	65.5	13.5	237
105								146	50.3	91.5	34.2	113	27	462
106								56.5	21.8	37.4	10.5	35	10.1	171
107								59	19.8	38.4	13	47.3	8.5	186
27001	36.5	325.4	113.8	82	123.3	29.9	87.1	16.8	44.7	84.5	24.5	98.5	21.1	1088
27002	15.7	124.1	48.4	27.5	42.9	11.6	29.8	39.7	1.1	20.7	5.7	23.3	4.6	395
27003	24.8	218	64.9	52.5	79.7	20.8	62.3	83.8	22.7	4.4	12.4	50.1	10.6	707
27004	6.5	62.2	28.1	19.9	28.1	5	15.2	27.3	7.6	13.8	0.4	16.8	4	235
27005	26.5	225.6	67.2	77.7	105.6	19.8	69.6	116.4	32.4	58.7	18.5	7.4	17.5	843
27006	3.6	47.6	35.7	8.3	15.5	3.6	4.8	17	4.6	8.8	2.4	10	0.2	162
Total	114	1003	358	268	395	91	269	1230	454	791	258	849	227	6306

4 RESULTS

Modelled outputs in the form of simulated volume figures are included as **Attachment 1** at the end of this memorandum.

4.1 INPUTS TO THE SYNCHRO ANALYSIS

The Aimsun model was used primarily as a way of assigning the Block 34E and Block 27 traffic in such a way that the traffic from both developments would take the other development into account and make use of all available alternative routes. Therefore, the main output from the Aimsun model was the vehicle counts on each turning movement, separated by the associated development and by direction of travel.

For input into the Synchro analysis, traffic volumes were compiled from the various developments and sources described in **Sections 2.3**, Background Traffic**3.3**, and **3.4**. Traffic associated with Blocks 27 and 34E made use of the Aimsun outputs, while all other traffic used the analysis from their respective traffic studies or derived manually by LEA.

The output turning movement volumes associated with Blocks 27 and 34E were adjusted to account for the random nature of a microsimulation and to correct any potential underestimation due to vehicles caught in congestion or that may have made wrong turns. The modelled volumes were compared against the input volumes by summing all the volumes entering or exiting the relevant traffic analysis zones. Scaling factors were determined for each segment of traffic – for each block and direction of travel. These scaling factors were then multiplied by the modelled volumes to eliminate the random nature of the simulations. **Table 4-1** shows the scaling factors applied to each category of traffic.

Table 4-1: Aimsun Output Scaling Factors

Traffic Grouping	Input Volume		Modelled Volume		Scaling Factor	
	AM	PM	AM	PM	AM	PM
Block 34E						
Light Vehicle Trips In	1,225.5	1,522.85	1,265	1,386	0.969	1.098
Light Vehicle Trips Out	463.6	2338.9	494.33	2,177	0.938	1.074
Heavy Vehicle Trips In	64.5	80.15	62	68.33	1.040	1.173
Heavy Vehicle Trips Out	24.4	123.1	25	114.67	0.976	1.074
Block 27						
Trips In	1,521	2,876	1,537.67	2,675.33	0.989	1.075
Trips Out	2,263	2,497	2,245	2,510.67	1.008	0.995
Internal Trips	1,804	1,866	1,758.33	1,870	1.026	0.998

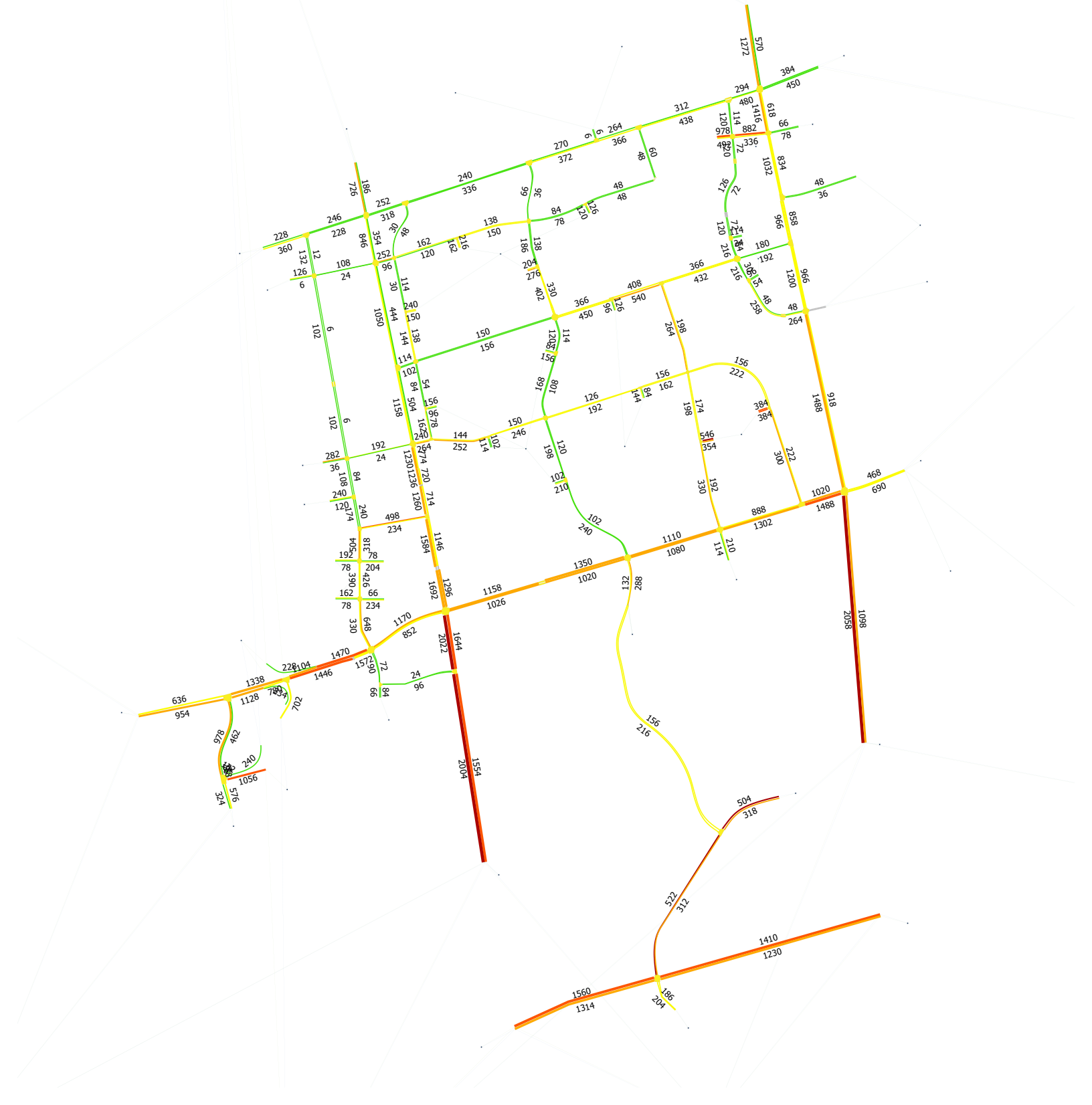
The resulting scaled volumes were combined with the original analysis volumes from other background developments and the March 2023 TMC data to create an input set of volumes for the Synchro analysis. Full details of the Synchro analysis are provided in the Block 27 Transportation Mobility Plan Update.

:tv

enclosed: Attachment 1: Aimsun Simulated Flow Figures

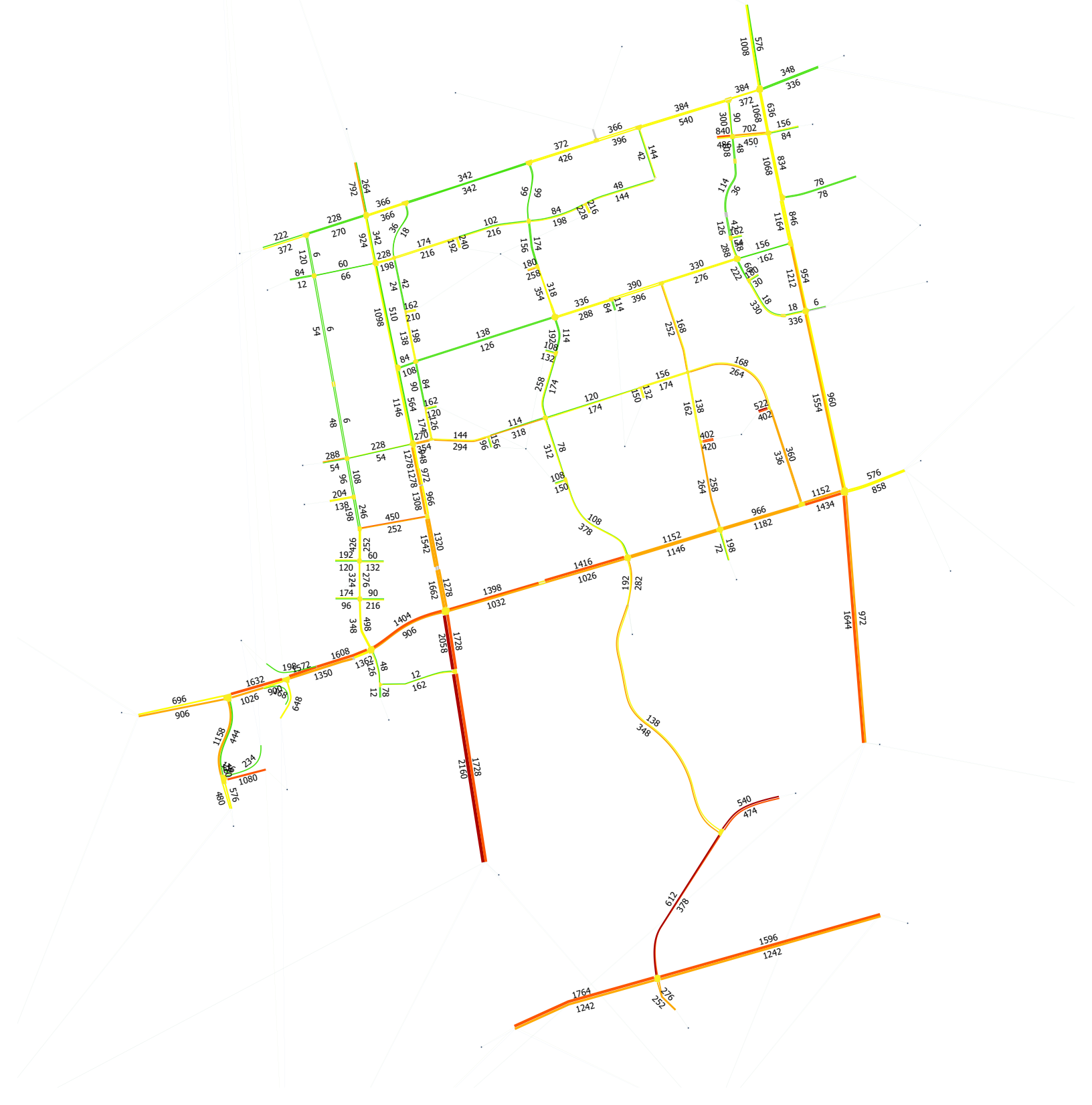
Peak Hour Volumes
Block27-v03.02.ang, Scenario: 2031 FT2 no6 AM (2024 07 11)
Result 38643
2024-08-29 2:27

Simulated V/C (Colour)
- -1 to 0
- 0 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- 1 to 1.79769e+308



Peak Hour Volumes
Block27-v03.02.ang, Scenario: 2031 FT2 no6 AM (2024 07 11)
Result 38644
2024-08-29 2:32

Simulated V/C (Colour)
- -1 to 0
- 0 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- 1 to 1.79769e+308



Peak Hour Volumes
Block27-v03.02.ang, Scenario: 2031 FT2 no6 AM (2024 07 11)
Result 38645
2024-08-29 2:34

Simulated V/C (Colour)

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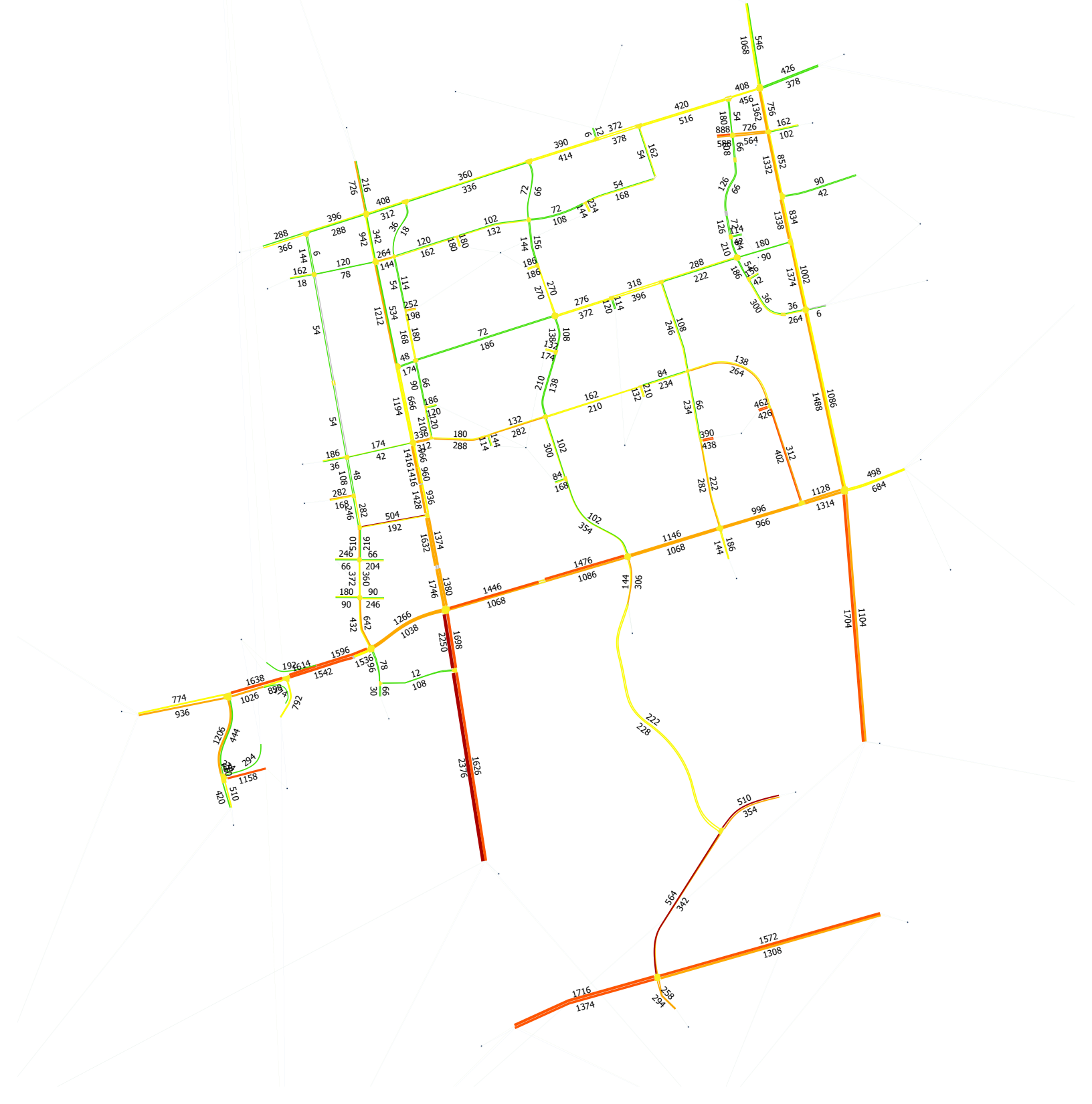
- 0 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- 1 to 1.79769e+308



Peak Hour Volumes
Block27-v03.02.ang, Scenario: 2031 FT2 no6 PM (2024 07 11)
Result 38650
2024-08-29 2:37

Simulated V/C (Colour)
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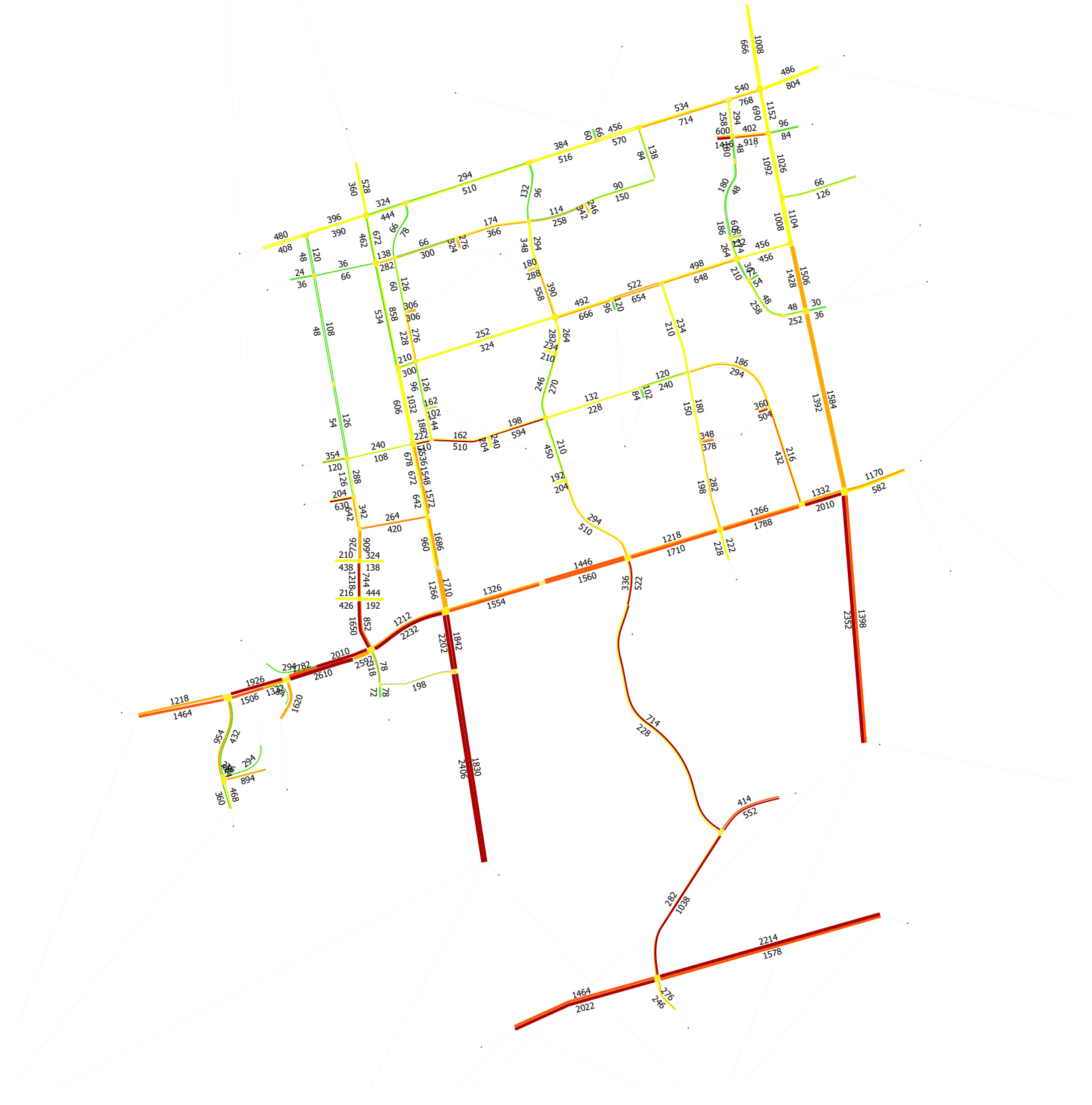
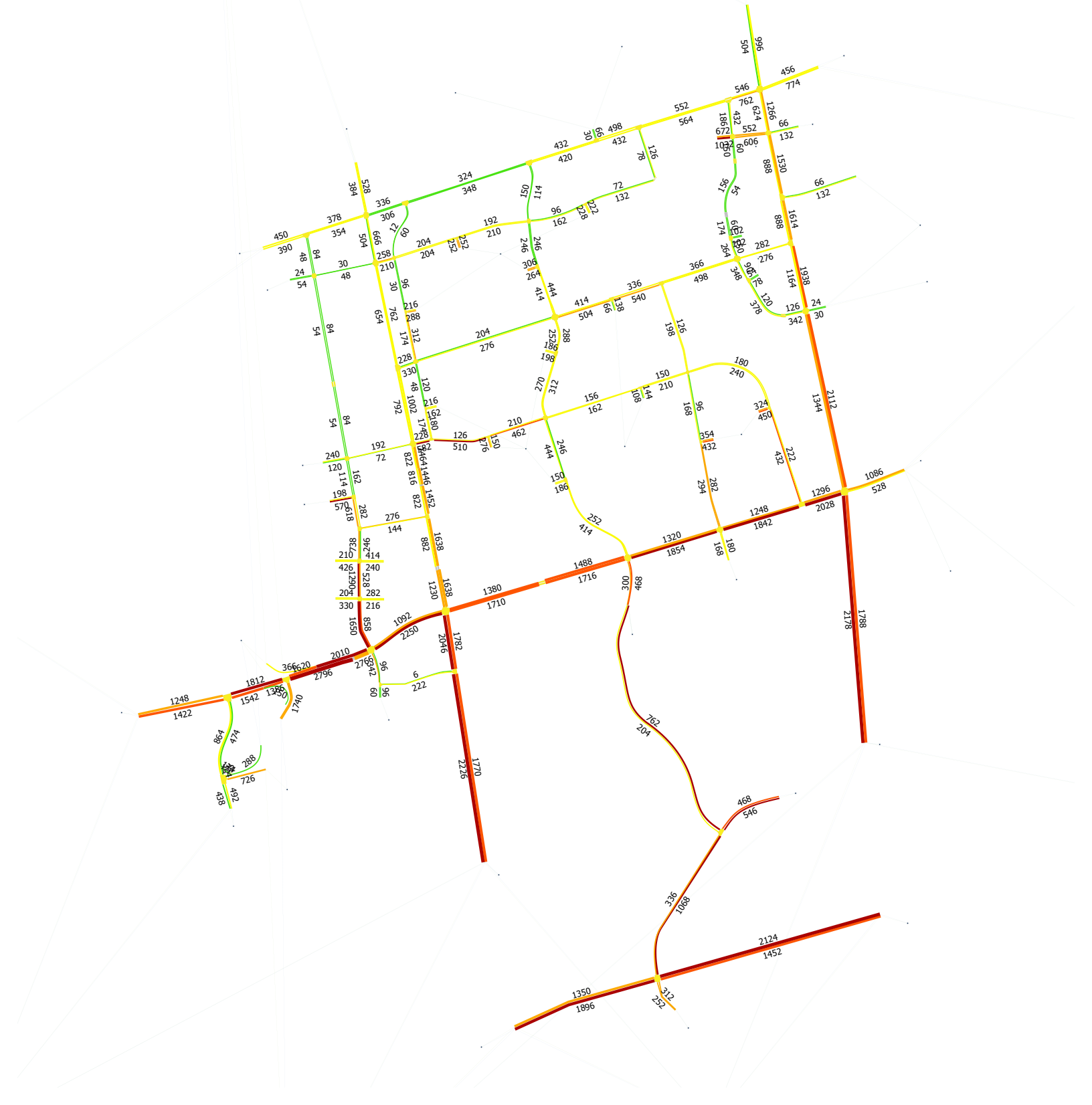
- 0 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- 1 to 1.79769e+308



Peak Hour Volumes
Block27-v03.02.ang, Scenario: 2031 FT2 no6 PM (2024 07 11)
Result 38651
2024-08-29 2:38

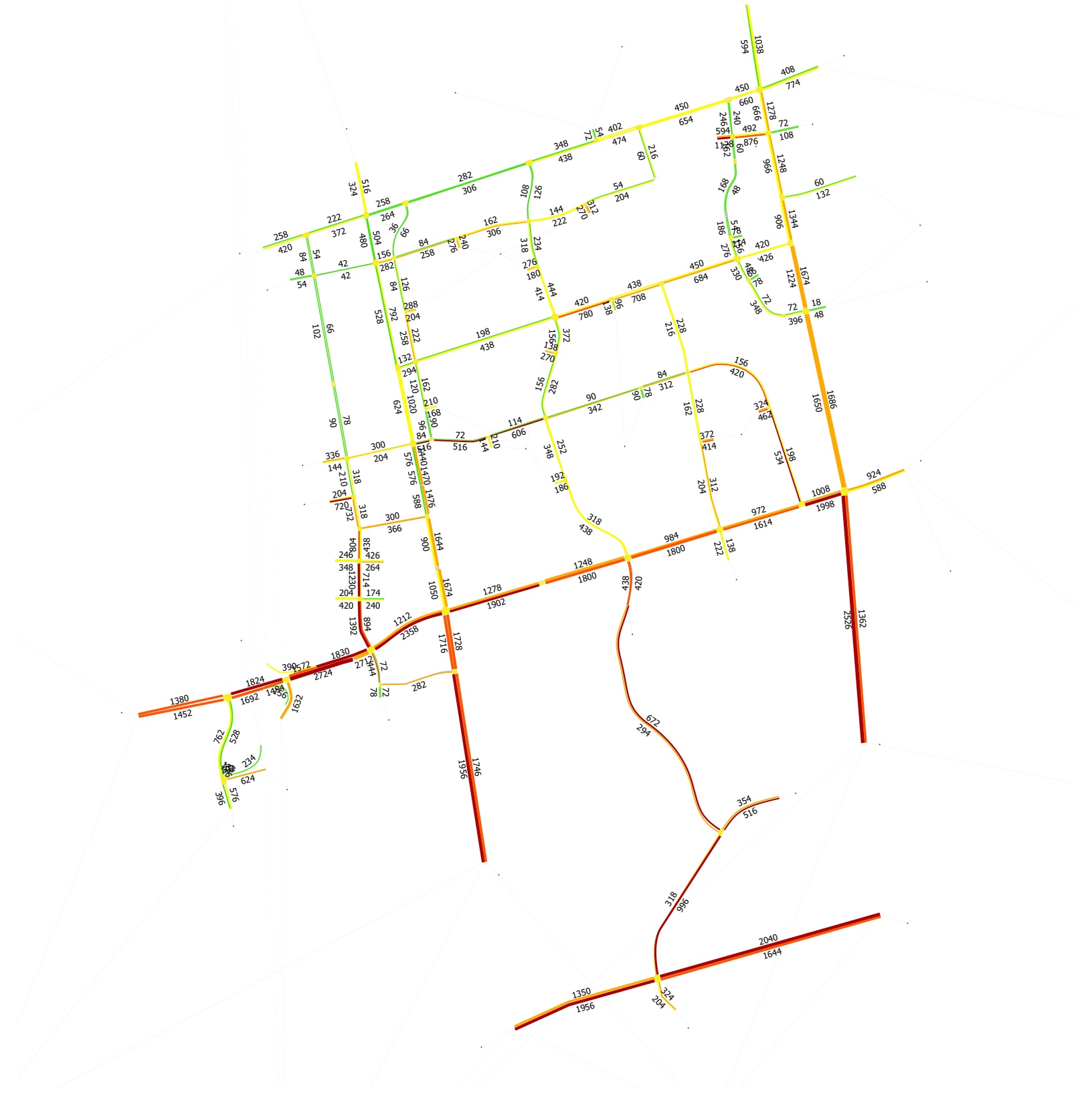
Simulated V/C (Colour)

- -1 to 0
- 0 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- 1 to 1.79769e+308



Peak Hour Volumes
Block27-v03.02.ang, Scenario: 2031 FT2 no6 PM (2024 07 11)
Result 38652
2024-08-29 2:40

Simulated V/C (Colour)
- -1 to 0
- 0 to 0.25
- 0.25 to 0.5
- 0.5 to 0.75
- 0.75 to 1
- 1 to 1.79769e+308

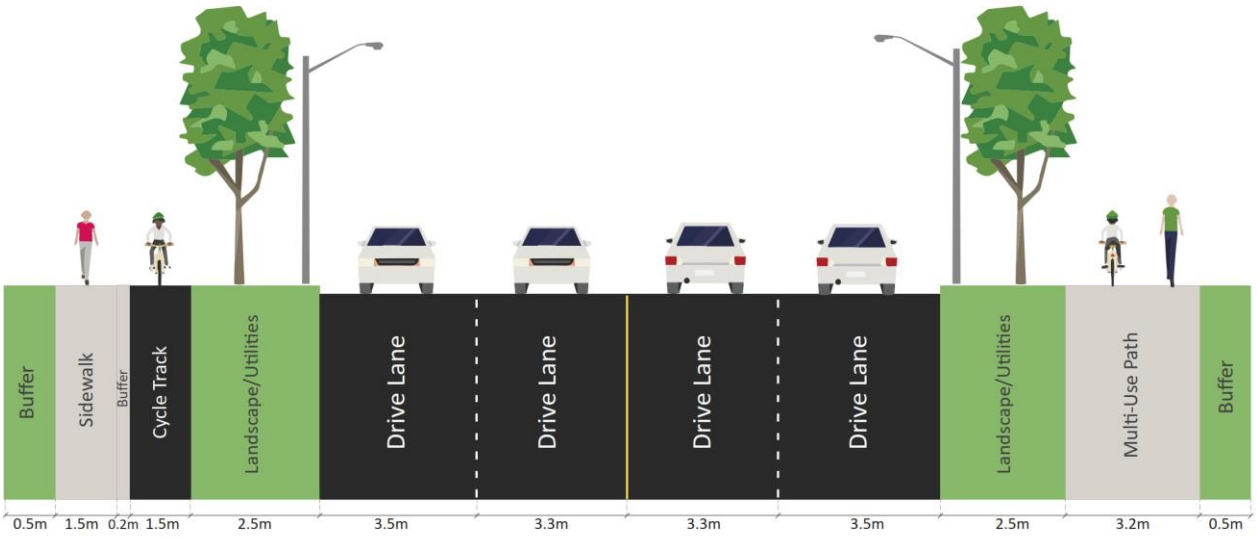


APPENDIX H

Block 27 MCEA - Recommended Cross-Sections

Block 27 Collector Roads Municipal Class Environmental Assessment Study
Final Major Collector Road Cross-Section

Alternative MA1: Multi-Use Path



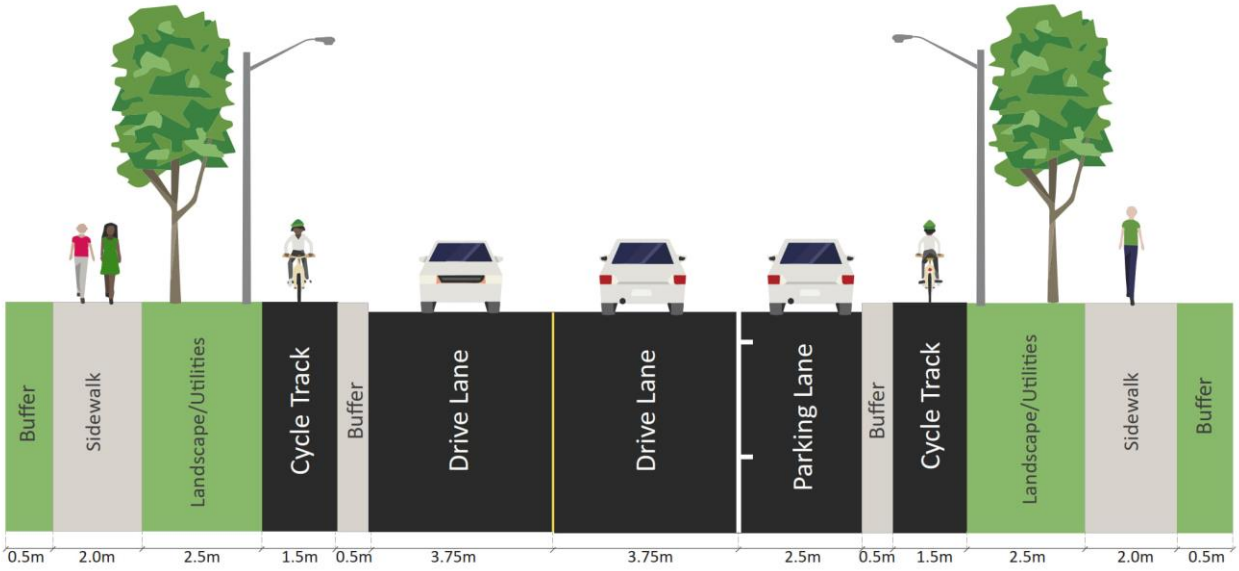
Note: This alternative considers implementation of MUP(s) and/or side-by-side facilities (both are illustrated in the above cross-section as an example)

Block 27 Collector Roads Municipal Class Environmental Assessment Study
Final Minor Collector Road Cross-Section

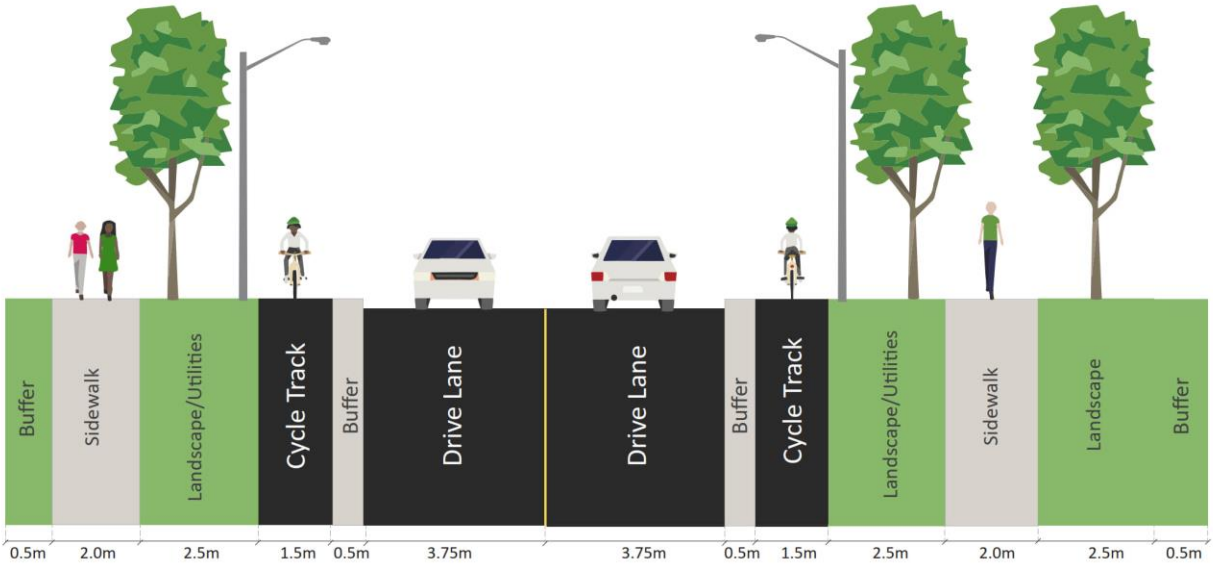
Note: It is anticipated that there are some areas along collector streets where a parking lane may not be suitable, as such, cross-sections with and without a parking lane has been developed. Both options with and without parking provide a 24 m right-of-way. Specific locations with/without parking along the Collector Roads will be determined in the next design phase.

Alternative MI1: Separated Uni-Directional Cycle Track

Option With Parking

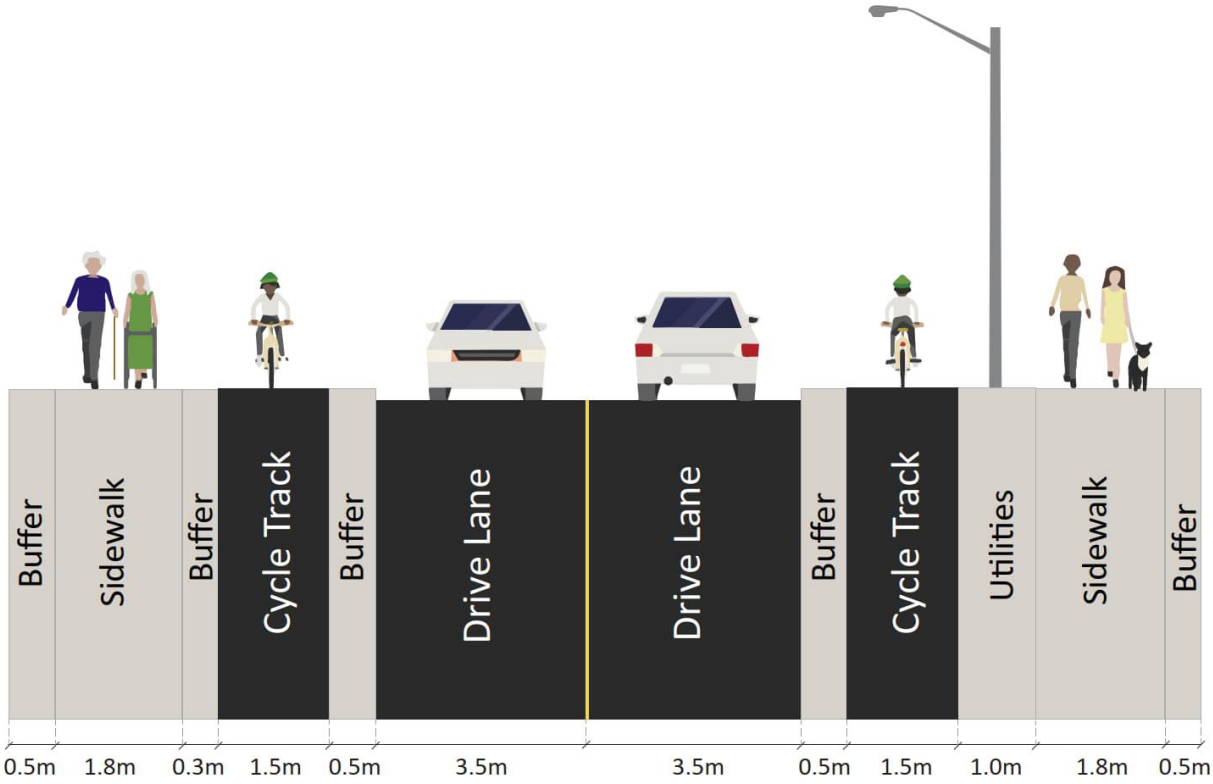


Option Without Parking



Block 27 Collector Roads Municipal Class Environmental Assessment Study
Final Reduced Street 6 Cross-Section

Alternative 1: Separated Facilities (16.9 m)

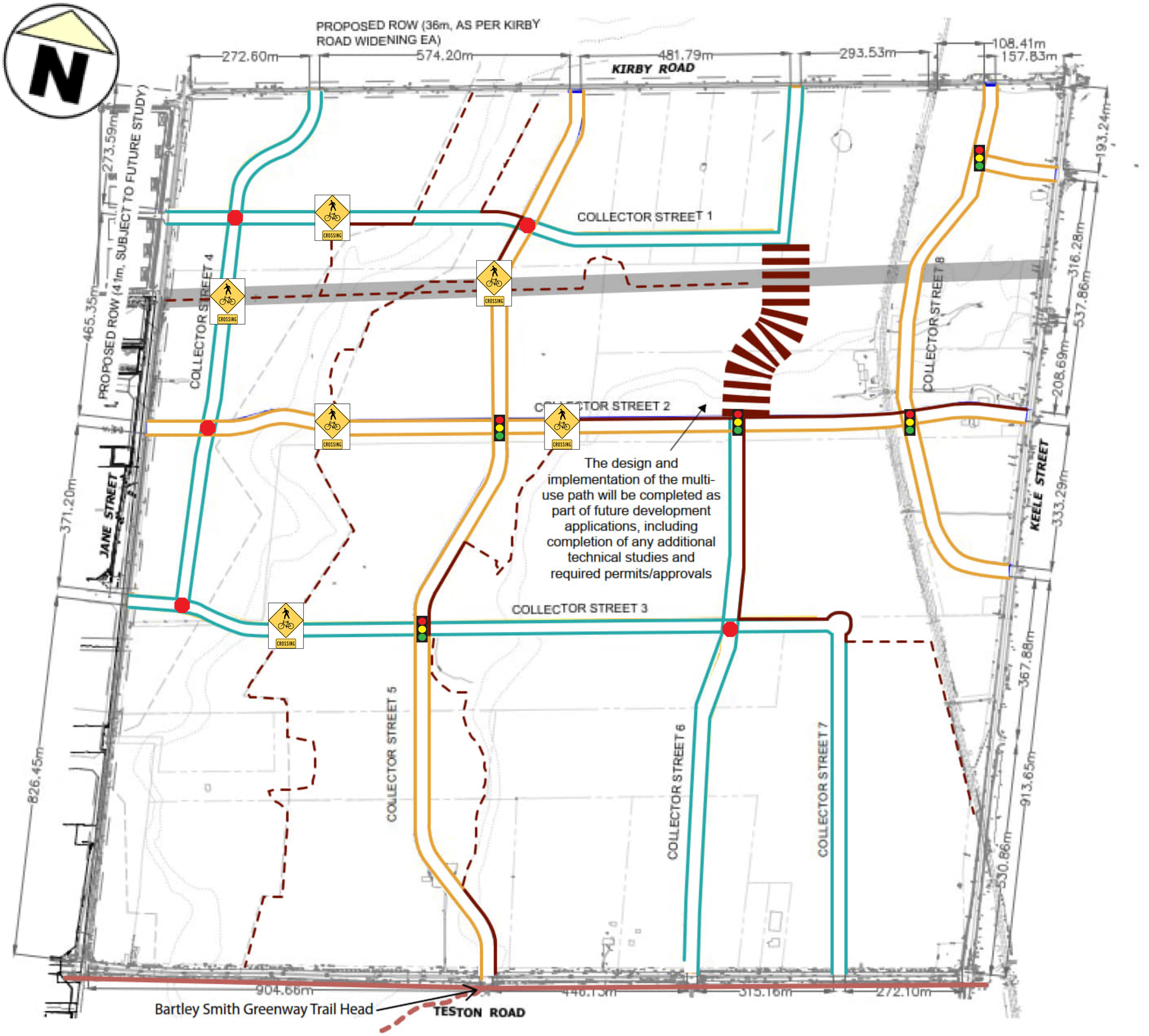


Block 27 Major Collector Roads Municipal Class Environmental Assessment Study
Minor Collector Road Cross-Section (24m) Cycle Track + MUP

Separated Uni-Directional Cycle Track + MUP

APPENDIX I

Transportation Management Plan



Legend

Existing Facilities

- Multi-Use Path
- Trail
- TCPL Corridor

Proposed Facilities

- Side-by-Side Facilities
- Cycle Track
- Multi-Use Path
- Trail

Conceptual location of the multi-use path through the significant woodlot

Pedestrian/Cyclist Crossing

NOTE: not to scale

APPENDIX J

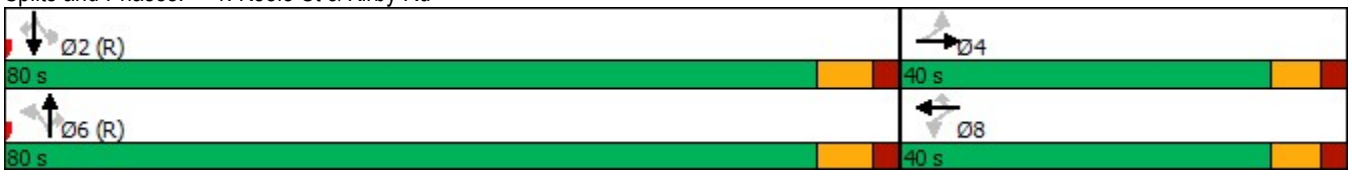
Existing Synchro Results

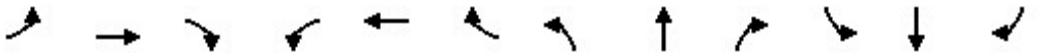
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	28	146	84	162	49	42	259	58	39	603	49
Future Volume (vph)	28	146	84	162	49	42	259	58	39	603	49
Lane Group Flow (vph)	0	226	0	259	52	0	317	61	0	676	52
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8			6			2	
Permitted Phases	4		8		8	6		6	2		2
Detector Phase	4	4	8	8	8	6	6	6	2	2	2
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	37.5	37.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	40.0	40.0	40.0	80.0	80.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0		7.5	7.5		7.5	7.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio		0.66		0.90	0.15		0.18	0.06		0.31	0.06
Control Delay		48.5		77.3	10.0		8.0	1.7		10.6	2.8
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay		48.5		77.3	10.0		8.0	1.7		10.6	2.8
Queue Length 50th (m)		47.8		61.4	0.0		11.2	0.0		38.0	0.0
Queue Length 95th (m)		73.3		#101.2	10.0		16.1	2.8		52.7	5.1
Internal Link Dist (m)		149.7		301.7			190.7			234.5	
Turn Bay Length (m)					60.0			45.0			90.0
Base Capacity (vph)		399		335	395		1792	991		2149	910
Starvation Cap Reductn		0		0	0		0	0		0	0
Spillback Cap Reductn		0		0	0		0	0		0	0
Storage Cap Reductn		0		0	0		0	0		0	0
Reduced v/c Ratio		0.57		0.77	0.13		0.18	0.06		0.31	0.06

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Keele St & Kirby Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	146	41	84	162	49	42	259	58	39	603	49
Future Volume (vph)	28	146	41	84	162	49	42	259	58	39	603	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0			7.0	7.0		7.5	7.5		7.5	7.5
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.98		1.00	0.98
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt		0.97			1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99			0.98	1.00		0.99	1.00		1.00	1.00
Satd. Flow (prot)		1729			1742	1300		3496	1506		3666	1385
Flt Permitted		0.82			0.69	1.00		0.79	1.00		0.91	1.00
Satd. Flow (perm)		1428			1221	1300		2786	1506		3337	1385
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	154	43	88	171	52	44	273	61	41	635	52
RTOR Reduction (vph)	0	8	0	0	0	40	0	0	22	0	0	19
Lane Group Flow (vph)	0	218	0	0	259	12	0	317	39	0	676	33
Confl. Peds. (#/hr)	4		2	2		4	1		1	1		1
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	4%	5%	5%	6%	6%	14%	5%	7%	3%	5%	2%	12%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6			2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)		28.3			28.3	28.3		77.2	77.2		77.2	77.2
Effective Green, g (s)		28.3			28.3	28.3		77.2	77.2		77.2	77.2
Actuated g/C Ratio		0.24			0.24	0.24		0.64	0.64		0.64	0.64
Clearance Time (s)		7.0			7.0	7.0		7.5	7.5		7.5	7.5
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		336			287	306		1792	968		2146	891
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.21	0.01		0.11	0.03		c0.20	0.02
v/c Ratio		0.65			0.90	0.04		0.18	0.04		0.32	0.04
Uniform Delay, d1		41.4			44.5	35.4		8.6	7.8		9.6	7.8
Progression Factor		1.00			1.00	1.00		0.83	0.63		1.00	1.00
Incremental Delay, d2		4.3			29.2	0.1		0.2	0.1		0.4	0.1
Delay (s)		45.7			73.8	35.4		7.3	5.1		10.0	7.9
Level of Service		D			E	D		A	A		A	A
Approach Delay (s)		45.7			67.3			7.0			9.8	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	31	344	40	23	672
Future Vol, veh/h	56	31	344	40	23	672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	70	-	37	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	7	0	4	3
Mvmt Flow	64	35	391	45	26	764

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	825	196	0	0	436	0
Stage 1	391	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.18	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.24	-
Pot Cap-1 Maneuver	315	819	-	-	1106	-
Stage 1	659	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	302	819	-	-	1106	-
Mov Cap-2 Maneuver	302	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	601	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	0.5
HCM LOS	C		

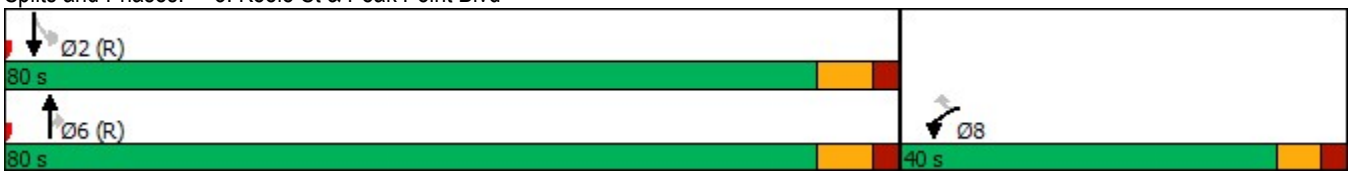
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	302	819	1106	-
HCM Lane V/C Ratio	-	-	0.211	0.043	0.024	-
HCM Control Delay (s)	-	-	20.1	9.6	8.3	0.2
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	0.1	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	166	12	373	50	9	735
Future Volume (vph)	166	12	373	50	9	735
Lane Group Flow (vph)	177	13	397	53	0	792
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	7.5	7.5		7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.69	0.05	0.15	0.05		0.31
Control Delay	61.2	17.7	5.7	1.9		5.0
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	61.2	17.7	5.7	1.9		5.0
Queue Length 50th (m)	42.2	0.0	13.7	0.0		22.4
Queue Length 95th (m)	61.6	5.5	24.9	4.4		32.9
Internal Link Dist (m)	483.2		212.8			306.7
Turn Bay Length (m)		35.0		55.0		
Base Capacity (vph)	461	430	2580	1125		2521
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.38	0.03	0.15	0.05		0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: Keele St & Peak Point Blvd



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	166	12	373	50	9	735
Future Volume (vph)	166	12	373	50	9	735
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1652	1507	3545	1526		3647
Flt Permitted	0.95	1.00	1.00	1.00		0.95
Satd. Flow (perm)	1652	1507	3545	1526		3462
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	177	13	397	53	10	782
RTOR Reduction (vph)	0	11	0	14	0	0
Lane Group Flow (vph)	177	2	397	39	0	792
Heavy Vehicles (%)	2%	0%	6%	4%	0%	3%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Actuated Green, G (s)	18.6	18.6	87.4	87.4		87.4
Effective Green, g (s)	18.6	18.6	87.4	87.4		87.4
Actuated g/C Ratio	0.16	0.16	0.73	0.73		0.73
Clearance Time (s)	6.5	6.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	256	233	2581	1111		2521
v/s Ratio Prot	c0.11		0.11			
v/s Ratio Perm		0.00		0.03		c0.23
v/c Ratio	0.69	0.01	0.15	0.03		0.31
Uniform Delay, d1	48.0	42.9	5.0	4.5		5.7
Progression Factor	1.00	1.00	1.00	1.00		0.73
Incremental Delay, d2	7.8	0.0	0.1	0.1		0.3
Delay (s)	55.8	42.9	5.1	4.6		4.5
Level of Service	E	D	A	A		A
Approach Delay (s)	54.9		5.1			4.5
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	1	429	6	2	951
Future Vol, veh/h	5	1	429	6	2	951
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	5	1	471	7	2	1045

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1002	239	0	0	478	0
Stage 1	475	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	243	768	-	-	1095	-
Stage 1	597	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	768	-	-	1095	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.5	0	0
HCM LOS	C		

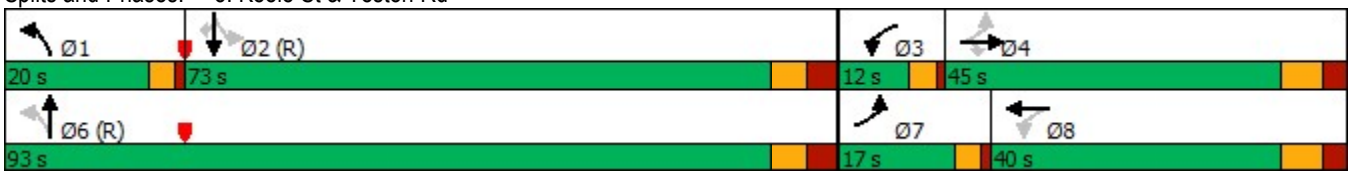
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	242	768	1095	-
HCM Lane V/C Ratio	-	-	0.023	0.001	0.002	-
HCM Control Delay (s)	-	-	20.2	9.7	8.3	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

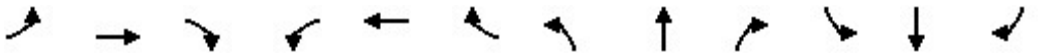
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	183	111	459	9	42	349	266	51	576	352
Future Volume (vph)	183	111	459	9	42	349	266	51	576	352
Lane Group Flow (vph)	189	114	473	9	71	360	294	53	594	363
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases	7	4		3	8	1	6		2	
Permitted Phases	4		4	8		6		2		2
Detector Phase	7	4	4	3	8	1	6	2	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.0	36.5	36.5	11.0	36.5	11.0	37.5	37.5	37.5	37.5
Total Split (s)	17.0	45.0	45.0	12.0	40.0	20.0	93.0	73.0	73.0	73.0
Total Split (%)	11.3%	30.0%	30.0%	8.0%	26.7%	13.3%	62.0%	48.7%	48.7%	48.7%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	4.0	7.5	4.0	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead		Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.66	0.34	0.76	0.05	0.45	0.64	0.12	0.09	0.30	0.37
Control Delay	60.7	54.3	16.3	41.0	53.1	14.8	8.6	19.7	20.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	54.3	16.3	41.0	53.1	14.8	8.6	19.7	20.0	3.3
Queue Length 50th (m)	53.6	31.5	13.9	2.3	15.6	34.2	13.4	7.2	48.2	0.0
Queue Length 95th (m)	68.0	48.8	56.1	6.4	29.1	73.9	27.5	19.5	81.1	19.1
Internal Link Dist (m)		191.4			260.4		253.9		909.7	
Turn Bay Length (m)	185.0			40.0		102.0		80.0		60.0
Base Capacity (vph)	286	433	681	202	327	568	2372	564	2004	990
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.26	0.69	0.04	0.22	0.63	0.12	0.09	0.30	0.37

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 5: Keele St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	111	459	9	42	27	349	266	19	51	576	352
Future Volume (vph)	183	111	459	9	42	27	349	266	19	51	576	352
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.5	7.5	4.0	7.5		4.0	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1623	1735	1463	1445	1437		1627	3437		1705	3648	1505
Flt Permitted	0.58	1.00	1.00	0.68	1.00		0.37	1.00		0.57	1.00	1.00
Satd. Flow (perm)	992	1735	1463	1039	1437		632	3437		1027	3648	1505
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	189	114	473	9	43	28	360	274	20	53	594	363
RTOR Reduction (vph)	0	0	339	0	18	0	0	3	0	0	0	171
Lane Group Flow (vph)	189	114	134	9	53	0	360	291	0	53	594	192
Confl. Peds. (#/hr)	3		7	7		3	1					1
Heavy Vehicles (%)	9%	14%	6%	22%	33%	22%	9%	8%	11%	4%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8			6			2		2
Actuated Green, G (s)	34.8	29.3	29.3	19.3	17.8		100.2	100.2		79.2	79.2	79.2
Effective Green, g (s)	34.8	29.3	29.3	19.3	17.8		100.2	100.2		79.2	79.2	79.2
Actuated g/C Ratio	0.23	0.20	0.20	0.13	0.12		0.67	0.67		0.53	0.53	0.53
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5		4.0	7.5		7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	284	338	285	137	170		534	2295		542	1926	794
v/s Ratio Prot	c0.06	0.07		0.00	0.04		c0.08	0.08			0.16	
v/s Ratio Perm	c0.10		0.09	0.01			c0.37			0.05		0.13
v/c Ratio	0.67	0.34	0.47	0.07	0.31		0.67	0.13		0.10	0.31	0.24
Uniform Delay, d1	50.7	52.0	53.5	57.3	60.5		11.5	9.0		17.6	20.0	19.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.8	0.6	1.2	0.2	1.1		3.4	0.1		0.4	0.4	0.7
Delay (s)	56.5	52.6	54.7	57.5	61.6		14.8	9.1		18.0	20.4	19.9
Level of Service	E	D	D	E	E		B	A		B	C	B
Approach Delay (s)		54.8			61.1			12.3			20.1	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	731	44	752	138	37
Future Volume (vph)	731	44	752	138	37
Lane Group Flow (vph)	842	45	775	142	38
Turn Type	NA	Perm	NA	Prot	Perm
Protected Phases	6		2	8	
Permitted Phases		2			8
Detector Phase	6	2	2	8	8
Switch Phase					
Minimum Initial (s)	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	31.0	31.0
Total Split (s)	70.0	70.0	70.0	50.0	50.0
Total Split (%)	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.0	7.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.32	0.10	0.29	0.63	0.17
Control Delay	5.1	6.0	5.8	60.6	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	6.0	5.8	60.6	14.3
Queue Length 50th (m)	27.5	2.6	27.8	34.0	0.0
Queue Length 95th (m)	35.0	8.2	47.4	51.7	9.7
Internal Link Dist (m)	448.8		392.6	309.1	
Turn Bay Length (m)		60.0		35.0	
Base Capacity (vph)	2608	452	2640	603	548
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.29	0.24	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 6: St Joan of Arc Ave & Teston Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	731	85	44	752	138	37
Future Volume (vph)	731	85	44	752	138	37
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5		7.5	7.5	7.0	7.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3498		1766	3545	1685	1463
Flt Permitted	1.00		0.33	1.00	0.95	1.00
Satd. Flow (perm)	3498		606	3545	1685	1463
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	754	88	45	775	142	38
RTOR Reduction (vph)	4	0	0	0	0	33
Lane Group Flow (vph)	838	0	45	775	142	5
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	6%	0%	0%	6%	0%	3%
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases			2			8
Actuated Green, G (s)	89.4		89.4	89.4	16.1	16.1
Effective Green, g (s)	89.4		89.4	89.4	16.1	16.1
Actuated g/C Ratio	0.75		0.75	0.75	0.13	0.13
Clearance Time (s)	7.5		7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2606		451	2641	226	196
v/s Ratio Prot	c0.24			0.22	c0.08	
v/s Ratio Perm			0.07			0.00
v/c Ratio	0.32		0.10	0.29	0.63	0.03
Uniform Delay, d1	5.1		4.2	5.0	49.1	45.1
Progression Factor	0.87		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		0.4	0.3	5.4	0.1
Delay (s)	4.8		4.7	5.3	54.5	45.2
Level of Service	A		A	A	D	D
Approach Delay (s)	4.8			5.2	52.5	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	760	81	21	869	159	46
Future Volume (vph)	760	81	21	869	159	46
Lane Group Flow (vph)	817	87	23	934	171	49
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	70.0	70.0	70.0	70.0	50.0	50.0
Total Split (%)	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.31	0.08	0.06	0.36	0.67	0.20
Control Delay	6.7	2.1	5.3	5.4	60.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	2.1	5.3	5.4	60.1	12.8
Queue Length 50th (m)	32.5	0.8	1.2	26.6	40.7	0.0
Queue Length 95th (m)	55.1	6.7	3.6	47.0	59.4	10.5
Internal Link Dist (m)	898.1			448.8	587.1	
Turn Bay Length (m)		39.0	60.0		35.0	
Base Capacity (vph)	2603	1135	409	2603	603	509
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.08	0.06	0.36	0.28	0.10

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 7: Cranston Park Ave & Teston Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	760	81	21	869	159	46
Future Volume (vph)	760	81	21	869	159	46
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	1533	1605	3579	1685	1334
Flt Permitted	1.00	1.00	0.33	1.00	0.95	1.00
Satd. Flow (perm)	3579	1533	562	3579	1685	1334
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	817	87	23	934	171	49
RTOR Reduction (vph)	0	20	0	0	0	42
Lane Group Flow (vph)	817	67	23	934	171	7
Confl. Peds. (#/hr)		6	6			
Heavy Vehicles (%)	5%	0%	10%	5%	0%	13%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	87.3	87.3	87.3	87.3	18.2	18.2
Effective Green, g (s)	87.3	87.3	87.3	87.3	18.2	18.2
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.15	0.15
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2603	1115	408	2603	255	202
v/s Ratio Prot	0.23			c0.26	c0.10	
v/s Ratio Perm		0.04	0.04			0.01
v/c Ratio	0.31	0.06	0.06	0.36	0.67	0.04
Uniform Delay, d1	5.8	4.7	4.6	6.0	48.1	43.4
Progression Factor	1.00	1.00	0.80	0.75	1.00	1.00
Incremental Delay, d2	0.3	0.1	0.3	0.4	6.8	0.1
Delay (s)	6.1	4.8	4.0	4.9	54.8	43.5
Level of Service	A	A	A	A	D	D
Approach Delay (s)	6.0			4.9	52.3	
Approach LOS	A			A	D	

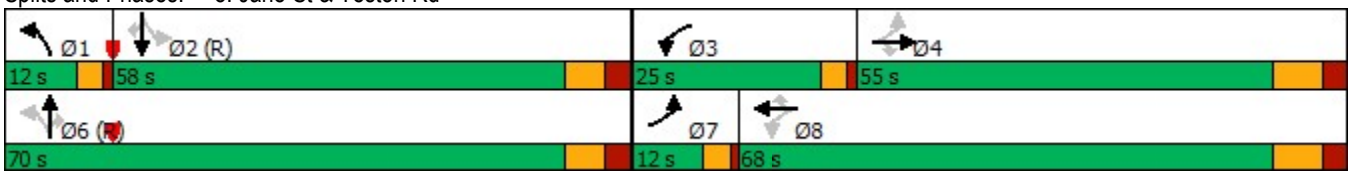
Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

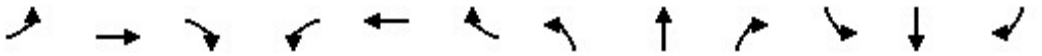
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	591	243	219	708	11	224	119	117	59	416	236
Future Volume (vph)	102	591	243	219	708	11	224	119	117	59	416	236
Lane Group Flow (vph)	107	622	256	231	745	12	236	125	123	62	438	248
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	35.0	35.0	35.0	35.0	35.0
Minimum Split (s)	11.0	40.5	40.5	11.0	40.5	40.5	11.0	42.5	42.5	42.5	42.5	42.5
Total Split (s)	12.0	55.0	55.0	25.0	68.0	68.0	12.0	70.0	70.0	58.0	58.0	58.0
Total Split (%)	8.0%	36.7%	36.7%	16.7%	45.3%	45.3%	8.0%	46.7%	46.7%	38.7%	38.7%	38.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.57	0.80	0.49	0.76	0.72	0.03	0.45	0.07	0.15	0.13	0.30	0.35
Control Delay	41.9	63.7	8.2	47.3	51.2	0.1	22.3	19.4	3.9	33.1	33.3	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	63.7	8.2	47.3	51.2	0.1	22.3	19.4	3.9	33.1	33.3	7.5
Queue Length 50th (m)	21.1	98.2	0.0	49.1	109.1	0.0	38.3	10.1	0.0	12.6	50.5	4.9
Queue Length 95th (m)	32.0	114.1	23.2	66.0	122.7	0.0	62.7	17.9	11.8	25.9	70.1	27.3
Internal Link Dist (m)		145.4			898.1			263.9			240.6	
Turn Bay Length (m)	100.0		70.0	120.0		35.0	45.0		55.0	135.0		58.0
Base Capacity (vph)	187	1109	633	321	1419	588	525	1836	838	490	1467	714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.56	0.40	0.72	0.53	0.02	0.45	0.07	0.15	0.13	0.30	0.35

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Splits and Phases: 8: Jane St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	591	243	219	708	11	224	119	117	59	416	236
Future Volume (vph)	102	591	243	219	708	11	224	119	117	59	416	236
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1569	3579	1475	1722	3579	1345	1773	3512	1491	1737	3684	1456
Flt Permitted	0.25	1.00	1.00	0.17	1.00	1.00	0.42	1.00	1.00	0.67	1.00	1.00
Satd. Flow (perm)	420	3579	1475	309	3579	1345	787	3512	1491	1230	3684	1456
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	107	622	256	231	745	12	236	125	123	62	438	248
RTOR Reduction (vph)	0	0	200	0	0	9	0	0	59	0	0	134
Lane Group Flow (vph)	107	622	56	231	745	3	236	125	64	62	438	114
Confl. Peds. (#/hr)			2	2					1	1		
Heavy Vehicles (%)	13%	5%	6%	3%	5%	18%	0%	7%	5%	2%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	40.6	32.6	32.6	55.6	43.6	43.6	78.4	78.4	78.4	59.7	59.7	59.7
Effective Green, g (s)	40.6	32.6	32.6	55.6	43.6	43.6	78.4	78.4	78.4	59.7	59.7	59.7
Actuated g/C Ratio	0.27	0.22	0.22	0.37	0.29	0.29	0.52	0.52	0.52	0.40	0.40	0.40
Clearance Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
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)	174	777	320	293	1040	390	507	1835	779	489	1466	579
v/s Ratio Prot	0.03	0.17		c0.10	0.21		c0.05	0.04			0.12	
v/s Ratio Perm	0.13		0.04	c0.19		0.00	c0.20		0.04	0.05		0.08
v/c Ratio	0.61	0.80	0.17	0.79	0.72	0.01	0.47	0.07	0.08	0.13	0.30	0.20
Uniform Delay, d1	43.2	55.6	47.7	36.5	47.7	37.8	20.1	17.7	17.9	28.6	30.8	29.5
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	6.3	5.9	0.3	13.1	2.4	0.0	0.7	0.1	0.2	0.5	0.5	0.8
Delay (s)	49.5	61.5	48.0	49.7	50.0	37.8	20.8	17.8	18.1	29.2	31.4	30.2
Level of Service	D	E	D	D	D	D	C	B	B	C	C	C
Approach Delay (s)		56.7			49.8			19.3			30.8	
Approach LOS		E			D			B			C	

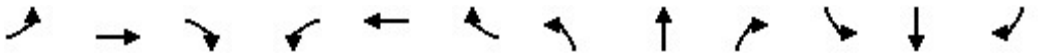
Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	133	134	10	138	33	539
Future Volume (vph)	133	134	10	138	33	539
Lane Group Flow (vph)	221	297	0	221	0	630
Turn Type	NA	NA	Perm	NA	Perm	NA
Protected Phases	4	3		6		2
Permitted Phases			6		2	
Detector Phase	4	3	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	40.0	40.0	40.0	40.0
Minimum Split (s)	16.5	16.5	48.5	48.5	48.5	48.5
Total Split (s)	40.0	40.0	120.0	120.0	120.0	120.0
Total Split (%)	20.0%	20.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.5	4.5	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.5	6.5		8.5		8.5
Lead/Lag	Lag	Lead				
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	Min
v/c Ratio	0.75	0.66		0.33		0.85
Control Delay	67.7	53.5		26.1		47.0
Queue Delay	0.0	0.0		0.0		0.0
Total Delay	67.7	53.5		26.1		47.0
Queue Length 50th (m)	54.2	69.2		36.7		148.7
Queue Length 95th (m)	96.0	#140.5		63.0		222.9
Internal Link Dist (m)	501.8	175.9		209.9		245.9
Turn Bay Length (m)						
Base Capacity (vph)	462	453		1454		1615
Starvation Cap Reductn	0	0		0		0
Spillback Cap Reductn	0	0		0		0
Storage Cap Reductn	0	0		0		0
Reduced v/c Ratio	0.48	0.66		0.15		0.39

Intersection Summary

Cycle Length: 200
Actuated Cycle Length: 129.4
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jane St & Kirby Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	133	45	127	134	15	10	138	58	33	539	14
Future Volume (vph)	28	133	45	127	134	15	10	138	58	33	539	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		6.5			6.5			8.5			8.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.99			0.96			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1740			1719			1732			1907	
Flt Permitted		0.99			0.98			0.96			0.97	
Satd. Flow (perm)		1740			1719			1666			1853	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	30	143	48	137	144	16	11	148	62	35	580	15
RTOR Reduction (vph)	0	5	0	0	1	0	0	10	0	0	1	0
Lane Group Flow (vph)	0	216	0	0	296	0	0	211	0	0	629	0
Heavy Vehicles (%)	11%	4%	0%	6%	6%	7%	20%	7%	14%	0%	3%	14%
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		3	3			6			2	
Permitted Phases							6			2		
Actuated Green, G (s)		21.5			34.0			52.0			52.0	
Effective Green, g (s)		21.5			34.0			52.0			52.0	
Actuated g/C Ratio		0.17			0.26			0.40			0.40	
Clearance Time (s)		6.5			6.5			8.5			8.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		290			453			671			746	
v/s Ratio Prot		c0.12			c0.17							
v/s Ratio Perm								0.13			c0.34	
v/c Ratio		0.74			0.65			0.32			0.84	
Uniform Delay, d1		51.1			42.3			26.3			34.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		9.9			3.4			0.3			8.6	
Delay (s)		61.1			45.6			26.6			43.5	
Level of Service		E			D			C			D	
Approach Delay (s)		61.1			45.6			26.6			43.5	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	129.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	972	28	6	1084	55	36
Future Volume (vph)	972	28	6	1084	55	36
Lane Group Flow (vph)	1068	31	7	1191	60	40
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	70.0	70.0	70.0	70.0	50.0	50.0
Total Split (%)	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.37	0.03	0.02	0.41	0.32	0.22
Control Delay	5.3	2.1	5.5	5.7	51.3	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	2.1	5.5	5.7	51.3	15.2
Queue Length 50th (m)	33.0	0.0	0.3	38.6	14.4	0.0
Queue Length 95th (m)	77.5	3.4	2.4	90.2	24.4	9.5
Internal Link Dist (m)	423.7			239.2	172.5	
Turn Bay Length (m)		75.0	60.0		35.0	
Base Capacity (vph)	2885	1199	327	2885	591	487
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.03	0.02	0.41	0.10	0.08

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 32: Mosque Gate & Teston Rd

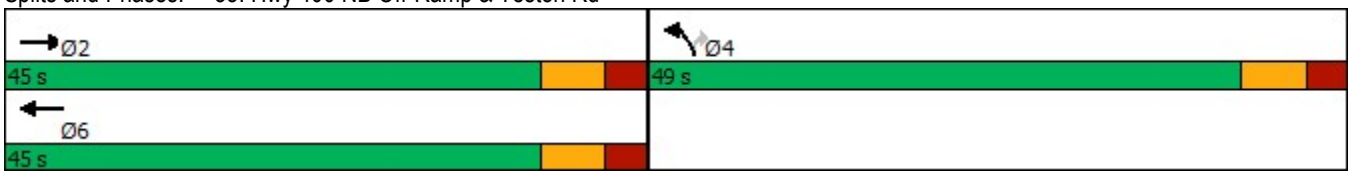
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	972	28	6	1084	55	36
Future Volume (vph)	972	28	6	1084	55	36
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3579	1480	1513	3579	1652	1288
Flt Permitted	1.00	1.00	0.26	1.00	0.95	1.00
Satd. Flow (perm)	3579	1480	406	3579	1652	1288
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1068	31	7	1191	60	40
RTOR Reduction (vph)	0	7	0	0	0	36
Lane Group Flow (vph)	1068	24	7	1191	60	4
Confl. Peds. (#/hr)		4	4			
Heavy Vehicles (%)	5%	4%	17%	5%	2%	17%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	93.8	93.8	93.8	93.8	11.7	11.7
Effective Green, g (s)	93.8	93.8	93.8	93.8	11.7	11.7
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2797	1156	317	2797	161	125
v/s Ratio Prot	0.30			c0.33	c0.04	
v/s Ratio Perm		0.02	0.02			0.00
v/c Ratio	0.38	0.02	0.02	0.43	0.37	0.03
Uniform Delay, d1	4.1	2.9	2.9	4.3	50.7	49.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	0.1	0.5	1.5	0.1
Delay (s)	4.5	2.9	3.0	4.8	52.2	49.1
Level of Service	A	A	A	A	D	D
Approach Delay (s)	4.4			4.8	50.9	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	737	998	135	256
Future Volume (vph)	737	998	135	256
Lane Group Flow (vph)	946	1040	275	133
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	20.0	20.0	15.0	15.0
Minimum Split (s)	27.5	27.5	36.5	36.5
Total Split (s)	45.0	45.0	49.0	49.0
Total Split (%)	47.9%	47.9%	52.1%	52.1%
Yellow Time (s)	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.50	0.54	0.36	0.36
Control Delay	11.7	12.8	15.8	12.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.7	12.8	15.8	12.0
Queue Length 50th (m)	34.6	41.1	10.9	5.8
Queue Length 95th (m)	73.5	85.8	19.6	19.3
Internal Link Dist (m)	297.1	423.7	207.9	
Turn Bay Length (m)				90.0
Base Capacity (vph)	1905	1920	1721	761
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	0.54	0.16	0.17

Intersection Summary
Cycle Length: 94
Actuated Cycle Length: 70.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 33: Hwy 400 NB Off-Ramp & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	737	171	0	998	135	256
Future Volume (vph)	737	171	0	998	135	256
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5			7.5	7.5	7.5
Lane Util. Factor	0.95			0.95	0.97	0.91
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.97			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	3522			3579	2841	1225
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	3522			3579	2841	1225
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	768	178	0	1040	141	267
RTOR Reduction (vph)	16	0	0	0	63	63
Lane Group Flow (vph)	930	0	0	1040	212	70
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	4%	0%	0%	5%	7%	12%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	37.7			37.7	17.5	17.5
Effective Green, g (s)	37.7			37.7	17.5	17.5
Actuated g/C Ratio	0.54			0.54	0.25	0.25
Clearance Time (s)	7.5			7.5	7.5	7.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	1891			1922	708	305
v/s Ratio Prot	0.26			c0.29	c0.07	
v/s Ratio Perm						0.06
v/c Ratio	0.49			0.54	0.30	0.23
Uniform Delay, d1	10.2			10.6	21.4	21.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.9			1.1	0.2	0.4
Delay (s)	11.1			11.7	21.6	21.4
Level of Service	B			B	C	C
Approach Delay (s)	11.1			11.7	21.5	
Approach LOS	B			B	C	

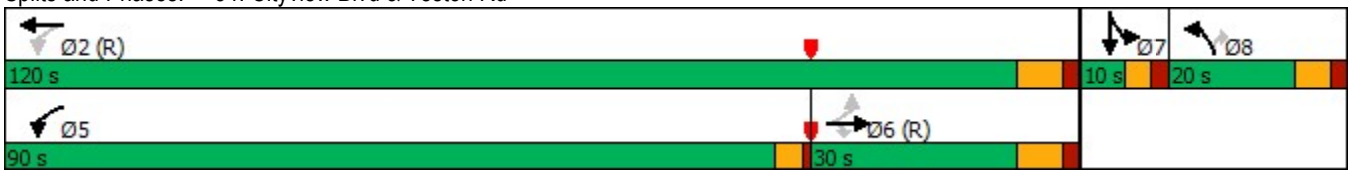
Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

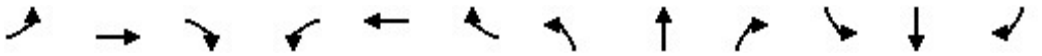
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations							
Traffic Volume (vph)	553	271	768	383	64	355	
Future Volume (vph)	553	271	768	383	64	355	
Lane Group Flow (vph)	576	282	800	399	67	370	
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm	
Protected Phases	6		5	2	8		7
Permitted Phases		6	2			8	
Detector Phase	6	6	5	2	8	8	
Switch Phase							
Minimum Initial (s)	30.0	30.0	7.0	30.0	7.0	7.0	7.0
Minimum Split (s)	37.0	37.0	11.0	37.0	38.0	38.0	12.0
Total Split (s)	30.0	30.0	90.0	120.0	20.0	20.0	10.0
Total Split (%)	20.0%	20.0%	60.0%	80.0%	13.3%	13.3%	7%
Yellow Time (s)	5.0	5.0	3.0	5.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	4.0	7.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None
v/c Ratio	0.47	0.40	0.80	0.13	0.27	0.81	
Control Delay	44.0	7.3	19.8	2.9	65.4	20.0	
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0	
Total Delay	44.0	7.3	19.9	2.9	65.4	20.0	
Queue Length 50th (m)	73.5	0.0	109.8	8.2	10.6	0.0	
Queue Length 95th (m)	#141.7	28.1	185.5	21.2	17.1	33.4	
Internal Link Dist (m)	224.3			297.1			
Turn Bay Length (m)		80.0	230.0				
Base Capacity (vph)	1218	704	1117	2982	328	486	
Starvation Cap Reductn	0	0	11	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.47	0.40	0.72	0.13	0.20	0.76	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 34: Cityview Blvd & Teston Rd





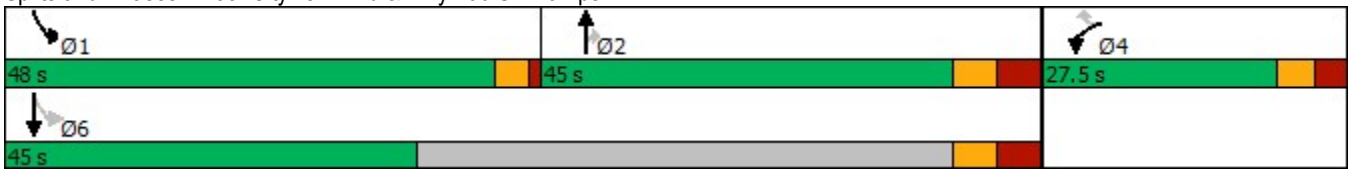
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	553	271	768	383	0	64	0	355	0	0	0
Future Volume (vph)	0	553	271	768	383	0	64	0	355	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00			
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00		1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3613	1534	1689	3579		3083		1463			
Flt Permitted		1.00	1.00	0.30	1.00		0.95		1.00			
Satd. Flow (perm)		3613	1534	531	3579		3083		1463			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	576	282	800	399	0	67	0	370	0	0	0
RTOR Reduction (vph)	0	0	187	0	0	0	0	0	340	0	0	0
Lane Group Flow (vph)	0	576	95	800	399	0	67	0	30	0	0	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	4%	2%	5%	5%	0%	6%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Prot		Perm			
Protected Phases		6		5	2		8			7	7	
Permitted Phases	6		6	2					8			
Actuated Green, G (s)		50.6	50.6	125.0	125.0		12.0		12.0			
Effective Green, g (s)		50.6	50.6	125.0	125.0		12.0		12.0			
Actuated g/C Ratio		0.34	0.34	0.83	0.83		0.08		0.08			
Clearance Time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		1218	517	985	2982		246		117			
v/s Ratio Prot		0.16		c0.38	0.11		c0.02					
v/s Ratio Perm			0.06	c0.30					0.02			
v/c Ratio		0.47	0.18	0.81	0.13		0.27		0.25			
Uniform Delay, d1		39.2	35.1	16.2	2.3		64.9		64.8			
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00			
Incremental Delay, d2		1.3	0.8	5.2	0.1		0.6		1.1			
Delay (s)		40.5	35.9	21.4	2.4		65.5		65.9			
Level of Service		D	D	C	A		E		E			
Approach Delay (s)		39.0			15.1			65.9			0.0	
Approach LOS		D			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	170	266	314	706	296
Future Volume (vph)	115	170	266	314	706	296
Lane Group Flow (vph)	122	181	283	334	751	315
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	33.0	33.0	7.0	33.0
Minimum Split (s)	27.5	27.5	41.0	41.0	11.0	41.0
Total Split (s)	27.5	27.5	45.0	45.0	48.0	45.0
Total Split (%)	22.8%	22.8%	37.3%	37.3%	39.8%	37.3%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	4.0	4.0	1.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
v/c Ratio	0.30	0.53	0.21	0.44	0.85	0.13
Control Delay	41.9	12.5	22.5	5.1	16.8	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	12.5	22.5	5.1	16.8	4.5
Queue Length 50th (m)	11.0	0.0	17.7	0.0	46.3	7.5
Queue Length 95th (m)	22.7	20.4	39.9	22.0	119.0	16.8
Internal Link Dist (m)	165.8		211.9			105.1
Turn Bay Length (m)	100.0			55.0		
Base Capacity (vph)	702	458	1365	767	1007	3092
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.40	0.21	0.44	0.75	0.10

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 96.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 35: Cityview Blvd & Hwy 400 SB Ramps



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	170	266	314	706	296
Future Volume (vph)	115	170	266	314	706	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3173	1436	3500	1446	1604	3466
Flt Permitted	0.95	1.00	1.00	1.00	0.52	1.00
Satd. Flow (perm)	3173	1436	3500	1446	882	3466
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	122	181	283	334	751	315
RTOR Reduction (vph)	0	158	0	203	0	0
Lane Group Flow (vph)	122	23	283	131	751	315
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	5%	2%	2%	5%	3%
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Actuated Green, G (s)	12.3	12.3	37.7	37.7	69.4	69.4
Effective Green, g (s)	12.3	12.3	37.7	37.7	69.4	69.4
Actuated g/C Ratio	0.13	0.13	0.39	0.39	0.72	0.72
Clearance Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Vehicle Extension (s)	4.0	4.0	3.6	3.6	3.5	3.6
Lane Grp Cap (vph)	405	183	1371	566	844	2500
v/s Ratio Prot	c0.04		0.08		c0.26	0.09
v/s Ratio Perm		0.02		0.09	c0.39	
v/c Ratio	0.30	0.13	0.21	0.23	0.89	0.13
Uniform Delay, d1	38.1	37.2	19.4	19.6	7.4	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.4	0.3	1.0	11.6	0.1
Delay (s)	38.6	37.6	19.7	20.5	18.9	4.2
Level of Service	D	D	B	C	B	A
Approach Delay (s)	38.0		20.1			14.6
Approach LOS	D		C			B

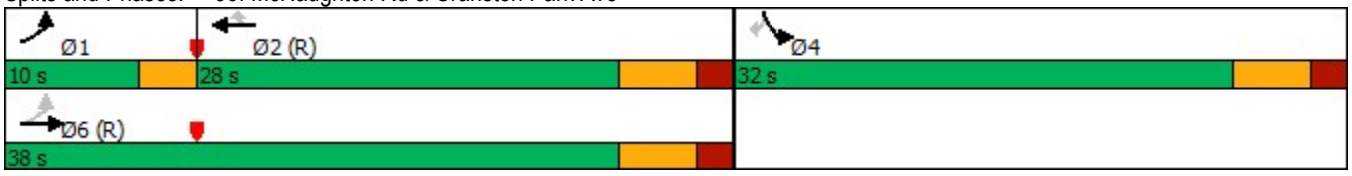
Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	18.5
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

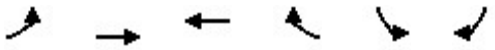
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	288	492	103	155	154
Future Volume (vph)	56	288	492	103	155	154
Lane Group Flow (vph)	68	351	600	126	189	188
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	6.0	16.0	16.0	16.0	8.0	8.0
Minimum Split (s)	9.0	27.0	27.0	27.0	32.0	32.0
Total Split (s)	10.0	38.0	28.0	28.0	32.0	32.0
Total Split (%)	14.3%	54.3%	40.0%	40.0%	45.7%	45.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.16	0.32	0.61	0.15	0.55	0.40
Control Delay	7.1	9.0	20.1	6.0	29.1	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	9.0	20.1	6.0	29.1	5.8
Queue Length 50th (m)	2.6	18.9	57.0	2.1	24.0	0.0
Queue Length 95th (m)	9.5	45.3	#129.0	12.0	29.6	9.0
Internal Link Dist (m)		821.3	323.4		900.1	
Turn Bay Length (m)	65.0			40.0		100.0
Base Capacity (vph)	430	1102	980	822	607	677
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.32	0.61	0.15	0.31	0.28

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 36: McNaughton Rd & Cranston Park Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	288	492	103	155	154
Future Volume (vph)	56	288	492	103	155	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1619	1789	1842	1462	1636	1507
Flt Permitted	0.28	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	480	1789	1842	1462	1636	1507
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	68	351	600	126	189	188
RTOR Reduction (vph)	0	0	0	46	0	148
Lane Group Flow (vph)	68	351	600	80	189	40
Confl. Peds. (#/hr)	6			6		
Heavy Vehicles (%)	4%	5%	2%	0%	3%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Actuated Green, G (s)	43.2	43.2	36.1	36.1	14.8	14.8
Effective Green, g (s)	43.2	43.2	36.1	36.1	14.8	14.8
Actuated g/C Ratio	0.62	0.62	0.52	0.52	0.21	0.21
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	362	1104	949	753	345	318
v/s Ratio Prot	0.01	c0.20	c0.33		c0.12	
v/s Ratio Perm	0.10			0.06		0.03
v/c Ratio	0.19	0.32	0.63	0.11	0.55	0.12
Uniform Delay, d1	6.9	6.4	12.2	8.7	24.6	22.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.8	3.2	0.3	1.8	0.2
Delay (s)	7.1	7.1	15.4	9.0	26.4	22.5
Level of Service	A	A	B	A	C	C
Approach Delay (s)		7.1	14.3		24.5	
Approach LOS		A	B		C	

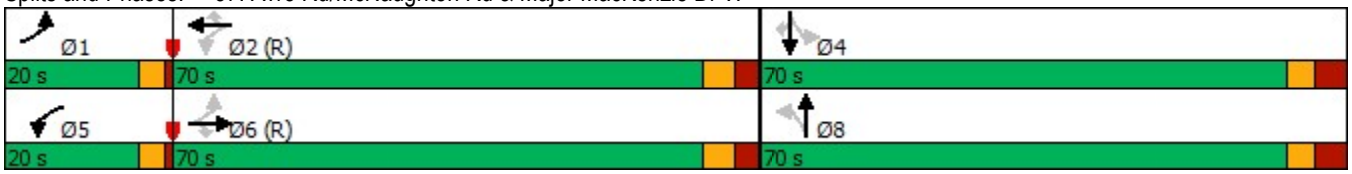
Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

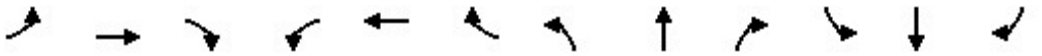
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	175	1073	18	140	1300	39	6	125	79	216	339
Future Volume (vph)	175	1073	18	140	1300	39	6	125	79	216	339
Lane Group Flow (vph)	184	1129	19	147	1368	41	6	248	83	227	357
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6		5	2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	40.5	40.5	40.5	40.5	40.5
Total Split (s)	20.0	70.0	70.0	20.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	12.5%	43.8%	43.8%	12.5%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.56	0.49	0.02	0.41	0.65	0.04	0.06	0.78	0.89	0.70	0.82
Control Delay	18.7	17.5	0.1	10.7	26.3	2.6	50.8	71.1	131.2	73.0	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	17.5	0.1	10.7	26.3	2.6	50.8	71.1	131.2	73.0	37.4
Queue Length 50th (m)	14.9	93.9	0.0	11.6	155.2	0.0	1.7	71.1	27.7	73.0	44.5
Queue Length 95th (m)	46.0	159.1	0.0	25.5	235.3	4.3	6.0	94.6	#49.1	94.1	79.1
Internal Link Dist (m)		379.3			530.0			161.1		821.3	
Turn Bay Length (m)	95.0		45.0	50.0		50.0	35.0		60.0		60.0
Base Capacity (vph)	334	2321	960	417	2112	925	245	677	211	733	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.49	0.02	0.35	0.65	0.04	0.02	0.37	0.39	0.31	0.51

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 37: Avro Rd/McNaughton Rd & Major MacKenzie Dr W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
Future Volume (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1627	3613	1463	1722	3613	1542	1674	1684		1681	1879	1431
Flt Permitted	0.11	1.00	1.00	0.22	1.00	1.00	0.36	1.00		0.31	1.00	1.00
Satd. Flow (perm)	196	3613	1463	398	3613	1542	630	1684		541	1879	1431
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	1129	19	147	1368	41	6	132	116	83	227	357
RTOR Reduction (vph)	0	0	7	0	0	17	0	26	0	0	0	189
Lane Group Flow (vph)	184	1129	12	147	1368	24	6	222	0	83	227	168
Confl. Peds. (#/hr)	3		1	1		3	7		3	3		7
Heavy Vehicles (%)	9%	4%	6%	3%	4%	0%	0%	2%	4%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8			4		4
Actuated Green, G (s)	117.9	102.8	102.8	104.7	93.6	93.6	27.6	27.6		27.6	27.6	27.6
Effective Green, g (s)	117.9	102.8	102.8	104.7	93.6	93.6	27.6	27.6		27.6	27.6	27.6
Actuated g/C Ratio	0.74	0.64	0.64	0.65	0.58	0.58	0.17	0.17		0.17	0.17	0.17
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
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
Lane Grp Cap (vph)	325	2321	939	352	2113	902	108	290		93	324	246
v/s Ratio Prot	c0.07	0.31		0.03	c0.38			0.13			0.12	
v/s Ratio Perm	0.34		0.01	0.24		0.02	0.01			c0.15		0.12
v/c Ratio	0.57	0.49	0.01	0.42	0.65	0.03	0.06	0.76		0.89	0.70	0.68
Uniform Delay, d1	17.9	14.9	10.3	11.1	22.2	14.0	55.3	63.1		64.7	62.3	62.1
Progression Factor	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	2.3	0.7	0.0	0.8	1.5	0.1	0.2	11.3		59.4	6.7	7.6
Delay (s)	20.1	15.6	10.3	11.9	23.7	14.1	55.5	74.4		124.2	69.0	69.8
Level of Service	C	B	B	B	C	B	E	E		F	E	E
Approach Delay (s)		16.2			22.4			74.0			76.3	
Approach LOS		B			C			E			E	

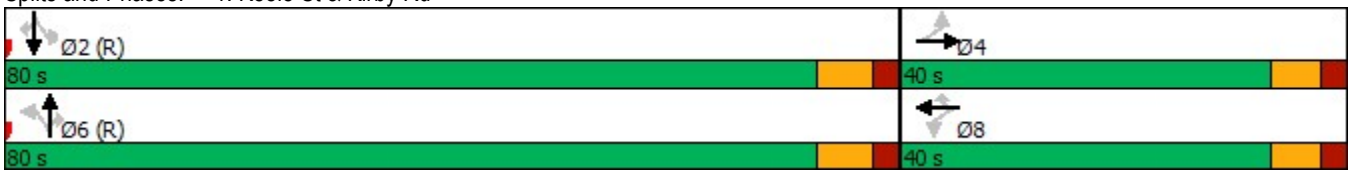
Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

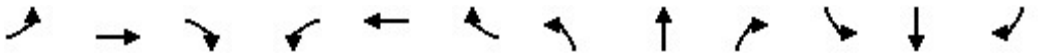
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	34	272	56	209	29	101	564	255	36	318	28
Future Volume (vph)	34	272	56	209	29	101	564	255	36	318	28
Lane Group Flow (vph)	0	349	0	279	31	0	700	268	0	373	29
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8			6			2	
Permitted Phases	4		8		8	6		6	2		2
Detector Phase	4	4	8	8	8	6	6	6	2	2	2
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	35.0	35.0	35.0	37.5	37.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	40.0	40.0	40.0	80.0	80.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0		7.5	7.5		7.5	7.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio		0.96		0.90	0.08		0.38	0.25		0.20	0.03
Control Delay		82.4		73.9	7.3		8.9	1.1		10.4	2.5
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay		82.4		73.9	7.3		8.9	1.1		10.4	2.5
Queue Length 50th (m)		82.4		65.0	0.0		23.9	0.1		20.7	0.0
Queue Length 95th (m)		#137.9		#111.6	5.9		29.6	5.4		28.7	3.2
Internal Link Dist (m)		149.7		301.7			190.7			234.5	
Turn Bay Length (m)					60.0			45.0			90.0
Base Capacity (vph)		395		339	406		1851	1084		1833	862
Starvation Cap Reductn		0		0	0		0	0		0	0
Spillback Cap Reductn		0		0	0		0	0		0	0
Storage Cap Reductn		0		0	0		0	0		0	0
Reduced v/c Ratio		0.88		0.82	0.08		0.38	0.25		0.20	0.03

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Keele St & Kirby Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	272	26	56	209	29	101	564	255	36	318	28
Future Volume (vph)	34	272	26	56	209	29	101	564	255	36	318	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0			7.0	7.0		7.5	7.5		7.5	7.5
Lane Util. Factor		1.00			1.00	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt		0.99			1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99	1.00		0.99	1.00		0.99	1.00
Satd. Flow (prot)		1816			1811	1370		3665	1571		3527	1354
Flt Permitted		0.78			0.67	1.00		0.80	1.00		0.82	1.00
Satd. Flow (perm)		1430			1233	1370		2956	1571		2923	1354
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	286	27	59	220	31	106	594	268	38	335	29
RTOR Reduction (vph)	0	2	0	0	0	23	0	0	100	0	0	11
Lane Group Flow (vph)	0	347	0	0	279	8	0	700	168	0	373	18
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)							3					
Heavy Vehicles (%)	9%	1%	0%	5%	2%	10%	0%	2%	1%	6%	6%	14%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6			2	
Permitted Phases	4			8		8	6		6	2		2
Actuated Green, G (s)		30.3			30.3	30.3		75.2	75.2		75.2	75.2
Effective Green, g (s)		30.3			30.3	30.3		75.2	75.2		75.2	75.2
Actuated g/C Ratio		0.25			0.25	0.25		0.63	0.63		0.63	0.63
Clearance Time (s)		7.0			7.0	7.0		7.5	7.5		7.5	7.5
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		361			311	345		1852	984		1831	848
v/s Ratio Prot												
v/s Ratio Perm		c0.24			0.23	0.01		c0.24	0.11		0.13	0.01
v/c Ratio		0.96			0.90	0.02		0.38	0.17		0.20	0.02
Uniform Delay, d1		44.3			43.3	33.7		11.0	9.4		9.6	8.5
Progression Factor		1.00			1.00	1.00		0.72	0.44		1.00	1.00
Incremental Delay, d2		36.9			26.5	0.0		0.6	0.4		0.3	0.0
Delay (s)		81.2			69.8	33.7		8.5	4.5		9.8	8.5
Level of Service		F			E	C		A	A		A	A
Approach Delay (s)		81.2			66.2			7.4			9.7	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	106.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	39	871	76	33	360
Future Vol, veh/h	38	39	871	76	33	360
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	70	-	37	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	0	1	0	3	5
Mvmt Flow	41	42	937	82	35	387

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1201	469	0	0	1019	0
Stage 1	937	-	-	-	-	-
Stage 2	264	-	-	-	-	-
Critical Hdwy	6.86	6.9	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.3	-	-	2.23	-
Pot Cap-1 Maneuver	176	546	-	-	671	-
Stage 1	339	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	164	546	-	-	671	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	339	-	-	-	-	-
Stage 2	703	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23	0	1.2
HCM LOS	C		

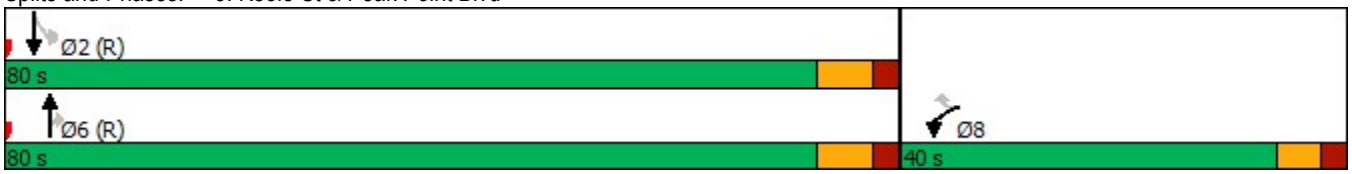
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	164	546	671	-
HCM Lane V/C Ratio	-	-	0.249	0.077	0.053	-
HCM Control Delay (s)	-	-	34.1	12.1	10.7	0.3
HCM Lane LOS	-	-	D	B	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	0.2	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	17	919	172	21	366
Future Volume (vph)	96	17	919	172	21	366
Lane Group Flow (vph)	104	18	999	187	0	421
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	7.5	7.5		7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.50	0.09	0.35	0.15		0.18
Control Delay	55.7	17.1	5.9	1.2		3.7
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	55.7	17.1	5.9	1.2		3.7
Queue Length 50th (m)	24.9	0.0	33.5	0.0		9.5
Queue Length 95th (m)	38.2	6.3	68.6	7.6		m16.8
Internal Link Dist (m)	483.2		212.8			306.7
Turn Bay Length (m)		35.0		55.0		
Base Capacity (vph)	456	433	2815	1207		2342
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.23	0.04	0.35	0.15		0.18

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Keele St & Peak Point Blvd



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	17	919	172	21	366
Future Volume (vph)	96	17	919	172	21	366
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1636	1507	3721	1536		3569
Flt Permitted	0.95	1.00	1.00	1.00		0.87
Satd. Flow (perm)	1636	1507	3721	1536		3097
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	18	999	187	23	398
RTOR Reduction (vph)	0	16	0	46	0	0
Lane Group Flow (vph)	104	2	999	141	0	421
Confl. Peds. (#/hr)	2			1	1	
Heavy Vehicles (%)	3%	0%	1%	1%	5%	5%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Actuated Green, G (s)	15.2	15.2	90.8	90.8		90.8
Effective Green, g (s)	15.2	15.2	90.8	90.8		90.8
Actuated g/C Ratio	0.13	0.13	0.76	0.76		0.76
Clearance Time (s)	6.5	6.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	207	190	2815	1162		2343
v/s Ratio Prot	c0.06		c0.27			
v/s Ratio Perm		0.00		0.09		0.14
v/c Ratio	0.50	0.01	0.35	0.12		0.18
Uniform Delay, d1	48.9	45.8	4.9	3.9		4.1
Progression Factor	1.00	1.00	1.00	1.00		0.75
Incremental Delay, d2	1.9	0.0	0.4	0.2		0.2
Delay (s)	50.8	45.9	5.2	4.1		3.2
Level of Service	D	D	A	A		A
Approach Delay (s)	50.1		5.0			3.2
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	0	1103	3	1	501
Future Vol, veh/h	2	0	1103	3	1	501
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	5
Mvmt Flow	2	0	1212	3	1	551

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1492	608	0	0	1215	0
Stage 1	1214	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	116	444	-	-	581	-
Stage 1	248	-	-	-	-	-
Stage 2	750	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	116	444	-	-	581	-
Mov Cap-2 Maneuver	116	-	-	-	-	-
Stage 1	248	-	-	-	-	-
Stage 2	749	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.6	0	0
HCM LOS	E		

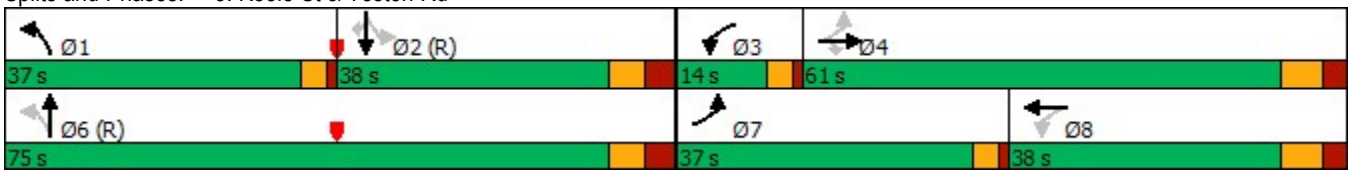
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	116	-	581	-
HCM Lane V/C Ratio	-	-	0.019	-	0.002	-
HCM Control Delay (s)	-	-	36.6	0	11.2	0
HCM Lane LOS	-	-	E	A	B	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0	-

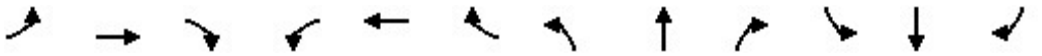
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	426	42	478	14	235	498	636	9	318	221
Future Volume (vph)	426	42	478	14	235	498	636	9	318	221
Lane Group Flow (vph)	468	46	525	15	353	547	720	10	349	243
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases	7	4		3	8	1	6		2	
Permitted Phases	4		4	8		6		2		2
Detector Phase	7	4	4	3	8	1	6	2	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.0	36.5	36.5	11.0	36.5	11.0	37.5	37.5	37.5	37.5
Total Split (s)	37.0	61.0	61.0	14.0	38.0	37.0	75.0	38.0	38.0	38.0
Total Split (%)	24.7%	40.7%	40.7%	9.3%	25.3%	24.7%	50.0%	25.3%	25.3%	25.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	-1.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	4.0	7.5	3.0	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead		Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.99	0.07	0.56	0.04	0.94	0.94	0.43	0.08	0.46	0.47
Control Delay	75.2	28.4	5.0	24.4	90.3	55.3	28.7	50.4	54.4	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	28.4	5.0	24.4	90.3	55.3	28.7	50.4	54.4	8.9
Queue Length 50th (m)	118.8	8.0	0.0	2.5	106.3	127.2	79.8	2.6	51.3	0.0
Queue Length 95th (m)	#193.6	18.8	26.4	6.8	#166.7	#180.1	97.3	8.5	68.3	24.6
Internal Link Dist (m)		191.4			260.4		253.9		909.7	
Turn Bay Length (m)	185.0			40.0		102.0		80.0		60.0
Base Capacity (vph)	475	688	937	417	387	584	1674	132	759	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.07	0.56	0.04	0.91	0.94	0.43	0.08	0.46	0.47

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 140 (93%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Keele St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	426	42	478	14	235	86	498	636	19	9	318	221
Future Volume (vph)	426	42	478	14	235	86	498	636	19	9	318	221
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	7.5	7.5	4.0	7.5		3.0	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	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	0.96		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1738	1662	1520	1771	1860		1755	3667		1594	3613	1534
Flt Permitted	0.18	1.00	1.00	0.73	1.00		0.39	1.00		0.38	1.00	1.00
Satd. Flow (perm)	327	1662	1520	1356	1860		723	3667		634	3613	1534
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	468	46	525	15	258	95	547	699	21	10	349	243
RTOR Reduction (vph)	0	0	307	0	9	0	0	2	0	0	0	196
Lane Group Flow (vph)	468	46	218	15	344	0	547	718	0	10	349	47
Confl. Peds. (#/hr)	6		1	1		6	1		2	2		1
Heavy Vehicles (%)	2%	19%	3%	0%	2%	0%	1%	2%	0%	11%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8			6			2		2
Actuated Green, G (s)	69.0	62.2	62.2	34.8	32.0		66.0	66.0		29.1	29.1	29.1
Effective Green, g (s)	70.0	62.2	62.2	34.8	32.0		67.0	66.0		29.1	29.1	29.1
Actuated g/C Ratio	0.47	0.41	0.41	0.23	0.21		0.45	0.44		0.19	0.19	0.19
Clearance Time (s)	4.0	7.5	7.5	4.0	7.5		4.0	7.5		7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	472	689	630	322	396		556	1613		122	700	297
v/s Ratio Prot	c0.22	0.03		0.00	0.19		c0.22	0.20			0.10	
v/s Ratio Perm	c0.24		0.14	0.01			c0.22			0.02		0.03
v/c Ratio	0.99	0.07	0.35	0.05	0.87		0.98	0.45		0.08	0.50	0.16
Uniform Delay, d1	40.6	26.4	30.0	44.6	57.0		35.3	29.3		49.5	53.9	50.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	39.1	0.0	0.3	0.1	18.0		33.8	0.9		1.3	2.5	1.1
Delay (s)	79.6	26.5	30.3	44.7	75.0		69.0	30.1		50.8	56.5	51.4
Level of Service	E	C	C	D	E		E	C		D	E	D
Approach Delay (s)		52.4			73.7			46.9			54.3	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	980	39	970	65	26
Future Volume (vph)	980	39	970	65	26
Lane Group Flow (vph)	1152	41	1021	68	27
Turn Type	NA	Perm	NA	Prot	Perm
Protected Phases	6		2	8	
Permitted Phases		2			8
Detector Phase	6	2	2	8	8
Switch Phase					
Minimum Initial (s)	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	31.0	31.0
Total Split (s)	70.0	70.0	70.0	50.0	50.0
Total Split (%)	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.0	7.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.40	0.12	0.34	0.37	0.14
Control Delay	4.4	5.7	4.8	53.5	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	5.7	4.8	53.5	16.5
Queue Length 50th (m)	36.6	1.9	30.8	16.4	0.0
Queue Length 95th (m)	45.4	8.2	65.7	27.7	8.2
Internal Link Dist (m)	448.8		392.6	309.1	
Turn Bay Length (m)		60.0		35.0	
Base Capacity (vph)	2882	340	2983	603	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.40	0.12	0.34	0.11	0.05

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 6: St Joan of Arc Ave & Teston Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	980	114	39	970	65	26
Future Volume (vph)	980	114	39	970	65	26
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5		7.5	7.5	7.0	7.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3558		1717	3684	1685	1507
Flt Permitted	1.00		0.23	1.00	0.95	1.00
Satd. Flow (perm)	3558		419	3684	1685	1507
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1032	120	41	1021	68	27
RTOR Reduction (vph)	3	0	0	0	0	24
Lane Group Flow (vph)	1149	0	41	1021	68	3
Confl. Peds. (#/hr)		6	6			
Heavy Vehicles (%)	4%	0%	3%	2%	0%	0%
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases			2			8
Actuated Green, G (s)	94.3		94.3	94.3	11.2	11.2
Effective Green, g (s)	94.3		94.3	94.3	11.2	11.2
Actuated g/C Ratio	0.79		0.79	0.79	0.09	0.09
Clearance Time (s)	7.5		7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2795		329	2895	157	140
v/s Ratio Prot	c0.32			0.28	c0.04	
v/s Ratio Perm			0.10			0.00
v/c Ratio	0.41		0.12	0.35	0.43	0.02
Uniform Delay, d1	4.1		3.1	3.8	51.4	49.4
Progression Factor	0.84		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.8	0.3	1.9	0.1
Delay (s)	3.8		3.8	4.1	53.3	49.5
Level of Service	A		A	A	D	D
Approach Delay (s)	3.8			4.1	52.2	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1069	202	32	939	92	35
Future Volume (vph)	1069	202	32	939	92	35
Lane Group Flow (vph)	1102	208	33	968	95	36
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	70.0	70.0	70.0	70.0	50.0	50.0
Total Split (%)	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.40	0.17	0.10	0.35	0.46	0.18
Control Delay	6.3	2.4	5.4	4.8	54.5	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	2.4	5.4	4.8	54.5	14.7
Queue Length 50th (m)	38.2	3.7	1.6	29.3	22.8	0.0
Queue Length 95th (m)	80.1	15.3	5.3	43.7	35.4	9.0
Internal Link Dist (m)	898.1			448.8	587.1	
Turn Bay Length (m)		39.0	60.0		35.0	
Base Capacity (vph)	2760	1200	329	2787	603	518
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.17	0.10	0.35	0.16	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 7: Cranston Park Ave & Teston Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1069	202	32	939	92	35
Future Volume (vph)	1069	202	32	939	92	35
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3648	1544	1719	3684	1685	1383
Flt Permitted	1.00	1.00	0.24	1.00	0.95	1.00
Satd. Flow (perm)	3648	1544	436	3684	1685	1383
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1102	208	33	968	95	36
RTOR Reduction (vph)	0	32	0	0	0	32
Lane Group Flow (vph)	1102	176	33	968	95	4
Confl. Peds. (#/hr)		3	3			
Heavy Vehicles (%)	3%	0%	3%	2%	0%	9%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	90.8	90.8	90.8	90.8	14.7	14.7
Effective Green, g (s)	90.8	90.8	90.8	90.8	14.7	14.7
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.12	0.12
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2760	1168	329	2787	206	169
v/s Ratio Prot	c0.30			0.26	c0.06	
v/s Ratio Perm		0.11	0.08			0.00
v/c Ratio	0.40	0.15	0.10	0.35	0.46	0.03
Uniform Delay, d1	5.1	4.0	3.8	4.8	49.0	46.3
Progression Factor	1.00	1.00	0.85	0.81	1.00	1.00
Incremental Delay, d2	0.4	0.3	0.6	0.3	1.6	0.1
Delay (s)	5.5	4.3	3.9	4.2	50.6	46.4
Level of Service	A	A	A	A	D	D
Approach Delay (s)	5.3			4.2	49.4	
Approach LOS	A			A	D	

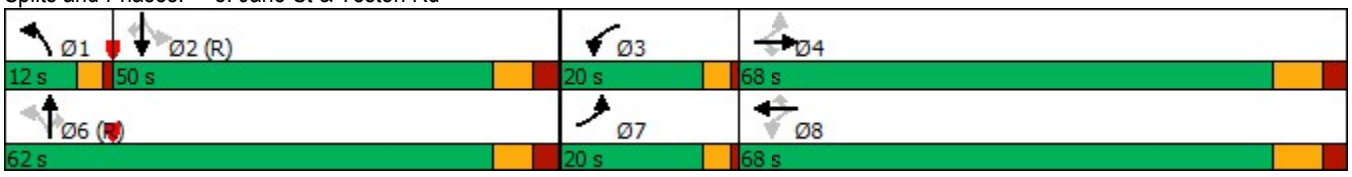
Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

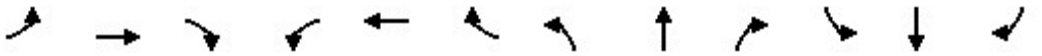
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	980	335	120	800	23	289	365	164	19	161	111
Future Volume (vph)	170	980	335	120	800	23	289	365	164	19	161	111
Lane Group Flow (vph)	198	1140	390	140	930	27	336	424	191	22	187	129
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	35.0	35.0	35.0	35.0	35.0
Minimum Split (s)	11.0	40.5	40.5	11.0	40.5	40.5	11.0	42.5	42.5	42.5	42.5	42.5
Total Split (s)	20.0	68.0	68.0	20.0	68.0	68.0	12.0	62.0	62.0	50.0	50.0	50.0
Total Split (%)	13.3%	45.3%	45.3%	13.3%	45.3%	45.3%	8.0%	41.3%	41.3%	33.3%	33.3%	33.3%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.77	0.85	0.54	0.70	0.73	0.04	0.61	0.27	0.24	0.08	0.17	0.24
Control Delay	43.2	50.9	14.8	47.5	46.1	0.1	37.4	30.0	4.8	40.6	40.2	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	50.9	14.8	47.5	46.1	0.1	37.4	30.0	4.8	40.6	40.2	7.3
Queue Length 50th (m)	34.0	171.0	31.9	24.8	133.8	0.0	71.7	45.5	0.0	5.1	23.4	0.0
Queue Length 95th (m)	49.3	178.1	54.5	41.7	137.8	0.0	104.0	61.4	14.4	12.4	32.5	14.4
Internal Link Dist (m)		145.4			898.1			263.9			240.6	
Turn Bay Length (m)	100.0		70.0	120.0		35.0	45.0		55.0	135.0		58.0
Base Capacity (vph)	273	1475	769	243	1461	684	551	1575	782	283	1096	544
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.77	0.51	0.58	0.64	0.04	0.61	0.27	0.24	0.08	0.17	0.24

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 35 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated

Splits and Phases: 8: Jane St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	980	335	120	800	23	289	365	164	19	161	111
Future Volume (vph)	170	980	335	120	800	23	289	365	164	19	161	111
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1689	3721	1556	1773	3684	1587	1773	3721	1587	1773	3648	1511
Flt Permitted	0.14	1.00	1.00	0.08	1.00	1.00	0.58	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	241	3721	1556	144	3684	1587	1087	3721	1587	942	3648	1511
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	198	1140	390	140	930	27	336	424	191	22	187	129
RTOR Reduction (vph)	0	0	161	0	0	18	0	0	110	0	0	90
Lane Group Flow (vph)	198	1140	229	140	930	9	336	424	81	22	187	39
Heavy Vehicles (%)	5%	1%	2%	0%	2%	0%	0%	1%	0%	0%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	68.6	54.1	54.1	64.4	52.0	52.0	63.5	63.5	63.5	45.1	45.1	45.1
Effective Green, g (s)	68.6	54.1	54.1	64.4	52.0	52.0	63.5	63.5	63.5	45.1	45.1	45.1
Actuated g/C Ratio	0.46	0.36	0.36	0.43	0.35	0.35	0.42	0.42	0.42	0.30	0.30	0.30
Clearance Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
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)	250	1342	561	196	1277	550	526	1575	671	283	1096	454
v/s Ratio Prot	c0.08	c0.31		0.06	0.25		c0.06	0.11			0.05	
v/s Ratio Perm	0.29		0.15	0.25		0.01	c0.21		0.05	0.02		0.03
v/c Ratio	0.79	0.85	0.41	0.71	0.73	0.02	0.64	0.27	0.12	0.08	0.17	0.09
Uniform Delay, d1	29.8	44.2	35.9	32.9	42.8	32.2	32.1	28.1	26.3	37.6	38.7	37.6
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	15.6	5.2	0.5	11.7	2.1	0.0	2.6	0.4	0.4	0.5	0.3	0.4
Delay (s)	45.4	49.4	36.4	44.6	44.9	32.2	34.7	28.6	26.6	38.1	39.0	38.0
Level of Service	D	D	D	D	D	C	C	C	C	D	D	D
Approach Delay (s)		46.0			44.6			30.3			38.6	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	113.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	170	177	23	437	18	164
Future Volume (vph)	170	177	23	437	18	164
Lane Group Flow (vph)	232	306	0	621	0	208
Turn Type	NA	NA	Perm	NA	Perm	NA
Protected Phases	4	3		6		2
Permitted Phases			6		2	
Detector Phase	4	3	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	40.0	40.0	40.0	40.0
Minimum Split (s)	16.5	16.5	48.5	48.5	48.5	48.5
Total Split (s)	40.0	40.0	120.0	120.0	120.0	120.0
Total Split (%)	20.0%	20.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.5	4.5	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.5	6.5		8.5		8.5
Lead/Lag	Lag	Lead				
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	Min
v/c Ratio	0.75	0.67		0.84		0.31
Control Delay	67.3	52.8		46.3		27.7
Queue Delay	0.0	0.0		0.0		0.0
Total Delay	67.3	52.8		46.3		27.7
Queue Length 50th (m)	57.4	70.2		143.4		36.4
Queue Length 95th (m)	100.2	#143.3		215.8		61.9
Internal Link Dist (m)	501.8	175.9		209.9		245.9
Turn Bay Length (m)						
Base Capacity (vph)	487	458		1620		1493
Starvation Cap Reductn	0	0		0		0
Spillback Cap Reductn	0	0		0		0
Storage Cap Reductn	0	0		0		0
Reduced v/c Ratio	0.48	0.67		0.38		0.14

Intersection Summary

Cycle Length: 200
Actuated Cycle Length: 128.4
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jane St & Kirby Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	170	17	74	177	37	23	437	124	18	164	14
Future Volume (vph)	31	170	17	74	177	37	23	437	124	18	164	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		6.5			6.5			8.5			8.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			0.97			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1832			1720			1875			1841	
Flt Permitted		0.99			0.99			0.98			0.92	
Satd. Flow (perm)		1832			1720			1843			1700	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	33	181	18	79	188	39	24	465	132	19	174	15
RTOR Reduction (vph)	0	2	0	0	2	0	0	7	0	0	2	0
Lane Group Flow (vph)	0	230	0	0	304	0	0	614	0	0	206	0
Heavy Vehicles (%)	0%	1%	0%	5%	6%	8%	0%	1%	7%	17%	4%	14%
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		3	3			6			2	
Permitted Phases							6			2		
Actuated Green, G (s)		21.6			34.0			50.9			50.9	
Effective Green, g (s)		21.6			34.0			50.9			50.9	
Actuated g/C Ratio		0.17			0.27			0.40			0.40	
Clearance Time (s)		6.5			6.5			8.5			8.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		309			456			732			676	
v/s Ratio Prot		c0.13			c0.18							
v/s Ratio Perm								c0.33			0.12	
v/c Ratio		0.75			0.67			0.84			0.31	
Uniform Delay, d1		50.6			41.9			34.9			26.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		9.4			3.7			8.4			0.3	
Delay (s)		60.0			45.6			43.2			26.7	
Level of Service		E			D			D			C	
Approach Delay (s)		60.0			45.6			43.2			26.7	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	128.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1396	101	7	1179	56	30
Future Volume (vph)	1396	101	7	1179	56	30
Lane Group Flow (vph)	1623	117	8	1371	65	35
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	70.0	70.0	70.0	70.0	50.0	50.0
Total Split (%)	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.55	0.09	0.04	0.46	0.34	0.22
Control Delay	7.1	2.0	6.1	6.1	51.8	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	2.0	6.1	6.1	51.8	32.6
Queue Length 50th (m)	63.1	1.2	0.4	47.5	15.7	4.7
Queue Length 95th (m)	132.1	8.0	2.5	101.2	24.8	12.4
Internal Link Dist (m)	423.7			239.2	172.5	
Turn Bay Length (m)		75.0	60.0		35.0	
Base Capacity (vph)	2966	1250	189	2966	591	471
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.09	0.04	0.46	0.11	0.07

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 32: Mosque Gate & Teston Rd

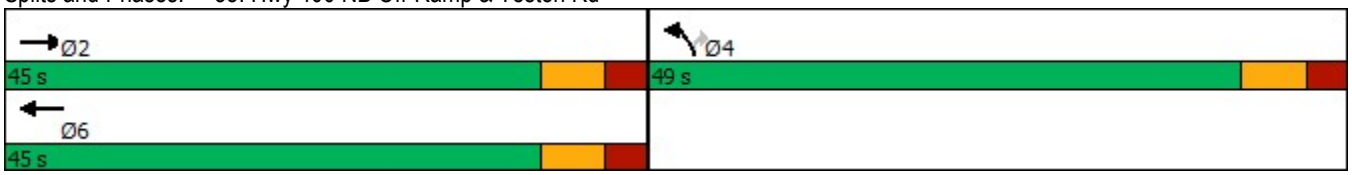
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1396	101	7	1179	56	30
Future Volume (vph)	1396	101	7	1179	56	30
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3684	1532	1771	3684	1652	1288
Flt Permitted	1.00	1.00	0.13	1.00	0.95	1.00
Satd. Flow (perm)	3684	1532	236	3684	1652	1288
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1623	117	8	1371	65	35
RTOR Reduction (vph)	0	20	0	0	0	14
Lane Group Flow (vph)	1623	97	8	1371	65	21
Confl. Peds. (#/hr)		6	6			
Heavy Vehicles (%)	2%	0%	0%	2%	2%	17%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	93.7	93.7	93.7	93.7	11.8	11.8
Effective Green, g (s)	93.7	93.7	93.7	93.7	11.8	11.8
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2876	1196	184	2876	162	126
v/s Ratio Prot	c0.44			0.37	c0.04	
v/s Ratio Perm		0.06	0.03			0.02
v/c Ratio	0.56	0.08	0.04	0.48	0.40	0.17
Uniform Delay, d1	5.2	3.1	3.0	4.6	50.8	49.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	0.4	0.6	1.6	0.6
Delay (s)	6.0	3.2	3.4	5.2	52.4	50.3
Level of Service	A	A	A	A	D	D
Approach Delay (s)	5.8			5.1	51.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	741	938	312	718
Future Volume (vph)	741	938	312	718
Lane Group Flow (vph)	981	1031	738	394
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	20.0	20.0	15.0	15.0
Minimum Split (s)	27.5	27.5	36.5	36.5
Total Split (s)	45.0	45.0	49.0	49.0
Total Split (%)	47.9%	47.9%	52.1%	52.1%
Yellow Time (s)	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.56	0.59	0.70	0.80
Control Delay	17.6	18.5	24.0	32.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.6	18.5	24.0	32.2
Queue Length 50th (m)	53.5	59.0	46.4	50.8
Queue Length 95th (m)	99.3	108.1	63.6	86.7
Internal Link Dist (m)	297.1	423.7	207.9	
Turn Bay Length (m)				90.0
Base Capacity (vph)	1739	1758	1641	743
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.56	0.59	0.45	0.53

Intersection Summary
Cycle Length: 94
Actuated Cycle Length: 79.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 33: Hwy 400 NB Off-Ramp & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	741	152	0	938	312	718
Future Volume (vph)	741	152	0	938	312	718
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5			7.5	7.5	7.5
Lane Util. Factor	0.95			0.95	0.97	0.91
Frpb, ped/bikes	0.99			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.97			1.00	0.92	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	3613			3684	3045	1345
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	3613			3684	3045	1345
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	814	167	0	1031	343	789
RTOR Reduction (vph)	16	0	0	0	46	46
Lane Group Flow (vph)	965	0	0	1031	692	348
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	1%	0%	0%	2%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	38.0			38.0	26.4	26.4
Effective Green, g (s)	38.0			38.0	26.4	26.4
Actuated g/C Ratio	0.48			0.48	0.33	0.33
Clearance Time (s)	7.5			7.5	7.5	7.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	1729			1763	1012	447
v/s Ratio Prot	0.27			c0.28	0.23	
v/s Ratio Perm						c0.26
v/c Ratio	0.56			0.58	0.68	0.78
Uniform Delay, d1	14.7			15.0	22.9	23.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.3			1.4	1.9	8.3
Delay (s)	16.0			16.4	24.8	32.2
Level of Service	B			B	C	C
Approach Delay (s)	16.0			16.4	27.4	
Approach LOS	B			B	C	

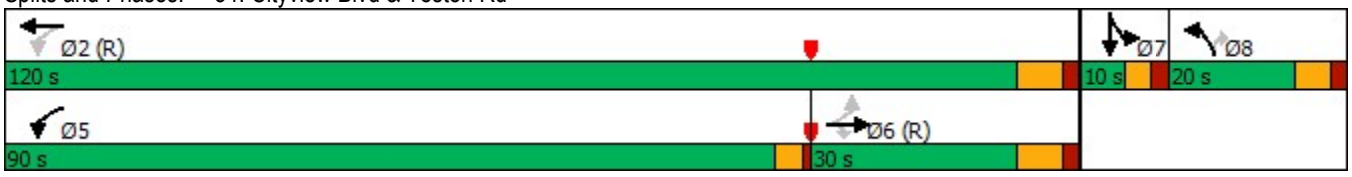
Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

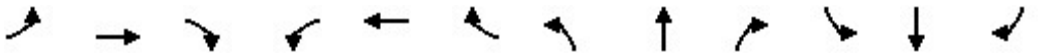
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations							
Traffic Volume (vph)	522	185	672	610	66	371	
Future Volume (vph)	522	185	672	610	66	371	
Lane Group Flow (vph)	549	195	707	642	69	391	
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm	
Protected Phases	6		5	2	8		7
Permitted Phases		6	2			8	
Detector Phase	6	6	5	2	8	8	
Switch Phase							
Minimum Initial (s)	30.0	30.0	7.0	30.0	7.0	7.0	7.0
Minimum Split (s)	37.0	37.0	11.0	37.0	38.0	38.0	12.0
Total Split (s)	30.0	30.0	90.0	120.0	20.0	20.0	10.0
Total Split (%)	20.0%	20.0%	60.0%	80.0%	13.3%	13.3%	7%
Yellow Time (s)	5.0	5.0	3.0	5.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	4.0	7.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None
v/c Ratio	0.36	0.26	0.72	0.21	0.28	0.82	
Control Delay	35.5	6.6	11.2	3.1	65.3	19.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.5	6.6	11.2	3.1	65.3	19.7	
Queue Length 50th (m)	59.0	0.0	49.8	14.3	10.9	0.0	
Queue Length 95th (m)	107.8	22.1	127.1	34.7	17.4	33.8	
Internal Link Dist (m)	224.3			297.1			
Turn Bay Length (m)		80.0	230.0				
Base Capacity (vph)	1545	760	1178	3098	332	508	
Starvation Cap Reductn	0	0	5	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.36	0.26	0.60	0.21	0.21	0.77	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated

Splits and Phases: 34: Cityview Blvd & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	522	185	672	610	0	66	0	371	0	0	0
Future Volume (vph)	0	522	185	672	610	0	66	0	371	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3721	1556	1739	3721		3113		1492			
Flt Permitted		1.00	1.00	0.35	1.00		0.95		1.00			
Satd. Flow (perm)		3721	1556	648	3721		3113		1492			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	549	195	707	642	0	69	0	391	0	0	0
RTOR Reduction (vph)	0	0	114	0	0	0	0	0	359	0	0	0
Lane Group Flow (vph)	0	549	81	707	642	0	69	0	32	0	0	0
Heavy Vehicles (%)	0%	1%	2%	2%	1%	0%	5%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Prot		Perm			
Protected Phases		6		5	2		8			7	7	
Permitted Phases	6		6	2					8			
Actuated Green, G (s)		62.3	62.3	124.9	124.9		12.1		12.1			
Effective Green, g (s)		62.3	62.3	124.9	124.9		12.1		12.1			
Actuated g/C Ratio		0.42	0.42	0.83	0.83		0.08		0.08			
Clearance Time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		1545	646	965	3098		251		120			
v/s Ratio Prot		0.15		c0.29	0.17		c0.02					
v/s Ratio Perm			0.05	c0.32					0.02			
v/c Ratio		0.36	0.13	0.73	0.21		0.27		0.26			
Uniform Delay, d1		30.1	27.0	9.2	2.5		64.8		64.8			
Progression Factor		1.00	1.00	1.00	1.00		1.00		1.00			
Incremental Delay, d2		0.6	0.4	2.9	0.2		0.6		1.2			
Delay (s)		30.7	27.4	12.1	2.7		65.4		65.9			
Level of Service		C	C	B	A		E		E			
Approach Delay (s)		29.9			7.6			65.9			0.0	
Approach LOS		C			A			E			A	

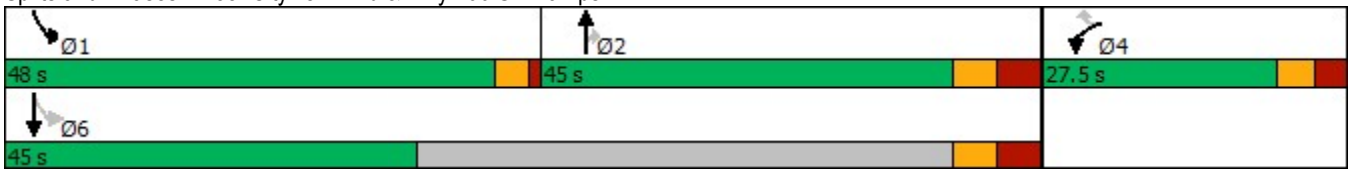
Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	168	306	172	476	352
Future Volume (vph)	64	168	306	172	476	352
Lane Group Flow (vph)	70	185	336	189	523	387
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	33.0	33.0	7.0	33.0
Minimum Split (s)	27.5	27.5	41.0	41.0	11.0	41.0
Total Split (s)	27.5	27.5	45.0	45.0	48.0	45.0
Total Split (%)	22.8%	22.8%	37.3%	37.3%	39.8%	37.3%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	4.0	4.0	1.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
v/c Ratio	0.15	0.51	0.21	0.26	0.67	0.16
Control Delay	34.1	11.0	17.0	4.2	9.6	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	11.0	17.0	4.2	9.6	5.1
Queue Length 50th (m)	5.3	0.0	16.5	0.0	24.9	9.4
Queue Length 95th (m)	12.6	18.5	38.6	14.9	64.6	20.9
Internal Link Dist (m)	165.8		211.9			105.1
Turn Bay Length (m)	100.0			55.0		
Base Capacity (vph)	814	499	1567	739	1025	3432
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.37	0.21	0.26	0.51	0.11

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 85.3
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 35: Cityview Blvd & Hwy 400 SB Ramps



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	168	306	172	476	352
Future Volume (vph)	64	168	306	172	476	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3268	1449	3570	1449	1616	3570
Flt Permitted	0.95	1.00	1.00	1.00	0.50	1.00
Satd. Flow (perm)	3268	1449	3570	1449	845	3570
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	70	185	336	189	523	387
RTOR Reduction (vph)	0	159	0	106	0	0
Lane Group Flow (vph)	70	26	336	83	523	387
Confl. Peds. (#/hr)				7	7	
Heavy Vehicles (%)	0%	4%	0%	1%	4%	0%
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Actuated Green, G (s)	11.9	11.9	37.6	37.6	58.8	58.8
Effective Green, g (s)	11.9	11.9	37.6	37.6	58.8	58.8
Actuated g/C Ratio	0.14	0.14	0.44	0.44	0.69	0.69
Clearance Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Vehicle Extension (s)	4.0	4.0	3.6	3.6	3.5	3.6
Lane Grp Cap (vph)	456	202	1575	639	738	2463
v/s Ratio Prot	c0.02		0.09		c0.14	0.11
v/s Ratio Perm		0.02		0.06	c0.35	
v/c Ratio	0.15	0.13	0.21	0.13	0.71	0.16
Uniform Delay, d1	32.2	32.1	14.7	14.1	6.3	4.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.4	0.3	0.4	3.2	0.1
Delay (s)	32.4	32.5	15.0	14.5	9.5	4.7
Level of Service	C	C	B	B	A	A
Approach Delay (s)	32.5		14.8			7.5
Approach LOS	C		B			A

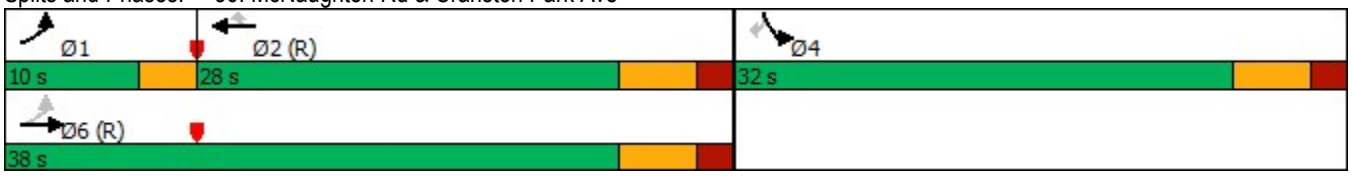
Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	18.5
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

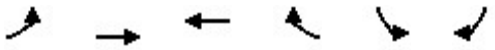
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	373	243	170	142	52
Future Volume (vph)	132	373	243	170	142	52
Lane Group Flow (vph)	148	419	273	191	160	58
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	6.0	16.0	16.0	16.0	8.0	8.0
Minimum Split (s)	9.0	27.0	27.0	27.0	32.0	32.0
Total Split (s)	10.0	38.0	28.0	28.0	32.0	32.0
Total Split (%)	14.3%	54.3%	40.0%	40.0%	45.7%	45.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.21	0.36	0.29	0.23	0.48	0.17
Control Delay	6.6	9.0	14.0	3.6	27.8	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	9.0	14.0	3.6	27.8	6.6
Queue Length 50th (m)	5.4	21.7	20.4	0.0	20.4	0.0
Queue Length 95th (m)	19.9	61.1	50.4	12.6	27.8	6.6
Internal Link Dist (m)		821.3	323.4		900.1	
Turn Bay Length (m)	65.0			40.0		100.0
Base Capacity (vph)	704	1169	938	840	625	596
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.36	0.29	0.23	0.26	0.10

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 36: McNaughton Rd & Cranston Park Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	373	243	170	142	52
Future Volume (vph)	132	373	243	170	142	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1647	1860	1842	1465	1685	1507
Flt Permitted	0.54	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	938	1860	1842	1465	1685	1507
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	148	419	273	191	160	58
RTOR Reduction (vph)	0	0	0	95	0	46
Lane Group Flow (vph)	148	419	273	96	160	12
Confl. Peds. (#/hr)	5			5		
Heavy Vehicles (%)	2%	1%	2%	0%	0%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Actuated Green, G (s)	44.0	44.0	35.1	35.1	14.0	14.0
Effective Green, g (s)	44.0	44.0	35.1	35.1	14.0	14.0
Actuated g/C Ratio	0.63	0.63	0.50	0.50	0.20	0.20
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	649	1169	923	734	337	301
v/s Ratio Prot	0.02	c0.23	0.15		c0.09	
v/s Ratio Perm	0.12			0.07		0.01
v/c Ratio	0.23	0.36	0.30	0.13	0.47	0.04
Uniform Delay, d1	5.4	6.2	10.2	9.3	24.8	22.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.9	0.8	0.4	1.1	0.1
Delay (s)	5.6	7.1	11.0	9.7	25.8	22.6
Level of Service	A	A	B	A	C	C
Approach Delay (s)		6.7	10.5		25.0	
Approach LOS		A	B		C	

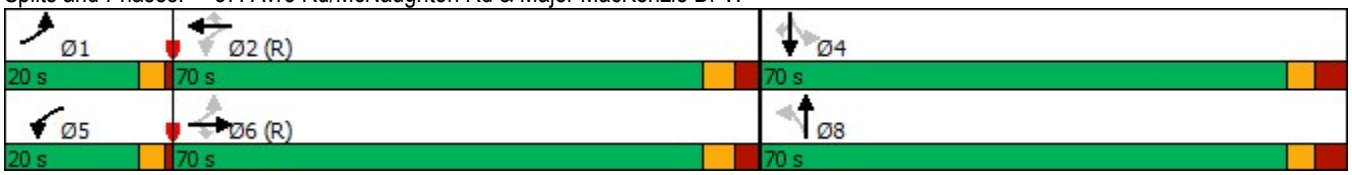
Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

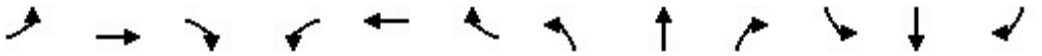
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	244	1394	9	127	1247	70	7	178	27	109	194
Future Volume (vph)	244	1394	9	127	1247	70	7	178	27	109	194
Lane Group Flow (vph)	254	1452	9	132	1299	73	7	315	28	114	202
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6		5	2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	40.5	40.5	40.5	40.5	40.5
Total Split (s)	20.0	70.0	70.0	20.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	12.5%	43.8%	43.8%	12.5%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.59	0.65	0.01	0.51	0.73	0.09	0.03	0.82	0.33	0.30	0.44
Control Delay	33.5	24.3	0.0	18.7	37.4	8.7	46.3	72.9	62.5	54.1	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	24.3	0.0	18.7	37.4	8.7	46.3	72.9	62.5	54.1	8.6
Queue Length 50th (m)	46.6	158.5	0.0	12.1	176.1	2.5	1.9	94.4	8.1	32.7	0.0
Queue Length 95th (m)	82.6	237.0	0.0	24.4	236.8	13.8	6.3	122.0	18.0	48.3	21.1
Internal Link Dist (m)		379.3			530.0			161.1		821.3	
Turn Bay Length (m)	95.0		45.0	50.0		50.0	35.0		60.0		60.0
Base Capacity (vph)	428	2245	951	307	1772	769	455	704	160	719	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.65	0.01	0.43	0.73	0.09	0.02	0.45	0.17	0.16	0.29

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 37: Avro Rd/McNaughton Rd & Major MacKenzie Dr W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	1394	9	127	1247	70	7	178	125	27	109	194
Future Volume (vph)	244	1394	9	127	1247	70	7	178	125	27	109	194
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	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	0.97	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1739	3721	1538	1773	3684	1538	1674	1763		1685	1842	1464
Flt Permitted	0.09	1.00	1.00	0.13	1.00	1.00	0.66	1.00		0.23	1.00	1.00
Satd. Flow (perm)	159	3721	1538	251	3684	1538	1164	1763		410	1842	1464
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	254	1452	9	132	1299	73	7	185	130	28	114	202
RTOR Reduction (vph)	0	0	4	0	0	30	0	21	0	0	0	161
Lane Group Flow (vph)	254	1452	5	132	1299	43	7	294	0	28	114	41
Confl. Peds. (#/hr)	4		4	4		4	5					5
Heavy Vehicles (%)	2%	1%	0%	0%	2%	0%	0%	0%	0%	0%	2%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8			4		4
Actuated Green, G (s)	112.7	96.6	96.6	89.1	77.0	77.0	32.8	32.8		32.8	32.8	32.8
Effective Green, g (s)	112.7	96.6	96.6	89.1	77.0	77.0	32.8	32.8		32.8	32.8	32.8
Actuated g/C Ratio	0.70	0.60	0.60	0.56	0.48	0.48	0.20	0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
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
Lane Grp Cap (vph)	425	2246	928	254	1772	740	238	361		84	377	300
v/s Ratio Prot	c0.12	c0.39		0.04	c0.35			c0.17			0.06	
v/s Ratio Perm	0.30		0.00	0.25		0.03	0.01			0.07		0.03
v/c Ratio	0.60	0.65	0.01	0.52	0.73	0.06	0.03	0.82		0.33	0.30	0.14
Uniform Delay, d1	34.4	20.6	12.6	19.1	33.3	22.1	50.9	60.7		54.3	53.9	52.0
Progression Factor	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	2.3	1.5	0.0	1.8	2.7	0.1	0.1	13.2		2.3	0.5	0.2
Delay (s)	36.6	22.1	12.6	20.8	36.0	22.3	50.9	73.9		56.6	54.4	52.2
Level of Service	D	C	B	C	D	C	D	E		E	D	D
Approach Delay (s)		24.2			34.0			73.4			53.3	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX K

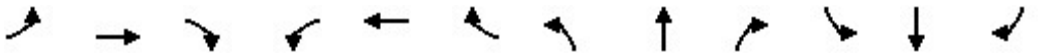
Future Background Synchro Results

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	53	279	84	243	63	260	39	604
Future Volume (vph)	53	279	84	243	63	260	39	604
Lane Group Flow (vph)	53	356	84	292	63	318	39	676
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		6		2
Permitted Phases	4		8		6		2	
Detector Phase	7	4	3	8	6	6	2	2
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.0	35.0	11.0	35.0	37.5	37.5	37.5	37.5
Total Split (s)	12.0	35.0	12.0	35.0	73.0	73.0	73.0	73.0
Total Split (%)	10.0%	29.2%	10.0%	29.2%	60.8%	60.8%	60.8%	60.8%
Yellow Time (s)	3.0	4.5	3.0	4.5	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	2.5	1.0	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	4.0	7.0	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.21	0.67	0.39	0.56	0.14	0.14	0.06	0.29
Control Delay	15.2	26.9	37.5	47.3	6.7	4.2	10.8	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	26.9	37.5	47.3	6.7	4.2	10.8	10.6
Queue Length 50th (m)	3.4	11.7	16.1	33.8	2.1	2.1	3.4	35.6
Queue Length 95th (m)	m6.7	15.5	26.2	43.7	7.9	6.7	10.1	58.8
Internal Link Dist (m)		149.7		301.7		190.7		234.5
Turn Bay Length (m)	85.0		55.0		80.0		35.0	
Base Capacity (vph)	254	800	215	780	442	2228	641	2328
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.45	0.39	0.37	0.14	0.14	0.06	0.29

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118 (98%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Keele St & Kirby Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	279	77	84	243	49	63	260	58	39	604	72
Future Volume (vph)	53	279	77	84	243	49	63	260	58	39	604	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0		4.0	7.0		7.5	7.5		7.5	7.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1649	3343		1588	3284		1721	3431		1687	3598	
Flt Permitted	0.50	1.00		0.39	1.00		0.38	1.00		0.56	1.00	
Satd. Flow (perm)	872	3343		659	3284		685	3431		993	3598	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	279	77	84	243	49	63	260	58	39	604	72
RTOR Reduction (vph)	0	23	0	0	15	0	0	13	0	0	6	0
Lane Group Flow (vph)	53	333	0	84	277	0	63	305	0	39	670	0
Confl. Peds. (#/hr)	4		2	2		4	1		1	1		1
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	2%	3%	3%	6%	4%	14%	3%	7%	3%	5%	2%	8%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	24.6	18.4		25.0	18.6		76.7	76.7		76.7	76.7	
Effective Green, g (s)	24.6	18.4		25.0	18.6		76.7	76.7		76.7	76.7	
Actuated g/C Ratio	0.21	0.15		0.21	0.16		0.64	0.64		0.64	0.64	
Clearance Time (s)	4.0	7.0		4.0	7.0		7.5	7.5		7.5	7.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	218	512		186	509		437	2192		634	2299	
v/s Ratio Prot	0.01	c0.10		c0.02	0.08			0.09			c0.19	
v/s Ratio Perm	0.04			0.07			0.09			0.04		
v/c Ratio	0.24	0.65		0.45	0.54		0.14	0.14		0.06	0.29	
Uniform Delay, d1	39.2	47.8		39.8	46.8		8.6	8.6		8.1	9.6	
Progression Factor	0.44	0.48		1.00	1.00		0.54	0.48		1.00	1.00	
Incremental Delay, d2	0.5	2.7		1.7	1.2		0.7	0.1		0.2	0.3	
Delay (s)	17.8	25.9		41.6	48.0		5.3	4.2		8.3	9.9	
Level of Service	B	C		D	D		A	A		A	A	
Approach Delay (s)		24.8			46.5			4.4			9.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	31	366	40	23	709
Future Vol, veh/h	56	31	366	40	23	709
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	70	-	37	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	7	0	4	3
Mvmt Flow	56	31	366	40	23	709

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	767	183	0	0	406	0
Stage 1	366	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.18	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.24	-
Pot Cap-1 Maneuver	343	834	-	-	1135	-
Stage 1	678	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	332	834	-	-	1135	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	678	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.4
HCM LOS	C		

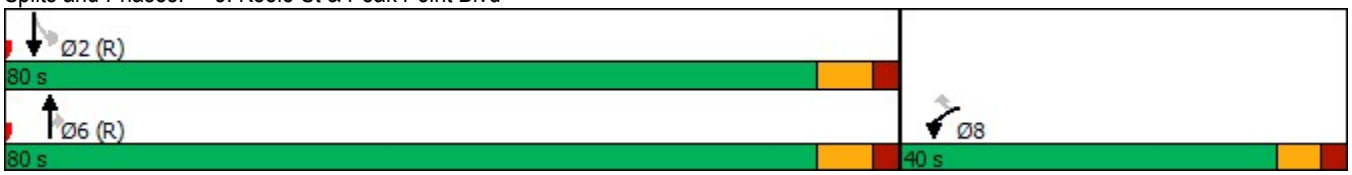
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	332	834	1135	-
HCM Lane V/C Ratio	-	-	0.169	0.037	0.02	-
HCM Control Delay (s)	-	-	18	9.5	8.2	0.1
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	0.1	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	166	12	395	50	9	772
Future Volume (vph)	166	12	395	50	9	772
Lane Group Flow (vph)	166	12	395	50	0	781
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	7.5	7.5		7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.67	0.05	0.15	0.04		0.31
Control Delay	60.6	18.4	5.6	1.9		5.0
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	60.6	18.4	5.6	1.9		5.0
Queue Length 50th (m)	39.6	0.0	13.2	0.0		23.2
Queue Length 95th (m)	58.0	5.3	24.8	4.3		39.2
Internal Link Dist (m)	483.2		204.7			306.7
Turn Bay Length (m)		35.0		55.0		
Base Capacity (vph)	461	429	2599	1131		2541
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.36	0.03	0.15	0.04		0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 95 (79%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: Keele St & Peak Point Blvd



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	166	12	395	50	9	772
Future Volume (vph)	166	12	395	50	9	772
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1652	1507	3545	1526		3647
Flt Permitted	0.95	1.00	1.00	1.00		0.95
Satd. Flow (perm)	1652	1507	3545	1526		3466
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	166	12	395	50	9	772
RTOR Reduction (vph)	0	10	0	13	0	0
Lane Group Flow (vph)	166	2	395	37	0	781
Heavy Vehicles (%)	2%	0%	6%	4%	0%	3%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Actuated Green, G (s)	18.0	18.0	88.0	88.0		88.0
Effective Green, g (s)	18.0	18.0	88.0	88.0		88.0
Actuated g/C Ratio	0.15	0.15	0.73	0.73		0.73
Clearance Time (s)	6.5	6.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	247	226	2599	1119		2541
v/s Ratio Prot	c0.10		0.11			
v/s Ratio Perm		0.00		0.02		c0.23
v/c Ratio	0.67	0.01	0.15	0.03		0.31
Uniform Delay, d1	48.2	43.4	4.8	4.4		5.5
Progression Factor	1.00	1.00	1.00	1.00		0.76
Incremental Delay, d2	7.0	0.0	0.1	0.1		0.3
Delay (s)	55.2	43.4	4.9	4.4		4.5
Level of Service	E	D	A	A		A
Approach Delay (s)	54.4		4.9			4.5
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	2	451	7	3	987
Future Vol, veh/h	6	2	451	7	3	987
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	130	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	6	2	451	7	3	987

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	951	226	0	0	458	0
Stage 1	451	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	262	783	-	-	1114	-
Stage 1	614	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	260	783	-	-	1114	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	614	-	-	-	-	-
Stage 2	577	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	0
HCM LOS	C		

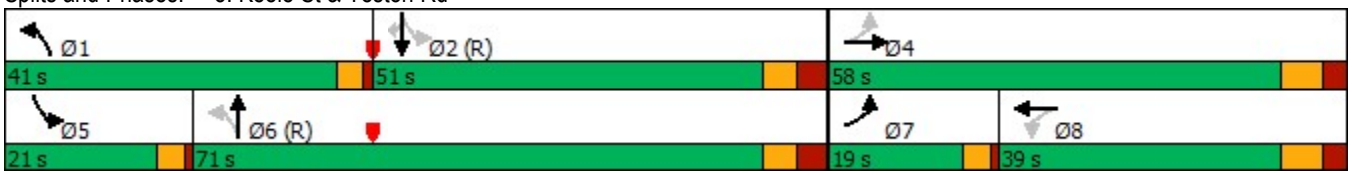
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	260	783	1114	-
HCM Lane V/C Ratio	-	-	0.023	0.003	0.003	-
HCM Control Delay (s)	-	-	19.2	9.6	8.2	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	183	377	9	315	376	286	54	610	352
Future Volume (vph)	183	377	9	315	376	286	54	610	352
Lane Group Flow (vph)	183	930	9	345	376	305	54	610	352
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		8	1	6	5	2	
Permitted Phases	4		8		6		2		2
Detector Phase	7	4	8	8	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	30.0	7.0	30.0	30.0
Minimum Split (s)	11.0	36.5	36.5	36.5	11.0	37.5	11.0	37.5	37.5
Total Split (s)	19.0	58.0	39.0	39.0	41.0	71.0	21.0	51.0	51.0
Total Split (%)	12.7%	38.7%	26.0%	26.0%	27.3%	47.3%	14.0%	34.0%	34.0%
Yellow Time (s)	3.0	4.5	4.5	4.5	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	1.0	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	7.5	4.0	7.5	4.0	7.5	7.5
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	0.69	0.87	0.23	0.67	0.70	0.15	0.10	0.37	0.42
Control Delay	29.8	14.3	66.8	65.4	20.3	17.0	13.4	31.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	14.3	66.8	65.4	20.3	17.0	13.4	31.2	7.1
Queue Length 50th (m)	15.8	8.5	2.6	54.2	49.3	22.9	5.6	64.5	6.4
Queue Length 95th (m)	21.0	11.5	8.5	66.7	83.3	37.5	13.3	105.1	37.3
Internal Link Dist (m)		274.5		260.4		253.9		909.7	
Turn Bay Length (m)	185.0		40.0		102.0		80.0		60.0
Base Capacity (vph)	267	1259	58	736	634	1969	671	1630	846
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.74	0.16	0.47	0.59	0.15	0.08	0.37	0.42

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 47 (31%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 5: Keele St & Teston Rd



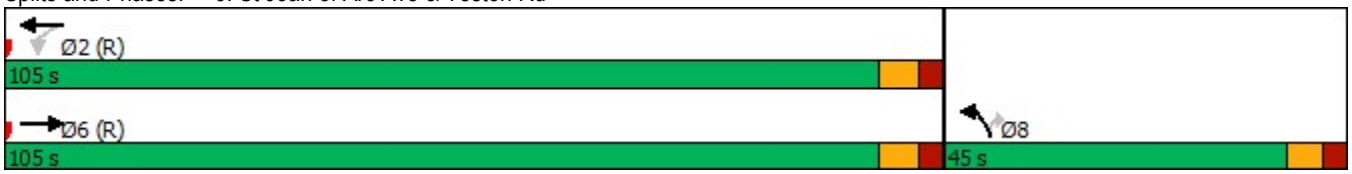
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	377	553	9	315	30	376	286	19	54	610	352
Future Volume (vph)	183	377	553	9	315	30	376	286	19	54	610	352
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.5		7.5	7.5		4.0	7.5		4.0	7.5	7.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1626	3216		1450	3484		1627	3471		1705	3648	1505
Flt Permitted	0.32	1.00		0.18	1.00		0.33	1.00		0.57	1.00	1.00
Satd. Flow (perm)	543	3216		278	3484		573	3471		1016	3648	1505
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	377	553	9	315	30	376	286	19	54	610	352
RTOR Reduction (vph)	0	195	0	0	5	0	0	3	0	0	0	174
Lane Group Flow (vph)	183	735	0	9	340	0	376	302	0	54	610	178
Confl. Peds. (#/hr)	3		7	7		3	1					1
Heavy Vehicles (%)	9%	5%	5%	22%	5%	20%	9%	7%	11%	4%	3%	4%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4			8			6			2		2
Actuated Green, G (s)	40.6	40.6		22.0	22.0		94.4	84.1		73.3	67.0	67.0
Effective Green, g (s)	40.6	40.6		22.0	22.0		94.4	84.1		73.3	67.0	67.0
Actuated g/C Ratio	0.27	0.27		0.15	0.15		0.63	0.56		0.49	0.45	0.45
Clearance Time (s)	4.0	7.5		7.5	7.5		4.0	7.5		4.0	7.5	7.5
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)	252	870		40	510		525	1946		525	1629	672
v/s Ratio Prot	0.07	c0.23			0.10		c0.11	0.09		0.00	0.17	
v/s Ratio Perm	0.13			0.03			c0.34			0.05		0.12
v/c Ratio	0.73	0.85		0.23	0.67		0.72	0.16		0.10	0.37	0.26
Uniform Delay, d1	45.4	51.7		56.5	60.5		14.9	15.9		20.3	27.6	26.0
Progression Factor	0.40	0.14		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.3	7.1		2.9	3.3		4.6	0.2		0.1	0.7	1.0
Delay (s)	27.6	14.1		59.3	63.8		19.5	16.0		20.3	28.2	27.0
Level of Service	C	B		E	E		B	B		C	C	C
Approach Delay (s)		16.3			63.7			17.9			27.4	
Approach LOS		B			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	1090	44	1052	138	37
Future Volume (vph)	1090	44	1052	138	37
Lane Group Flow (vph)	1175	44	1052	138	37
Turn Type	NA	Perm	NA	Prot	Perm
Protected Phases	6		2	8	
Permitted Phases		2			8
Detector Phase	6	2	2	8	8
Switch Phase					
Minimum Initial (s)	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	31.0	31.0
Total Split (s)	105.0	105.0	105.0	45.0	45.0
Total Split (%)	70.0%	70.0%	70.0%	30.0%	30.0%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.0	7.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.42	0.14	0.37	0.70	0.18
Control Delay	1.3	5.1	5.6	81.4	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.3	5.1	5.6	81.4	17.9
Queue Length 50th (m)	1.4	3.4	53.3	42.2	0.0
Queue Length 95th (m)	5.4	m6.7	66.3	64.0	11.0
Internal Link Dist (m)	448.8		309.4	309.1	
Turn Bay Length (m)		60.0		35.0	
Base Capacity (vph)	2811	325	2812	426	398
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.14	0.37	0.32	0.09

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 75 (50%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: St Joan of Arc Ave & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1090	85	44	1052	138	37
Future Volume (vph)	1090	85	44	1052	138	37
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5		7.5	7.5	7.0	7.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3574		1769	3579	1685	1463
Flt Permitted	1.00		0.22	1.00	0.95	1.00
Satd. Flow (perm)	3574		413	3579	1685	1463
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1090	85	44	1052	138	37
RTOR Reduction (vph)	2	0	0	0	0	33
Lane Group Flow (vph)	1173	0	44	1052	138	4
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	4%	0%	0%	5%	0%	3%
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases			2			8
Actuated Green, G (s)	117.9		117.9	117.9	17.6	17.6
Effective Green, g (s)	117.9		117.9	117.9	17.6	17.6
Actuated g/C Ratio	0.79		0.79	0.79	0.12	0.12
Clearance Time (s)	7.5		7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2809		324	2813	197	171
v/s Ratio Prot	c0.33			0.29	c0.08	
v/s Ratio Perm			0.11			0.00
v/c Ratio	0.42		0.14	0.37	0.70	0.03
Uniform Delay, d1	5.1		3.8	4.9	63.7	58.6
Progression Factor	0.17		0.88	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.8	0.3	10.7	0.1
Delay (s)	1.3		4.2	5.2	74.4	58.7
Level of Service	A		A	A	E	E
Approach Delay (s)	1.3			5.1	71.0	
Approach LOS	A			A	E	

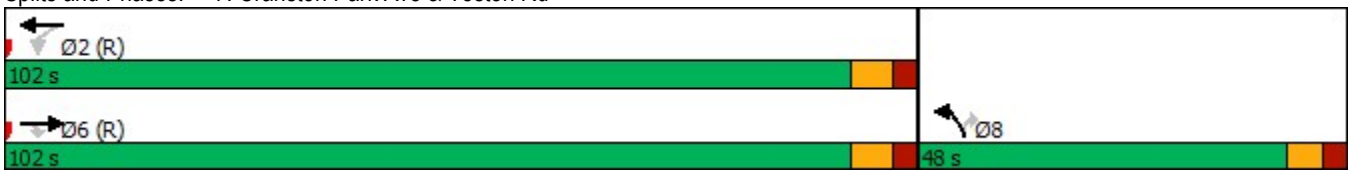
Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1117	81	21	1169	159	46
Future Volume (vph)	1117	81	21	1169	159	46
Lane Group Flow (vph)	1117	81	21	1169	159	46
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	102.0	102.0	102.0	102.0	48.0	48.0
Total Split (%)	68.0%	68.0%	68.0%	68.0%	32.0%	32.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.40	0.07	0.07	0.42	0.72	0.21
Control Delay	2.5	0.1	3.0	3.3	80.2	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	0.1	3.0	3.3	80.2	16.1
Queue Length 50th (m)	7.0	0.0	0.7	21.6	48.5	0.0
Queue Length 95th (m)	8.0	m0.0	1.8	34.3	71.0	12.1
Internal Link Dist (m)	898.1			448.8	587.1	
Turn Bay Length (m)		39.0	60.0		35.0	
Base Capacity (vph)	2817	1191	307	2790	460	398
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.07	0.07	0.42	0.35	0.12

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 48 (32%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Cranston Park Ave & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1117	81	21	1169	159	46
Future Volume (vph)	1117	81	21	1169	159	46
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.96	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3648	1527	1607	3613	1685	1334
Flt Permitted	1.00	1.00	0.24	1.00	0.95	1.00
Satd. Flow (perm)	3648	1527	398	3613	1685	1334
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1117	81	21	1169	159	46
RTOR Reduction (vph)	0	12	0	0	0	40
Lane Group Flow (vph)	1117	69	21	1169	159	6
Confl. Peds. (#/hr)		6	6			
Heavy Vehicles (%)	3%	0%	10%	4%	0%	13%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	115.9	115.9	115.9	115.9	19.6	19.6
Effective Green, g (s)	115.9	115.9	115.9	115.9	19.6	19.6
Actuated g/C Ratio	0.77	0.77	0.77	0.77	0.13	0.13
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2818	1179	307	2791	220	174
v/s Ratio Prot	0.31			c0.32	c0.09	
v/s Ratio Perm		0.05	0.05			0.00
v/c Ratio	0.40	0.06	0.07	0.42	0.72	0.03
Uniform Delay, d1	5.6	4.1	4.1	5.7	62.6	56.9
Progression Factor	0.36	0.00	0.50	0.46	1.00	1.00
Incremental Delay, d2	0.3	0.1	0.4	0.4	11.1	0.1
Delay (s)	2.3	0.1	2.4	3.1	73.7	57.0
Level of Service	A	A	A	A	E	E
Approach Delay (s)	2.2			3.1	70.0	
Approach LOS	A			A	E	

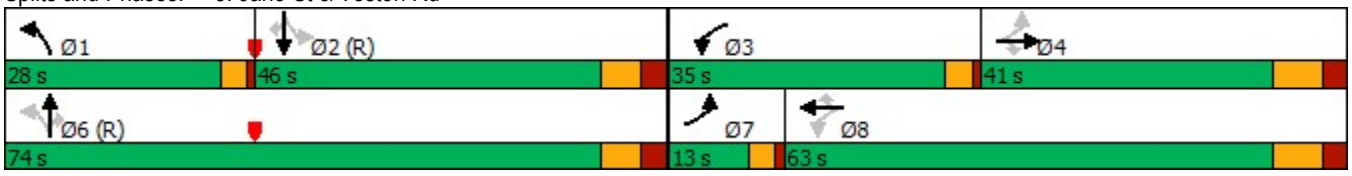
Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

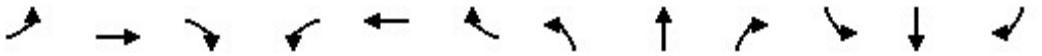
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	909	425	219	1022	40	326	670	120	85	798	248
Future Volume (vph)	108	909	425	219	1022	40	326	670	120	85	798	248
Lane Group Flow (vph)	108	909	425	219	1022	40	326	670	120	85	798	248
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	35.0	35.0	35.0	35.0	35.0
Minimum Split (s)	11.0	40.5	40.5	11.0	40.5	40.5	11.0	42.5	42.5	42.5	42.5	42.5
Total Split (s)	13.0	41.0	41.0	35.0	63.0	63.0	28.0	74.0	74.0	46.0	46.0	46.0
Total Split (%)	8.7%	27.3%	27.3%	23.3%	42.0%	42.0%	18.7%	49.3%	49.3%	30.7%	30.7%	30.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.64	0.79	0.66	0.76	0.77	0.07	0.97	0.42	0.17	0.45	0.85	0.50
Control Delay	45.6	36.3	12.7	47.1	36.8	1.7	83.5	29.6	5.0	56.1	63.0	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	36.3	12.7	47.1	36.8	1.7	83.5	29.6	5.0	56.1	63.0	21.0
Queue Length 50th (m)	6.2	115.3	63.1	49.0	123.2	0.2	83.8	74.7	0.9	22.6	126.0	23.2
Queue Length 95th (m)	#40.4	#183.3	82.0	78.0	143.1	3.5	#148.6	92.0	13.0	41.7	152.4	52.4
Internal Link Dist (m)		145.4			898.1			263.9			638.1	
Turn Bay Length (m)	100.0		70.0	120.0		35.0	45.0		55.0	135.0		58.0
Base Capacity (vph)	172	1156	647	416	1332	584	337	1586	725	188	936	493
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.79	0.66	0.53	0.77	0.07	0.97	0.42	0.17	0.45	0.85	0.50

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 54 (36%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Jane St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	909	425	219	1022	40	326	670	120	85	798	248
Future Volume (vph)	108	909	425	219	1022	40	326	670	120	85	798	248
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1583	3840	1503	1722	3648	1442	1756	3579	1491	1755	3648	1469
Flt Permitted	0.14	1.00	1.00	0.12	1.00	1.00	0.10	1.00	1.00	0.40	1.00	1.00
Satd. Flow (perm)	235	3840	1503	221	3648	1442	184	3579	1491	733	3648	1469
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	909	425	219	1022	40	326	670	120	85	798	248
RTOR Reduction (vph)	0	0	195	0	0	25	0	0	64	0	0	117
Lane Group Flow (vph)	108	909	230	219	1022	15	326	670	56	85	798	131
Confl. Peds. (#/hr)			2	2					1	1		
Heavy Vehicles (%)	12%	3%	4%	3%	3%	10%	1%	5%	5%	1%	3%	8%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	53.9	45.2	45.2	67.5	54.8	54.8	66.5	66.5	66.5	38.5	38.5	38.5
Effective Green, g (s)	53.9	45.2	45.2	67.5	54.8	54.8	66.5	66.5	66.5	38.5	38.5	38.5
Actuated g/C Ratio	0.36	0.30	0.30	0.45	0.37	0.37	0.44	0.44	0.44	0.26	0.26	0.26
Clearance Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
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)	162	1157	452	282	1332	526	333	1586	661	188	936	377
v/s Ratio Prot	0.04	0.24		c0.09	0.28		c0.16	0.19			0.22	
v/s Ratio Perm	0.20		0.15	c0.25		0.01	c0.28		0.04	0.12		0.09
v/c Ratio	0.67	0.79	0.51	0.78	0.77	0.03	0.98	0.42	0.08	0.45	0.85	0.35
Uniform Delay, d1	35.2	48.0	43.2	31.0	42.0	30.5	46.5	28.6	24.1	46.9	53.0	45.5
Progression Factor	1.20	0.63	0.50	1.13	0.77	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	3.2	0.8	11.8	2.5	0.0	43.1	0.8	0.3	7.7	9.7	2.5
Delay (s)	51.3	33.3	22.5	46.7	34.9	30.5	89.7	29.4	24.4	54.5	62.8	48.0
Level of Service	D	C	C	D	C	C	F	C	C	D	E	D
Approach Delay (s)		31.5			36.8			46.5			58.9	
Approach LOS		C			D			D			E	

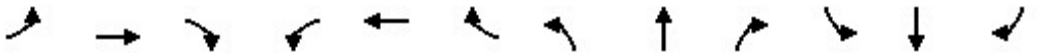
Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	71	325	128	257	72	144	60	33	674
Future Volume (vph)	71	325	128	257	72	144	60	33	674
Lane Group Flow (vph)	71	458	128	272	72	144	60	33	724
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4	3	8		6			2
Permitted Phases	4		8		6		6	2	
Detector Phase	4	4	3	8	6	6	6	2	2
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	40.0	40.0	40.0	40.0	40.0
Minimum Split (s)	16.5	16.5	11.0	16.5	48.5	48.5	48.5	48.5	48.5
Total Split (s)	36.0	36.0	18.0	54.0	66.0	66.0	66.0	66.0	66.0
Total Split (%)	30.0%	30.0%	15.0%	45.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.5	4.5	3.0	4.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	1.0	2.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	4.0	6.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lead						
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.42	0.75	0.52	0.26	0.20	0.13	0.07	0.05	0.35
Control Delay	51.4	50.2	39.7	20.4	13.1	10.2	1.9	13.7	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	50.2	39.7	20.4	13.1	10.2	1.9	13.7	15.0
Queue Length 50th (m)	16.0	51.6	16.1	14.5	8.2	15.8	0.0	3.5	47.9
Queue Length 95th (m)	29.7	66.4	30.9	20.7	19.0	30.0	0.7	9.7	70.3
Internal Link Dist (m)		496.3		276.4		275.0			245.9
Turn Bay Length (m)	50.0		50.0		50.0			50.0	
Base Capacity (vph)	244	864	264	1361	361	1068	833	710	2071
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.53	0.48	0.20	0.20	0.13	0.07	0.05	0.35

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 9: Jane St & Kirby Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	325	133	128	257	15	72	144	60	33	674	50
Future Volume (vph)	71	325	133	128	257	15	72	144	60	33	674	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5	6.5		4.0	6.5		8.5	8.5	8.5	8.5	8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1620	3367		1589	3430		1722	1866	1404	1773	3608	
Flt Permitted	0.58	1.00		0.23	1.00		0.35	1.00	1.00	0.67	1.00	
Satd. Flow (perm)	996	3367		383	3430		630	1866	1404	1242	3608	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	71	325	133	128	257	15	72	144	60	33	674	50
RTOR Reduction (vph)	0	41	0	0	4	0	0	0	26	0	4	0
Lane Group Flow (vph)	71	417	0	128	268	0	72	144	34	33	720	0
Heavy Vehicles (%)	4%	2%	0%	6%	3%	7%	3%	6%	13%	0%	3%	4%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			6			2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	20.3	20.3		36.3	36.3		68.7	68.7	68.7	68.7	68.7	
Effective Green, g (s)	20.3	20.3		36.3	36.3		68.7	68.7	68.7	68.7	68.7	
Actuated g/C Ratio	0.17	0.17		0.30	0.30		0.57	0.57	0.57	0.57	0.57	
Clearance Time (s)	6.5	6.5		4.0	6.5		8.5	8.5	8.5	8.5	8.5	
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)	168	569		236	1037		360	1068	803	711	2065	
v/s Ratio Prot		c0.12		c0.05	0.08			0.08			c0.20	
v/s Ratio Perm	0.07			0.11			0.11		0.02	0.03		
v/c Ratio	0.42	0.73		0.54	0.26		0.20	0.13	0.04	0.05	0.35	
Uniform Delay, d1	44.6	47.3		32.6	31.7		12.4	11.9	11.2	11.3	13.7	
Progression Factor	1.00	1.00		1.12	0.66		0.79	0.74	0.59	1.00	1.00	
Incremental Delay, d2	1.7	4.9		2.5	0.1		1.2	0.3	0.1	0.1	0.5	
Delay (s)	46.3	52.1		39.1	21.1		11.1	9.1	6.7	11.4	14.2	
Level of Service	D	D		D	C		B	A	A	B	B	
Approach Delay (s)		51.4			26.8			9.1			14.0	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	1	10	88	275	930
Future Volume (vph)	1	10	88	275	930
Lane Group Flow (vph)	1	10	88	275	934
Turn Type	Prot	Perm	Perm	NA	NA
Protected Phases	4			2	6
Permitted Phases		4	2		
Detector Phase	4	4	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	37.5	37.5	37.5
Total Split (s)	53.0	53.0	67.0	67.0	67.0
Total Split (%)	44.2%	44.2%	55.8%	55.8%	55.8%
Yellow Time (s)	4.5	4.5	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.5	7.5	7.5
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.01	0.06	0.18	0.09	0.29
Control Delay	41.0	20.6	5.9	3.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	20.6	5.9	3.1	1.9
Queue Length 50th (m)	0.2	0.0	0.0	0.0	0.0
Queue Length 95th (m)	1.7	4.7	17.5	18.1	29.0
Internal Link Dist (m)	213.9			446.2	275.0
Turn Bay Length (m)	35.0		50.0		
Base Capacity (vph)	645	583	489	3120	3238
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02	0.18	0.09	0.29

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 117 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 14: Jane St & Street 4 (34E)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1	10	88	275	930	4
Future Volume (vph)	1	10	88	275	930	4
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0	7.0	7.5	7.5	7.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1685	1507	1722	3512	3646	
Flt Permitted	0.95	1.00	0.30	1.00	1.00	
Satd. Flow (perm)	1685	1507	550	3512	3646	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	10	88	275	930	4
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	1	1	88	275	934	0
Heavy Vehicles (%)	0%	0%	3%	7%	3%	0%
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	7.6	7.6	97.9	97.9	97.9	
Effective Green, g (s)	7.6	7.6	97.9	97.9	97.9	
Actuated g/C Ratio	0.06	0.06	0.82	0.82	0.82	
Clearance Time (s)	7.0	7.0	7.5	7.5	7.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	106	95	448	2865	2974	
v/s Ratio Prot	c0.00			0.08	c0.26	
v/s Ratio Perm		0.00	0.16			
v/c Ratio	0.01	0.01	0.20	0.10	0.31	
Uniform Delay, d1	52.7	52.7	2.4	2.2	2.7	
Progression Factor	1.00	1.00	1.14	0.99	0.50	
Incremental Delay, d2	0.0	0.0	1.0	0.1	0.3	
Delay (s)	52.7	52.7	3.7	2.2	1.6	
Level of Service	D	D	A	A	A	
Approach Delay (s)	52.7			2.6	1.6	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	2.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	4	33	184	359	884
Future Volume (vph)	4	33	184	359	884
Lane Group Flow (vph)	4	33	184	359	941
Turn Type	Prot	Perm	pm+pt	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4	2		
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	30.0	30.0
Minimum Split (s)	35.0	35.0	11.0	37.5	37.5
Total Split (s)	48.0	48.0	16.0	72.0	56.0
Total Split (%)	40.0%	40.0%	13.3%	60.0%	46.7%
Yellow Time (s)	4.5	4.5	3.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.5	7.5
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	C-Max	C-Max
v/c Ratio	0.03	0.17	0.37	0.12	0.37
Control Delay	42.5	15.5	5.4	3.7	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	15.5	5.4	3.7	4.4
Queue Length 50th (m)	0.9	0.0	6.9	8.6	29.9
Queue Length 95th (m)	3.9	8.7	24.1	23.6	21.9
Internal Link Dist (m)	201.9			187.8	362.7
Turn Bay Length (m)	35.0		50.0		
Base Capacity (vph)	460	507	528	2948	2566
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.07	0.35	0.12	0.37

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 24 (20%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 26: Jane St & Street 3 (34E)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	33	184	359	884	57
Future Volume (vph)	4	33	184	359	884	57
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0	7.0	4.0	7.5	7.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1348	1422	1689	3479	3580	
Flt Permitted	0.95	1.00	0.27	1.00	1.00	
Satd. Flow (perm)	1348	1422	475	3479	3580	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	33	184	359	884	57
RTOR Reduction (vph)	0	30	0	0	2	0
Lane Group Flow (vph)	4	3	184	359	939	0
Heavy Vehicles (%)	25%	6%	5%	8%	4%	4%
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	9.6	9.6	95.9	95.9	83.1	
Effective Green, g (s)	9.6	9.6	95.9	95.9	83.1	
Actuated g/C Ratio	0.08	0.08	0.80	0.80	0.69	
Clearance Time (s)	7.0	7.0	4.0	7.5	7.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	107	113	468	2780	2479	
v/s Ratio Prot	c0.00		c0.03	0.10	0.26	
v/s Ratio Perm		0.00	c0.28			
v/c Ratio	0.04	0.02	0.39	0.13	0.38	
Uniform Delay, d1	50.9	50.9	3.4	2.7	7.7	
Progression Factor	1.00	1.00	1.00	1.00	0.44	
Incremental Delay, d2	0.1	0.1	0.5	0.1	0.4	
Delay (s)	51.1	51.0	4.0	2.8	3.8	
Level of Service	D	D	A	A	A	
Approach Delay (s)	51.0			3.2	3.8	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

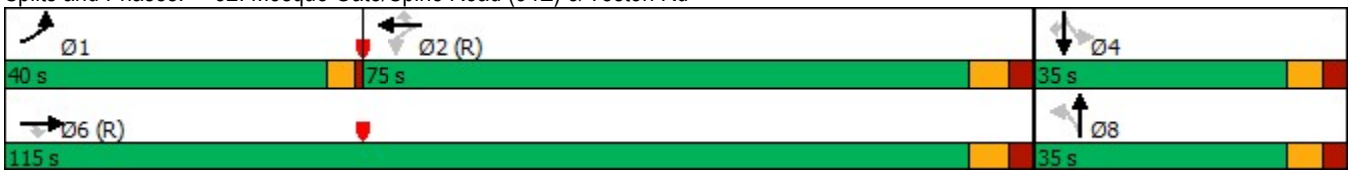
c Critical Lane Group

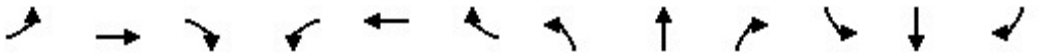
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBR
Lane Configurations										
Traffic Volume (vph)	501	1434	28	6	1438	77	55	0	47	140
Future Volume (vph)	501	1434	28	6	1438	77	55	0	47	140
Lane Group Flow (vph)	501	1434	28	6	1438	77	55	36	47	140
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	1	6			2			8		
Permitted Phases			6	2		2	8		4	4
Detector Phase	1	6	6	2	2	2	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	37.5	37.5	37.5	37.5	37.5	34.0	34.0	34.0	34.0
Total Split (s)	40.0	115.0	115.0	75.0	75.0	75.0	35.0	35.0	35.0	35.0
Total Split (%)	26.7%	76.7%	76.7%	50.0%	50.0%	50.0%	23.3%	23.3%	23.3%	23.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.81	0.49	0.02	0.03	0.64	0.08	0.44	0.18	0.39	0.29
Control Delay	63.6	4.5	1.0	13.7	13.9	4.2	72.5	2.0	70.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.6	4.5	1.0	13.7	13.9	4.2	72.5	2.0	70.7	1.5
Queue Length 50th (m)	70.0	37.5	0.1	0.6	71.4	1.4	16.9	0.0	14.4	0.0
Queue Length 95th (m)	98.8	145.0	m2.0	m0.9	m86.4	m2.5	29.4	0.3	25.8	0.0
Internal Link Dist (m)		423.7			239.2			172.5		
Turn Bay Length (m)	75.0		75.0	60.0		60.0	35.0		35.0	
Base Capacity (vph)	786	2943	1196	174	2252	927	245	315	233	583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.49	0.02	0.03	0.64	0.08	0.22	0.11	0.20	0.24

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 126 (84%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 32: Mosque Gate/Spine Road (34E) & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	501	1434	28	6	1438	77	55	0	36	47	0	140
Future Volume (vph)	501	1434	28	6	1438	77	55	0	36	47	0	140
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		7.0		7.0
Lane Util. Factor	0.97	0.95	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	1.00	1.00		1.00		1.00
Flpb, ped/bikes	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	0.85		1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95		1.00
Satd. Flow (prot)	3276	3648	1476	1513	3803	1526	1652	1365		1620		1436
Flt Permitted	0.95	1.00	1.00	0.19	1.00	1.00	0.76	1.00		0.73		1.00
Satd. Flow (perm)	3276	3648	1476	295	3803	1526	1316	1365		1251		1436
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	501	1434	28	6	1438	77	55	0	36	47	0	140
RTOR Reduction (vph)	0	0	5	0	0	24	0	33	0	0	0	126
Lane Group Flow (vph)	501	1434	23	6	1438	53	55	3	0	47	0	14
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	5%	3%	4%	17%	4%	4%	2%	0%	17%	4%	0%	5%
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA		Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases			6	2		2	8			4		4
Actuated Green, G (s)	28.2	121.0	121.0	88.8	88.8	88.8	14.5	14.5		14.5		14.5
Effective Green, g (s)	28.2	121.0	121.0	88.8	88.8	88.8	14.5	14.5		14.5		14.5
Actuated g/C Ratio	0.19	0.81	0.81	0.59	0.59	0.59	0.10	0.10		0.10		0.10
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		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
Lane Grp Cap (vph)	615	2942	1190	174	2251	903	127	131		120		138
v/s Ratio Prot	c0.15	0.39			c0.38			0.00				
v/s Ratio Perm			0.02	0.02		0.03	c0.04			0.04		0.01
v/c Ratio	0.81	0.49	0.02	0.03	0.64	0.06	0.43	0.03		0.39		0.10
Uniform Delay, d1	58.4	4.6	2.8	12.7	20.1	12.9	63.9	61.4		63.6		61.8
Progression Factor	0.93	0.76	0.66	0.73	0.59	0.65	1.00	1.00		1.00		1.00
Incremental Delay, d2	7.0	0.5	0.0	0.2	0.9	0.1	2.4	0.1		2.1		0.3
Delay (s)	61.2	4.0	1.9	9.6	12.7	8.5	66.2	61.4		65.7		62.1
Level of Service	E	A	A	A	B	A	E	E		E		E
Approach Delay (s)		18.6			12.4			64.3			63.0	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1316	1443	204	632
Future Volume (vph)	1316	1443	204	632
Lane Group Flow (vph)	1316	1443	520	316
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	20.0	20.0	15.0	15.0
Minimum Split (s)	27.5	27.5	36.5	36.5
Total Split (s)	86.0	86.0	64.0	64.0
Total Split (%)	57.3%	57.3%	42.7%	42.7%
Yellow Time (s)	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
v/c Ratio	0.56	0.59	0.67	0.85
Control Delay	5.9	4.3	49.5	66.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.9	4.3	49.5	66.4
Queue Length 50th (m)	20.9	77.6	70.2	88.9
Queue Length 95th (m)	m37.8	15.0	80.4	116.8
Internal Link Dist (m)	297.1	423.7	207.9	
Turn Bay Length (m)				90.0
Base Capacity (vph)	2336	2435	1108	522
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.56	0.59	0.47	0.61

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 4 (3%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: Hwy 400 NB Off-Ramp & Teston Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1316	0	0	1443	204	632
Future Volume (vph)	1316	0	0	1443	204	632
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5			7.5	7.5	7.5
Lane Util. Factor	0.95			*1.00	0.97	*0.95
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.91	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	3648			3803	2881	1326
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	3648			3803	2881	1326
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1316	0	0	1443	204	632
RTOR Reduction (vph)	0	0	0	0	27	27
Lane Group Flow (vph)	1316	0	0	1443	493	289
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	3%	0%	0%	4%	4%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	96.1			96.1	38.9	38.9
Effective Green, g (s)	96.1			96.1	38.9	38.9
Actuated g/C Ratio	0.64			0.64	0.26	0.26
Clearance Time (s)	7.5			7.5	7.5	7.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	2337			2436	747	343
v/s Ratio Prot	0.36			c0.38	0.17	
v/s Ratio Perm						c0.22
v/c Ratio	0.56			0.59	0.66	0.84
Uniform Delay, d1	15.1			15.6	49.6	52.6
Progression Factor	0.33			0.20	1.00	1.00
Incremental Delay, d2	0.4			0.9	2.1	16.8
Delay (s)	5.4			3.9	51.7	69.4
Level of Service	A			A	D	E
Approach Delay (s)	5.4			3.9	58.4	
Approach LOS	A			A	E	

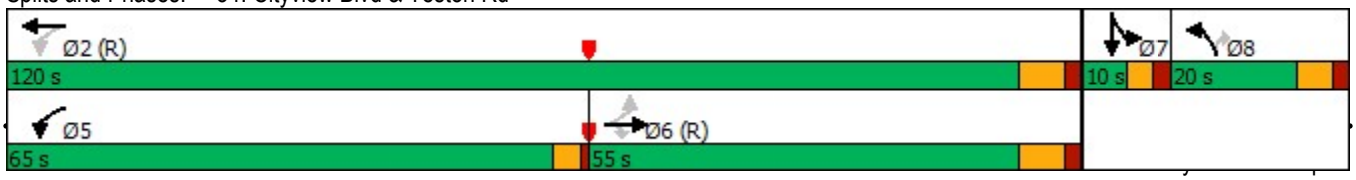
Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations							
Traffic Volume (vph)	1162	777	821	845	416	375	
Future Volume (vph)	1162	777	821	845	416	375	
Lane Group Flow (vph)	1162	777	821	845	416	375	
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm	
Protected Phases	6		5	2	8		7
Permitted Phases		6	2			8	
Detector Phase	6	6	5	2	8	8	
Switch Phase							
Minimum Initial (s)	30.0	30.0	7.0	30.0	7.0	7.0	7.0
Minimum Split (s)	37.0	37.0	11.0	37.0	38.0	38.0	12.0
Total Split (s)	55.0	55.0	65.0	120.0	20.0	20.0	10.0
Total Split (%)	36.7%	36.7%	43.3%	80.0%	13.3%	13.3%	7%
Yellow Time (s)	5.0	5.0	3.0	5.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	4.0	7.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None
v/c Ratio	0.99	1.08	1.10	0.31	0.80	0.68	
Control Delay	73.4	85.7	113.3	6.4	73.5	12.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.4	85.7	113.3	6.4	73.5	12.1	
Queue Length 50th (m)	190.6	~197.6	~265.7	31.4	65.6	0.0	
Queue Length 95th (m)	#240.3	#279.8	#365.6	48.6	#86.4	33.4	
Internal Link Dist (m)	224.3			297.1			
Turn Bay Length (m)		80.0	230.0				
Base Capacity (vph)	1178	718	743	2748	517	549	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.99	1.08	1.10	0.31	0.80	0.68	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 16 (11%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 34: Cityview Blvd & Teston Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1162	777	821	845	0	416	0	375	0	0	0
Future Volume (vph)	0	1162	777	821	845	0	416	0	375	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00			
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00		1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3684	1550	1705	3648		3236		1463			
Flt Permitted		1.00	1.00	0.08	1.00		0.95		1.00			
Satd. Flow (perm)		3684	1550	138	3648		3236		1463			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1162	777	821	845	0	416	0	375	0	0	0
RTOR Reduction (vph)	0	0	222	0	0	0	0	0	315	0	0	0
Lane Group Flow (vph)	0	1162	555	821	845	0	416	0	60	0	0	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	2%	1%	4%	3%	0%	1%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Prot		Perm			
Protected Phases		6		5	2		8			7	7	
Permitted Phases	6		6	2					8			
Actuated Green, G (s)		48.0	48.0	113.0	113.0		24.0		24.0			
Effective Green, g (s)		48.0	48.0	113.0	113.0		24.0		24.0			
Actuated g/C Ratio		0.32	0.32	0.75	0.75		0.16		0.16			
Clearance Time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		1178	496	741	2748		517		234			
v/s Ratio Prot		0.32		c0.45	0.23		c0.13					
v/s Ratio Perm			0.36	c0.38					0.04			
v/c Ratio		0.99	1.12	1.11	0.31		0.80		0.26			
Uniform Delay, d1		50.7	51.0	40.0	5.9		60.7		55.2			
Progression Factor		1.00	1.00	1.47	1.03		1.00		1.00			
Incremental Delay, d2		23.2	76.9	64.2	0.2		8.9		0.6			
Delay (s)		73.8	127.9	123.0	6.3		69.6		55.8			
Level of Service		E	F	F	A		E		E			
Approach Delay (s)		95.5			63.8			63.0			0.0	
Approach LOS		F			E			E			A	

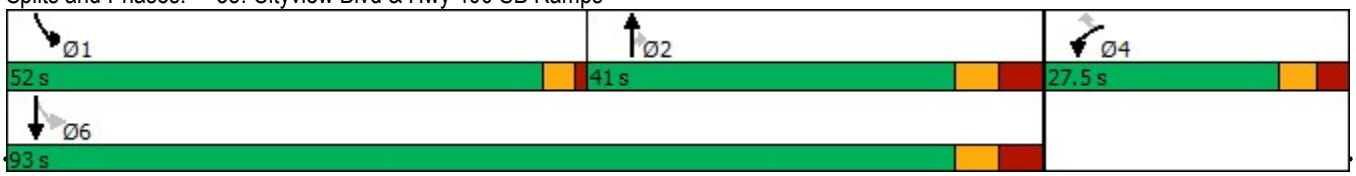
Intersection Summary			
HCM 2000 Control Delay	77.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	541	268	314	1260	301
Future Volume (vph)	115	541	268	314	1260	301
Lane Group Flow (vph)	115	541	268	314	1260	301
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	33.0	33.0	7.0	33.0
Minimum Split (s)	27.5	27.5	41.0	41.0	11.0	41.0
Total Split (s)	27.5	27.5	41.0	41.0	52.0	93.0
Total Split (%)	22.8%	22.8%	34.0%	34.0%	43.2%	77.2%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	4.0	4.0	1.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
v/c Ratio	0.31	0.83	0.26	0.49	1.23	0.12
Control Delay	47.2	15.9	32.2	6.5	129.7	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	15.9	32.2	6.5	129.7	4.3
Queue Length 50th (m)	12.7	0.0	24.3	0.0	~351.1	7.6
Queue Length 95th (m)	21.6	38.1	39.9	22.9	#488.1	16.1
Internal Link Dist (m)	165.8		211.9			105.1
Turn Bay Length (m)	100.0			55.0		
Base Capacity (vph)	590	715	1023	645	1022	2610
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.76	0.26	0.49	1.23	0.12

Intersection Summary

Cycle Length: 120.5
Actuated Cycle Length: 113
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 35: Cityview Blvd & Hwy 400 SB Ramps



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	541	268	314	1260	301
Future Volume (vph)	115	541	268	314	1260	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3173	1478	3500	1446	1635	3466
Flt Permitted	0.95	1.00	1.00	1.00	0.52	1.00
Satd. Flow (perm)	3173	1478	3500	1446	900	3466
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	541	268	314	1260	301
RTOR Reduction (vph)	0	477	0	222	0	0
Lane Group Flow (vph)	115	64	268	92	1260	301
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	2%	2%	2%	3%	3%
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Actuated Green, G (s)	13.4	13.4	33.0	33.0	85.1	85.1
Effective Green, g (s)	13.4	13.4	33.0	33.0	85.1	85.1
Actuated g/C Ratio	0.12	0.12	0.29	0.29	0.75	0.75
Clearance Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Vehicle Extension (s)	4.0	4.0	3.6	3.6	3.5	3.6
Lane Grp Cap (vph)	376	175	1022	422	990	2610
v/s Ratio Prot	0.04		0.08		c0.54	0.09
v/s Ratio Perm		c0.04		0.06	c0.42	
v/c Ratio	0.31	0.37	0.26	0.22	1.27	0.12
Uniform Delay, d1	45.5	45.9	30.7	30.2	12.1	3.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.8	0.6	1.2	130.7	0.1
Delay (s)	46.2	47.7	31.3	31.4	142.8	3.9
Level of Service	D	D	C	C	F	A
Approach Delay (s)	47.4		31.4			116.0
Approach LOS	D		C			F

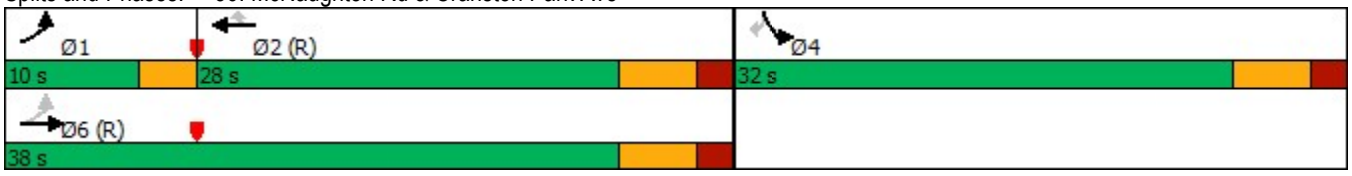
Intersection Summary			
HCM 2000 Control Delay	82.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	113.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

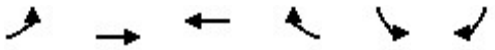
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	288	492	103	155	154
Future Volume (vph)	56	288	492	103	155	154
Lane Group Flow (vph)	62	320	547	114	172	171
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	6.0	16.0	16.0	16.0	8.0	8.0
Minimum Split (s)	9.0	27.0	27.0	27.0	32.0	32.0
Total Split (s)	10.0	38.0	28.0	28.0	32.0	32.0
Total Split (%)	14.3%	54.3%	40.0%	40.0%	45.7%	45.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.13	0.29	0.55	0.14	0.51	0.38
Control Delay	6.8	8.5	18.3	5.4	28.5	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	8.5	18.3	5.4	28.5	5.9
Queue Length 50th (m)	2.3	16.2	48.4	1.3	21.9	0.0
Queue Length 95th (m)	9.9	46.5	#132.6	12.4	30.3	11.2
Internal Link Dist (m)		821.3	323.4		900.1	
Turn Bay Length (m)	65.0			40.0		100.0
Base Capacity (vph)	474	1113	993	831	607	667
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.29	0.55	0.14	0.28	0.26

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 36: McNaughton Rd & Cranston Park Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	288	492	103	155	154
Future Volume (vph)	56	288	492	103	155	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1618	1789	1842	1462	1636	1507
Flt Permitted	0.33	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	554	1789	1842	1462	1636	1507
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	62	320	547	114	172	171
RTOR Reduction (vph)	0	0	0	45	0	136
Lane Group Flow (vph)	62	320	547	69	172	35
Confl. Peds. (#/hr)	6			6		
Heavy Vehicles (%)	4%	5%	2%	0%	3%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Actuated Green, G (s)	43.6	43.6	36.6	36.6	14.4	14.4
Effective Green, g (s)	43.6	43.6	36.6	36.6	14.4	14.4
Actuated g/C Ratio	0.62	0.62	0.52	0.52	0.21	0.21
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	405	1114	963	764	336	310
v/s Ratio Prot	0.01	c0.18	c0.30		c0.11	
v/s Ratio Perm	0.09			0.05		0.02
v/c Ratio	0.15	0.29	0.57	0.09	0.51	0.11
Uniform Delay, d1	6.2	6.1	11.3	8.4	24.7	22.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	2.4	0.2	1.3	0.2
Delay (s)	6.4	6.7	13.8	8.6	26.0	22.8
Level of Service	A	A	B	A	C	C
Approach Delay (s)		6.7	12.9		24.4	
Approach LOS		A	B		C	

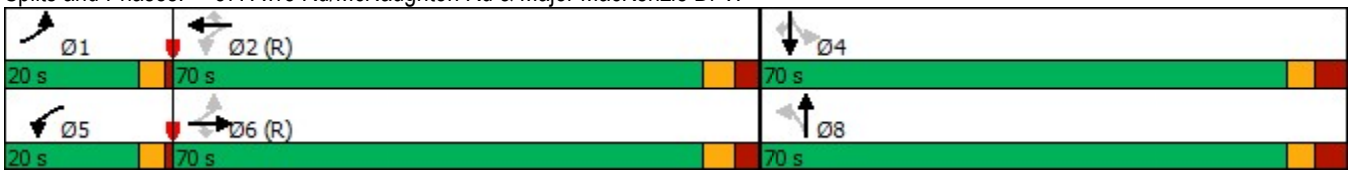
Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

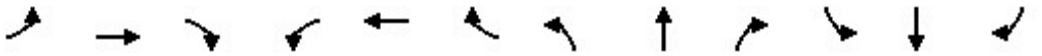
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	175	1073	18	140	1300	39	6	125	79	216	339
Future Volume (vph)	175	1073	18	140	1300	39	6	125	79	216	339
Lane Group Flow (vph)	175	1073	18	140	1300	39	6	235	79	216	339
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6		5	2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	40.5	40.5	40.5	40.5	40.5
Total Split (s)	20.0	70.0	70.0	20.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	12.5%	43.8%	43.8%	12.5%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.51	0.45	0.02	0.37	0.59	0.04	0.06	0.79	0.90	0.72	0.80
Control Delay	12.1	14.8	0.1	9.3	22.8	2.0	53.5	73.7	135.9	76.3	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	14.8	0.1	9.3	22.8	2.0	53.5	73.7	135.9	76.3	34.5
Queue Length 50th (m)	13.5	83.4	0.0	10.5	136.6	0.0	1.7	66.9	26.4	69.7	36.8
Queue Length 95th (m)	30.5	132.0	0.0	21.8	201.7	3.5	6.3	93.0	#49.7	93.1	73.0
Internal Link Dist (m)		379.3			530.0			161.1		821.3	
Turn Bay Length (m)	95.0		45.0	50.0		50.0	35.0		60.0		60.0
Base Capacity (vph)	353	2397	990	447	2185	955	248	677	214	733	699
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.45	0.02	0.31	0.59	0.04	0.02	0.35	0.37	0.29	0.48

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 37: Avro Rd/McNaughton Rd & Major MacKenzie Dr W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
Future Volume (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1627	3613	1463	1721	3613	1542	1674	1684		1680	1879	1431
Flt Permitted	0.14	1.00	1.00	0.24	1.00	1.00	0.36	1.00		0.31	1.00	1.00
Satd. Flow (perm)	234	3613	1463	442	3613	1542	636	1684		549	1879	1431
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
RTOR Reduction (vph)	0	0	6	0	0	15	0	27	0	0	0	193
Lane Group Flow (vph)	175	1073	12	140	1300	24	6	208	0	79	216	146
Confl. Peds. (#/hr)	3		1	1		3	7		3	3		7
Heavy Vehicles (%)	9%	4%	6%	3%	4%	0%	0%	2%	4%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8			4		4
Actuated Green, G (s)	119.8	106.2	106.2	106.3	96.7	96.7	25.7	25.7		25.7	25.7	25.7
Effective Green, g (s)	119.8	106.2	106.2	106.3	96.7	96.7	25.7	25.7		25.7	25.7	25.7
Actuated g/C Ratio	0.75	0.66	0.66	0.66	0.60	0.60	0.16	0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
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
Lane Grp Cap (vph)	341	2398	971	370	2183	931	102	270		88	301	229
v/s Ratio Prot	c0.06	0.30		0.02	c0.36			0.12			0.11	
v/s Ratio Perm	0.32		0.01	0.23		0.02	0.01			c0.14		0.10
v/c Ratio	0.51	0.45	0.01	0.38	0.60	0.03	0.06	0.77		0.90	0.72	0.64
Uniform Delay, d1	13.4	12.9	9.1	10.1	19.6	12.7	56.9	64.3		65.9	63.7	62.8
Progression Factor	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	1.3	0.6	0.0	0.6	1.2	0.1	0.2	12.7		62.7	7.9	5.7
Delay (s)	14.7	13.5	9.1	10.7	20.8	12.8	57.1	77.1		128.5	71.6	68.5
Level of Service	B	B	A	B	C	B	E	E		F	E	E
Approach Delay (s)		13.6			19.6			76.6			77.0	
Approach LOS		B			B			E			E	

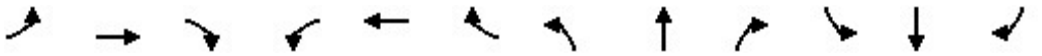
Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	53	437	58	357	179	574	36	329
Future Volume (vph)	53	437	58	357	179	574	36	329
Lane Group Flow (vph)	53	478	58	386	179	834	36	375
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	1	6		2
Permitted Phases	4		8		6		2	
Detector Phase	7	4	8	8	1	6	2	2
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	30.0	30.0	30.0
Minimum Split (s)	11.0	35.0	35.0	35.0	11.0	37.5	37.5	37.5
Total Split (s)	19.0	54.0	35.0	35.0	27.0	66.0	39.0	39.0
Total Split (%)	15.8%	45.0%	29.2%	29.2%	22.5%	55.0%	32.5%	32.5%
Yellow Time (s)	3.0	4.5	4.5	4.5	3.0	5.0	5.0	5.0
All-Red Time (s)	1.0	2.5	2.5	2.5	1.0	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	7.0	4.0	7.5	7.5	7.5
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.23	0.53	0.44	0.66	0.26	0.37	0.12	0.21
Control Delay	17.0	18.6	54.1	51.4	7.7	7.6	22.8	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	18.6	54.1	51.4	7.7	7.6	22.8	18.9
Queue Length 50th (m)	4.6	22.1	13.3	47.6	9.5	22.3	4.6	25.5
Queue Length 95th (m)	8.9	26.4	25.4	58.8	15.2	28.0	14.9	46.8
Internal Link Dist (m)		149.7		301.7		190.7		234.5
Turn Bay Length (m)	85.0		55.0		80.0		35.0	
Base Capacity (vph)	279	1371	188	815	765	2226	298	1755
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.35	0.31	0.47	0.23	0.37	0.12	0.21

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 1: Keele St & Kirby Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	437	41	58	357	29	179	574	260	36	329	46
Future Volume (vph)	53	437	41	58	357	29	179	574	260	36	329	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0		7.0	7.0		4.0	7.5		7.5	7.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1589	3488		1602	3471		1771	3523		1673	3490	
Flt Permitted	0.31	1.00		0.48	1.00		0.50	1.00		0.34	1.00	
Satd. Flow (perm)	519	3488		808	3471		924	3523		595	3490	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	437	41	58	357	29	179	574	260	36	329	46
RTOR Reduction (vph)	0	7	0	0	6	0	0	33	0	0	6	0
Lane Group Flow (vph)	53	471	0	58	380	0	179	801	0	36	369	0
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)							3					
Heavy Vehicles (%)	6%	1%	0%	5%	1%	10%	0%	2%	1%	6%	5%	9%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	31.5	31.5		19.9	19.9		74.0	74.0		59.4	59.4	
Effective Green, g (s)	31.5	31.5		19.9	19.9		74.0	74.0		59.4	59.4	
Actuated g/C Ratio	0.26	0.26		0.17	0.17		0.62	0.62		0.49	0.49	
Clearance Time (s)	4.0	7.0		7.0	7.0		4.0	7.5		7.5	7.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	204	915		133	575		644	2172		294	1727	
v/s Ratio Prot	0.02	c0.13			c0.11		0.02	c0.23			0.11	
v/s Ratio Perm	0.05			0.07			0.15			0.06		
v/c Ratio	0.26	0.51		0.44	0.66		0.28	0.37		0.12	0.21	
Uniform Delay, d1	34.2	37.7		45.0	46.9		9.9	11.4		16.3	17.1	
Progression Factor	0.52	0.45		1.00	1.00		0.69	0.64		1.00	1.00	
Incremental Delay, d2	0.7	0.5		2.3	2.9		0.2	0.5		0.9	0.3	
Delay (s)	18.3	17.5		47.3	49.7		7.0	7.8		17.1	17.4	
Level of Service	B	B		D	D		A	A		B	B	
Approach Delay (s)		17.6			49.4			7.6			17.4	
Approach LOS		B			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	39	965	76	33	388
Future Vol, veh/h	38	39	965	76	33	388
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	70	-	37	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	0	1	0	3	5
Mvmt Flow	38	39	965	76	33	388

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1225	483	0	0	1041	0
Stage 1	965	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	6.86	6.9	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.3	-	-	2.23	-
Pot Cap-1 Maneuver	170	535	-	-	658	-
Stage 1	328	-	-	-	-	-
Stage 2	757	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	159	535	-	-	658	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	328	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.3	0	1.1
HCM LOS	C		

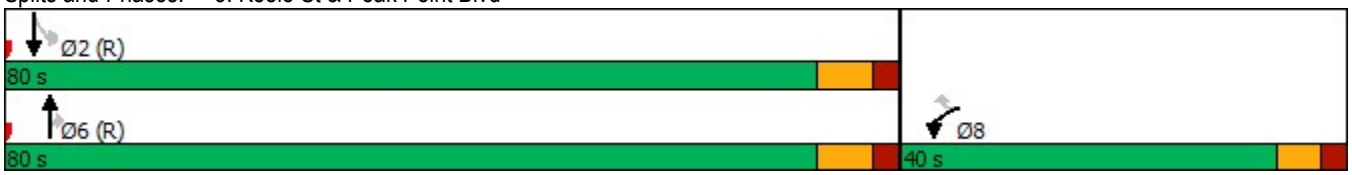
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	159	535	658	-
HCM Lane V/C Ratio	-	-	0.239	0.073	0.05	-
HCM Control Delay (s)	-	-	34.6	12.3	10.8	0.3
HCM Lane LOS	-	-	D	B	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	0.2	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	17	1014	172	21	394
Future Volume (vph)	96	17	1014	172	21	394
Lane Group Flow (vph)	96	17	1014	172	0	415
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	7.5	7.5		7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.48	0.08	0.36	0.14		0.17
Control Delay	55.1	17.6	5.8	1.2		3.8
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	55.1	17.6	5.8	1.2		3.8
Queue Length 50th (m)	23.0	0.0	33.2	0.0		8.8
Queue Length 95th (m)	35.7	6.3	70.0	7.4		17.7
Internal Link Dist (m)	483.2		204.7			306.7
Turn Bay Length (m)		35.0		55.0		
Base Capacity (vph)	456	432	2826	1208		2373
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.21	0.04	0.36	0.14		0.17

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 97 (81%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: Keele St & Peak Point Blvd



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	17	1014	172	21	394
Future Volume (vph)	96	17	1014	172	21	394
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1636	1507	3721	1536		3570
Flt Permitted	0.95	1.00	1.00	1.00		0.87
Satd. Flow (perm)	1636	1507	3721	1536		3125
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	96	17	1014	172	21	394
RTOR Reduction (vph)	0	15	0	41	0	0
Lane Group Flow (vph)	96	2	1014	131	0	415
Confl. Peds. (#/hr)	2			1	1	
Heavy Vehicles (%)	3%	0%	1%	1%	5%	5%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Actuated Green, G (s)	14.8	14.8	91.2	91.2		91.2
Effective Green, g (s)	14.8	14.8	91.2	91.2		91.2
Actuated g/C Ratio	0.12	0.12	0.76	0.76		0.76
Clearance Time (s)	6.5	6.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	201	185	2827	1167		2375
v/s Ratio Prot	c0.06		c0.27			
v/s Ratio Perm		0.00		0.09		0.13
v/c Ratio	0.48	0.01	0.36	0.11		0.17
Uniform Delay, d1	49.0	46.2	4.8	3.8		4.0
Progression Factor	1.00	1.00	1.00	1.00		0.77
Incremental Delay, d2	1.8	0.0	0.4	0.2		0.2
Delay (s)	50.8	46.2	5.1	4.0		3.2
Level of Service	D	D	A	A		A
Approach Delay (s)	50.1		4.9			3.2
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	15	1190	33	15	519
Future Vol, veh/h	9	15	1190	33	15	519
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	130	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	1	0	0	4
Mvmt Flow	9	15	1190	33	15	519

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1480	595	0	0	1223	0
Stage 1	1190	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	119	452	-	-	577	-
Stage 1	255	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	452	-	-	577	-
Mov Cap-2 Maneuver	115	-	-	-	-	-
Stage 1	255	-	-	-	-	-
Stage 2	713	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.8	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	115	452	577	-
HCM Lane V/C Ratio	-	-	0.078	0.033	0.026	-
HCM Control Delay (s)	-	-	38.9	13.2	11.4	0.2
HCM Lane LOS	-	-	E	B	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	446	357	841	14	565	611	727	12	342	224
Future Volume (vph)	446	357	841	14	565	611	727	12	342	224
Lane Group Flow (vph)	446	357	841	14	661	611	746	12	342	224
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases	7	4			8	1	6		2	
Permitted Phases	4		4	8		6		2		2
Detector Phase	7	4	4	8	8	1	6	2	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.0	36.5	36.5	36.5	36.5	11.0	37.5	37.5	37.5	37.5
Total Split (s)	26.0	66.0	66.0	40.0	40.0	34.0	84.0	50.0	50.0	50.0
Total Split (%)	17.3%	44.0%	44.0%	26.7%	26.7%	22.7%	56.0%	33.3%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	1.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	-1.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	7.5	7.5	3.0	7.5	7.5	7.5	7.5
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	1.39	0.50	0.89	0.07	0.88	0.92	0.39	0.07	0.33	0.37
Control Delay	221.3	11.8	25.1	48.1	71.3	45.4	22.3	40.8	43.4	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	221.3	11.8	25.1	48.1	71.3	45.4	22.3	40.8	43.4	6.6
Queue Length 50th (m)	~161.9	36.4	235.8	3.5	103.7	130.4	73.3	2.8	44.8	0.0
Queue Length 95th (m)	#233.1	61.8	#291.3	10.3	127.6	#218.0	89.7	8.6	59.7	20.9
Internal Link Dist (m)		274.5			260.4		253.9		909.7	
Turn Bay Length (m)	185.0			40.0		102.0		80.0		60.0
Base Capacity (vph)	322	741	953	221	796	666	1922	181	1037	600
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.39	0.48	0.88	0.06	0.83	0.92	0.39	0.07	0.33	0.37

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 76 (51%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Keele St & Teston Rd

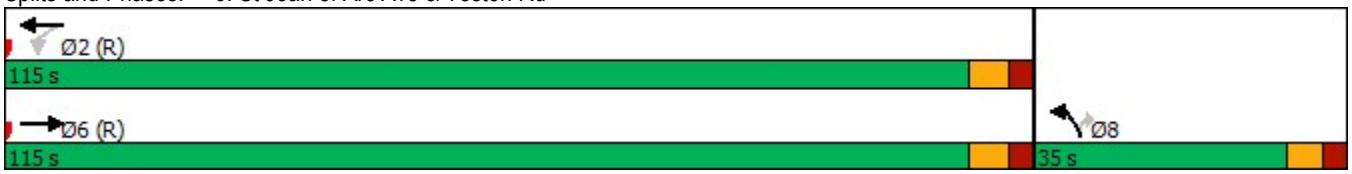
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	446	357	841	14	565	96	611	727	19	12	342	224
Future Volume (vph)	446	357	841	14	565	96	611	727	19	12	342	224
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	7.5	7.5	7.5	7.5		3.0	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	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	0.98		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1738	1902	1535	1772	3634		1755	3669		1639	3613	1534
Flt Permitted	0.12	1.00	1.00	0.55	1.00		0.46	1.00		0.37	1.00	1.00
Satd. Flow (perm)	220	1902	1535	1021	3634		850	3669		636	3613	1534
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	446	357	841	14	565	96	611	727	19	12	342	224
RTOR Reduction (vph)	0	0	363	0	10	0	0	1	0	0	0	160
Lane Group Flow (vph)	446	357	478	14	651	0	611	745	0	12	342	64
Confl. Peds. (#/hr)	6		1	1		6	1		2	2		1
Heavy Vehicles (%)	2%	4%	2%	0%	1%	0%	1%	2%	0%	8%	4%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		1	6			2	
Permitted Phases	4		4	8			6			2		2
Actuated Green, G (s)	56.5	56.5	56.5	30.5	30.5		78.5	78.5		43.0	43.0	43.0
Effective Green, g (s)	57.5	56.5	56.5	30.5	30.5		79.5	78.5		43.0	43.0	43.0
Actuated g/C Ratio	0.38	0.38	0.38	0.20	0.20		0.53	0.52		0.29	0.29	0.29
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5		4.0	7.5		7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	317	716	578	207	738		646	1920		182	1035	439
v/s Ratio Prot	c0.22	0.19			0.18		c0.20	0.20			0.09	
v/s Ratio Perm	c0.32		0.31	0.01			c0.30			0.02		0.04
v/c Ratio	1.41	0.50	0.83	0.07	0.88		0.95	0.39		0.07	0.33	0.15
Uniform Delay, d1	46.0	35.9	42.3	48.3	58.0		27.4	21.4		38.9	42.2	39.8
Progression Factor	0.90	0.27	1.08	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	198.3	0.5	8.0	0.1	12.1		22.7	0.6		0.7	0.9	0.7
Delay (s)	239.9	10.1	53.8	48.4	70.1		50.1	22.0		39.6	43.0	40.5
Level of Service	F	B	D	D	E		D	C		D	D	D
Approach Delay (s)		94.8			69.6			34.7			42.0	
Approach LOS		F			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	64.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	118.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	1634	39	1415	65	26
Future Volume (vph)	1634	39	1415	65	26
Lane Group Flow (vph)	1748	39	1415	65	26
Turn Type	NA	Perm	NA	Prot	Perm
Protected Phases	6		2	8	
Permitted Phases		2			8
Detector Phase	6	2	2	8	8
Switch Phase					
Minimum Initial (s)	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	31.0	31.0
Total Split (s)	115.0	115.0	115.0	35.0	35.0
Total Split (%)	76.7%	76.7%	76.7%	23.3%	23.3%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.0	7.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.57	0.23	0.45	0.42	0.16
Control Delay	1.9	3.5	1.7	71.4	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	3.5	1.7	71.4	20.9
Queue Length 50th (m)	7.8	0.4	8.0	20.0	0.0
Queue Length 95th (m)	14.0	m2.1	m87.5	33.6	9.3
Internal Link Dist (m)	448.8		309.4	309.1	
Turn Bay Length (m)		60.0		35.0	
Base Capacity (vph)	3079	173	3113	314	302
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.57	0.23	0.45	0.21	0.09

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 52 (35%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: St Joan of Arc Ave & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1634	114	39	1415	65	26
Future Volume (vph)	1634	114	39	1415	65	26
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5		7.5	7.5	7.0	7.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3643		1720	3684	1685	1507
Flt Permitted	1.00		0.11	1.00	0.95	1.00
Satd. Flow (perm)	3643		205	3684	1685	1507
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1634	114	39	1415	65	26
RTOR Reduction (vph)	2	0	0	0	0	24
Lane Group Flow (vph)	1746	0	39	1415	65	2
Confl. Peds. (#/hr)		6	6			
Heavy Vehicles (%)	2%	0%	3%	2%	0%	0%
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases			2			8
Actuated Green, G (s)	123.9		123.9	123.9	11.6	11.6
Effective Green, g (s)	123.9		123.9	123.9	11.6	11.6
Actuated g/C Ratio	0.83		0.83	0.83	0.08	0.08
Clearance Time (s)	7.5		7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3009		169	3042	130	116
v/s Ratio Prot	c0.48			0.38	c0.04	
v/s Ratio Perm			0.19			0.00
v/c Ratio	0.58		0.23	0.47	0.50	0.02
Uniform Delay, d1	4.4		2.8	3.7	66.4	63.9
Progression Factor	0.24		0.33	0.32	1.00	1.00
Incremental Delay, d2	0.7		2.0	0.3	3.0	0.1
Delay (s)	1.7		2.9	1.5	69.4	64.0
Level of Service	A		A	A	E	E
Approach Delay (s)	1.7			1.5	67.9	
Approach LOS	A			A	E	

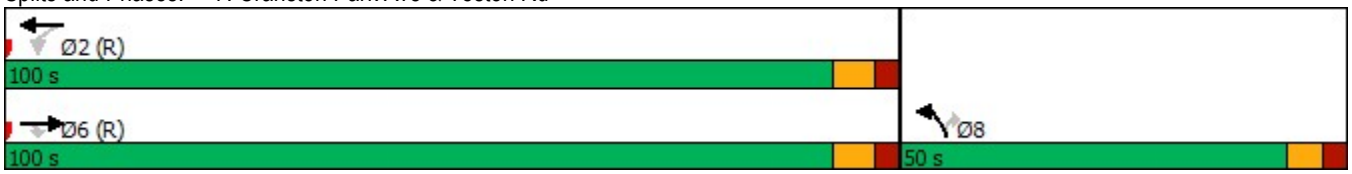
Intersection Summary			
HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1680	202	32	1379	165	35
Future Volume (vph)	1680	202	32	1379	165	35
Lane Group Flow (vph)	1680	202	32	1379	165	35
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	2	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	100.0	100.0	100.0	100.0	50.0	50.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.59	0.17	0.21	0.49	0.74	0.17
Control Delay	4.1	0.1	6.7	4.1	81.0	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	0.1	6.7	4.1	81.0	24.5
Queue Length 50th (m)	24.2	0.0	1.5	34.4	50.3	2.2
Queue Length 95th (m)	m8.4	m0.0	4.1	49.4	73.5	12.9
Internal Link Dist (m)	898.1			448.8	587.1	
Turn Bay Length (m)		39.0	60.0		35.0	
Base Capacity (vph)	2828	1202	155	2828	473	415
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.17	0.21	0.49	0.35	0.08

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 62 (41%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Cranston Park Ave & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1680	202	32	1379	165	35
Future Volume (vph)	1680	202	32	1379	165	35
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3684	1541	1722	3684	1652	1383
Flt Permitted	1.00	1.00	0.11	1.00	0.95	1.00
Satd. Flow (perm)	3684	1541	202	3684	1652	1383
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1680	202	32	1379	165	35
RTOR Reduction (vph)	0	19	0	0	0	23
Lane Group Flow (vph)	1680	183	32	1379	165	12
Confl. Peds. (#/hr)		3	3			
Heavy Vehicles (%)	2%	0%	3%	2%	2%	9%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	8	
Permitted Phases		6	2			8
Actuated Green, G (s)	115.2	115.2	115.2	115.2	20.3	20.3
Effective Green, g (s)	115.2	115.2	115.2	115.2	20.3	20.3
Actuated g/C Ratio	0.77	0.77	0.77	0.77	0.14	0.14
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2829	1183	155	2829	223	187
v/s Ratio Prot	c0.46			0.37	c0.10	
v/s Ratio Perm		0.12	0.16			0.01
v/c Ratio	0.59	0.15	0.21	0.49	0.74	0.06
Uniform Delay, d1	7.4	4.6	4.8	6.5	62.3	56.6
Progression Factor	0.48	0.00	0.59	0.51	1.00	1.00
Incremental Delay, d2	0.3	0.1	2.7	0.6	12.1	0.1
Delay (s)	3.8	0.1	5.6	3.8	74.4	56.7
Level of Service	A	A	A	A	E	E
Approach Delay (s)	3.4			3.9	71.3	
Approach LOS	A			A	E	

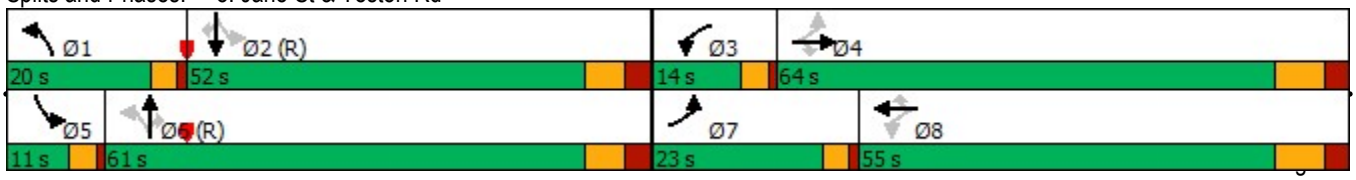
Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

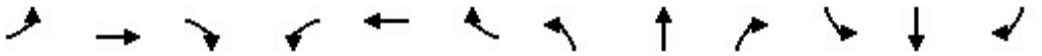
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	1608	1029	124	1271	90	429	897	172	33	1044	129
Future Volume (vph)	241	1608	1029	124	1271	90	429	897	172	33	1044	129
Lane Group Flow (vph)	241	1608	1029	124	1271	90	429	897	172	33	1044	129
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	35.0	35.0	7.0	35.0	35.0
Minimum Split (s)	11.0	40.5	40.5	11.0	40.5	40.5	11.0	42.5	42.5	11.0	42.5	42.5
Total Split (s)	23.0	64.0	64.0	14.0	55.0	55.0	20.0	61.0	61.0	11.0	52.0	52.0
Total Split (%)	15.3%	42.7%	42.7%	9.3%	36.7%	36.7%	13.3%	40.7%	40.7%	7.3%	34.7%	34.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	3.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
v/c Ratio	0.94	1.10	1.43	0.73	1.10	0.15	1.70	0.66	0.26	0.17	0.97	0.23
Control Delay	56.5	93.9	224.4	53.4	97.3	2.3	358.7	42.8	11.0	25.5	73.9	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	93.9	224.4	53.4	97.3	2.3	358.7	42.8	11.0	25.5	73.9	3.7
Queue Length 50th (m)	62.3	~285.1	~408.6	16.9	~241.7	1.4	~179.9	125.9	9.3	5.7	170.8	0.0
Queue Length 95th (m)	m57.5	m#249.6	m#363.3	#50.2	#287.1	4.7	#250.3	150.7	27.4	12.5	#218.0	9.8
Internal Link Dist (m)		145.4			898.1			263.9			638.1	
Turn Bay Length (m)	100.0		70.0	120.0		35.0	45.0		55.0	135.0		58.0
Base Capacity (vph)	264	1457	719	173	1158	595	253	1354	668	198	1071	562
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	1.10	1.43	0.72	1.10	0.15	1.70	0.66	0.26	0.17	0.97	0.23

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 77 (51%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Jane St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	1608	1029	124	1271	90	429	897	172	33	1044	129
Future Volume (vph)	241	1608	1029	124	1271	90	429	897	172	33	1044	129
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	8.5	8.5	4.0	8.5	8.5	3.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	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)	1689	3916	1540	1773	3684	1571	1773	3648	1587	1722	3613	1526
Flt Permitted	0.08	1.00	1.00	0.08	1.00	1.00	0.08	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	139	3916	1540	159	3684	1571	154	3648	1587	370	3613	1526
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	241	1608	1029	124	1271	90	429	897	172	33	1044	129
RTOR Reduction (vph)	0	0	146	0	0	62	0	0	81	0	0	91
Lane Group Flow (vph)	241	1608	883	124	1271	28	429	897	91	33	1044	38
Heavy Vehicles (%)	5%	1%	3%	0%	2%	1%	0%	3%	0%	3%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	69.5	55.8	55.8	56.8	47.1	47.1	64.5	54.9	54.9	50.1	44.5	44.5
Effective Green, g (s)	69.5	55.8	55.8	56.8	47.1	47.1	65.5	54.9	54.9	50.1	44.5	44.5
Actuated g/C Ratio	0.46	0.37	0.37	0.38	0.31	0.31	0.44	0.37	0.37	0.33	0.30	0.30
Clearance Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	4.0	7.5	7.5
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)	254	1456	572	164	1156	493	250	1335	580	174	1071	452
v/s Ratio Prot	c0.12	0.41		0.05	0.34		c0.19	0.25		0.01	0.29	
v/s Ratio Perm	0.32		c0.57	0.24		0.02	c0.55		0.06	0.06		0.03
v/c Ratio	0.95	1.10	1.54	0.76	1.10	0.06	1.72	0.67	0.16	0.19	0.97	0.08
Uniform Delay, d1	47.3	47.1	47.1	37.8	51.5	35.9	47.3	40.0	32.0	34.8	52.2	38.1
Progression Factor	1.25	1.07	1.10	1.04	0.85	22.30	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.9	48.1	245.2	16.2	56.9	0.0	338.6	2.7	0.6	0.5	22.1	0.4
Delay (s)	66.9	98.4	296.8	55.5	100.5	801.5	385.9	42.7	32.6	35.3	74.3	38.4
Level of Service	E	F	F	E	F	F	F	D	C	D	E	D
Approach Delay (s)		166.7			139.2			139.8			69.4	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	138.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

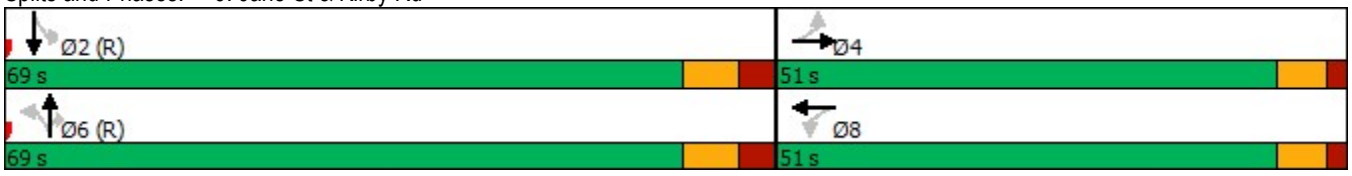
c Critical Lane Group

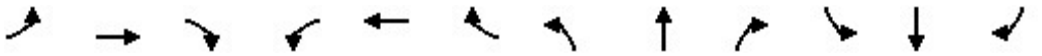
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	124	357	86	405	149	484	133	18	260
Future Volume (vph)	124	357	86	405	149	484	133	18	260
Lane Group Flow (vph)	124	502	86	442	149	484	133	18	292
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		6			2
Permitted Phases	4		8		6		6	2	
Detector Phase	4	4	8	8	6	6	6	2	2
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	40.0	40.0	40.0	40.0	40.0
Minimum Split (s)	16.5	16.5	16.5	16.5	48.5	48.5	48.5	48.5	48.5
Total Split (s)	51.0	51.0	51.0	51.0	69.0	69.0	69.0	69.0	69.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.94	0.64	0.81	0.59	0.21	0.38	0.13	0.04	0.13
Control Delay	109.0	40.6	69.6	26.7	6.3	7.4	0.7	10.2	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.0	40.6	69.6	26.7	6.3	7.4	0.7	10.2	8.5
Queue Length 50th (m)	30.7	53.7	9.6	24.8	5.6	47.4	0.0	1.4	11.9
Queue Length 95th (m)	#54.2	62.5	16.7	32.0	8.9	23.6	1.4	5.6	23.6
Internal Link Dist (m)		496.3		276.4		275.0			245.9
Turn Bay Length (m)	50.0		50.0		50.0			50.0	
Base Capacity (vph)	227	1299	183	1280	705	1278	1013	470	2325
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.39	0.47	0.35	0.21	0.38	0.13	0.04	0.13

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 114 (95%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jane St & Kirby Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	357	145	86	405	37	149	484	133	18	260	32
Future Volume (vph)	124	357	145	86	405	37	149	484	133	18	260	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5	6.5		6.5	6.5		8.5	8.5	8.5	8.5	8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	3405		1604	3439		1773	1939	1469	1516	3516	
Flt Permitted	0.35	1.00		0.29	1.00		0.57	1.00	1.00	0.45	1.00	
Satd. Flow (perm)	613	3405		494	3439		1070	1939	1469	713	3516	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	124	357	145	86	405	37	149	484	133	18	260	32
RTOR Reduction (vph)	0	45	0	0	7	0	0	0	45	0	5	0
Lane Group Flow (vph)	124	457	0	86	435	0	149	484	88	18	287	0
Heavy Vehicles (%)	2%	0%	1%	5%	2%	8%	0%	2%	8%	17%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	25.9	25.9		25.9	25.9		79.1	79.1	79.1	79.1	79.1	
Effective Green, g (s)	25.9	25.9		25.9	25.9		79.1	79.1	79.1	79.1	79.1	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.66	0.66	0.66	0.66	0.66	
Clearance Time (s)	6.5	6.5		6.5	6.5		8.5	8.5	8.5	8.5	8.5	
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)	132	734		106	742		705	1278	968	469	2317	
v/s Ratio Prot		0.13			0.13			c0.25			0.08	
v/s Ratio Perm	c0.20			0.17			0.14		0.06	0.03		
v/c Ratio	0.94	0.62		0.81	0.59		0.21	0.38	0.09	0.04	0.12	
Uniform Delay, d1	46.3	42.6		44.7	42.2		8.1	9.3	7.4	7.2	7.6	
Progression Factor	1.00	1.00		0.58	0.58		0.56	0.60	0.22	1.00	1.00	
Incremental Delay, d2	59.2	1.6		34.2	1.1		0.7	0.8	0.2	0.2	0.1	
Delay (s)	105.5	44.3		60.2	25.8		5.2	6.4	1.8	7.3	7.7	
Level of Service	F	D		E	C		A	A	A	A	A	
Approach Delay (s)		56.4			31.4			5.4			7.7	
Approach LOS		E			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		

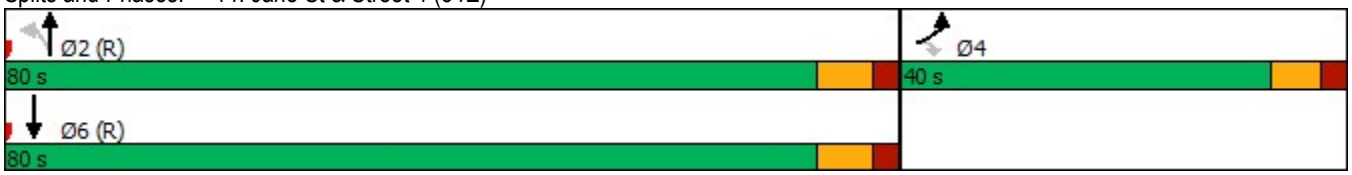
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	13	54	22	726	507
Future Volume (vph)	13	54	22	726	507
Lane Group Flow (vph)	13	54	22	726	508
Turn Type	Prot	Perm	Perm	NA	NA
Protected Phases	4			2	6
Permitted Phases		4	2		
Detector Phase	4	4	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	37.5	37.5	37.5
Total Split (s)	40.0	40.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%
Yellow Time (s)	4.5	4.5	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.5	7.5	7.5
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.07	0.26	0.03	0.24	0.17
Control Delay	44.5	14.0	4.7	4.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	14.0	4.7	4.0	3.3
Queue Length 50th (m)	3.0	0.0	0.9	18.8	4.7
Queue Length 95th (m)	8.0	10.7	3.9	32.2	38.4
Internal Link Dist (m)	213.9			446.2	275.0
Turn Bay Length (m)	35.0		50.0		
Base Capacity (vph)	429	430	667	2971	2915
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.13	0.03	0.24	0.17

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 103 (86%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 14: Jane St & Street 4 (34E)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	13	54	22	726	507	1
Future Volume (vph)	13	54	22	726	507	1
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0	7.0	7.5	7.5	7.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1560	1422	1689	3684	3612	
Flt Permitted	0.95	1.00	0.47	1.00	1.00	
Satd. Flow (perm)	1560	1422	827	3684	3612	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	54	22	726	507	1
RTOR Reduction (vph)	0	49	0	0	0	0
Lane Group Flow (vph)	13	5	22	726	508	0
Heavy Vehicles (%)	8%	6%	5%	2%	4%	0%
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	11.6	11.6	93.9	93.9	93.9	
Effective Green, g (s)	11.6	11.6	93.9	93.9	93.9	
Actuated g/C Ratio	0.10	0.10	0.78	0.78	0.78	
Clearance Time (s)	7.0	7.0	7.5	7.5	7.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	150	137	647	2882	2826	
v/s Ratio Prot	c0.01			c0.20	0.14	
v/s Ratio Perm		0.00	0.03			
v/c Ratio	0.09	0.04	0.03	0.25	0.18	
Uniform Delay, d1	49.4	49.1	2.9	3.5	3.3	
Progression Factor	1.00	1.00	0.92	0.86	0.77	
Incremental Delay, d2	0.3	0.1	0.1	0.2	0.1	
Delay (s)	49.6	49.3	2.8	3.2	2.7	
Level of Service	D	D	A	A	A	
Approach Delay (s)	49.3			3.2	2.7	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	22	276	260	729	478
Future Volume (vph)	22	276	260	729	478
Lane Group Flow (vph)	22	276	260	729	554
Turn Type	Prot	Perm	pm+pt	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4	2		
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	30.0	30.0
Minimum Split (s)	35.0	35.0	11.0	37.5	37.5
Total Split (s)	49.0	49.0	17.0	71.0	54.0
Total Split (%)	40.8%	40.8%	14.2%	59.2%	45.0%
Yellow Time (s)	4.5	4.5	3.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.5	7.5
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	C-Max	C-Max
v/c Ratio	0.12	0.68	0.38	0.26	0.24
Control Delay	45.8	13.9	5.5	5.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	13.9	5.5	5.1	5.5
Queue Length 50th (m)	5.2	0.0	10.3	19.6	13.3
Queue Length 95th (m)	11.5	22.9	34.1	49.0	24.9
Internal Link Dist (m)	201.9			187.8	362.7
Turn Bay Length (m)	35.0		50.0		
Base Capacity (vph)	561	682	705	2819	2288
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.40	0.37	0.26	0.24

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 26: Jane St & Street 3 (34E)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	276	260	729	478	76
Future Volume (vph)	22	276	260	729	478	76
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0	7.0	4.0	7.5	7.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1604	1436	1705	3684	3534	
Flt Permitted	0.95	1.00	0.42	1.00	1.00	
Satd. Flow (perm)	1604	1436	752	3684	3534	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	22	276	260	729	478	76
RTOR Reduction (vph)	0	244	0	0	6	0
Lane Group Flow (vph)	22	32	260	729	548	0
Heavy Vehicles (%)	5%	5%	4%	2%	4%	5%
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	13.7	13.7	91.8	91.8	77.5	
Effective Green, g (s)	13.7	13.7	91.8	91.8	77.5	
Actuated g/C Ratio	0.11	0.11	0.76	0.76	0.65	
Clearance Time (s)	7.0	7.0	4.0	7.5	7.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	183	163	657	2818	2282	
v/s Ratio Prot	0.01		c0.03	0.20	0.16	
v/s Ratio Perm		c0.02	c0.27			
v/c Ratio	0.12	0.19	0.40	0.26	0.24	
Uniform Delay, d1	47.7	48.1	4.0	4.1	8.9	
Progression Factor	1.00	1.00	1.00	1.00	0.52	
Incremental Delay, d2	0.3	0.6	0.4	0.2	0.2	
Delay (s)	48.0	48.7	4.4	4.4	4.9	
Level of Service	D	D	A	A	A	
Approach Delay (s)	48.7			4.4	4.9	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

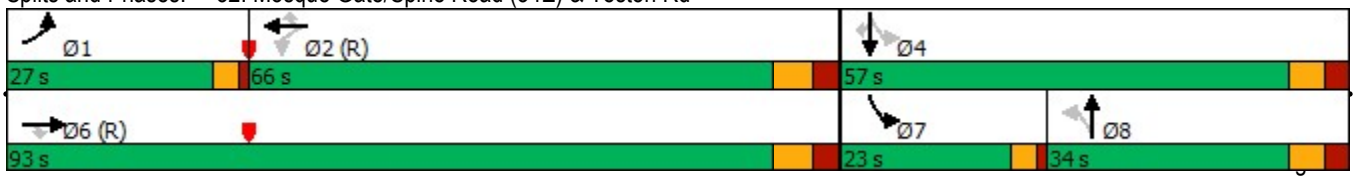
c Critical Lane Group

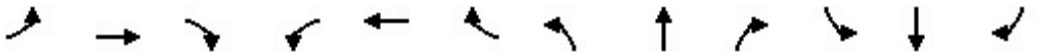
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBR
Lane Configurations										
Traffic Volume (vph)	755	2204	101	7	1660	147	56	0	603	743
Future Volume (vph)	755	2204	101	7	1660	147	56	0	603	743
Lane Group Flow (vph)	755	2204	101	7	1660	147	56	30	603	743
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	Perm
Protected Phases	1	6			2			8	7	
Permitted Phases			6	2		2	8		4	4
Detector Phase	1	6	6	2	2	2	8	8	7	4
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0	7.0	10.0
Minimum Split (s)	11.0	37.5	37.5	37.5	37.5	37.5	34.0	34.0	11.0	34.0
Total Split (s)	27.0	93.0	93.0	66.0	66.0	66.0	34.0	34.0	23.0	57.0
Total Split (%)	18.0%	62.0%	62.0%	44.0%	44.0%	44.0%	22.7%	22.7%	15.3%	38.0%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0	3.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	1.44	1.04	0.11	0.14	1.09	0.23	0.27	0.10	1.24	1.08
Control Delay	244.1	51.5	7.6	20.3	64.2	5.7	57.2	0.7	165.0	87.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	244.1	51.5	7.6	20.3	64.2	5.7	57.2	0.7	165.0	87.0
Queue Length 50th (m)	~165.7	~389.0	5.5	0.6	~282.8	4.5	15.2	0.0	~241.2	~191.5
Queue Length 95th (m)	m#160.8	m311.3	m5.2	m0.6	m67.7	m3.6	29.4	0.0	#317.8	#273.1
Internal Link Dist (m)		423.7			239.2			172.5		
Turn Bay Length (m)	75.0		75.0	60.0		60.0	35.0		35.0	
Base Capacity (vph)	524	2120	894	51	1527	653	236	320	485	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.44	1.04	0.11	0.14	1.09	0.23	0.24	0.09	1.24	1.08

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 16 (11%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 32: Mosque Gate/Spine Road (34E) & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	755	2204	101	7	1660	147	56	0	30	603	0	743
Future Volume (vph)	755	2204	101	7	1660	147	56	0	30	603	0	743
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		3.0		7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	*1.00	1.00	1.00	1.00		1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00		1.00		1.00
Flpb, ped/bikes	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	0.85		1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95		1.00
Satd. Flow (prot)	3276	3721	1526	1773	3916	1540	1652	1365		1604		1436
Flt Permitted	0.95	1.00	1.00	0.07	1.00	1.00	0.76	1.00		0.65		1.00
Satd. Flow (perm)	3276	3721	1526	131	3916	1540	1316	1365		1100		1436
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	755	2204	101	7	1660	147	56	0	30	603	0	743
RTOR Reduction (vph)	0	0	25	0	0	54	0	26	0	0	0	204
Lane Group Flow (vph)	755	2204	76	7	1660	93	56	4	0	603	0	539
Confl. Peds. (#/hr)			6	6								
Heavy Vehicles (%)	5%	1%	0%	0%	1%	3%	2%	0%	17%	5%	0%	5%
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt		Perm
Protected Phases	1	6			2			8		7	4	
Permitted Phases			6	2		2	8			4		4
Actuated Green, G (s)	23.0	84.1	84.1	57.1	57.1	57.1	21.6	21.6		51.4		51.4
Effective Green, g (s)	24.0	84.1	84.1	57.1	57.1	57.1	21.6	21.6		52.4		51.4
Actuated g/C Ratio	0.16	0.56	0.56	0.38	0.38	0.38	0.14	0.14		0.35		0.34
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		4.0		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
Lane Grp Cap (vph)	524	2086	855	49	1490	586	189	196		474		492
v/s Ratio Prot	c0.23	0.59			c0.42			0.00		c0.23		
v/s Ratio Perm			0.05	0.05		0.06	0.04			c0.22		0.38
v/c Ratio	1.44	1.06	0.09	0.14	1.11	0.16	0.30	0.02		1.27		1.10
Uniform Delay, d1	63.0	33.0	15.2	30.4	46.4	30.6	57.4	55.1		46.9		49.3
Progression Factor	1.05	1.00	1.11	0.61	0.49	0.44	1.00	1.00		1.00		1.00
Incremental Delay, d2	199.4	26.8	0.0	0.6	52.4	0.1	0.9	0.0		138.2		69.3
Delay (s)	265.8	59.8	17.0	19.0	75.1	13.4	58.3	55.2		185.1		118.6
Level of Service	F	E	B	B	E	B	E	E		F		F
Approach Delay (s)		109.2			69.9			57.2			148.4	
Approach LOS		F			E			E			F	

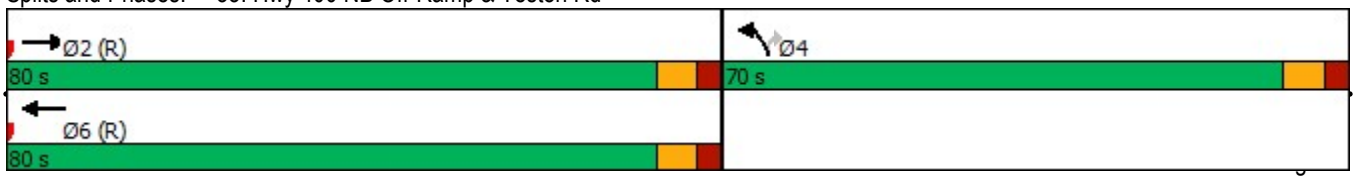
Intersection Summary			
HCM 2000 Control Delay	105.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	141.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1511	2074	369	1513
Future Volume (vph)	1511	2074	369	1513
Lane Group Flow (vph)	1511	2074	369	1513
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	20.0	20.0	15.0	15.0
Minimum Split (s)	27.5	27.5	36.5	36.5
Total Split (s)	80.0	80.0	70.0	70.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0
Total Lost Time (s)	7.5	7.5	7.5	6.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
v/c Ratio	0.85	1.12	0.53	1.26
Control Delay	8.7	72.4	36.2	158.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.8	72.4	36.2	158.9
Queue Length 50th (m)	33.7	~366.1	85.8	~309.6
Queue Length 95th (m)	m35.2	m#314.4	119.3	#354.6
Internal Link Dist (m)	297.1	423.7	207.9	
Turn Bay Length (m)				90.0
Base Capacity (vph)	1780	1856	695	1204
Starvation Cap Reductn	3	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	1.12	0.53	1.26

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 29 (19%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: Hwy 400 NB Off-Ramp & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1511	0	0	2074	369	1513
Future Volume (vph)	1511	0	0	2074	369	1513
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5			7.5	7.5	6.5
Lane Util. Factor	0.95			*1.00	1.00	*0.95
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3684			3840	1668	2808
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3684			3840	1668	2808
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1511	0	0	2074	369	1513
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	1511	0	0	2074	369	1497
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	2%	0%	0%	3%	1%	2%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	72.5			72.5	62.5	62.5
Effective Green, g (s)	72.5			72.5	62.5	63.5
Actuated g/C Ratio	0.48			0.48	0.42	0.42
Clearance Time (s)	7.5			7.5	7.5	7.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	1780			1856	695	1188
v/s Ratio Prot	0.41			c0.54	0.22	
v/s Ratio Perm						c0.53
v/c Ratio	0.85			1.12	0.53	1.26
Uniform Delay, d1	34.0			38.8	32.8	43.2
Progression Factor	0.21			0.42	1.00	1.00
Incremental Delay, d2	1.6			53.7	0.8	123.9
Delay (s)	8.7			69.8	33.6	167.2
Level of Service	A			E	C	F
Approach Delay (s)	8.7			69.8	141.0	
Approach LOS	A			E	F	

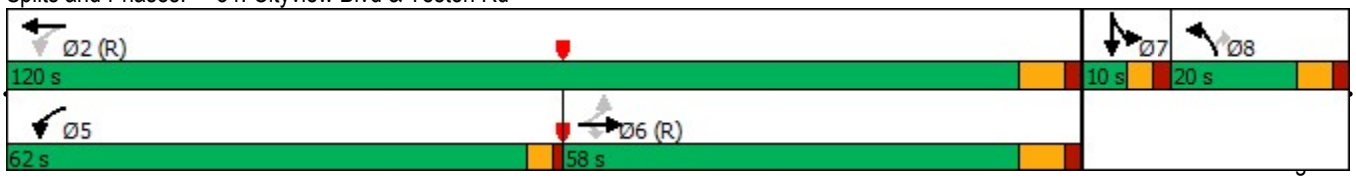
Intersection Summary			
HCM 2000 Control Delay	77.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

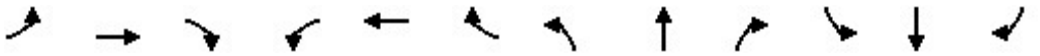
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø7
Lane Configurations							
Traffic Volume (vph)	1323	341	922	1552	353	420	
Future Volume (vph)	1323	341	922	1552	353	420	
Lane Group Flow (vph)	1323	341	922	1552	353	420	
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm	
Protected Phases	6		5	2	8		7
Permitted Phases		6	2			8	
Detector Phase	6	6	5	2	8	8	
Switch Phase							
Minimum Initial (s)	30.0	30.0	7.0	30.0	7.0	7.0	7.0
Minimum Split (s)	37.0	37.0	11.0	37.0	38.0	38.0	12.0
Total Split (s)	58.0	58.0	62.0	120.0	20.0	20.0	10.0
Total Split (%)	38.7%	38.7%	41.3%	80.0%	13.3%	13.3%	7%
Yellow Time (s)	5.0	5.0	3.0	5.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.0	7.0	4.0	7.0	6.0	6.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None
v/c Ratio	1.06	0.51	1.29	0.56	0.68	0.71	
Control Delay	88.9	19.0	165.2	19.3	66.9	12.2	
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	
Total Delay	88.9	19.0	165.2	19.6	66.9	12.2	
Queue Length 50th (m)	~238.0	35.0	~357.8	181.8	54.4	0.0	
Queue Length 95th (m)	#282.7	66.8	m#315.0	m159.8	72.5	35.5	
Internal Link Dist (m)	224.3			297.1			
Turn Bay Length (m)		80.0	230.0				
Base Capacity (vph)	1252	663	716	2775	517	591	
Starvation Cap Reductn	0	0	0	576	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.06	0.51	1.29	0.71	0.68	0.71	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 18 (12%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 34: Cityview Blvd & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1323	341	922	1552	0	353	0	420	0	0	0
Future Volume (vph)	0	1323	341	922	1552	0	353	0	420	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Lane Util. Factor		0.95	1.00	1.00	0.95		0.97		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3684	1571	1722	3684		3236		1492			
Flt Permitted		1.00	1.00	0.07	1.00		0.95		1.00			
Satd. Flow (perm)		3684	1571	132	3684		3236		1492			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1323	341	922	1552	0	353	0	420	0	0	0
RTOR Reduction (vph)	0	0	129	0	0	0	0	0	353	0	0	0
Lane Group Flow (vph)	0	1323	212	922	1552	0	353	0	67	0	0	0
Heavy Vehicles (%)	0%	2%	1%	3%	2%	0%	1%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Prot		Perm			
Protected Phases		6		5	2		8			7	7	
Permitted Phases	6		6	2					8			
Actuated Green, G (s)		51.0	51.0	113.0	113.0		24.0		24.0			
Effective Green, g (s)		51.0	51.0	113.0	113.0		24.0		24.0			
Actuated g/C Ratio		0.34	0.34	0.75	0.75		0.16		0.16			
Clearance Time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		1252	534	714	2775		517		238			
v/s Ratio Prot		0.36		c0.50	0.42		c0.11					
v/s Ratio Perm			0.13	c0.47					0.05			
v/c Ratio		1.06	0.40	1.29	0.56		0.68		0.28			
Uniform Delay, d1		49.5	37.8	41.4	7.9		59.4		55.4			
Progression Factor		1.00	1.00	1.02	2.40		1.00		1.00			
Incremental Delay, d2		41.9	2.2	132.1	0.1		3.7		0.7			
Delay (s)		91.4	40.0	174.5	19.0		63.1		56.1			
Level of Service		F	D	F	B		E		E			
Approach Delay (s)		80.8			77.0			59.3			0.0	
Approach LOS		F			E			E			A	

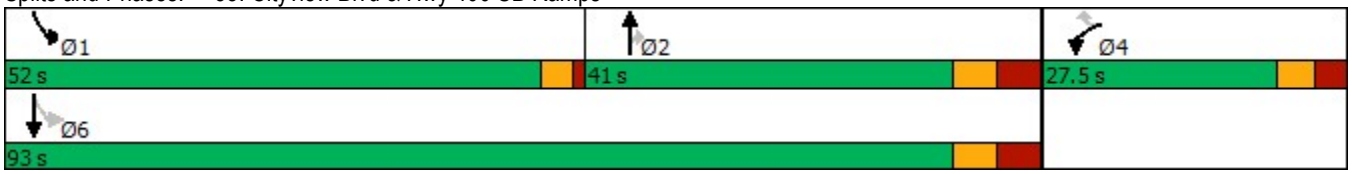
Intersection Summary			
HCM 2000 Control Delay	75.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	453	349	172	885	355
Future Volume (vph)	64	453	349	172	885	355
Lane Group Flow (vph)	64	453	349	172	885	355
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	33.0	33.0	7.0	33.0
Minimum Split (s)	27.5	27.5	41.0	41.0	11.0	41.0
Total Split (s)	27.5	27.5	41.0	41.0	52.0	93.0
Total Split (%)	22.8%	22.8%	34.0%	34.0%	43.2%	77.2%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	4.0	4.0	1.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
v/c Ratio	0.17	0.80	0.31	0.30	0.91	0.13
Control Delay	45.5	15.5	31.2	6.3	24.4	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.5	15.5	31.2	6.3	24.4	4.1
Queue Length 50th (m)	7.0	0.0	31.9	0.0	77.5	8.5
Queue Length 95th (m)	13.5	33.4	51.0	17.2	#225.3	18.7
Internal Link Dist (m)	165.8		211.9			105.1
Turn Bay Length (m)	100.0			55.0		
Base Capacity (vph)	612	647	1136	580	990	2707
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.70	0.31	0.30	0.89	0.13

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 112.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 35: Cityview Blvd & Hwy 400 SB Ramps



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	453	349	172	885	355
Future Volume (vph)	64	453	349	172	885	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3268	1492	3535	1445	1615	3570
Flt Permitted	0.95	1.00	1.00	1.00	0.48	1.00
Satd. Flow (perm)	3268	1492	3535	1445	815	3570
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	64	453	349	172	885	355
RTOR Reduction (vph)	0	402	0	117	0	0
Lane Group Flow (vph)	64	51	349	55	885	355
Confl. Peds. (#/hr)				7	7	
Heavy Vehicles (%)	0%	1%	1%	1%	4%	0%
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Actuated Green, G (s)	12.6	12.6	36.1	36.1	85.1	85.1
Effective Green, g (s)	12.6	12.6	36.1	36.1	85.1	85.1
Actuated g/C Ratio	0.11	0.11	0.32	0.32	0.76	0.76
Clearance Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Vehicle Extension (s)	4.0	4.0	3.6	3.6	3.5	3.6
Lane Grp Cap (vph)	366	167	1137	464	939	2707
v/s Ratio Prot	0.02		0.10		c0.38	0.10
v/s Ratio Perm		c0.03		0.04	c0.34	
v/c Ratio	0.17	0.30	0.31	0.12	0.94	0.13
Uniform Delay, d1	45.1	45.8	28.6	26.8	10.3	3.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.4	0.7	0.5	17.3	0.1
Delay (s)	45.4	47.2	29.3	27.4	27.6	3.7
Level of Service	D	D	C	C	C	A
Approach Delay (s)	47.0		28.7			20.7
Approach LOS	D		C			C

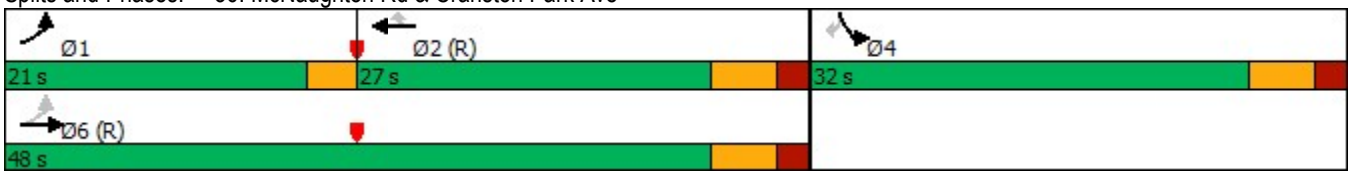
Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	112.2	Sum of lost time (s)	18.5
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

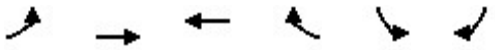
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	218	375	243	170	142	57
Future Volume (vph)	218	375	243	170	142	57
Lane Group Flow (vph)	242	417	270	189	158	63
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	6.0	16.0	16.0	16.0	8.0	8.0
Minimum Split (s)	9.0	27.0	27.0	27.0	32.0	32.0
Total Split (s)	21.0	48.0	27.0	27.0	32.0	32.0
Total Split (%)	26.3%	60.0%	33.8%	33.8%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.33	0.34	0.29	0.23	0.52	0.19
Control Delay	6.5	8.3	15.6	4.0	34.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	8.3	15.6	4.0	34.2	7.8
Queue Length 50th (m)	15.1	32.2	21.8	0.0	23.7	0.0
Queue Length 95th (m)	26.1	53.0	58.9	14.5	33.9	8.2
Internal Link Dist (m)		821.3	323.4		900.1	
Turn Bay Length (m)	65.0			40.0		100.0
Base Capacity (vph)	812	1244	930	832	547	532
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.34	0.29	0.23	0.29	0.12

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 37 (46%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 36: McNaughton Rd & Cranston Park Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	218	375	243	170	142	57
Future Volume (vph)	218	375	243	170	142	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1631	1860	1842	1463	1685	1507
Flt Permitted	0.54	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	924	1860	1842	1463	1685	1507
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	242	417	270	189	158	63
RTOR Reduction (vph)	0	0	0	94	0	52
Lane Group Flow (vph)	242	417	270	95	158	11
Confl. Peds. (#/hr)	5			5		
Heavy Vehicles (%)	3%	1%	2%	0%	0%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Actuated Green, G (s)	53.5	53.5	40.4	40.4	14.5	14.5
Effective Green, g (s)	53.5	53.5	40.4	40.4	14.5	14.5
Actuated g/C Ratio	0.67	0.67	0.50	0.50	0.18	0.18
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	707	1243	930	738	305	273
v/s Ratio Prot	0.04	c0.22	0.15		c0.09	
v/s Ratio Perm	c0.19			0.07		0.01
v/c Ratio	0.34	0.34	0.29	0.13	0.52	0.04
Uniform Delay, d1	5.3	5.7	11.5	10.5	29.6	27.0
Progression Factor	1.07	1.13	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.7	0.8	0.4	1.5	0.1
Delay (s)	5.9	7.1	12.3	10.8	31.1	27.1
Level of Service	A	A	B	B	C	C
Approach Delay (s)		6.7	11.7		29.9	
Approach LOS		A	B		C	

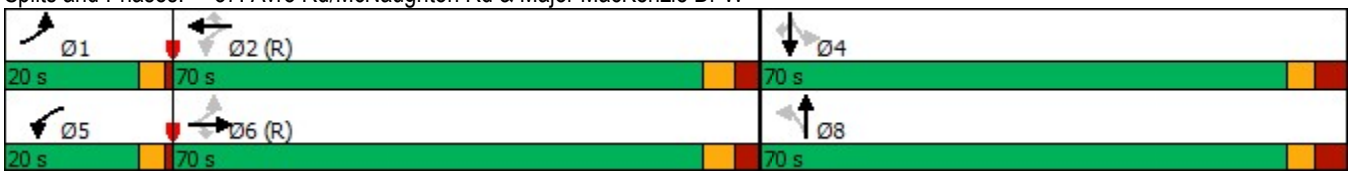
Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

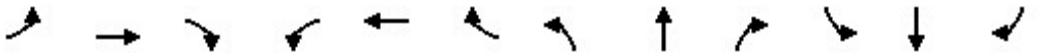
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	261	1394	9	127	1247	141	7	178	27	109	199
Future Volume (vph)	261	1394	9	127	1247	141	7	178	27	109	199
Lane Group Flow (vph)	261	1394	9	127	1247	141	7	303	27	109	199
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6		5	2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	40.5	40.5	40.5	40.5	40.5
Total Split (s)	20.0	70.0	70.0	20.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	12.5%	43.8%	43.8%	12.5%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.57	0.61	0.01	0.46	0.71	0.19	0.03	0.82	0.32	0.30	0.44
Control Delay	29.4	22.4	0.0	16.0	36.4	15.5	47.1	73.4	52.6	46.4	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	22.4	0.0	16.0	36.4	15.5	47.1	73.4	52.6	46.4	14.1
Queue Length 50th (m)	43.4	144.5	0.0	11.3	165.6	14.7	1.9	90.5	6.2	25.3	13.3
Queue Length 95th (m)	80.3	217.2	0.0	23.0	221.5	33.4	6.4	118.0	13.1	37.4	31.3
Internal Link Dist (m)		379.3			530.0			161.1		821.3	
Turn Bay Length (m)	95.0		45.0	50.0		50.0	35.0		60.0		60.0
Base Capacity (vph)	455	2281	965	328	1765	752	461	704	166	719	693
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.61	0.01	0.39	0.71	0.19	0.02	0.43	0.16	0.15	0.29

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 37: Avro Rd/McNaughton Rd & Major MacKenzie Dr W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	1394	9	127	1247	141	7	178	125	27	109	199
Future Volume (vph)	261	1394	9	127	1247	141	7	178	125	27	109	199
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	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	0.97	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1739	3721	1538	1773	3684	1508	1674	1763		1685	1842	1464
Flt Permitted	0.10	1.00	1.00	0.16	1.00	1.00	0.67	1.00		0.24	1.00	1.00
Satd. Flow (perm)	182	3721	1538	294	3684	1508	1181	1763		426	1842	1464
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	261	1394	9	127	1247	141	7	178	125	27	109	199
RTOR Reduction (vph)	0	0	3	0	0	30	0	21	0	0	0	160
Lane Group Flow (vph)	261	1394	6	127	1247	111	7	282	0	27	109	39
Confl. Peds. (#/hr)	4		4	4		4	5					5
Heavy Vehicles (%)	2%	1%	0%	0%	2%	2%	0%	0%	0%	0%	2%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8			4		4
Actuated Green, G (s)	113.8	98.1	98.1	88.3	76.6	76.6	31.7	31.7		31.7	31.7	31.7
Effective Green, g (s)	113.8	98.1	98.1	88.3	76.6	76.6	31.7	31.7		31.7	31.7	31.7
Actuated g/C Ratio	0.71	0.61	0.61	0.55	0.48	0.48	0.20	0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
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
Lane Grp Cap (vph)	452	2281	942	270	1763	721	233	349		84	364	290
v/s Ratio Prot	c0.12	0.37		0.03	c0.34			c0.16			0.06	
v/s Ratio Perm	0.29		0.00	0.22		0.07	0.01			0.06		0.03
v/c Ratio	0.58	0.61	0.01	0.47	0.71	0.15	0.03	0.81		0.32	0.30	0.14
Uniform Delay, d1	30.5	19.1	12.0	18.3	32.9	23.5	51.7	61.3		54.9	54.7	52.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.81	0.84	1.90
Incremental Delay, d2	1.8	1.2	0.0	1.3	2.4	0.5	0.1	12.9		2.2	0.5	0.2
Delay (s)	32.3	20.4	12.0	19.6	35.3	23.9	51.8	74.1		46.9	46.3	100.7
Level of Service	C	C	B	B	D	C	D	E		D	D	F
Approach Delay (s)		22.2			32.9			73.6			78.7	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX L

Future Total Synchro Results

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	245	368	192	288	117	272	39	1064
Future Volume (vph)	245	368	192	288	117	272	39	1064
Lane Group Flow (vph)	245	463	192	337	117	346	39	1142
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		6		2
Permitted Phases	4		8		6		2	
Detector Phase	7	4	3	8	6	6	2	2
Switch Phase								
Minimum Initial (s)	7.0	10.0	7.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.0	35.0	11.0	35.0	37.5	37.5	37.5	37.5
Total Split (s)	12.0	35.0	12.0	35.0	73.0	73.0	73.0	73.0
Total Split (%)	10.0%	29.2%	10.0%	29.2%	60.8%	60.8%	60.8%	60.8%
Yellow Time (s)	3.0	4.5	3.0	4.5	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	2.5	1.0	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	4.0	7.0	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.90	0.75	0.91	0.56	0.55	0.17	0.07	0.52
Control Delay	63.6	42.7	80.2	46.1	26.8	4.4	11.7	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.6	42.7	80.2	46.1	26.8	4.4	11.7	15.3
Queue Length 50th (m)	34.6	40.6	37.8	38.8	19.3	21.8	3.8	79.5
Queue Length 95th (m)	#57.0	45.2	#68.2	50.7	#30.0	1.8	10.2	113.4
Internal Link Dist (m)		149.7		301.7		190.7		234.5
Turn Bay Length (m)	85.0		55.0		80.0		35.0	
Base Capacity (vph)	272	808	210	788	211	2075	581	2209
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.57	0.91	0.43	0.55	0.17	0.07	0.52

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 110 (92%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Keele St & Kirby Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	368	95	192	288	49	117	272	74	39	1064	78
Future Volume (vph)	245	368	95	192	288	49	117	272	74	39	1064	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0		4.0	7.0		7.5	7.5		7.5	7.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1683	3382		1635	3330		1738	3417		1687	3662	
Flt Permitted	0.45	1.00		0.29	1.00		0.19	1.00		0.54	1.00	
Satd. Flow (perm)	798	3382		502	3330		352	3417		966	3662	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	245	368	95	192	288	49	117	272	74	39	1064	78
RTOR Reduction (vph)	0	21	0	0	12	0	0	18	0	0	4	0
Lane Group Flow (vph)	245	442	0	192	325	0	117	328	0	39	1138	0
Confl. Peds. (#/hr)	4		2	2		4	1		1	1		1
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	0%	2%	2%	3%	3%	14%	2%	7%	3%	5%	1%	8%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	29.2	21.2		29.2	21.2		72.3	72.3		72.3	72.3	
Effective Green, g (s)	29.2	21.2		29.2	21.2		72.3	72.3		72.3	72.3	
Actuated g/C Ratio	0.24	0.18		0.24	0.18		0.60	0.60		0.60	0.60	
Clearance Time (s)	4.0	7.0		4.0	7.0		7.5	7.5		7.5	7.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	597		197	588		212	2058		582	2206	
v/s Ratio Prot	0.06	0.13		c0.06	0.10			0.10			0.31	
v/s Ratio Perm	0.17			c0.17			c0.33			0.04		
v/c Ratio	0.97	0.74		0.97	0.55		0.55	0.16		0.07	0.52	
Uniform Delay, d1	43.5	46.8		42.8	45.1		14.2	10.5		9.9	13.8	
Progression Factor	0.77	0.79		1.00	1.00		0.91	0.44		1.00	1.00	
Incremental Delay, d2	47.2	4.9		56.3	1.1		9.9	0.2		0.2	0.9	
Delay (s)	80.7	42.1		99.1	46.2		22.8	4.7		10.1	14.6	
Level of Service	F	D		F	D		C	A		B	B	
Approach Delay (s)		55.4			65.4			9.3			14.5	
Approach LOS		E			E			A			B	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

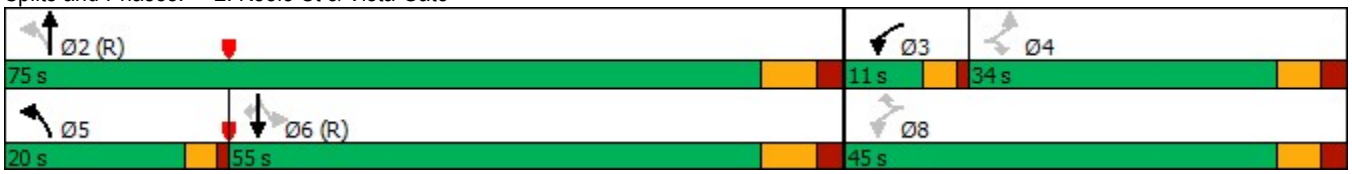
c Critical Lane Group

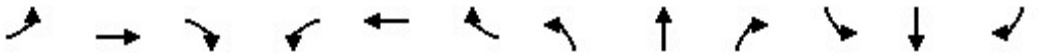
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	16	339	56	31	221	432	23	745	550
Future Volume (vph)	16	339	56	31	221	432	23	745	550
Lane Group Flow (vph)	16	339	56	31	221	472	23	745	550
Turn Type	Perm	Perm	pm+pt	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases			3		5	2		6	
Permitted Phases	4	4	8	8	2		6		6
Detector Phase	4	4	3	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	11.0	33.5	11.0	37.5	37.5	37.5	37.5
Total Split (s)	34.0	34.0	11.0	45.0	20.0	75.0	55.0	55.0	55.0
Total Split (%)	28.3%	28.3%	9.2%	37.5%	16.7%	62.5%	45.8%	45.8%	45.8%
Yellow Time (s)	4.0	4.0	3.0	4.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	1.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	4.0	6.5	4.0	7.5	7.5	7.5	7.5
Lead/Lag	Lag	Lag	Lead		Lead		Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.08	0.72	0.16	0.09	0.42	0.19	0.05	0.36	0.51
Control Delay	45.9	17.3	36.4	0.5	9.3	3.7	10.9	10.3	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	45.9	17.3	36.4	0.5	9.3	3.7	10.9	10.3	2.7
Queue Length 50th (m)	3.8	0.0	11.7	0.0	11.5	13.2	1.5	30.6	2.2
Queue Length 95th (m)	8.6	25.5	19.4	0.0	57.7	47.8	m3.8	m48.3	m6.0
Internal Link Dist (m)						306.7		190.7	
Turn Bay Length (m)				70.0	50.0		50.0		35.0
Base Capacity (vph)	386	606	348	535	583	2454	497	2097	1071
Starvation Cap Reductn	0	0	0	0	0	0	0	0	58
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.56	0.16	0.06	0.38	0.19	0.05	0.36	0.54

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Keele St & Vista Gate





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	339	56	0	31	221	432	40	23	745	550
Future Volume (vph)	16	0	339	56	0	31	221	432	40	23	745	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5		6.5	4.0		6.5	4.0	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00		0.85	1.00		0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1685		1507	1685		1507	1773	3517		1705	3648	1587
Flt Permitted	0.95		1.00	0.95		1.00	0.31	1.00		0.48	1.00	1.00
Satd. Flow (perm)	1685		1507	1685		1507	584	3517		864	3648	1587
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	0	339	56	0	31	221	432	40	23	745	550
RTOR Reduction (vph)	0	0	301	0	0	25	0	4	0	0	0	162
Lane Group Flow (vph)	16	0	38	56	0	6	221	468	0	23	745	388
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	4%	3%	0%
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases				3			5	2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	13.6		13.6	23.2		23.2	82.8	82.8		68.1	68.1	68.1
Effective Green, g (s)	13.6		13.6	23.2		23.2	82.8	82.8		68.1	68.1	68.1
Actuated g/C Ratio	0.11		0.11	0.19		0.19	0.69	0.69		0.57	0.57	0.57
Clearance Time (s)	6.5		6.5	4.0		6.5	4.0	7.5		7.5	7.5	7.5
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)	190		170	325		291	508	2426		490	2070	900
v/s Ratio Prot				c0.01			c0.04	0.13			0.20	
v/s Ratio Perm	0.01		c0.03	0.03		0.00	c0.26			0.03		0.24
v/c Ratio	0.08		0.23	0.17		0.02	0.44	0.19		0.05	0.36	0.43
Uniform Delay, d1	47.6		48.4	40.4		39.2	7.3	6.7		11.5	14.1	14.9
Progression Factor	1.02		1.75	1.00		1.00	1.04	0.48		0.65	0.62	0.19
Incremental Delay, d2	0.2		0.7	0.3		0.0	0.6	0.2		0.1	0.4	1.2
Delay (s)	48.9		85.3	40.6		39.2	8.2	3.4		7.7	9.2	4.1
Level of Service	D		F	D		D	A	A		A	A	A
Approach Delay (s)		83.6			40.1			4.9			7.0	
Approach LOS		F			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

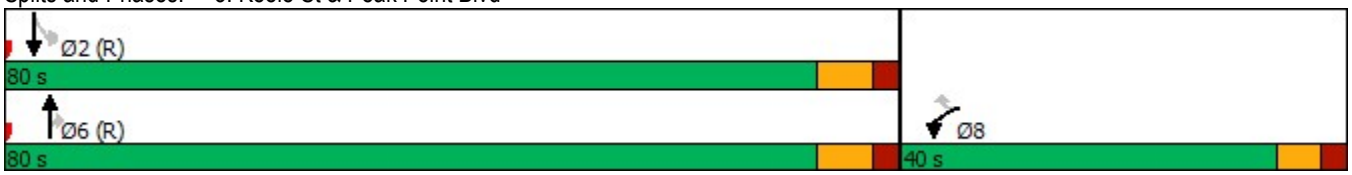
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	166	12	682	50	9	1147
Future Volume (vph)	166	12	682	50	9	1147
Lane Group Flow (vph)	166	12	682	50	0	1156
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	7.5	7.5		7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.67	0.05	0.26	0.04		0.45
Control Delay	60.6	18.4	1.8	0.6		4.9
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	60.6	18.4	1.8	0.6		4.9
Queue Length 50th (m)	39.6	0.0	25.9	0.1		48.7
Queue Length 95th (m)	58.0	5.3	1.9	0.1		21.0
Internal Link Dist (m)	483.2		204.2			306.7
Turn Bay Length (m)		35.0		55.0		
Base Capacity (vph)	461	429	2648	1131		2563
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.36	0.03	0.26	0.04		0.45

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 17 (14%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: Keele St & Peak Point Blvd



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	166	12	682	50	9	1147
Future Volume (vph)	166	12	682	50	9	1147
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1652	1507	3613	1526		3683
Flt Permitted	0.95	1.00	1.00	1.00		0.95
Satd. Flow (perm)	1652	1507	3613	1526		3496
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	166	12	682	50	9	1147
RTOR Reduction (vph)	0	10	0	13	0	0
Lane Group Flow (vph)	166	2	682	37	0	1156
Heavy Vehicles (%)	2%	0%	4%	4%	0%	2%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Actuated Green, G (s)	18.0	18.0	88.0	88.0		88.0
Effective Green, g (s)	18.0	18.0	88.0	88.0		88.0
Actuated g/C Ratio	0.15	0.15	0.73	0.73		0.73
Clearance Time (s)	6.5	6.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	247	226	2649	1119		2563
v/s Ratio Prot	c0.10		0.19			
v/s Ratio Perm		0.00		0.02		c0.33
v/c Ratio	0.67	0.01	0.26	0.03		0.45
Uniform Delay, d1	48.2	43.4	5.3	4.4		6.4
Progression Factor	1.00	1.00	0.26	0.29		0.61
Incremental Delay, d2	7.0	0.0	0.2	0.1		0.5
Delay (s)	55.2	43.4	1.6	1.3		4.4
Level of Service	E	D	A	A		A
Approach Delay (s)	54.4		1.6			4.4
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

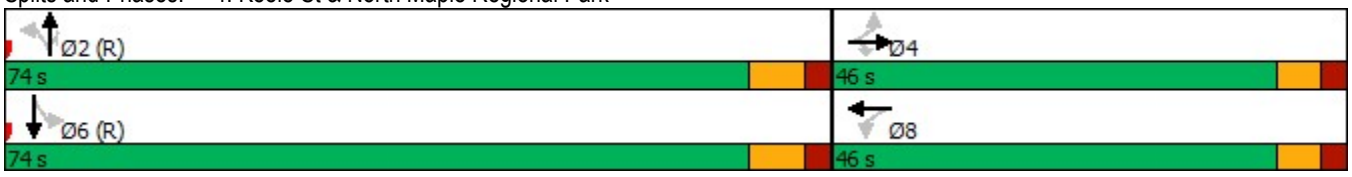
c Critical Lane Group

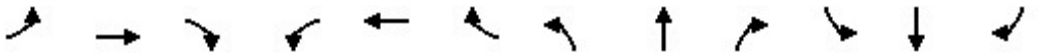
Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	4	280	6	0	24	863	7	3	1493
Future Volume (vph)	4	280	6	0	24	863	7	3	1493
Lane Group Flow (vph)	4	280	6	2	24	863	7	0	1496
Turn Type	Perm	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases				8		2			6
Permitted Phases	4	4	8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	33.5	33.5	37.5	37.5	37.5	37.5	37.5
Total Split (s)	46.0	46.0	46.0	46.0	74.0	74.0	74.0	74.0	74.0
Total Split (%)	38.3%	38.3%	38.3%	38.3%	61.7%	61.7%	61.7%	61.7%	61.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	7.5	7.5	7.5		7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.01	0.81	0.02	0.00	0.15	0.35	0.01		0.63
Control Delay	33.0	55.6	33.3	0.0	12.2	9.6	0.0		3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	33.0	55.6	33.3	0.0	12.2	9.6	0.0		3.6
Queue Length 50th (m)	0.8	57.3	1.2	0.0	2.0	43.8	0.0		55.2
Queue Length 95th (m)	3.6	81.9	4.5	0.0	7.8	69.7	0.0		16.8
Internal Link Dist (m)				256.1		909.7			338.6
Turn Bay Length (m)	35.0		50.0		50.0		130.0		
Base Capacity (vph)	441	523	441	619	157	2462	1081		2372
Starvation Cap Reductn	0	0	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0	0	0		0
Reduced v/c Ratio	0.01	0.54	0.01	0.00	0.15	0.35	0.01		0.63

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 39 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 4: Keele St & North Maple Regional Park





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	280	6	0	2	24	863	7	3	1493	0
Future Volume (vph)	4	0	280	6	0	2	24	863	7	3	1493	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5		6.5	6.5	6.5		7.5	7.5	7.5		7.5	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95	1.00		0.95	
Frt	1.00		0.85	1.00	0.85		1.00	1.00	0.85		1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1685		1507	1685	1597		1773	3648	1587		3684	
Flt Permitted	0.76		1.00	0.76	1.00		0.13	1.00	1.00		0.95	
Satd. Flow (perm)	1342		1507	1343	1597		233	3648	1587		3514	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	280	6	0	2	24	863	7	3	1493	0
RTOR Reduction (vph)	0	0	32	0	2	0	0	0	2	0	0	0
Lane Group Flow (vph)	4	0	248	6	0	0	24	863	5	0	1496	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Turn Type	Perm		Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	25.0		25.0	25.0	25.0		81.0	81.0	81.0		81.0	
Effective Green, g (s)	25.0		25.0	25.0	25.0		81.0	81.0	81.0		81.0	
Actuated g/C Ratio	0.21		0.21	0.21	0.21		0.68	0.68	0.68		0.68	
Clearance Time (s)	6.5		6.5	6.5	6.5		7.5	7.5	7.5		7.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	279		313	279	332		157	2462	1071		2371	
v/s Ratio Prot					0.00			0.24				
v/s Ratio Perm	0.00		c0.16	0.00			0.10		0.00		c0.43	
v/c Ratio	0.01		0.79	0.02	0.00		0.15	0.35	0.00		0.63	
Uniform Delay, d1	37.7		45.0	37.8	37.6		7.1	8.3	6.4		11.0	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00	1.00		0.20	
Incremental Delay, d2	0.0		12.8	0.0	0.0		2.1	0.4	0.0		1.1	
Delay (s)	37.7		57.8	37.8	37.6		9.1	8.7	6.4		3.3	
Level of Service	D		E	D	D		A	A	A		A	
Approach Delay (s)		57.5			37.8			8.7			3.3	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

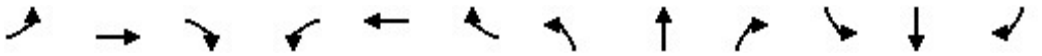
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	235	646	795	9	548	178	457	522	254	1141	407
Future Volume (vph)	235	646	795	9	548	178	457	522	254	1141	407
Lane Group Flow (vph)	235	646	795	9	548	178	457	541	254	1141	407
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4			8		1	6	5	2	
Permitted Phases	4		4	8		8	6		2		2
Detector Phase	7	4	4	8	8	8	1	6	5	2	2
Switch Phase											
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	7.0	30.0	7.0	30.0	30.0
Minimum Split (s)	11.0	36.5	36.5	36.5	36.5	36.5	11.0	37.5	11.0	37.5	37.5
Total Split (s)	19.0	58.0	58.0	39.0	39.0	39.0	41.0	71.0	21.0	51.0	51.0
Total Split (%)	12.7%	38.7%	38.7%	26.0%	26.0%	26.0%	27.3%	47.3%	14.0%	34.0%	34.0%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.5	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	1.0	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	-1.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	7.5	7.5	7.5	3.0	7.5	4.0	7.5	7.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	0.89	0.54	0.99	0.07	0.75	0.43	0.98	0.34	0.57	0.97	0.68
Control Delay	75.1	50.1	52.6	49.7	63.6	17.5	80.4	28.2	23.3	70.8	28.9
Queue Delay	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.1	50.1	58.9	49.7	63.6	17.5	80.4	28.2	23.3	70.8	28.9
Queue Length 50th (m)	54.7	78.0	105.0	2.3	84.8	10.8	126.6	58.7	37.0	~181.0	57.9
Queue Length 95th (m)	#92.4	115.0	#223.1	7.9	106.6	34.2	#200.5	75.1	53.2	#228.5	99.7
Internal Link Dist (m)		274.8			260.4			253.9		909.7	
Turn Bay Length (m)	185.0		50.0	40.0		50.0	102.0		80.0		60.0
Base Capacity (vph)	265	1228	815	129	766	425	469	1607	469	1180	601
Starvation Cap Reductn	0	0	24	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.53	1.01	0.07	0.72	0.42	0.97	0.34	0.54	0.97	0.68

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 17 (11%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Keele St & Teston Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	646	795	9	548	178	457	522	19	254	1141	407
Future Volume (vph)	235	646	795	9	548	178	457	522	19	254	1141	407
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	7.5	7.5	7.5	7.5	7.5	3.0	7.5		4.0	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	*1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	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	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1657	3648	1491	1447	3648	1515	1657	3586		1756	3916	1520
Flt Permitted	0.20	1.00	1.00	0.41	1.00	1.00	0.08	1.00		0.45	1.00	1.00
Satd. Flow (perm)	356	3648	1491	619	3648	1515	142	3586		832	3916	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	646	795	9	548	178	457	522	19	254	1141	407
RTOR Reduction (vph)	0	0	319	0	0	109	0	2	0	0	0	143
Lane Group Flow (vph)	235	646	476	9	548	69	457	539	0	254	1141	264
Confl. Peds. (#/hr)	3		7	7		3	1					1
Heavy Vehicles (%)	7%	3%	4%	22%	3%	3%	7%	4%	11%	1%	1%	3%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)	48.9	48.9	48.9	29.9	29.9	29.9	86.1	67.2		60.1	45.2	45.2
Effective Green, g (s)	49.9	48.9	48.9	29.9	29.9	29.9	87.1	67.2		60.1	45.2	45.2
Actuated g/C Ratio	0.33	0.33	0.33	0.20	0.20	0.20	0.58	0.45		0.40	0.30	0.30
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	4.0	7.5		4.0	7.5	7.5
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
Lane Grp Cap (vph)	257	1189	486	123	727	301	465	1606		425	1180	458
v/s Ratio Prot	0.10	0.18			0.15		c0.25	0.15		0.06	0.29	
v/s Ratio Perm	0.21		c0.32	0.01		0.05	c0.32			0.18		0.17
v/c Ratio	0.91	0.54	0.98	0.07	0.75	0.23	0.98	0.34		0.60	0.97	0.58
Uniform Delay, d1	41.1	41.4	50.1	48.8	56.6	50.4	47.1	26.9		31.5	51.7	44.3
Progression Factor	1.32	1.18	1.46	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	27.9	0.4	29.9	0.3	4.4	0.4	37.0	0.6		2.3	19.4	5.2
Delay (s)	82.2	49.2	103.0	49.0	61.0	50.8	84.1	27.5		33.8	71.0	49.5
Level of Service	F	D	F	D	E	D	F	C		C	E	D
Approach Delay (s)		79.3			58.4			53.4			60.9	
Approach LOS		E			E			D			E	

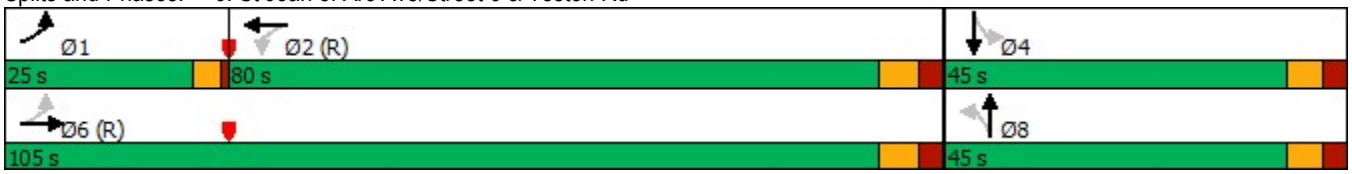
Intersection Summary			
HCM 2000 Control Delay	65.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

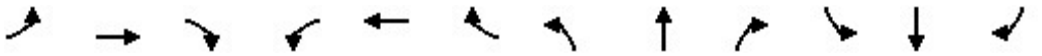
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	126	1273	44	1203	138	0	158	0
Future Volume (vph)	126	1273	44	1203	138	0	158	0
Lane Group Flow (vph)	126	1358	44	1289	138	37	158	136
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		8		4
Permitted Phases	6		2		8		4	
Detector Phase	1	6	2	2	8	8	4	4
Switch Phase								
Minimum Initial (s)	7.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	37.5	37.5	37.5	31.0	31.0	31.0	31.0
Total Split (s)	25.0	105.0	80.0	80.0	45.0	45.0	45.0	45.0
Total Split (%)	16.7%	70.0%	53.3%	53.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.41	0.50	0.19	0.55	0.85	0.12	0.76	0.28
Control Delay	14.2	7.4	19.2	20.2	99.8	0.8	82.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	7.4	19.2	20.2	99.8	0.8	82.4	1.4
Queue Length 50th (m)	5.7	39.7	6.4	100.3	42.6	0.0	48.1	0.0
Queue Length 95th (m)	30.8	101.4	m11.6	241.8	64.9	0.0	69.7	0.0
Internal Link Dist (m)		448.8		309.1		309.1		798.5
Turn Bay Length (m)	50.0		60.0		65.0		75.0	
Base Capacity (vph)	432	2691	233	2365	259	451	329	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.50	0.19	0.55	0.53	0.08	0.48	0.22

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 32 (21%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: St Joan of Arc Ave/Street 6 & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1273	85	44	1203	86	138	0	37	158	0	136
Future Volume (vph)	126	1273	85	44	1203	86	138	0	37	158	0	136
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.5		7.5	7.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1773	3612		1769	3586		1685	1551		1685	1597	
Flt Permitted	0.16	1.00		0.19	1.00		0.58	1.00		0.73	1.00	
Satd. Flow (perm)	294	3612		354	3586		1024	1551		1300	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	126	1273	85	44	1203	86	138	0	37	158	0	136
RTOR Reduction (vph)	0	2	0	0	2	0	0	31	0	0	114	0
Lane Group Flow (vph)	126	1356	0	44	1287	0	138	6	0	158	22	0
Confl. Peds. (#/hr)			5	5								
Heavy Vehicles (%)	0%	3%	0%	0%	4%	0%	0%	0%	3%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	111.6	111.6		98.8	98.8		23.9	23.9		23.9	23.9	
Effective Green, g (s)	111.6	111.6		98.8	98.8		23.9	23.9		23.9	23.9	
Actuated g/C Ratio	0.74	0.74		0.66	0.66		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	7.5		7.5	7.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	305	2687		233	2361		163	247		207	254	
v/s Ratio Prot	0.02	c0.38			c0.36			0.00			0.01	
v/s Ratio Perm	0.28			0.12			c0.13			0.12		
v/c Ratio	0.41	0.50		0.19	0.54		0.85	0.02		0.76	0.09	
Uniform Delay, d1	9.0	7.9		10.0	13.6		61.3	53.2		60.3	53.7	
Progression Factor	2.05	0.79		1.31	1.31		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.6		1.5	0.8		31.2	0.0		15.3	0.1	
Delay (s)	19.2	6.8		14.6	18.6		92.5	53.2		75.6	53.9	
Level of Service	B	A		B	B		F	D		E	D	
Approach Delay (s)		7.9			18.5			84.2			65.6	
Approach LOS		A			B			F			E	

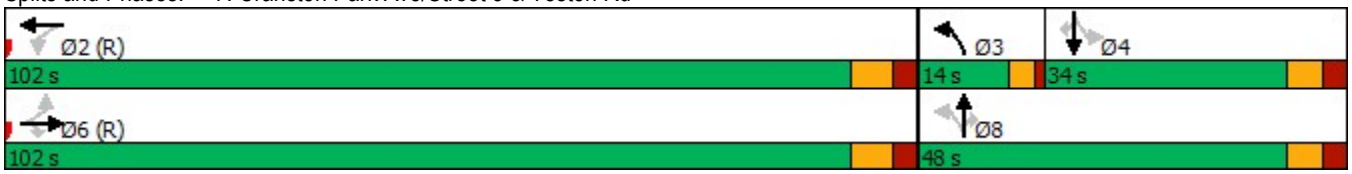
Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

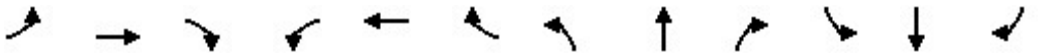
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations									
Traffic Volume (vph)	89	1321	81	36	1387	159	84	69	177
Future Volume (vph)	89	1321	81	36	1387	159	84	69	177
Lane Group Flow (vph)	89	1321	81	36	1441	159	84	69	177
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	Perm	Perm	Perm
Protected Phases		6			2	3			
Permitted Phases	6		6	2		8	8	4	4
Detector Phase	6	6	6	2	2	3	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	30.0	30.0	7.0	10.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	37.5	11.0	34.0	34.0	34.0
Total Split (s)	102.0	102.0	102.0	102.0	102.0	14.0	48.0	34.0	34.0
Total Split (%)	68.0%	68.0%	68.0%	68.0%	68.0%	9.3%	32.0%	22.7%	22.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5	4.0	7.0	7.0	7.0
Lead/Lag						Lead		Lag	Lag
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.48	0.51	0.07	0.17	0.56	0.58	0.25	0.49	0.73
Control Delay	13.7	5.5	0.1	5.3	4.8	58.3	16.7	72.8	48.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	5.5	0.1	5.3	4.8	58.3	16.7	72.8	48.1
Queue Length 50th (m)	2.5	19.3	0.0	1.4	30.5	44.0	5.0	21.0	26.7
Queue Length 95th (m)	m7.7	m170.0	m0.0	m2.8	35.7	60.7	18.6	34.9	50.2
Internal Link Dist (m)		898.1			448.8				
Turn Bay Length (m)	50.0		39.0	60.0		35.0	65.0	55.0	
Base Capacity (vph)	185	2568	1092	208	2556	276	432	241	345
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.51	0.07	0.17	0.56	0.58	0.19	0.29	0.51

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 39 (26%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Cranston Park Ave/Street 5 & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	1321	81	36	1387	54	159	0	84	69	0	177
Future Volume (vph)	89	1321	81	36	1387	54	159	0	84	69	0	177
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.5		4.0		7.0	7.0		7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00		1.00	1.00		1.00
Flpb, ped/bikes	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	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1773	3648	1527	1670	3632		1685		1409	1685		1507
Flt Permitted	0.14	1.00	1.00	0.17	1.00		0.61		1.00	0.76		1.00
Satd. Flow (perm)	263	3648	1527	295	3632		1073		1409	1343		1507
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	89	1321	81	36	1387	54	159	0	84	69	0	177
RTOR Reduction (vph)	0	0	17	0	1	0	0	0	52	0	0	81
Lane Group Flow (vph)	89	1321	64	36	1440	0	159	0	32	69	0	96
Confl. Peds. (#/hr)			6	6								
Heavy Vehicles (%)	0%	3%	0%	6%	3%	0%	0%	0%	7%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt		Perm	Perm		Perm
Protected Phases		6			2		3	8			4	
Permitted Phases	6		6	2			8		8	4		4
Actuated Green, G (s)	105.6	105.6	105.6	105.6	105.6		29.9		29.9	15.9		15.9
Effective Green, g (s)	105.6	105.6	105.6	105.6	105.6		29.9		29.9	15.9		15.9
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70		0.20		0.20	0.11		0.11
Clearance Time (s)	7.5	7.5	7.5	7.5	7.5		4.0		7.0	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
Lane Grp Cap (vph)	185	2568	1075	207	2556		254		280	142		159
v/s Ratio Prot		0.36			c0.40		c0.04					
v/s Ratio Perm	0.34		0.04	0.12			c0.08		0.02	0.05		0.06
v/c Ratio	0.48	0.51	0.06	0.17	0.56		0.63		0.11	0.49		0.60
Uniform Delay, d1	9.9	10.3	6.9	7.5	10.9		53.9		49.2	63.2		64.0
Progression Factor	0.65	0.46	0.01	0.37	0.34		1.00		1.00	1.00		1.00
Incremental Delay, d2	4.4	0.4	0.1	1.6	0.8		4.8		0.2	2.6		6.3
Delay (s)	10.9	5.1	0.1	4.4	4.5		58.7		49.4	65.8		70.3
Level of Service	B	A	A	A	A		E		D	E		E
Approach Delay (s)		5.2			4.5			55.5			69.0	
Approach LOS		A			A			E			E	

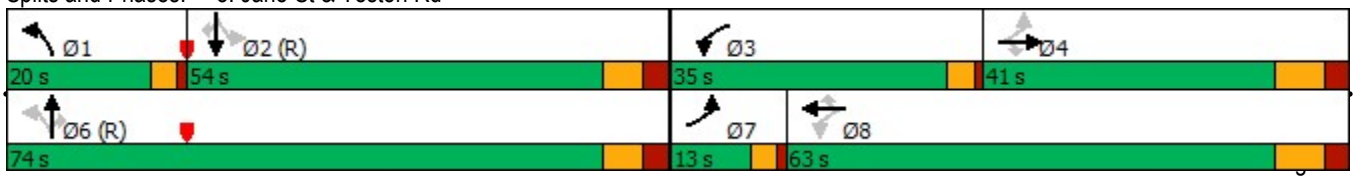
Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

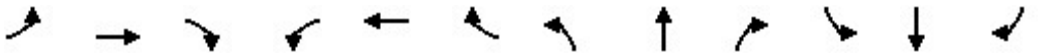
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	919	425	573	1060	43	326	1188	359	86	1277	248
Future Volume (vph)	123	919	425	573	1060	43	326	1188	359	86	1277	248
Lane Group Flow (vph)	123	919	425	573	1060	43	326	1188	359	86	1277	248
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	35.0	35.0	35.0	35.0	35.0
Minimum Split (s)	11.0	40.5	40.5	11.0	40.5	40.5	11.0	42.5	42.5	42.5	42.5	42.5
Total Split (s)	13.0	41.0	41.0	35.0	63.0	63.0	20.0	74.0	74.0	54.0	54.0	54.0
Total Split (%)	8.7%	27.3%	27.3%	23.3%	42.0%	42.0%	13.3%	49.3%	49.3%	36.0%	36.0%	36.0%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	8.5	8.5	3.0	8.5	8.5	3.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.69	1.10	0.87	1.33	0.76	0.07	1.29	0.72	0.46	1.00	1.06	0.46
Control Delay	40.7	111.8	43.4	190.4	32.7	0.7	192.0	37.2	14.5	148.7	93.1	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	111.8	43.4	190.4	32.7	0.7	192.0	37.2	14.5	148.7	93.1	22.6
Queue Length 50th (m)	23.9	~161.5	58.4	~210.3	162.8	0.0	~112.2	158.2	33.5	26.9	~219.4	29.5
Queue Length 95th (m)	#38.3	#204.9	#85.3	#288.6	137.5	m1.1	#177.4	185.2	61.8	#66.1	#262.2	57.2
Internal Link Dist (m)		408.5			898.1			263.9			638.1	
Turn Bay Length (m)	100.0		70.0	120.0		35.0	45.0		55.0	135.0		58.0
Base Capacity (vph)	180	832	490	430	1398	607	253	1649	789	86	1202	543
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	1.10	0.87	1.33	0.76	0.07	1.29	0.72	0.46	1.00	1.06	0.46

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 44 (29%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Jane St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	919	425	573	1060	43	326	1188	359	86	1277	248
Future Volume (vph)	123	919	425	573	1060	43	326	1188	359	86	1277	248
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	8.5	8.5	3.0	8.5	8.5	3.0	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	0.95	1.00	1.00	*1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	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)	1598	3840	1503	1756	3840	1511	1773	3721	1535	1755	3878	1469
Flt Permitted	0.20	1.00	1.00	0.11	1.00	1.00	0.08	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	343	3840	1503	203	3840	1511	148	3721	1535	279	3878	1469
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	123	919	425	573	1060	43	326	1188	359	86	1277	248
RTOR Reduction (vph)	0	0	165	0	0	27	0	0	109	0	0	88
Lane Group Flow (vph)	123	919	260	573	1060	16	326	1188	250	86	1277	160
Confl. Peds. (#/hr)			2	2					1	1		
Heavy Vehicles (%)	11%	3%	4%	1%	3%	5%	0%	1%	2%	1%	2%	8%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8		1	6			2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	41.4	32.5	32.5	67.5	54.6	54.6	66.5	66.5	66.5	46.5	46.5	46.5
Effective Green, g (s)	41.4	32.5	32.5	68.5	54.6	54.6	67.5	66.5	66.5	46.5	46.5	46.5
Actuated g/C Ratio	0.28	0.22	0.22	0.46	0.36	0.36	0.45	0.44	0.44	0.31	0.31	0.31
Clearance Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	7.5	7.5	7.5
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)	169	832	325	424	1397	550	250	1649	680	86	1202	455
v/s Ratio Prot	0.04	0.24		c0.29	0.28		c0.15	0.32			0.33	
v/s Ratio Perm	0.16		0.17	c0.33		0.01	c0.44		0.16	0.31		0.11
v/c Ratio	0.73	1.10	0.80	1.35	0.76	0.03	1.30	0.72	0.37	1.00	1.06	0.35
Uniform Delay, d1	43.1	58.8	55.7	47.4	41.9	30.7	48.0	34.1	27.8	51.8	51.8	40.1
Progression Factor	0.82	0.92	0.93	0.67	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.3	62.7	11.8	170.8	2.0	0.0	162.8	2.8	1.5	97.0	44.3	2.1
Delay (s)	48.7	116.5	63.6	202.3	31.2	30.7	210.7	36.9	29.3	148.8	96.0	42.2
Level of Service	D	F	E	F	C	C	F	D	C	F	F	D
Approach Delay (s)		95.5			89.7			65.7			90.5	
Approach LOS		F			F			E			F	

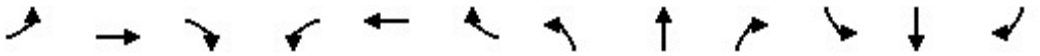
Intersection Summary			
HCM 2000 Control Delay	84.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	137.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	71	347	129	261	120	168	149	80	690
Future Volume (vph)	71	347	129	261	120	168	149	80	690
Lane Group Flow (vph)	71	527	129	282	120	168	149	80	740
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4	3	8		6			2
Permitted Phases	4		8		6		6	2	
Detector Phase	4	4	3	8	6	6	6	2	2
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	40.0	40.0	40.0	40.0	40.0
Minimum Split (s)	16.5	16.5	11.0	16.5	48.5	48.5	48.5	48.5	48.5
Total Split (s)	36.0	36.0	18.0	54.0	66.0	66.0	66.0	66.0	66.0
Total Split (%)	30.0%	30.0%	15.0%	45.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.5	4.5	3.0	4.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	1.0	2.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	4.0	6.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lead						
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.39	0.78	0.56	0.26	0.35	0.16	0.16	0.12	0.36
Control Delay	48.6	48.3	38.7	18.4	18.0	12.8	4.7	14.9	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	48.3	38.7	18.4	18.0	12.8	4.7	14.9	16.0
Queue Length 50th (m)	15.7	57.3	16.6	16.5	9.7	13.4	0.0	9.1	50.9
Queue Length 95th (m)	29.1	72.6	22.5	13.0	23.5	30.6	20.3	20.2	75.0
Internal Link Dist (m)		496.3		275.3		275.3			245.9
Turn Bay Length (m)	50.0		50.0		50.0			50.0	
Base Capacity (vph)	242	883	253	1359	344	1043	910	679	2039
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.60	0.51	0.21	0.35	0.16	0.16	0.12	0.36

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 9: Jane St & Kirby Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	347	180	129	261	21	120	168	149	80	690	50
Future Volume (vph)	71	347	180	129	261	21	120	168	149	80	690	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5	6.5		4.0	6.5		8.5	8.5	8.5	8.5	8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1620	3365		1589	3422		1739	1866	1511	1773	3642	
Flt Permitted	0.58	1.00		0.19	1.00		0.34	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	987	3365		310	3422		617	1866	1511	1215	3642	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	71	347	180	129	261	21	120	168	149	80	690	50
RTOR Reduction (vph)	0	60	0	0	5	0	0	0	66	0	4	0
Lane Group Flow (vph)	71	467	0	129	277	0	120	168	83	80	736	0
Heavy Vehicles (%)	4%	1%	0%	6%	3%	5%	2%	6%	5%	0%	2%	4%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			6			2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	21.9	21.9		37.9	37.9		67.1	67.1	67.1	67.1	67.1	
Effective Green, g (s)	21.9	21.9		37.9	37.9		67.1	67.1	67.1	67.1	67.1	
Actuated g/C Ratio	0.18	0.18		0.32	0.32		0.56	0.56	0.56	0.56	0.56	
Clearance Time (s)	6.5	6.5		4.0	6.5		8.5	8.5	8.5	8.5	8.5	
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)	180	614		225	1080		345	1043	844	679	2036	
v/s Ratio Prot		c0.14		c0.06	0.08			0.09			c0.20	
v/s Ratio Perm	0.07			0.12			0.19		0.06	0.07		
v/c Ratio	0.39	0.76		0.57	0.26		0.35	0.16	0.10	0.12	0.36	
Uniform Delay, d1	43.2	46.6		31.8	30.6		14.5	12.8	12.3	12.5	14.6	
Progression Factor	1.00	1.00		1.08	0.62		0.88	0.87	1.69	1.00	1.00	
Incremental Delay, d2	1.4	5.4		3.5	0.1		2.7	0.3	0.2	0.4	0.5	
Delay (s)	44.6	51.9		37.7	19.2		15.4	11.5	21.1	12.8	15.1	
Level of Service	D	D		D	B		B	B	C	B	B	
Approach Delay (s)		51.1			25.0			15.8			14.9	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	559	8	15	386	2	36
Future Vol, veh/h	559	8	15	386	2	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	35	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	0	5	0	0
Mvmt Flow	559	8	15	386	2	36

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	567	0	786	284
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	223	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1015	-	333	719
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	799	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1015	-	328	719
Mov Cap-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	787	-

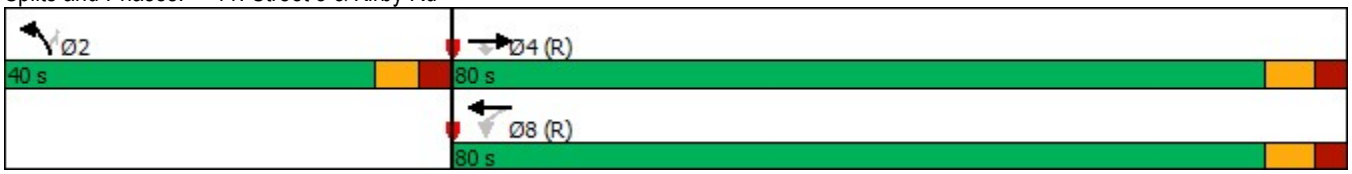
Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	328	719	-	-	1015	-
HCM Lane V/C Ratio	0.006	0.05	-	-	0.015	-
HCM Control Delay (s)	16	10.3	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	577	18	44	397	4	46
Future Volume (vph)	577	18	44	397	4	46
Lane Group Flow (vph)	577	18	44	397	4	46
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	80.0	80.0	80.0	80.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.20	0.01	0.07	0.14	0.02	0.22
Control Delay	2.2	0.4	2.9	2.2	42.8	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.2	0.4	2.9	2.2	42.8	14.5
Queue Length 50th (m)	11.3	0.1	1.1	5.6	0.9	0.0
Queue Length 95th (m)	8.0	m0.0	m4.5	13.8	3.9	10.0
Internal Link Dist (m)	519.6			532.2	262.3	
Turn Bay Length (m)		50.0	50.0			
Base Capacity (vph)	2829	1221	623	2748	463	447
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.01	0.07	0.14	0.01	0.10

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Street 5 & Kirby Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	577	18	44	397	4	46
Future Volume (vph)	577	18	44	397	4	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1507	1685	3400	1685	1507
Flt Permitted	1.00	1.00	0.43	1.00	0.95	1.00
Satd. Flow (perm)	3500	1507	771	3400	1685	1507
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	577	18	44	397	4	46
RTOR Reduction (vph)	0	4	0	0	0	42
Lane Group Flow (vph)	577	14	44	397	4	4
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	94.1	94.1	94.1	94.1	11.4	11.4
Effective Green, g (s)	94.1	94.1	94.1	94.1	11.4	11.4
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2744	1181	604	2666	160	143
v/s Ratio Prot	c0.16			0.12	0.00	
v/s Ratio Perm		0.01	0.06			c0.00
v/c Ratio	0.21	0.01	0.07	0.15	0.03	0.03
Uniform Delay, d1	3.3	2.8	3.0	3.2	49.3	49.3
Progression Factor	0.50	0.14	0.56	0.53	1.00	1.00
Incremental Delay, d2	0.2	0.0	0.2	0.1	0.1	0.1
Delay (s)	1.8	0.4	1.9	1.8	49.3	49.4
Level of Service	A	A	A	A	D	D
Approach Delay (s)	1.8			1.8	49.4	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	623	0	43	440	1	111
Future Vol, veh/h	623	0	43	440	1	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	35	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	623	0	43	440	1	111

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	623	0	929	312
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	306	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	968	-	270	690
Stage 1	-	-	-	-	503	-
Stage 2	-	-	-	-	726	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	968	-	258	690
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	503	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	690	-	-	968	-
HCM Lane V/C Ratio	0.004	0.161	-	-	0.044	-
HCM Control Delay (s)	19	11.2	-	-	8.9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.6	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	498	236	0	483	0	210
Future Vol, veh/h	498	236	0	483	0	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	35	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	498	236	0	483	0	210

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	249
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	757
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	757
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	757	-	-	-
HCM Lane V/C Ratio	0.277	-	-	-
HCM Control Delay (s)	11.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	1	2	246	2	88	407	127	20	974
Future Volume (vph)	1	2	246	2	88	407	127	20	974
Lane Group Flow (vph)	1	16	246	31	88	407	127	20	978
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4	3	8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	3	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	11.0	35.0	37.5	37.5	37.5	37.5	37.5
Total Split (s)	35.0	35.0	18.0	53.0	67.0	67.0	67.0	67.0	67.0
Total Split (%)	29.2%	29.2%	15.0%	44.2%	55.8%	55.8%	55.8%	55.8%	55.8%
Yellow Time (s)	4.5	4.5	3.0	4.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lag	Lag	Lead						
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.01	0.08	0.91	0.10	0.26	0.16	0.11	0.03	0.38
Control Delay	41.0	21.4	78.3	11.5	14.0	7.3	1.9	6.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	21.4	78.3	11.5	14.0	7.3	1.9	6.0	5.6
Queue Length 50th (m)	0.2	0.5	~76.8	0.3	3.2	7.7	0.0	0.5	16.1
Queue Length 95th (m)	1.7	6.5	60.9	6.7	20.7	26.5	7.7	m4.1	56.1
Internal Link Dist (m)		213.9		69.1		445.9			275.3
Turn Bay Length (m)	35.0				50.0		35.0	50.0	
Base Capacity (vph)	304	391	271	637	342	2508	1149	671	2579
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.04	0.91	0.05	0.26	0.16	0.11	0.03	0.38

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Jane St & Street 4 (34E)/Street 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	2	14	246	2	29	88	407	127	20	974	4
Future Volume (vph)	1	2	14	246	2	29	88	407	127	20	974	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		4.0	7.0		7.5	7.5	7.5	7.5	7.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.87		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1632		1685	1615		1773	3579	1587	1773	3682	
Flt Permitted	0.74	1.00		0.49	1.00		0.26	1.00	1.00	0.51	1.00	
Satd. Flow (perm)	1307	1632		868	1615		488	3579	1587	957	3682	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	2	14	246	2	29	88	407	127	20	974	4
RTOR Reduction (vph)	0	13	0	0	23	0	0	0	42	0	0	0
Lane Group Flow (vph)	1	3	0	246	8	0	88	407	85	20	978	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	2%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	7.6	7.6		25.6	25.6		79.9	79.9	79.9	79.9	79.9	
Effective Green, g (s)	7.6	7.6		25.6	25.6		79.9	79.9	79.9	79.9	79.9	
Actuated g/C Ratio	0.06	0.06		0.21	0.21		0.67	0.67	0.67	0.67	0.67	
Clearance Time (s)	7.0	7.0		4.0	7.0		7.5	7.5	7.5	7.5	7.5	
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)	82	103		280	344		324	2383	1056	637	2451	
v/s Ratio Prot		0.00		c0.10	0.01			0.11			c0.27	
v/s Ratio Perm	0.00			c0.08			0.18		0.05	0.02		
v/c Ratio	0.01	0.03		0.88	0.02		0.27	0.17	0.08	0.03	0.40	
Uniform Delay, d1	52.7	52.7		44.1	37.3		8.2	7.6	7.1	6.8	9.1	
Progression Factor	1.00	1.00		1.01	1.05		1.05	0.86	0.70	0.57	0.54	
Incremental Delay, d2	0.1	0.1		25.2	0.0		2.0	0.2	0.1	0.1	0.4	
Delay (s)	52.7	52.8		69.8	39.0		10.7	6.6	5.1	4.0	5.4	
Level of Service	D	D		E	D		B	A	A	A	A	
Approach Delay (s)		52.8			66.4			6.9			5.3	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	141	8	5	197	1	74	37	5	2	15	6
Future Vol, veh/h	0	141	8	5	197	1	74	37	5	2	15	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	120	0	0	0	0	120	0	0	0
Mvmt Flow	0	157	9	6	219	1	82	41	6	2	17	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	220	0	0	166	0	0	406	394	162	417	398	220
Stage 1	-	-	-	-	-	-	162	162	-	232	232	-
Stage 2	-	-	-	-	-	-	244	232	-	185	166	-
Critical Hdwy	4.1	-	-	5.3	-	-	7.1	6.5	7.4	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	3.28	-	-	3.5	4	4.38	3.5	4	3.3
Pot Cap-1 Maneuver	1361	-	-	926	-	-	559	546	649	550	543	825
Stage 1	-	-	-	-	-	-	845	768	-	775	716	-
Stage 2	-	-	-	-	-	-	764	716	-	821	765	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1361	-	-	926	-	-	538	542	649	511	539	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	538	542	-	511	539	-
Stage 1	-	-	-	-	-	-	845	768	-	775	711	-
Stage 2	-	-	-	-	-	-	735	711	-	770	765	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	13.7	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	543	1361	-	-	926	-	-	590
HCM Lane V/C Ratio	0.237	-	-	-	0.006	-	-	0.043
HCM Control Delay (s)	13.7	0	-	-	8.9	0	-	11.4
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	64	88	61	60	2	76	23	63	10	26	26
Future Vol, veh/h	25	64	88	61	60	2	76	23	63	10	26	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	7	0	0	0	8	0	0	0	0	0
Mvmt Flow	28	71	98	68	67	2	84	26	70	11	29	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	281	330	29	301	309	48	58	0	0	96	0	0
Stage 1	66	66	-	229	229	-	-	-	-	-	-	-
Stage 2	215	264	-	72	80	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.04	7.5	6.5	6.9	4.26	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.37	3.5	4	3.3	2.28	-	-	2.2	-	-
Pot Cap-1 Maneuver	655	592	1023	634	609	1017	1501	-	-	1510	-	-
Stage 1	943	844	-	759	718	-	-	-	-	-	-	-
Stage 2	773	694	-	935	832	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	565	552	1023	491	568	1017	1501	-	-	1510	-	-
Mov Cap-2 Maneuver	565	552	-	491	568	-	-	-	-	-	-	-
Stage 1	886	837	-	713	675	-	-	-	-	-	-	-
Stage 2	653	652	-	768	825	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	14.1	3.5	1.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1501	-	-	719	531	1510	-	-
HCM Lane V/C Ratio	0.056	-	-	0.274	0.257	0.007	-	-
HCM Control Delay (s)	7.5	0	-	11.9	14.1	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.1	1	0	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	112	0	0	0	0	43
Future Vol, veh/h	112	0	0	0	0	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	124	0	0	0	0	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	24	24	48	0	-	0
Stage 1	24	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	997	1058	1572	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	997	1058	1572	-	-	-
Mov Cap-2 Maneuver	997	-	-	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

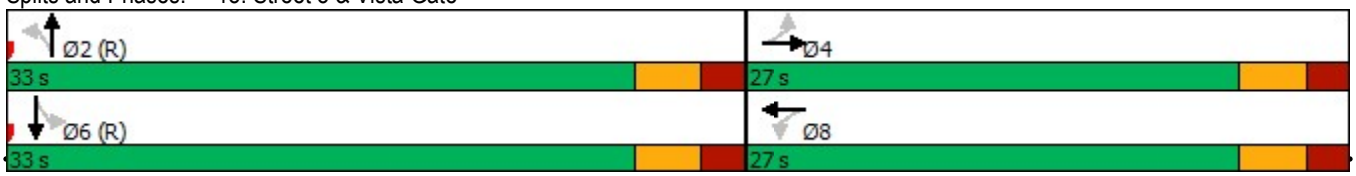
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1572	-	997	-	-
HCM Lane V/C Ratio	-	-	0.125	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

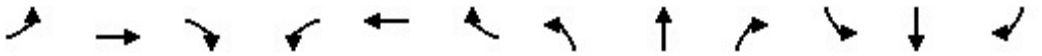
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	204	268	3	768	38	6	83	5
Future Volume (vph)	204	268	3	768	38	6	83	5
Lane Group Flow (vph)	227	410	3	853	42	11	83	179
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	26.0	26.0	26.0	26.0	23.0	23.0	23.0	23.0
Total Split (s)	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.65	0.19	0.01	0.38	0.19	0.03	0.35	0.30
Control Delay	21.0	4.0	5.7	7.1	20.8	14.7	18.5	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	4.0	5.7	7.1	20.8	14.7	18.5	10.4
Queue Length 50th (m)	12.0	5.5	0.2	26.7	4.3	0.7	8.1	5.8
Queue Length 95th (m)	#57.2	15.0	m0.6	58.3	10.0	3.6	13.1	8.7
Internal Link Dist (m)		46.0		156.2		607.0		152.9
Turn Bay Length (m)	25.0		35.0				35.0	
Base Capacity (vph)	351	2214	576	2270	524	830	564	1325
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.19	0.01	0.38	0.08	0.01	0.15	0.14

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 28 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 18: Street 8 & Vista Gate





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	268	101	3	768	0	38	6	4	83	5	148
Future Volume (vph)	204	268	101	3	768	0	38	6	4	83	5	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.91	0.91	
Frt	1.00	0.96		1.00	1.00		1.00	0.95		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3424		1685	3570		1685	1776		1533	2942	
Flt Permitted	0.31	1.00		0.51	1.00		0.63	1.00		0.75	0.94	
Satd. Flow (perm)	553	3424		907	3570		1124	1776		1211	2785	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	227	298	112	3	853	0	42	7	4	92	6	164
RTOR Reduction (vph)	0	37	0	0	0	0	0	3	0	0	39	0
Lane Group Flow (vph)	227	373	0	3	853	0	42	8	0	83	140	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.2	38.2		38.2	38.2		11.8	11.8		11.8	11.8	
Effective Green, g (s)	38.2	38.2		38.2	38.2		11.8	11.8		11.8	11.8	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.20	0.20		0.20	0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	352	2179		577	2272		221	349		238	547	
v/s Ratio Prot		0.11			0.24			0.00				
v/s Ratio Perm	c0.41			0.00			0.04			c0.07	0.05	
v/c Ratio	0.64	0.17		0.01	0.38		0.19	0.02		0.35	0.26	
Uniform Delay, d1	6.7	4.4		4.0	5.2		20.1	19.4		20.8	20.4	
Progression Factor	1.00	1.00		1.07	1.17		1.00	1.00		0.72	0.63	
Incremental Delay, d2	4.0	0.0		0.0	0.1		1.9	0.1		4.0	1.1	
Delay (s)	10.7	4.5		4.2	6.2		22.0	19.6		19.0	14.0	
Level of Service	B	A		A	A		C	B		B	B	
Approach Delay (s)		6.7			6.2			21.5			15.6	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

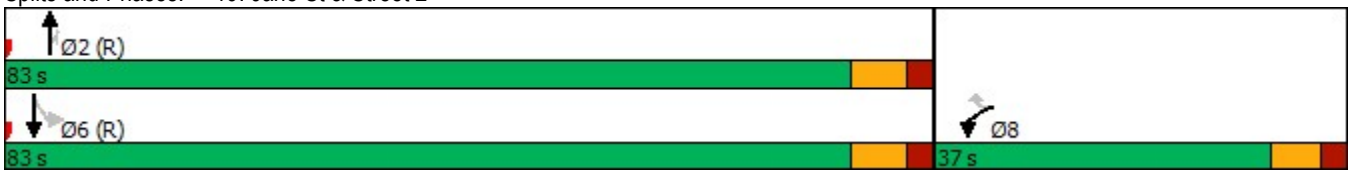
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	30	591	115	13	1222
Future Volume (vph)	4	30	591	115	13	1222
Lane Group Flow (vph)	4	30	591	115	13	1222
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	37.5	37.5	37.5	37.5
Total Split (s)	37.0	37.0	83.0	83.0	83.0	83.0
Total Split (%)	30.8%	30.8%	69.2%	69.2%	69.2%	69.2%
Yellow Time (s)	4.5	4.5	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.5	7.5	7.5	7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.05	0.15	0.19	0.09	0.02	0.39
Control Delay	44.0	15.5	3.5	1.1	2.8	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	15.5	3.5	1.1	2.8	2.3
Queue Length 50th (m)	0.9	0.0	15.2	0.0	0.3	19.0
Queue Length 95th (m)	3.9	8.1	30.1	4.7	m1.2	m43.8
Internal Link Dist (m)	71.6		362.7			445.9
Turn Bay Length (m)				35.0	50.0	
Base Capacity (vph)	168	399	3092	1298	679	3122
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.19	0.09	0.02	0.39

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 97 (81%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 19: Jane St & Street 2



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	30	591	115	13	1222
Future Volume (vph)	4	30	591	115	13	1222
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	7.0	7.0	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	674	1507	3648	1511	1773	3684
Flt Permitted	0.95	1.00	1.00	1.00	0.43	1.00
Satd. Flow (perm)	674	1507	3648	1511	801	3684
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	30	591	115	13	1222
RTOR Reduction (vph)	0	28	0	23	0	0
Lane Group Flow (vph)	4	2	591	92	13	1222
Heavy Vehicles (%)	150%	0%	3%	5%	0%	2%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	9.6	9.6	95.9	95.9	95.9	95.9
Effective Green, g (s)	9.6	9.6	95.9	95.9	95.9	95.9
Actuated g/C Ratio	0.08	0.08	0.80	0.80	0.80	0.80
Clearance Time (s)	7.0	7.0	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	53	120	2915	1207	640	2944
v/s Ratio Prot	c0.01		0.16			c0.33
v/s Ratio Perm		0.00		0.06	0.02	
v/c Ratio	0.08	0.02	0.20	0.08	0.02	0.42
Uniform Delay, d1	51.1	50.9	2.9	2.6	2.5	3.6
Progression Factor	1.00	1.00	0.90	0.83	0.53	0.43
Incremental Delay, d2	0.6	0.1	0.2	0.1	0.1	0.4
Delay (s)	51.7	50.9	2.8	2.3	1.4	2.0
Level of Service	D	D	A	A	A	A
Approach Delay (s)	51.0		2.7			1.9
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	3.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	67	53	8	19	18	40	14	43	13	67	72	2
Future Vol, veh/h	67	53	8	19	18	40	14	43	13	67	72	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	11	0	0	33	0	0	14	0	0	8	0
Mvmt Flow	74	59	9	21	20	44	16	48	14	74	80	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	68	0	0	304	318	34	286	300	32
Stage 1	-	-	-	-	-	-	212	212	-	84	84	-
Stage 2	-	-	-	-	-	-	92	106	-	202	216	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.78	6.9	7.5	6.66	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.78	-	6.5	5.66	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.78	-	6.5	5.66	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.14	3.3	3.5	4.08	3.3
Pot Cap-1 Maneuver	1551	-	-	1546	-	-	631	570	1038	649	598	1041
Stage 1	-	-	-	-	-	-	776	697	-	920	811	-
Stage 2	-	-	-	-	-	-	911	779	-	787	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1551	-	-	1546	-	-	534	534	1038	568	560	1041
Mov Cap-2 Maneuver	-	-	-	-	-	-	534	534	-	568	560	-
Stage 1	-	-	-	-	-	-	737	662	-	874	800	-
Stage 2	-	-	-	-	-	-	807	768	-	684	673	-

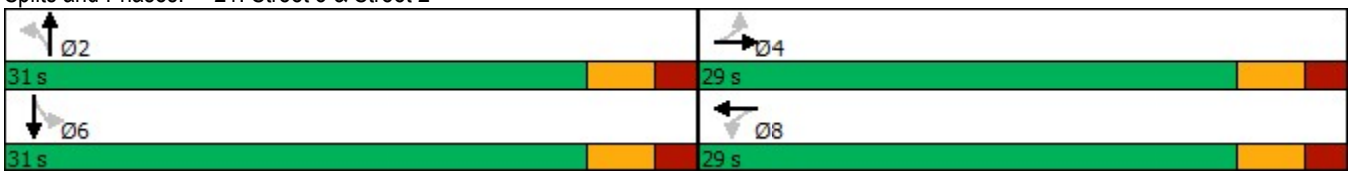
Approach	EB	WB	NB	SB
HCM Control Delay, s	3.9	1.8	12.1	13.7
HCM LOS			B	B

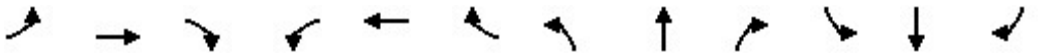
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	587	1551	-	-	1546	-	-	568
HCM Lane V/C Ratio	0.133	0.048	-	-	0.014	-	-	0.276
HCM Control Delay (s)	12.1	7.4	0.1	-	7.4	0	-	13.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0	-	-	1.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	37	88	46	62	6	75	268	97
Future Volume (vph)	37	88	46	62	6	75	268	97
Lane Group Flow (vph)	41	107	51	268	7	123	298	118
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	29.0	29.0	29.0	29.0	31.0	31.0	31.0	31.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	51.7%	51.7%	51.7%	51.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min
v/c Ratio	0.12	0.10	0.13	0.23	0.01	0.10	0.64	0.09
Control Delay	11.2	9.4	11.0	4.1	8.2	5.9	17.2	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	9.4	11.0	4.1	8.2	5.9	17.2	7.4
Queue Length 50th (m)	1.6	2.0	2.0	1.4	0.2	1.4	12.4	1.8
Queue Length 95th (m)	8.3	7.6	9.5	8.7	2.4	6.8	47.6	7.7
Internal Link Dist (m)		692.0		518.2		491.8		477.6
Turn Bay Length (m)	35.0		35.0		35.0		35.0	
Base Capacity (vph)	704	2244	821	2158	880	2372	876	2452
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.06	0.12	0.01	0.05	0.34	0.05

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 37.8
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 21: Street 5 & Street 2





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	88	8	46	62	179	6	75	36	268	97	9
Future Volume (vph)	37	88	8	46	62	179	6	75	36	268	97	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.89		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3312		1685	3093		1685	3222		1685	3341	
Flt Permitted	0.59	1.00		0.68	1.00		0.68	1.00		0.67	1.00	
Satd. Flow (perm)	1040	3312		1214	3093		1201	3222		1195	3341	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	98	9	51	69	199	7	83	40	298	108	10
RTOR Reduction (vph)	0	6	0	0	132	0	0	24	0	0	6	0
Lane Group Flow (vph)	41	101	0	51	136	0	7	99	0	298	112	0
Heavy Vehicles (%)	0%	7%	0%	0%	10%	0%	0%	8%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		12.4	12.4		14.7	14.7		14.7	14.7	
Effective Green, g (s)	12.4	12.4		12.4	12.4		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.40	0.40		0.40	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	347	1106		405	1033		475	1276		473	1323	
v/s Ratio Prot		0.03			c0.04			0.03			0.03	
v/s Ratio Perm	0.04			0.04			0.01			c0.25		
v/c Ratio	0.12	0.09		0.13	0.13		0.01	0.08		0.63	0.08	
Uniform Delay, d1	8.6	8.5		8.6	8.6		6.8	7.0		9.0	7.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0		0.1	0.1		0.0	0.0		2.7	0.0	
Delay (s)	8.7	8.5		8.7	8.7		6.8	7.0		11.7	7.0	
Level of Service	A	A		A	A		A	A		B	A	
Approach Delay (s)		8.6			8.7			7.0			10.4	
Approach LOS		A			A			A			B	

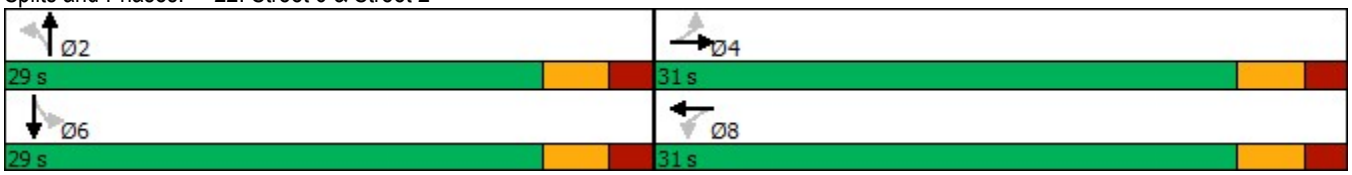
Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	37.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

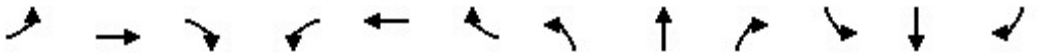
c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBT	Ø6
Lane Configurations						
Traffic Volume (vph)	280	92	221	109	0	
Future Volume (vph)	280	92	221	109	0	
Lane Group Flow (vph)	499	102	246	0	162	
Turn Type	NA	Perm	NA	Perm	NA	
Protected Phases	4		8		2	6
Permitted Phases		8		2		
Detector Phase	4	8	8	2	2	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.0	23.0	23.0	29.0	29.0	29.0
Total Split (s)	31.0	31.0	31.0	29.0	29.0	29.0
Total Split (%)	51.7%	51.7%	51.7%	48.3%	48.3%	48%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.24	0.20	0.12		0.18	
Control Delay	5.5	10.8	7.8		6.6	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	5.5	10.8	7.8		6.6	
Queue Length 50th (m)	5.6	3.6	4.3		4.3	
Queue Length 95th (m)	21.0	18.2	15.4		16.0	
Internal Link Dist (m)	518.2		413.8		438.5	
Turn Bay Length (m)		25.0				
Base Capacity (vph)	2835	702	2924		1155	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.18	0.15	0.08		0.14	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 27.5
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 22: Street 6 & Street 2





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	280	169	92	221	0	109	0	37	0	0	0
Future Volume (vph)	0	280	169	92	221	0	109	0	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		5.0		5.0	5.0			5.0				
Lane Util. Factor		0.95		1.00	0.95			1.00				
Frt		0.94		1.00	1.00			0.97				
Flt Protected		1.00		0.95	1.00			0.96				
Satd. Flow (prot)		3327		1685	3466			1749				
Flt Permitted		1.00		0.47	1.00			0.78				
Satd. Flow (perm)		3327		832	3466			1416				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	311	188	102	246	0	121	0	41	0	0	0
RTOR Reduction (vph)	0	119	0	0	0	0	0	27	0	0	0	0
Lane Group Flow (vph)	0	380	0	102	246	0	0	135	0	0	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.3		9.3	9.3			6.2				
Effective Green, g (s)		9.3		9.3	9.3			6.2				
Actuated g/C Ratio		0.36		0.36	0.36			0.24				
Clearance Time (s)		5.0		5.0	5.0			5.0				
Vehicle Extension (s)		3.0		3.0	3.0			3.0				
Lane Grp Cap (vph)		1213		303	1264			344				
v/s Ratio Prot		0.11			0.07							
v/s Ratio Perm				c0.12				c0.10				
v/c Ratio		0.31		0.34	0.19			0.39				
Uniform Delay, d1		5.8		5.9	5.5			8.1				
Progression Factor		1.00		1.00	1.00			1.00				
Incremental Delay, d2		0.1		0.7	0.1			0.7				
Delay (s)		6.0		6.5	5.6			8.8				
Level of Service		A		A	A			A				
Approach Delay (s)		6.0			5.9			8.8			0.0	
Approach LOS		A			A			A			A	

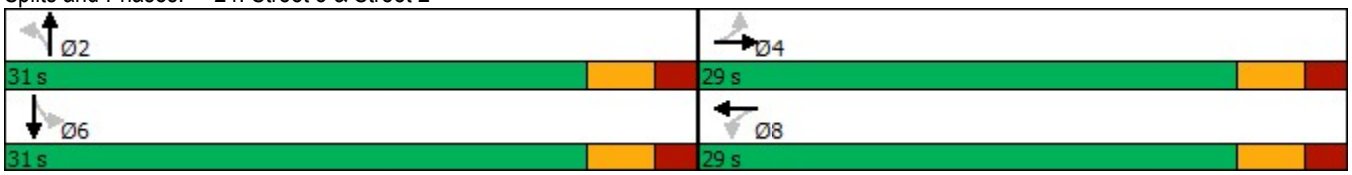
Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	25.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

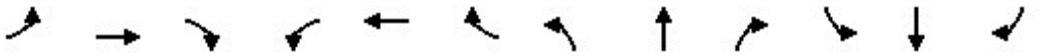
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	115	1	123	47	3	33	52
Future Volume (vph)	50	115	1	123	47	3	33	52
Lane Group Flow (vph)	56	297	1	165	52	5	37	217
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	29.0	29.0	29.0	29.0	31.0	31.0	31.0	31.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	51.7%	51.7%	51.7%	51.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min
v/c Ratio	0.14	0.24	0.00	0.14	0.14	0.00	0.08	0.18
Control Delay	9.7	4.6	9.0	7.4	9.7	7.8	9.0	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	4.6	9.0	7.4	9.7	7.8	9.0	3.7
Queue Length 50th (m)	1.8	2.1	0.0	2.3	1.7	0.0	1.2	1.0
Queue Length 95th (m)	9.8	10.8	0.8	9.6	9.3	0.9	7.0	7.3
Internal Link Dist (m)		413.8		213.8		322.8		607.0
Turn Bay Length (m)	35.0		35.0		35.0		35.0	
Base Capacity (vph)	830	2358	730	2423	855	2627	1046	2521
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.13	0.00	0.07	0.06	0.00	0.04	0.09

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 35.6
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 24: Street 8 & Street 2





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	115	152	1	123	25	47	3	2	33	52	143
Future Volume (vph)	50	115	152	1	123	25	47	3	2	33	52	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.97		1.00	0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3196		1685	3340		1685	3356		1685	3178	
Flt Permitted	0.65	1.00		0.57	1.00		0.62	1.00		0.75	1.00	
Satd. Flow (perm)	1148	3196		1012	3340		1092	3356		1338	3178	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	128	169	1	137	28	52	3	2	37	58	159
RTOR Reduction (vph)	0	109	0	0	18	0	0	1	0	0	102	0
Lane Group Flow (vph)	56	188	0	1	147	0	52	4	0	37	115	0
Heavy Vehicles (%)	0%	5%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		12.4	12.4		12.4	12.4		12.4	12.4	
Effective Green, g (s)	12.4	12.4		12.4	12.4		12.4	12.4		12.4	12.4	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.36	0.36		0.36	0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	409	1138		360	1190		389	1195		476	1132	
v/s Ratio Prot		c0.06			0.04			0.00			0.04	
v/s Ratio Perm	0.05			0.00			c0.05			0.03		
v/c Ratio	0.14	0.17		0.00	0.12		0.13	0.00		0.08	0.10	
Uniform Delay, d1	7.6	7.7		7.2	7.5		7.6	7.2		7.4	7.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.0	0.0		0.2	0.0		0.1	0.0	
Delay (s)	7.7	7.7		7.2	7.6		7.7	7.2		7.5	7.5	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		7.7			7.6			7.7			7.5	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	34.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

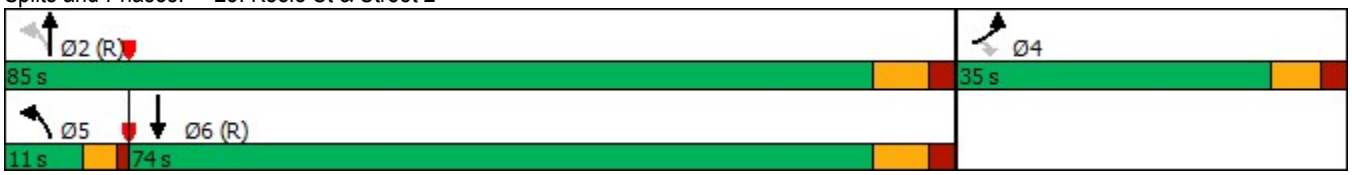
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	8	142	138	724	1302
Future Volume (vph)	8	142	138	724	1302
Lane Group Flow (vph)	8	142	138	724	1313
Turn Type	Prot	Perm	pm+pt	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4	2		
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	30.0	30.0
Minimum Split (s)	35.0	35.0	11.0	37.5	37.5
Total Split (s)	35.0	35.0	11.0	85.0	74.0
Total Split (%)	29.2%	29.2%	9.2%	70.8%	61.7%
Yellow Time (s)	4.5	4.5	3.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.5	7.5
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	C-Max	C-Max
v/c Ratio	0.04	0.49	0.44	0.26	0.53
Control Delay	43.1	12.8	19.5	5.0	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	12.8	19.5	5.0	5.4
Queue Length 50th (m)	1.9	0.0	5.0	19.6	22.3
Queue Length 95th (m)	5.8	16.6	40.0	46.4	51.9
Internal Link Dist (m)	213.8			338.6	204.2
Turn Bay Length (m)			35.0		
Base Capacity (vph)	393	446	311	2767	2475
Starvation Cap Reductn	0	0	0	0	125
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.32	0.44	0.26	0.56

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 25: Keele St & Street 2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	142	138	724	1302	11
Future Volume (vph)	8	142	138	724	1302	11
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0	7.0	4.0	7.5	7.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1685	1449	1705	3613	3680	
Flt Permitted	0.95	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	1685	1449	283	3613	3680	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	8	142	138	724	1302	11
RTOR Reduction (vph)	0	126	0	0	0	0
Lane Group Flow (vph)	8	16	138	724	1313	0
Heavy Vehicles (%)	0%	4%	4%	4%	2%	0%
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	13.6	13.6	91.9	91.9	80.7	
Effective Green, g (s)	13.6	13.6	91.9	91.9	80.7	
Actuated g/C Ratio	0.11	0.11	0.77	0.77	0.67	
Clearance Time (s)	7.0	7.0	4.0	7.5	7.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	190	164	302	2766	2474	
v/s Ratio Prot	0.00		c0.03	0.20	c0.36	
v/s Ratio Perm		c0.01	0.32			
v/c Ratio	0.04	0.10	0.46	0.26	0.53	
Uniform Delay, d1	47.4	47.7	6.5	4.1	10.0	
Progression Factor	1.00	1.00	4.12	0.98	0.41	
Incremental Delay, d2	0.1	0.3	1.0	0.2	0.7	
Delay (s)	47.5	48.0	27.7	4.3	4.9	
Level of Service	D	D	C	A	A	
Approach Delay (s)	47.9			8.0	4.9	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

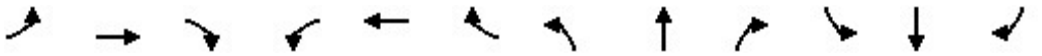
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	4	2	229	5	184	669	226	34	1135
Future Volume (vph)	4	2	229	5	184	669	226	34	1135
Lane Group Flow (vph)	4	35	229	39	184	669	226	34	1192
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases		4	3	8	5	2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	3	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	11.0	35.0	11.0	37.5	37.5	37.5	37.5
Total Split (s)	35.0	35.0	14.0	49.0	18.0	71.0	71.0	53.0	53.0
Total Split (%)	29.2%	29.2%	11.7%	40.8%	15.0%	59.2%	59.2%	44.2%	44.2%
Yellow Time (s)	4.5	4.5	3.0	4.5	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	1.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	4.0	7.5	7.5	7.5	7.5
Lead/Lag	Lag	Lag	Lead		Lead			Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.03	0.17	0.90	0.12	0.55	0.27	0.20	0.08	0.57
Control Delay	42.8	16.5	78.0	12.6	13.5	8.9	2.1	7.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	16.5	78.0	12.6	13.5	8.9	2.1	7.2	9.3
Queue Length 50th (m)	0.9	0.5	51.5	1.0	13.2	31.2	0.5	3.0	87.3
Queue Length 95th (m)	3.9	9.1	63.1	8.6	34.0	61.8	12.6	6.5	62.9
Internal Link Dist (m)		201.9		71.1		187.8			362.7
Turn Bay Length (m)	35.0				50.0		35.0	50.0	
Base Capacity (vph)	258	384	255	593	378	2513	1138	424	2101
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.09	0.90	0.07	0.49	0.27	0.20	0.08	0.57

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 24 (20%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 26: Jane St & Street 3 (34E)/Street 3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	33	229	5	34	184	669	226	34	1135	57
Future Volume (vph)	4	2	33	229	5	34	184	669	226	34	1135	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		4.0	7.0		4.0	7.5	7.5	7.5	7.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.86		1.00	0.87		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1440	1541		1636	1633		1773	3613	1540	1773	3661	
Flt Permitted	0.73	1.00		0.52	1.00		0.15	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	1109	1541		892	1633		281	3613	1540	742	3661	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	2	33	229	5	34	184	669	226	34	1135	57
RTOR Reduction (vph)	0	30	0	0	27	0	0	0	72	0	2	0
Lane Group Flow (vph)	4	5	0	229	12	0	184	669	154	34	1190	0
Heavy Vehicles (%)	17%	0%	5%	3%	0%	0%	0%	4%	3%	0%	2%	0%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	9.6	9.6		24.8	24.8		80.7	80.7	80.7	66.0	66.0	
Effective Green, g (s)	9.6	9.6		24.8	24.8		80.7	80.7	80.7	66.0	66.0	
Actuated g/C Ratio	0.08	0.08		0.21	0.21		0.67	0.67	0.67	0.55	0.55	
Clearance Time (s)	7.0	7.0		4.0	7.0		4.0	7.5	7.5	7.5	7.5	
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)	88	123		253	337		322	2429	1035	408	2013	
v/s Ratio Prot		0.00		c0.08	0.01		c0.05	0.19			0.32	
v/s Ratio Perm	0.00			c0.10			c0.33		0.10	0.05		
v/c Ratio	0.05	0.04		0.91	0.04		0.57	0.28	0.15	0.08	0.59	
Uniform Delay, d1	51.0	50.9		45.2	38.0		11.8	7.9	7.2	12.7	18.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.38	0.41	
Incremental Delay, d2	0.2	0.1		32.4	0.0		2.4	0.3	0.3	0.4	1.2	
Delay (s)	51.2	51.1		77.6	38.1		14.2	8.2	7.5	5.3	8.6	
Level of Service	D	D		E	D		B	A	A	A	A	
Approach Delay (s)		51.1			71.9			9.1			8.5	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	203	149	45	54	119
Future Vol, veh/h	60	203	149	45	54	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	3	4	0	0	0
Mvmt Flow	67	226	166	50	60	132

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	216	0	-	0	551	191
Stage 1	-	-	-	-	191	-
Stage 2	-	-	-	-	360	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1366	-	-	-	499	856
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1366	-	-	-	475	856
Mov Cap-2 Maneuver	-	-	-	-	475	-
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	710	-

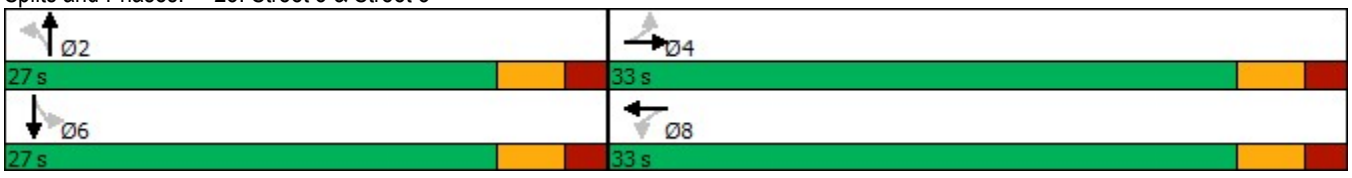
Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	12.3
HCM LOS			B

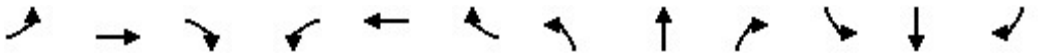
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1366	-	-	-	685
HCM Lane V/C Ratio	0.049	-	-	-	0.281
HCM Control Delay (s)	7.8	-	-	-	12.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	95	112	38	65	37	20	37	107
Future Volume (vph)	95	112	38	65	37	20	37	107
Lane Group Flow (vph)	106	174	42	99	41	55	41	183
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	23.0	23.0	23.0	23.0
Total Split (s)	33.0	33.0	33.0	33.0	27.0	27.0	27.0	27.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min
v/c Ratio	0.24	0.27	0.10	0.16	0.11	0.06	0.10	0.16
Control Delay	9.4	7.2	8.1	6.6	10.1	5.8	9.8	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	7.2	8.1	6.6	10.1	5.8	9.8	6.6
Queue Length 50th (m)	3.6	4.4	1.4	2.4	1.3	0.3	1.3	2.0
Queue Length 95th (m)	13.3	16.0	6.4	10.2	8.0	3.6	8.0	9.5
Internal Link Dist (m)		543.6		710.7		849.4		491.8
Turn Bay Length (m)	35.0		35.0		35.0		35.0	
Base Capacity (vph)	1050	1489	979	1449	757	1958	856	2207
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.12	0.04	0.07	0.05	0.03	0.05	0.08

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 34.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 28: Street 5 & Street 3





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	112	45	38	65	24	37	20	30	37	107	58
Future Volume (vph)	95	112	45	38	65	24	37	20	30	37	107	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.91		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	1736		1685	1691		1685	2901		1685	3256	
Flt Permitted	0.69	1.00		0.65	1.00		0.64	1.00		0.72	1.00	
Satd. Flow (perm)	1229	1736		1148	1691		1129	2901		1275	3256	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	124	50	42	72	27	41	22	33	41	119	64
RTOR Reduction (vph)	0	29	0	0	17	0	0	22	0	0	42	0
Lane Group Flow (vph)	106	145	0	42	82	0	41	33	0	41	141	0
Heavy Vehicles (%)	0%	5%	0%	0%	9%	0%	0%	30%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.3	12.3		12.3	12.3		11.6	11.6		11.6	11.6	
Effective Green, g (s)	12.3	12.3		12.3	12.3		11.6	11.6		11.6	11.6	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.34	0.34		0.34	0.34	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	445	629		416	613		386	992		436	1114	
v/s Ratio Prot		0.08			0.05			0.01			c0.04	
v/s Ratio Perm	c0.09			0.04			0.04			0.03		
v/c Ratio	0.24	0.23		0.10	0.13		0.11	0.03		0.09	0.13	
Uniform Delay, d1	7.5	7.5		7.1	7.2		7.6	7.4		7.6	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.2		0.1	0.1		0.1	0.0		0.1	0.1	
Delay (s)	7.8	7.7		7.2	7.3		7.7	7.4		7.7	7.7	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		7.7			7.3			7.6			7.7	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	33.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	114	61	3	68	71	37	69	4	124	124	13
Future Vol, veh/h	6	114	61	3	68	71	37	69	4	124	124	13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	5	0	0	9	0	0	0	0	0	0	0
Mvmt Flow	7	127	68	3	76	79	41	77	4	138	138	14
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	9.4	9.5	11.6
HCM LOS	A	A	A	B

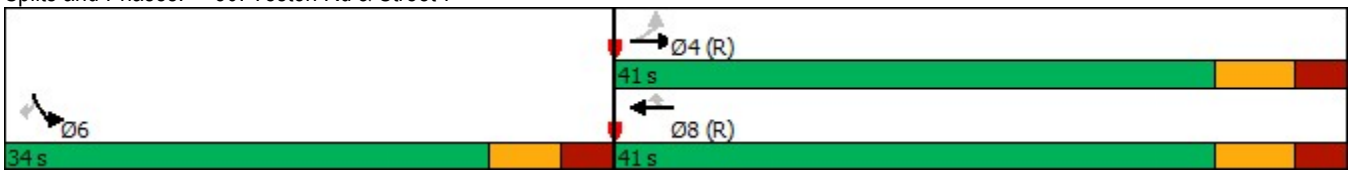
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	34%	3%	2%	48%
Vol Thru, %	63%	63%	48%	48%
Vol Right, %	4%	34%	50%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	181	142	261
LT Vol	37	6	3	124
Through Vol	69	114	68	124
RT Vol	4	61	71	13
Lane Flow Rate	122	201	158	290
Geometry Grp	1	1	1	1
Degree of Util (X)	0.18	0.282	0.219	0.41
Departure Headway (Hd)	5.311	5.046	5.004	5.093
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	714	718	710
Service Time	3.341	3.062	3.033	3.105
HCM Lane V/C Ratio	0.18	0.282	0.22	0.408
HCM Control Delay	9.5	10	9.4	11.6
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.7	1.2	0.8	2

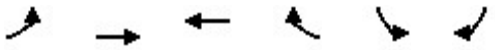
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	1387	1222	190	288	58
Future Volume (vph)	66	1387	1222	190	288	58
Lane Group Flow (vph)	66	1387	1222	190	288	58
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Detector Phase	4	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	41.0	41.0	41.0	41.0	34.0	34.0
Total Split (%)	54.7%	54.7%	54.7%	54.7%	45.3%	45.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.41	0.69	0.61	0.21	0.70	0.16
Control Delay	11.6	7.8	10.2	2.9	34.0	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	7.8	10.2	2.9	34.0	12.9
Queue Length 50th (m)	2.9	32.6	52.4	2.0	39.3	3.6
Queue Length 95th (m)	5.0	38.3	m106.9	m11.8	54.8	10.5
Internal Link Dist (m)		309.1	274.8		778.4	
Turn Bay Length (m)	85.0			35.0	100.0	
Base Capacity (vph)	161	2010	2010	918	594	510
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.69	0.61	0.21	0.48	0.11

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 16 (21%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: Teston Rd & Street 7





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	1387	1222	190	288	58
Future Volume (vph)	66	1387	1222	190	288	58
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1627	3613	3613	1540	1652	1370
Flt Permitted	0.17	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	289	3613	3613	1540	1652	1370
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	1387	1222	190	288	58
RTOR Reduction (vph)	0	0	0	61	0	20
Lane Group Flow (vph)	66	1387	1222	129	288	38
Heavy Vehicles (%)	9%	4%	4%	3%	2%	10%
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	41.7	41.7	41.7	41.7	18.8	18.8
Effective Green, g (s)	41.7	41.7	41.7	41.7	18.8	18.8
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.25	0.25
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	2008	2008	856	414	343
v/s Ratio Prot		c0.38	0.34		c0.17	
v/s Ratio Perm	0.23			0.08		0.03
v/c Ratio	0.41	0.69	0.61	0.15	0.70	0.11
Uniform Delay, d1	9.6	12.0	11.2	8.1	25.5	21.7
Progression Factor	0.37	0.46	0.77	0.80	1.00	1.00
Incremental Delay, d2	6.8	1.7	0.8	0.2	5.0	0.1
Delay (s)	10.3	7.3	9.4	6.7	30.5	21.8
Level of Service	B	A	A	A	C	C
Approach Delay (s)		7.4	9.0		29.1	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

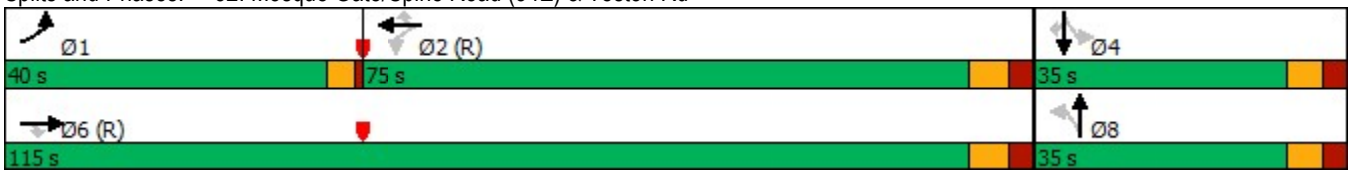
c Critical Lane Group

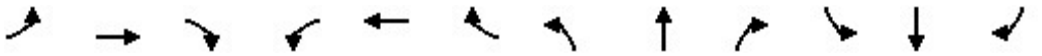
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBR
Lane Configurations										
Traffic Volume (vph)	501	1448	28	17	1465	77	55	0	47	141
Future Volume (vph)	501	1448	28	17	1465	77	55	0	47	141
Lane Group Flow (vph)	501	1448	28	17	1465	77	55	47	47	141
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	1	6			2			8		
Permitted Phases			6	2		2	8		4	4
Detector Phase	1	6	6	2	2	2	8	8	4	4
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	37.5	37.5	37.5	37.5	37.5	34.0	34.0	34.0	34.0
Total Split (s)	40.0	115.0	115.0	75.0	75.0	75.0	35.0	35.0	35.0	35.0
Total Split (%)	26.7%	76.7%	76.7%	50.0%	50.0%	50.0%	23.3%	23.3%	23.3%	23.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.81	0.47	0.02	0.08	0.64	0.08	0.44	0.23	0.39	0.29
Control Delay	76.1	3.9	1.8	8.8	10.2	0.8	72.5	6.4	71.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.1	3.9	1.8	8.8	10.2	0.8	72.5	6.4	71.1	1.5
Queue Length 50th (m)	82.3	24.7	0.2	0.8	35.7	0.2	16.9	0.0	14.4	0.0
Queue Length 95th (m)	91.4	56.0	m0.9	m1.9	m203.7	m1.1	29.4	5.0	25.8	0.0
Internal Link Dist (m)		423.7			408.5			172.5		
Turn Bay Length (m)	125.0		75.0	60.0		60.0	35.0		35.0	
Base Capacity (vph)	825	3097	1196	207	2280	974	245	323	231	583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.47	0.02	0.08	0.64	0.08	0.22	0.15	0.20	0.24

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 32: Mosque Gate/Spine Road (34E) & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	501	1448	28	17	1465	77	55	0	47	47	0	141
Future Volume (vph)	501	1448	28	17	1465	77	55	0	47	47	0	141
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		7.0		7.0
Lane Util. Factor	0.97	*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	1.00	1.00		1.00		1.00
Flpb, ped/bikes	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	0.85		1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95		1.00
Satd. Flow (prot)	3440	3840	1476	1670	3803	1587	1652	1413		1620		1436
Flt Permitted	0.95	1.00	1.00	0.20	1.00	1.00	0.76	1.00		0.73		1.00
Satd. Flow (perm)	3440	3840	1476	346	3803	1587	1316	1413		1239		1436
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	501	1448	28	17	1465	77	55	0	47	47	0	141
RTOR Reduction (vph)	0	0	5	0	0	23	0	42	0	0	0	127
Lane Group Flow (vph)	501	1448	23	17	1465	54	55	5	0	47	0	14
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	0%	3%	4%	6%	4%	0%	2%	0%	13%	4%	0%	5%
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA		Perm		Perm
Protected Phases	1	6			2			8			4	
Permitted Phases			6	2		2	8			4		4
Actuated Green, G (s)	27.1	121.0	121.0	89.9	89.9	89.9	14.5	14.5		14.5		14.5
Effective Green, g (s)	27.1	121.0	121.0	89.9	89.9	89.9	14.5	14.5		14.5		14.5
Actuated g/C Ratio	0.18	0.81	0.81	0.60	0.60	0.60	0.10	0.10		0.10		0.10
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		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
Lane Grp Cap (vph)	621	3097	1190	207	2279	951	127	136		119		138
v/s Ratio Prot	c0.15	0.38			c0.39			0.00				
v/s Ratio Perm			0.02	0.05		0.03	c0.04			0.04		0.01
v/c Ratio	0.81	0.47	0.02	0.08	0.64	0.06	0.43	0.03		0.39		0.10
Uniform Delay, d1	58.9	4.5	2.8	12.7	19.6	12.5	63.9	61.4		63.6		61.8
Progression Factor	1.14	0.68	1.15	0.48	0.43	0.12	1.00	1.00		1.00		1.00
Incremental Delay, d2	6.5	0.4	0.0	0.4	0.8	0.1	2.4	0.1		2.2		0.3
Delay (s)	73.7	3.5	3.3	6.5	9.3	1.5	66.2	61.5		65.8		62.1
Level of Service	E	A	A	A	A	A	E	E		E		E
Approach Delay (s)		21.3			8.9			64.1			63.0	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1327	1465	204	635
Future Volume (vph)	1327	1465	204	635
Lane Group Flow (vph)	1327	1465	522	317
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	20.0	20.0	15.0	15.0
Minimum Split (s)	27.5	27.5	36.5	36.5
Total Split (s)	86.0	86.0	64.0	64.0
Total Split (%)	57.3%	57.3%	42.7%	42.7%
Yellow Time (s)	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
v/c Ratio	0.55	0.58	0.70	0.84
Control Delay	3.1	8.1	52.5	66.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.1	8.1	52.5	66.3
Queue Length 50th (m)	19.0	40.1	72.1	85.3
Queue Length 95th (m)	m18.8	46.5	83.1	111.9
Internal Link Dist (m)	297.1	423.7	207.9	
Turn Bay Length (m)				90.0
Base Capacity (vph)	2414	2517	1126	562
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.58	0.46	0.56

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 4 (3%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: Hwy 400 NB Off-Ramp & Teston Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1327	0	0	1465	204	635
Future Volume (vph)	1327	0	0	1465	204	635
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5			7.5	7.5	7.5
Lane Util. Factor	0.95			*1.00	0.97	*1.00
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	0.91	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	3684			3840	2931	1436
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	3684			3840	2931	1436
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1327	0	0	1465	204	635
RTOR Reduction (vph)	0	0	0	0	26	26
Lane Group Flow (vph)	1327	0	0	1465	496	291
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	2%	0%	0%	3%	4%	5%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	98.3			98.3	36.7	36.7
Effective Green, g (s)	98.3			98.3	36.7	36.7
Actuated g/C Ratio	0.66			0.66	0.24	0.24
Clearance Time (s)	7.5			7.5	7.5	7.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	2414			2516	717	351
v/s Ratio Prot	0.36			c0.38	0.17	
v/s Ratio Perm						c0.20
v/c Ratio	0.55			0.58	0.69	0.83
Uniform Delay, d1	13.9			14.4	51.5	53.7
Progression Factor	0.17			0.46	1.00	1.00
Incremental Delay, d2	0.4			0.8	2.9	14.7
Delay (s)	2.8			7.4	54.4	68.4
Level of Service	A			A	D	E
Approach Delay (s)	2.8			7.4	59.7	
Approach LOS	A			A	E	

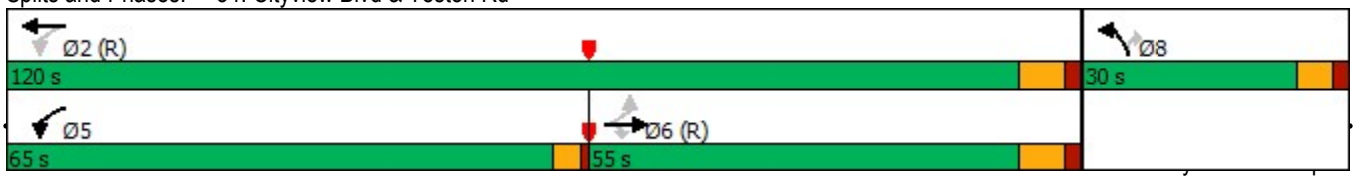
Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

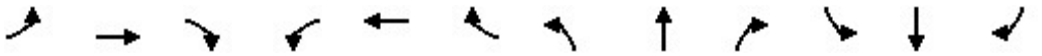
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1173	777	822	866	416	375
Future Volume (vph)	1173	777	822	866	416	375
Lane Group Flow (vph)	1173	777	822	866	416	375
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	5	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	7.0	30.0	7.0	7.0
Minimum Split (s)	37.0	37.0	11.0	37.0	38.0	38.0
Total Split (s)	55.0	55.0	65.0	120.0	30.0	30.0
Total Split (%)	36.7%	36.7%	43.3%	80.0%	20.0%	20.0%
Yellow Time (s)	5.0	5.0	3.0	5.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	None	C-Max	None	None
v/c Ratio	0.95	1.04	1.08	0.31	0.85	0.70
Control Delay	65.2	69.0	91.7	11.7	78.9	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	69.0	91.7	11.7	78.9	12.6
Queue Length 50th (m)	179.4	~177.2	~278.3	79.7	65.6	0.0
Queue Length 95th (m)	#221.8	#259.4	#363.7	79.0	#86.4	33.4
Internal Link Dist (m)	224.3			297.1		
Turn Bay Length (m)		80.0	230.0			
Base Capacity (vph)	1240	748	759	2781	517	549
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	1.04	1.08	0.31	0.80	0.68

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 132 (88%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 34: Cityview Blvd & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1173	777	822	866	0	416	0	375	0	0	0
Future Volume (vph)	0	1173	777	822	866	0	416	0	375	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Lane Util. Factor		*1.00	1.00	1.00	0.95		0.97		1.00			
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00		1.00			
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3878	1550	1705	3648		3236		1463			
Flt Permitted		1.00	1.00	0.08	1.00		0.95		1.00			
Satd. Flow (perm)		3878	1550	138	3648		3236		1463			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1173	777	822	866	0	416	0	375	0	0	0
RTOR Reduction (vph)	0	0	253	0	0	0	0	0	319	0	0	0
Lane Group Flow (vph)	0	1173	524	822	866	0	416	0	57	0	0	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	2%	1%	4%	3%	0%	1%	0%	3%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Prot		Perm			
Protected Phases		6		5	2		8					
Permitted Phases	6		6	2					8			
Actuated Green, G (s)		48.0	48.0	114.4	114.4		22.6		22.6			
Effective Green, g (s)		48.0	48.0	114.4	114.4		22.6		22.6			
Actuated g/C Ratio		0.32	0.32	0.76	0.76		0.15		0.15			
Clearance Time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		1240	496	757	2782		487		220			
v/s Ratio Prot		0.30		c0.45	0.24		c0.13					
v/s Ratio Perm			0.34	c0.38					0.04			
v/c Ratio		0.95	1.06	1.09	0.31		0.85		0.26			
Uniform Delay, d1		49.7	51.0	39.4	5.5		62.1		56.3			
Progression Factor		1.00	1.00	1.02	2.00		1.00		1.00			
Incremental Delay, d2		15.5	56.2	56.0	0.2		13.6		0.6			
Delay (s)		65.2	107.2	96.0	11.3		75.7		56.9			
Level of Service		E	F	F	B		E		E			
Approach Delay (s)		82.0			52.5			66.8			0.0	
Approach LOS		F			D			E			A	

Intersection Summary			
HCM 2000 Control Delay	68.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	541	268	314	1261	301
Future Volume (vph)	115	541	268	314	1261	301
Lane Group Flow (vph)	115	541	268	314	1261	301
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	33.0	33.0	7.0	33.0
Minimum Split (s)	27.5	27.5	41.0	41.0	11.0	41.0
Total Split (s)	27.5	27.5	41.0	41.0	52.0	93.0
Total Split (%)	22.8%	22.8%	34.0%	34.0%	43.2%	77.2%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	4.0	4.0	1.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
v/c Ratio	0.31	0.83	0.26	0.49	1.23	0.12
Control Delay	47.2	15.9	32.2	6.5	130.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	15.9	32.2	6.5	130.1	4.3
Queue Length 50th (m)	12.7	0.0	24.3	0.0	~351.6	7.6
Queue Length 95th (m)	21.6	38.1	39.9	22.9	#488.6	16.1
Internal Link Dist (m)	165.8		211.9			105.1
Turn Bay Length (m)	100.0			55.0		
Base Capacity (vph)	590	715	1023	645	1022	2610
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.76	0.26	0.49	1.23	0.12

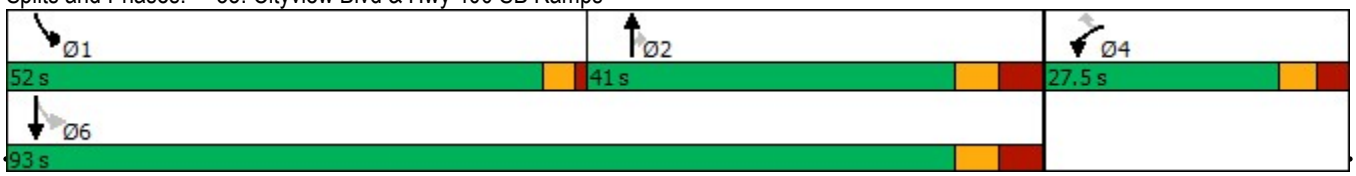
Intersection Summary

Cycle Length: 120.5
Actuated Cycle Length: 113
Natural Cycle: 150
Control Type: Actuated-Uncoordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 35: Cityview Blvd & Hwy 400 SB Ramps



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	541	268	314	1261	301
Future Volume (vph)	115	541	268	314	1261	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3173	1478	3500	1446	1635	3466
Flt Permitted	0.95	1.00	1.00	1.00	0.52	1.00
Satd. Flow (perm)	3173	1478	3500	1446	900	3466
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	541	268	314	1261	301
RTOR Reduction (vph)	0	477	0	222	0	0
Lane Group Flow (vph)	115	64	268	92	1261	301
Confl. Peds. (#/hr)				1	1	
Heavy Vehicles (%)	3%	2%	2%	2%	3%	3%
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Actuated Green, G (s)	13.4	13.4	33.0	33.0	85.1	85.1
Effective Green, g (s)	13.4	13.4	33.0	33.0	85.1	85.1
Actuated g/C Ratio	0.12	0.12	0.29	0.29	0.75	0.75
Clearance Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Vehicle Extension (s)	4.0	4.0	3.6	3.6	3.5	3.6
Lane Grp Cap (vph)	376	175	1022	422	990	2610
v/s Ratio Prot	0.04		0.08		c0.54	0.09
v/s Ratio Perm		c0.04		0.06	c0.42	
v/c Ratio	0.31	0.37	0.26	0.22	1.27	0.12
Uniform Delay, d1	45.5	45.9	30.7	30.2	12.1	3.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.8	0.6	1.2	131.1	0.1
Delay (s)	46.2	47.7	31.3	31.4	143.2	3.9
Level of Service	D	D	C	C	F	A
Approach Delay (s)	47.4		31.4			116.3
Approach LOS	D		C			F

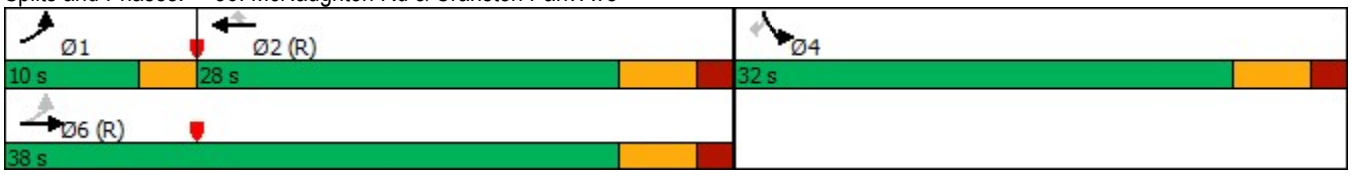
Intersection Summary			
HCM 2000 Control Delay	82.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	113.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

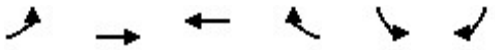
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	288	492	103	155	154
Future Volume (vph)	56	288	492	103	155	154
Lane Group Flow (vph)	62	320	547	114	172	171
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	6.0	16.0	16.0	16.0	8.0	8.0
Minimum Split (s)	9.0	27.0	27.0	27.0	32.0	32.0
Total Split (s)	10.0	38.0	28.0	28.0	32.0	32.0
Total Split (%)	14.3%	54.3%	40.0%	40.0%	45.7%	45.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.13	0.29	0.55	0.14	0.51	0.38
Control Delay	6.8	8.5	18.3	5.4	28.5	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	8.5	18.3	5.4	28.5	5.9
Queue Length 50th (m)	2.3	16.2	48.4	1.3	21.9	0.0
Queue Length 95th (m)	9.9	46.5	#132.6	12.4	30.3	11.2
Internal Link Dist (m)		821.3	323.4		900.1	
Turn Bay Length (m)	65.0			40.0		100.0
Base Capacity (vph)	474	1113	993	831	607	667
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.29	0.55	0.14	0.28	0.26

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 36: McNaughton Rd & Cranston Park Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	288	492	103	155	154
Future Volume (vph)	56	288	492	103	155	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1618	1789	1842	1462	1636	1507
Flt Permitted	0.33	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	554	1789	1842	1462	1636	1507
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	62	320	547	114	172	171
RTOR Reduction (vph)	0	0	0	45	0	136
Lane Group Flow (vph)	62	320	547	69	172	35
Confl. Peds. (#/hr)	6			6		
Heavy Vehicles (%)	4%	5%	2%	0%	3%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Actuated Green, G (s)	43.6	43.6	36.6	36.6	14.4	14.4
Effective Green, g (s)	43.6	43.6	36.6	36.6	14.4	14.4
Actuated g/C Ratio	0.62	0.62	0.52	0.52	0.21	0.21
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	405	1114	963	764	336	310
v/s Ratio Prot	0.01	c0.18	c0.30		c0.11	
v/s Ratio Perm	0.09			0.05		0.02
v/c Ratio	0.15	0.29	0.57	0.09	0.51	0.11
Uniform Delay, d1	6.2	6.1	11.3	8.4	24.7	22.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	2.4	0.2	1.3	0.2
Delay (s)	6.4	6.7	13.8	8.6	26.0	22.8
Level of Service	A	A	B	A	C	C
Approach Delay (s)		6.7	12.9		24.4	
Approach LOS		A	B		C	

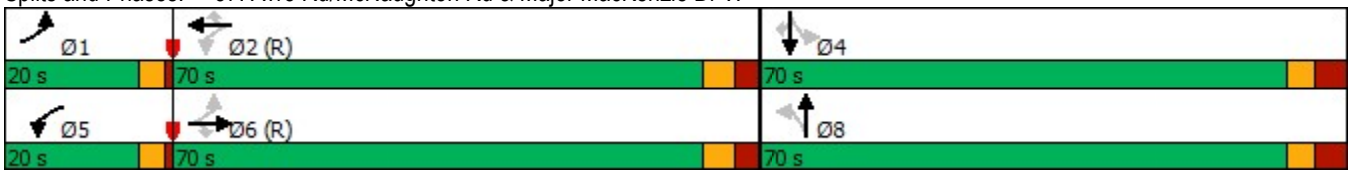
Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

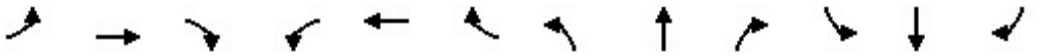
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	175	1073	18	140	1300	39	6	125	79	216	339
Future Volume (vph)	175	1073	18	140	1300	39	6	125	79	216	339
Lane Group Flow (vph)	175	1073	18	140	1300	39	6	235	79	216	339
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6		5	2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	40.5	40.5	40.5	40.5	40.5
Total Split (s)	20.0	70.0	70.0	20.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	12.5%	43.8%	43.8%	12.5%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.51	0.45	0.02	0.37	0.59	0.04	0.06	0.79	0.90	0.72	0.80
Control Delay	12.1	14.8	0.1	9.3	22.8	2.0	53.5	73.7	135.9	76.3	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	14.8	0.1	9.3	22.8	2.0	53.5	73.7	135.9	76.3	34.5
Queue Length 50th (m)	13.5	83.4	0.0	10.5	136.6	0.0	1.7	66.9	26.4	69.7	36.8
Queue Length 95th (m)	30.5	132.0	0.0	21.8	201.7	3.5	6.3	93.0	#49.7	93.1	73.0
Internal Link Dist (m)		379.3			530.0			161.1		821.3	
Turn Bay Length (m)	95.0		45.0	50.0		50.0	35.0		60.0		60.0
Base Capacity (vph)	353	2397	990	447	2185	955	248	677	214	733	699
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.45	0.02	0.31	0.59	0.04	0.02	0.35	0.37	0.29	0.48

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 37: Avro Rd/McNaughton Rd & Major MacKenzie Dr W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
Future Volume (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1627	3613	1463	1721	3613	1542	1674	1684		1680	1879	1431
Flt Permitted	0.14	1.00	1.00	0.24	1.00	1.00	0.36	1.00		0.31	1.00	1.00
Satd. Flow (perm)	234	3613	1463	442	3613	1542	636	1684		549	1879	1431
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1073	18	140	1300	39	6	125	110	79	216	339
RTOR Reduction (vph)	0	0	6	0	0	15	0	27	0	0	0	193
Lane Group Flow (vph)	175	1073	12	140	1300	24	6	208	0	79	216	146
Confl. Peds. (#/hr)	3		1	1		3	7		3	3		7
Heavy Vehicles (%)	9%	4%	6%	3%	4%	0%	0%	2%	4%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8			4		4
Actuated Green, G (s)	119.8	106.2	106.2	106.3	96.7	96.7	25.7	25.7		25.7	25.7	25.7
Effective Green, g (s)	119.8	106.2	106.2	106.3	96.7	96.7	25.7	25.7		25.7	25.7	25.7
Actuated g/C Ratio	0.75	0.66	0.66	0.66	0.60	0.60	0.16	0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
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
Lane Grp Cap (vph)	341	2398	971	370	2183	931	102	270		88	301	229
v/s Ratio Prot	c0.06	0.30		0.02	c0.36			0.12			0.11	
v/s Ratio Perm	0.32		0.01	0.23		0.02	0.01			c0.14		0.10
v/c Ratio	0.51	0.45	0.01	0.38	0.60	0.03	0.06	0.77		0.90	0.72	0.64
Uniform Delay, d1	13.4	12.9	9.1	10.1	19.6	12.7	56.9	64.3		65.9	63.7	62.8
Progression Factor	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	1.3	0.6	0.0	0.6	1.2	0.1	0.2	12.7		62.7	7.9	5.7
Delay (s)	14.7	13.5	9.1	10.7	20.8	12.8	57.1	77.1		128.5	71.6	68.5
Level of Service	B	B	A	B	C	B	E	E		F	E	E
Approach Delay (s)		13.6			19.6			76.6			77.0	
Approach LOS		B			B			E			E	

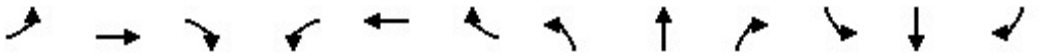
Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	283	678	111	431	456	818	36	558
Future Volume (vph)	283	678	111	431	456	818	36	558
Lane Group Flow (vph)	283	751	111	460	456	1112	36	614
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		8	1	6		2
Permitted Phases	4		8		6		2	
Detector Phase	7	4	8	8	1	6	2	2
Switch Phase								
Minimum Initial (s)	7.0	10.0	10.0	10.0	7.0	30.0	30.0	30.0
Minimum Split (s)	11.0	35.0	35.0	35.0	11.0	37.5	37.5	37.5
Total Split (s)	19.0	54.0	35.0	35.0	27.0	66.0	39.0	39.0
Total Split (%)	15.8%	45.0%	29.2%	29.2%	22.5%	55.0%	32.5%	32.5%
Yellow Time (s)	3.0	4.5	4.5	4.5	3.0	5.0	5.0	5.0
All-Red Time (s)	1.0	2.5	2.5	2.5	1.0	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	7.0	4.0	7.5	7.5	7.5
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
v/c Ratio	0.83	0.59	0.87	0.64	0.89	0.59	0.28	0.59
Control Delay	47.3	27.4	95.6	47.2	36.0	15.6	42.5	39.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	47.3	27.4	95.6	47.2	36.0	15.8	42.5	39.7
Queue Length 50th (m)	35.1	59.0	25.7	52.6	70.1	44.8	7.2	70.4
Queue Length 95th (m)	#73.5	72.1	#57.5	70.5	#128.4	76.4	18.1	90.7
Internal Link Dist (m)		149.7		301.7		190.7		234.5
Turn Bay Length (m)	85.0		55.0		80.0		35.0	
Base Capacity (vph)	339	1369	147	816	516	1874	130	1043
Starvation Cap Reductn	0	0	0	0	0	114	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.55	0.76	0.56	0.88	0.63	0.28	0.59

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Keele St & Kirby Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	678	73	111	431	29	456	818	294	36	558	56
Future Volume (vph)	283	678	73	111	431	29	456	818	294	36	558	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0		7.0	7.0		4.0	7.5		7.5	7.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3481		1634	3482		1773	3573		1673	3580	
Flt Permitted	0.28	1.00		0.37	1.00		0.26	1.00		0.26	1.00	
Satd. Flow (perm)	500	3481		631	3482		476	3573		451	3580	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	283	678	73	111	431	29	456	818	294	36	558	56
RTOR Reduction (vph)	0	7	0	0	4	0	0	29	0	0	6	0
Lane Group Flow (vph)	283	744	0	111	456	0	456	1083	0	36	608	0
Confl. Peds. (#/hr)			2	2			3					3
Confl. Bikes (#/hr)							3					
Heavy Vehicles (%)	1%	1%	0%	3%	1%	10%	0%	1%	1%	6%	3%	7%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		1	6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	43.5	43.5		24.5	24.5		62.0	62.0		34.7	34.7	
Effective Green, g (s)	43.5	43.5		24.5	24.5		62.0	62.0		34.7	34.7	
Actuated g/C Ratio	0.36	0.36		0.20	0.20		0.52	0.52		0.29	0.29	
Clearance Time (s)	4.0	7.0		7.0	7.0		4.0	7.5		7.5	7.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	327	1261		128	710		497	1846		130	1035	
v/s Ratio Prot	c0.11	0.21			0.13		c0.18	0.30			0.17	
v/s Ratio Perm	c0.21			0.18			c0.30			0.08		
v/c Ratio	0.87	0.59		0.87	0.64		0.92	0.59		0.28	0.59	
Uniform Delay, d1	30.7	31.0		46.2	43.7		21.2	20.1		33.0	36.5	
Progression Factor	0.94	0.84		1.00	1.00		0.85	0.73		1.00	1.00	
Incremental Delay, d2	20.5	0.7		41.9	2.0		19.4	1.2		5.2	2.4	
Delay (s)	49.2	26.8		88.1	45.7		37.4	15.8		38.2	39.0	
Level of Service	D	C		F	D		D	B		D	D	
Approach Delay (s)		32.9			54.0			22.1			38.9	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	109.1%	ICU Level of Service	H
Analysis Period (min)	15		

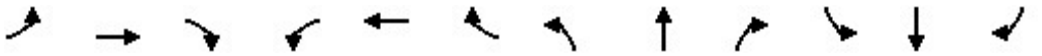
c Critical Lane Group

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	353	440	38	39	313	1167	33	459	243
Future Volume (vph)	353	440	38	39	313	1167	33	459	243
Lane Group Flow (vph)	353	440	38	39	313	1243	33	459	243
Turn Type	Perm	Perm	Perm	Perm	Perm	NA	Perm	NA	Perm
Protected Phases						2		6	
Permitted Phases	4	4	8	8	2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	33.5	33.5	37.5	37.5	37.5	37.5	37.5
Total Split (s)	49.0	49.0	49.0	49.0	71.0	71.0	71.0	71.0	71.0
Total Split (%)	40.8%	40.8%	40.8%	40.8%	59.2%	59.2%	59.2%	59.2%	59.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.81	0.68	0.09	0.09	0.55	0.54	0.17	0.20	0.22
Control Delay	52.2	14.1	31.2	8.6	6.6	3.6	8.5	5.7	0.6
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	14.4	31.2	8.6	6.6	3.6	8.5	5.7	0.6
Queue Length 50th (m)	84.1	20.2	7.2	0.0	14.7	28.9	1.4	10.7	0.1
Queue Length 95th (m)	92.0	43.1	14.7	7.6	25.3	26.2	m4.3	24.1	m4.6
Internal Link Dist (m)						306.7		190.7	
Turn Bay Length (m)				70.0	50.0		50.0		35.0
Base Capacity (vph)	596	763	579	560	569	2310	193	2260	1083
Starvation Cap Reductn	0	46	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.61	0.07	0.07	0.55	0.54	0.17	0.20	0.22

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 38 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Keele St & Vista Gate



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	0	440	38	0	39	313	1167	76	33	459	243
Future Volume (vph)	353	0	440	38	0	39	313	1167	76	33	459	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5		6.5	6.5		6.5	7.5	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00		0.85	1.00		0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1685		1507	1636		1507	1773	3689		1722	3613	1587
Flt Permitted	0.95		1.00	0.95		1.00	0.49	1.00		0.17	1.00	1.00
Satd. Flow (perm)	1685		1507	1636		1507	910	3689		309	3613	1587
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	353	0	440	38	0	39	313	1167	76	33	459	243
RTOR Reduction (vph)	0	0	264	0	0	29	0	3	0	0	0	91
Lane Group Flow (vph)	353	0	176	38	0	10	313	1240	0	33	459	152
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%	0%	1%	0%	3%	4%	0%
Turn Type	Perm		Perm	Perm		Perm	Perm	NA		Perm	NA	Perm
Protected Phases								2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	30.9		30.9	30.9		30.9	75.1	75.1		75.1	75.1	75.1
Effective Green, g (s)	30.9		30.9	30.9		30.9	75.1	75.1		75.1	75.1	75.1
Actuated g/C Ratio	0.26		0.26	0.26		0.26	0.63	0.63		0.63	0.63	0.63
Clearance Time (s)	6.5		6.5	6.5		6.5	7.5	7.5		7.5	7.5	7.5
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)	433		388	421		388	569	2308		193	2261	993
v/s Ratio Prot								0.34			0.13	
v/s Ratio Perm	c0.21		0.12	0.02		0.01	c0.34			0.11		0.10
v/c Ratio	0.82		0.45	0.09		0.03	0.55	0.54		0.17	0.20	0.15
Uniform Delay, d1	41.9		37.5	33.9		33.3	12.8	12.7		9.4	9.6	9.3
Progression Factor	0.92		1.18	1.00		1.00	0.21	0.21		0.54	0.52	0.16
Incremental Delay, d2	10.7		0.8	0.1		0.0	3.3	0.8		1.5	0.2	0.3
Delay (s)	49.2		45.0	34.0		33.3	6.0	3.4		6.6	5.1	1.8
Level of Service	D		D	C		C	A	A		A	A	A
Approach Delay (s)		46.9			33.6			3.9			4.1	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

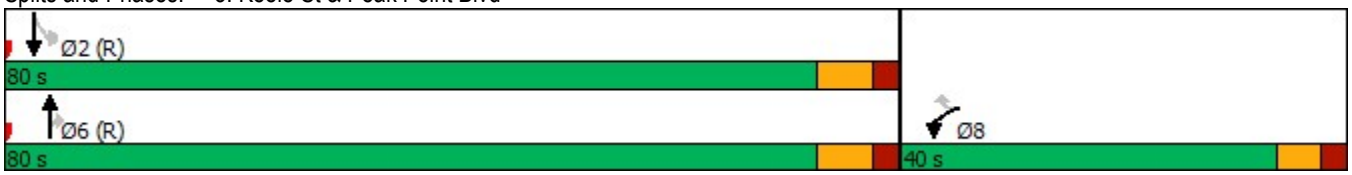
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	17	1528	172	21	905
Future Volume (vph)	96	17	1528	172	21	905
Lane Group Flow (vph)	96	17	1528	172	0	926
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.0	4.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	7.5	7.5		7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.48	0.08	0.54	0.14		0.38
Control Delay	55.1	17.6	1.9	0.3		8.7
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	55.1	17.6	2.0	0.3		8.7
Queue Length 50th (m)	23.0	0.0	10.4	0.0		58.8
Queue Length 95th (m)	35.7	6.3	11.6	0.0		90.7
Internal Link Dist (m)	483.2		204.2			306.7
Turn Bay Length (m)		35.0		55.0		
Base Capacity (vph)	456	432	2826	1197		2458
Starvation Cap Reductn	0	0	121	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.21	0.04	0.56	0.14		0.38

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 10 (8%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: Keele St & Peak Point Blvd



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	17	1528	172	21	905
Future Volume (vph)	96	17	1528	172	21	905
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1636	1507	3721	1536		3677
Flt Permitted	0.95	1.00	1.00	1.00		0.88
Satd. Flow (perm)	1636	1507	3721	1536		3236
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	96	17	1528	172	21	905
RTOR Reduction (vph)	0	15	0	31	0	0
Lane Group Flow (vph)	96	2	1528	141	0	926
Confl. Peds. (#/hr)	2			1	1	
Heavy Vehicles (%)	3%	0%	1%	1%	5%	2%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		6			2
Permitted Phases		8		6	2	
Actuated Green, G (s)	14.8	14.8	91.2	91.2		91.2
Effective Green, g (s)	14.8	14.8	91.2	91.2		91.2
Actuated g/C Ratio	0.12	0.12	0.76	0.76		0.76
Clearance Time (s)	6.5	6.5	7.5	7.5		7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	201	185	2827	1167		2459
v/s Ratio Prot	c0.06		c0.41			
v/s Ratio Perm		0.00		0.09		0.29
v/c Ratio	0.48	0.01	0.54	0.12		0.38
Uniform Delay, d1	49.0	46.2	5.9	3.8		4.8
Progression Factor	1.00	1.00	0.20	0.04		1.48
Incremental Delay, d2	1.8	0.0	0.6	0.2		0.4
Delay (s)	50.8	46.2	1.8	0.3		7.6
Level of Service	D	D	A	A		A
Approach Delay (s)	50.1		1.6			7.6
Approach LOS	D		A			A

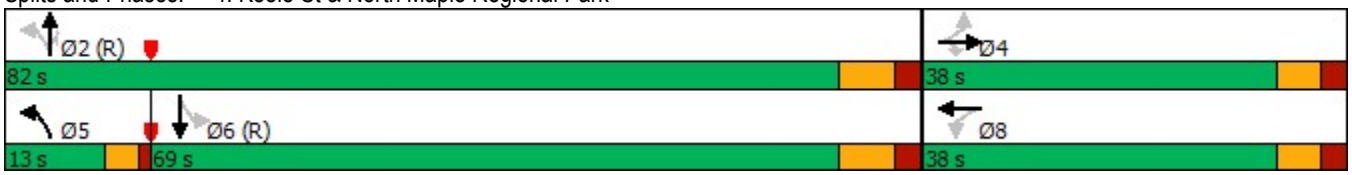
Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

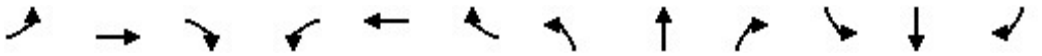
Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	322	9	0	121	1936	33	15	1243
Future Volume (vph)	5	322	9	0	121	1936	33	15	1243
Lane Group Flow (vph)	5	322	9	15	121	1936	33	0	1263
Turn Type	Perm	Perm	Perm	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases				8	5	2			6
Permitted Phases	4	4	8		2		2	6	
Detector Phase	4	4	8	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	33.5	33.5	33.5	33.5	11.0	37.5	37.5	37.5	37.5
Total Split (s)	38.0	38.0	38.0	38.0	13.0	82.0	82.0	69.0	69.0
Total Split (%)	31.7%	31.7%	31.7%	31.7%	10.8%	68.3%	68.3%	57.5%	57.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	4.0	7.5	7.5		7.5
Lead/Lag					Lead			Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.02	0.83	0.04	0.05	0.38	0.72	0.03		0.61
Control Delay	37.4	39.6	38.1	0.3	8.4	12.7	2.5		13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	37.4	39.6	38.1	0.3	8.4	12.7	2.5		13.8
Queue Length 50th (m)	1.1	36.5	1.9	0.0	6.7	125.3	0.0		55.7
Queue Length 95th (m)	4.4	65.4	6.2	0.0	16.9	211.2	3.8		116.4
Internal Link Dist (m)				256.1		909.7			338.6
Turn Bay Length (m)	35.0		50.0		50.0		130.0		
Base Capacity (vph)	348	525	352	476	334	2698	1159		2063
Starvation Cap Reductn	0	0	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0	0	0		0
Reduced v/c Ratio	0.01	0.61	0.03	0.03	0.36	0.72	0.03		0.61

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 4: Keele St & North Maple Regional Park





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	322	9	0	15	121	1936	33	15	1243	5
Future Volume (vph)	5	0	322	9	0	15	121	1936	33	15	1243	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5		6.5	6.5	6.5		4.0	7.5	7.5		7.5	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95	1.00		0.95	
Frt	1.00		0.85	1.00	0.85		1.00	1.00	0.85		1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1685		1507	1685	1597		1773	3721	1587		3681	
Flt Permitted	0.75		1.00	0.76	1.00		0.16	1.00	1.00		0.90	
Satd. Flow (perm)	1326		1507	1343	1597		292	3721	1587		3306	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	0	322	9	0	15	121	1936	33	15	1243	5
RTOR Reduction (vph)	0	0	148	0	13	0	0	0	9	0	0	0
Lane Group Flow (vph)	5	0	174	9	2	0	121	1936	24	0	1263	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	19.0		19.0	19.0	19.0		87.0	87.0	87.0		74.9	
Effective Green, g (s)	19.0		19.0	19.0	19.0		87.0	87.0	87.0		74.9	
Actuated g/C Ratio	0.16		0.16	0.16	0.16		0.72	0.72	0.72		0.62	
Clearance Time (s)	6.5		6.5	6.5	6.5		4.0	7.5	7.5		7.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	209		238	212	252		311	2697	1150		2063	
v/s Ratio Prot					0.00		0.03	c0.52				
v/s Ratio Perm	0.00		c0.12	0.01			0.26		0.02		0.38	
v/c Ratio	0.02		0.73	0.04	0.01		0.39	0.72	0.02		0.61	
Uniform Delay, d1	42.7		48.1	42.8	42.6		8.0	9.5	4.6		13.7	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00	1.00		0.81	
Incremental Delay, d2	0.0		10.9	0.1	0.0		0.8	1.7	0.0		1.3	
Delay (s)	42.7		59.0	42.9	42.6		8.8	11.1	4.6		12.3	
Level of Service	D		E	D	D		A	B	A		B	
Approach Delay (s)		58.8			42.7			10.9			12.3	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		

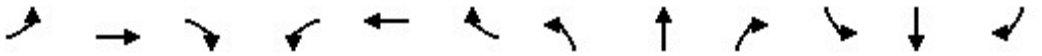
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	490	669	1121	14	964	298	682	1345	35	1275	307
Future Volume (vph)	490	669	1121	14	964	298	682	1345	35	1275	307
Lane Group Flow (vph)	490	669	1121	14	964	298	682	1365	35	1275	307
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	7	4			8		1	6		2	
Permitted Phases	4		4	8		8	6		2		2
Detector Phase	7	4	4	8	8	8	1	6	2	2	2
Switch Phase											
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	11.0	36.5	36.5	36.5	36.5	36.5	11.0	37.5	37.5	37.5	37.5
Total Split (s)	26.0	66.0	66.0	40.0	40.0	40.0	34.0	84.0	50.0	50.0	50.0
Total Split (%)	17.3%	44.0%	44.0%	26.7%	26.7%	26.7%	22.7%	56.0%	33.3%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.5	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	1.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	-1.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	7.5	7.5	7.5	3.0	7.5	7.5	7.5	7.5
Lead/Lag	Lead			Lag	Lag	Lag	Lead		Lag	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	1.52	0.47	1.27	0.09	1.18	0.73	1.64	0.72	0.42	1.15	0.58
Control Delay	277.1	27.0	146.2	48.9	144.9	49.2	331.3	31.2	61.5	125.4	29.5
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	277.1	27.0	146.4	48.9	144.9	49.2	331.3	31.2	61.5	125.4	29.5
Queue Length 50th (m)	~194.2	50.9	~187.6	3.5	~190.2	62.0	~292.4	170.3	9.0	~233.7	45.6
Queue Length 95th (m)	#267.8	78.3	#490.2	10.5	#234.3	98.6	#372.0	198.0	22.6	#276.6	78.9
Internal Link Dist (m)		274.8			260.4			253.9		909.7	
Turn Bay Length (m)	185.0		50.0	40.0		50.0	102.0		80.0		60.0
Base Capacity (vph)	323	1436	880	160	814	407	415	1894	84	1109	532
Starvation Cap Reductn	0	0	31	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.52	0.47	1.32	0.09	1.18	0.73	1.64	0.72	0.42	1.15	0.58

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 113 (75%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Keele St & Teston Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	490	669	1121	14	964	298	682	1345	20	35	1275	307
Future Volume (vph)	490	669	1121	14	964	298	682	1345	20	35	1275	307
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	7.5	7.5	7.5	7.5	7.5	3.0	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	*1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	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		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1756	3684	1550	1772	3758	1553	1756	3712		1721	3916	1534
Flt Permitted	0.11	1.00	1.00	0.40	1.00	1.00	0.09	1.00		0.16	1.00	1.00
Satd. Flow (perm)	203	3684	1550	741	3758	1553	159	3712		298	3916	1534
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	490	669	1121	14	964	298	682	1345	20	35	1275	307
RTOR Reduction (vph)	0	0	276	0	0	71	0	0	0	0	0	98
Lane Group Flow (vph)	490	669	845	14	964	227	682	1365	0	35	1275	209
Confl. Peds. (#/hr)	6		1	1		6	1		2	2		1
Heavy Vehicles (%)	1%	2%	1%	0%	0%	0%	1%	1%	0%	3%	1%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		1	6			2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)	58.5	58.5	58.5	32.5	32.5	32.5	76.5	76.5		42.5	42.5	42.5
Effective Green, g (s)	59.5	58.5	58.5	32.5	32.5	32.5	77.5	76.5		42.5	42.5	42.5
Actuated g/C Ratio	0.40	0.39	0.39	0.22	0.22	0.22	0.52	0.51		0.28	0.28	0.28
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	4.0	7.5		7.5	7.5	7.5
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
Lane Grp Cap (vph)	318	1436	604	160	814	336	412	1893		84	1109	434
v/s Ratio Prot	c0.24	0.18			0.26		c0.34	0.37			0.33	
v/s Ratio Perm	c0.38		0.55	0.02		0.15	c0.51			0.12		0.14
v/c Ratio	1.54	0.47	1.40	0.09	1.18	0.67	1.66	0.72		0.42	1.15	0.48
Uniform Delay, d1	47.4	34.1	45.8	46.9	58.8	53.9	48.7	28.5		43.7	53.8	44.6
Progression Factor	1.17	0.77	0.57	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	252.1	0.1	185.0	0.2	95.3	5.3	305.6	2.4		14.5	78.1	3.8
Delay (s)	307.6	26.3	210.9	47.1	154.0	59.2	354.3	30.9		58.2	131.9	48.4
Level of Service	F	C	F	D	F	E	F	C		E	F	D
Approach Delay (s)		177.5			130.7			138.6			114.4	
Approach LOS		F			F			F			F	

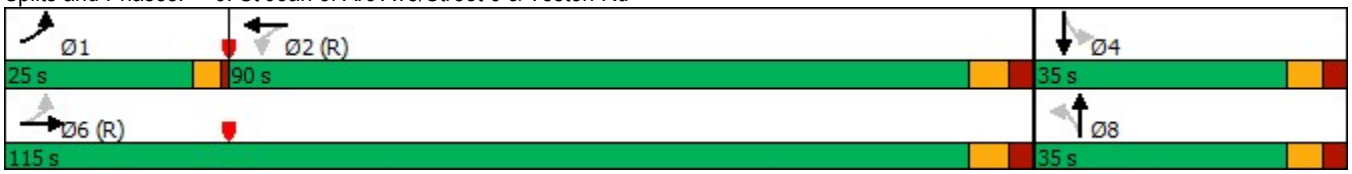
Intersection Summary			
HCM 2000 Control Delay	144.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.69		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	139.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

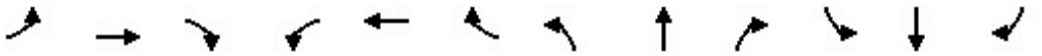
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	190	1869	39	1692	65	0	137	0
Future Volume (vph)	190	1869	39	1692	65	0	137	0
Lane Group Flow (vph)	190	1983	39	1818	65	26	137	122
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		8		4
Permitted Phases	6		2		8		4	
Detector Phase	1	6	2	2	8	8	4	4
Switch Phase								
Minimum Initial (s)	7.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	11.0	37.5	37.5	37.5	31.0	31.0	31.0	31.0
Total Split (s)	25.0	115.0	90.0	90.0	35.0	35.0	35.0	35.0
Total Split (%)	16.7%	76.7%	60.0%	60.0%	23.3%	23.3%	23.3%	23.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.76	0.71	0.41	0.78	0.45	0.10	0.76	0.29
Control Delay	32.3	22.2	8.3	4.0	67.4	0.7	86.9	1.7
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	32.3	22.2	8.3	4.2	67.4	0.7	86.9	1.7
Queue Length 50th (m)	40.4	232.2	0.2	5.7	18.9	0.0	41.8	0.0
Queue Length 95th (m)	m51.6	263.8	m0.4	12.5	33.9	0.0	63.7	0.0
Internal Link Dist (m)		448.8		309.1		309.1		798.5
Turn Bay Length (m)	50.0		60.0		65.0		75.0	
Base Capacity (vph)	309	2794	94	2342	198	348	244	488
Starvation Cap Reductn	0	0	0	96	0	0	0	0
Spillback Cap Reductn	0	8	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.71	0.41	0.81	0.33	0.07	0.56	0.25

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 31 (21%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: St Joan of Arc Ave/Street 6 & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	1869	114	39	1692	126	65	0	26	137	0	122
Future Volume (vph)	190	1869	114	39	1692	126	65	0	26	137	0	122
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.5		7.5	7.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1773	3648		1721	3684		1685	1597		1685	1597	
Flt Permitted	0.05	1.00		0.08	1.00		0.60	1.00		0.74	1.00	
Satd. Flow (perm)	95	3648		148	3684		1064	1597		1313	1597	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	1869	114	39	1692	126	65	0	26	137	0	122
RTOR Reduction (vph)	0	2	0	0	3	0	0	22	0	0	105	0
Lane Group Flow (vph)	190	1981	0	39	1815	0	65	4	0	137	17	0
Confl. Peds. (#/hr)			6	6								
Heavy Vehicles (%)	0%	2%	0%	3%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	114.8	114.8		95.2	95.2		20.7	20.7		20.7	20.7	
Effective Green, g (s)	114.8	114.8		95.2	95.2		20.7	20.7		20.7	20.7	
Actuated g/C Ratio	0.77	0.77		0.63	0.63		0.14	0.14		0.14	0.14	
Clearance Time (s)	4.0	7.5		7.5	7.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	247	2791		93	2338		146	220		181	220	
v/s Ratio Prot	0.08	c0.54			0.49			0.00			0.01	
v/s Ratio Perm	c0.51			0.26			0.06			c0.10		
v/c Ratio	0.77	0.71		0.42	0.78		0.45	0.02		0.76	0.08	
Uniform Delay, d1	44.6	9.0		13.6	19.7		59.4	55.9		62.2	56.3	
Progression Factor	0.64	2.14		0.07	0.11		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.0	0.8		6.9	1.3		2.2	0.0		16.4	0.1	
Delay (s)	35.7	20.2		7.8	3.4		61.5	55.9		78.7	56.5	
Level of Service	D	C		A	A		E	E		E	E	
Approach Delay (s)		21.5			3.5			59.9			68.2	
Approach LOS		C			A			E			E	

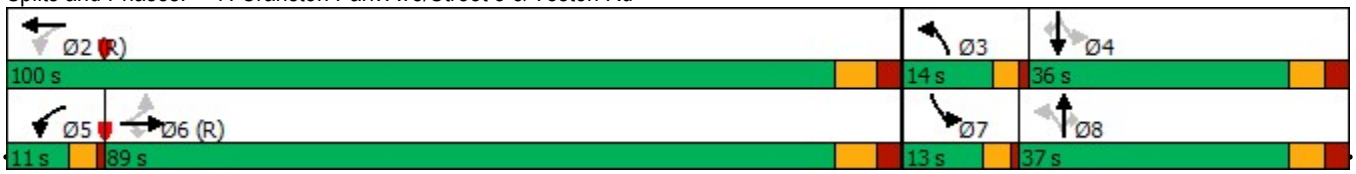
Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	118.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

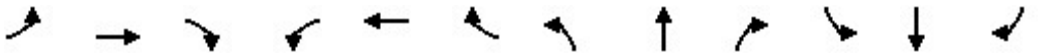
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	55	1808	202	79	1590	171	318	235	140	47	208
Future Volume (vph)	55	1808	202	79	1590	171	318	235	140	47	208
Lane Group Flow (vph)	55	1808	202	79	1737	171	318	235	140	47	208
Turn Type	Perm	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		6		5	2	3	8		7	4	
Permitted Phases	6		6	2		8		8	4		4
Detector Phase	6	6	6	5	2	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	30.0	30.0	30.0	7.0	30.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	11.0	37.5	11.0	34.0	34.0	11.0	34.0	34.0
Total Split (s)	89.0	89.0	89.0	11.0	100.0	14.0	37.0	37.0	13.0	36.0	36.0
Total Split (%)	59.3%	59.3%	59.3%	7.3%	66.7%	9.3%	24.7%	24.7%	8.7%	24.0%	24.0%
Yellow Time (s)	4.5	4.5	4.5	3.0	4.5	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	1.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	4.0	7.5	4.0	7.0	7.0	4.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
v/c Ratio	0.74	0.88	0.23	0.59	0.75	0.46	0.90	0.65	0.84	0.14	0.60
Control Delay	21.2	9.6	0.6	54.7	4.0	46.4	87.8	39.2	81.2	51.7	38.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	9.6	0.6	54.7	4.0	46.4	87.8	39.2	81.2	51.7	38.5
Queue Length 50th (m)	2.1	37.4	0.6	9.8	17.6	41.5	97.0	37.8	33.3	12.3	33.3
Queue Length 95th (m)	m2.6	m36.0	m0.8	m18.9	20.4	63.4	#148.1	69.1	#58.6	24.7	62.3
Internal Link Dist (m)		898.1			448.8		587.1			849.4	
Turn Bay Length (m)	50.0		39.0	60.0		35.0		65.0	55.0		
Base Capacity (vph)	74	2045	894	133	2315	370	375	381	166	359	364
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.88	0.23	0.59	0.75	0.46	0.85	0.62	0.84	0.13	0.57

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 60 (40%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Cranston Park Ave/Street 5 & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	1808	202	79	1590	147	171	318	235	140	47	208
Future Volume (vph)	55	1808	202	79	1590	147	171	318	235	140	47	208
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.5	7.5	7.5	4.0	7.5		4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		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	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	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	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1773	3684	1541	1756	3676		1685	1879	1492	1668	1860	1507
Flt Permitted	0.07	1.00	1.00	0.05	1.00		0.70	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	135	3684	1541	85	3676		1242	1879	1492	332	1860	1507
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	1808	202	79	1590	147	171	318	235	140	47	208
RTOR Reduction (vph)	0	0	39	0	4	0	0	0	84	0	0	74
Lane Group Flow (vph)	55	1808	163	79	1733	0	171	318	151	140	47	134
Confl. Peds. (#/hr)			3	3								
Heavy Vehicles (%)	0%	2%	0%	1%	1%	0%	0%	0%	1%	1%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		6		5	2		3	8		7	4	
Permitted Phases	6		6	2			8		8	4		4
Actuated Green, G (s)	83.3	83.3	83.3	94.3	94.3		38.2	28.2	28.2	36.2	27.2	27.2
Effective Green, g (s)	83.3	83.3	83.3	94.3	94.3		38.2	28.2	28.2	36.2	27.2	27.2
Actuated g/C Ratio	0.56	0.56	0.56	0.63	0.63		0.25	0.19	0.19	0.24	0.18	0.18
Clearance Time (s)	7.5	7.5	7.5	4.0	7.5		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
Lane Grp Cap (vph)	74	2045	855	131	2310		345	353	280	160	337	273
v/s Ratio Prot		c0.49		0.03	c0.47		0.03	c0.17		c0.05	0.03	
v/s Ratio Perm	0.41		0.11	0.35			0.09		0.10	0.16		0.09
v/c Ratio	0.74	0.88	0.19	0.60	0.75		0.50	0.90	0.54	0.88	0.14	0.49
Uniform Delay, d1	25.3	29.1	16.6	31.3	19.6		46.6	59.5	55.0	50.6	51.6	55.2
Progression Factor	0.32	0.29	0.06	2.10	0.12		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0	0.6	0.0	5.2	1.5		1.1	25.0	2.0	37.4	0.2	1.4
Delay (s)	14.0	9.0	1.0	70.9	3.9		47.7	84.5	57.0	88.1	51.8	56.5
Level of Service	B	A	A	E	A		D	F	E	F	D	E
Approach Delay (s)		8.4			6.8			66.9			67.2	
Approach LOS		A			A			E			E	

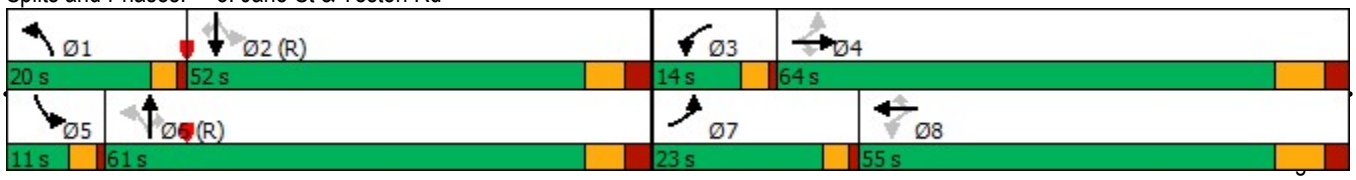
Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

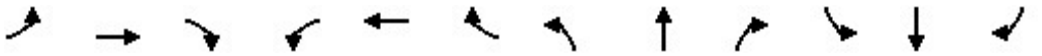
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	481	1689	1029	290	1479	130	429	1258	253	33	1338	141
Future Volume (vph)	481	1689	1029	290	1479	130	429	1258	253	33	1338	141
Lane Group Flow (vph)	481	1689	1029	290	1479	130	429	1258	253	33	1338	141
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Detector Phase	7	4	4	3	8	8	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	35.0	35.0	7.0	35.0	35.0
Minimum Split (s)	11.0	40.5	40.5	11.0	40.5	40.5	11.0	42.5	42.5	11.0	42.5	42.5
Total Split (s)	23.0	64.0	64.0	14.0	55.0	55.0	20.0	61.0	61.0	11.0	52.0	52.0
Total Split (%)	15.3%	42.7%	42.7%	9.3%	36.7%	36.7%	13.3%	40.7%	40.7%	7.3%	34.7%	34.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	8.5	8.5	3.0	8.5	8.5	3.0	7.5	7.5	4.0	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
v/c Ratio	1.69	1.17	1.48	1.58	1.22	0.22	1.70	0.90	0.38	0.25	1.17	0.25
Control Delay	344.2	120.6	245.4	306.7	145.0	5.9	358.7	54.9	18.9	28.3	133.8	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	344.2	120.6	245.4	306.7	145.0	5.9	358.7	54.9	18.9	28.3	133.8	5.2
Queue Length 50th (m)	~206.3	~311.3	~417.6	~111.9	~284.9	4.2	~179.9	200.2	28.2	5.7	~249.4	0.0
Queue Length 95th (m)	m#166.4	m#231.8	m#291.8	#171.5	#330.0	m12.8	#250.3	#245.9	53.3	12.5	#292.2	13.1
Internal Link Dist (m)		408.5			898.1			263.9			638.1	
Turn Bay Length (m)	100.0		70.0	120.0		35.0	45.0		55.0	135.0		58.0
Base Capacity (vph)	285	1448	697	184	1213	594	253	1395	668	133	1139	562
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.69	1.17	1.48	1.58	1.22	0.22	1.70	0.90	0.38	0.25	1.17	0.25

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 99 (66%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Jane St & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	481	1689	1029	290	1479	130	429	1258	253	33	1338	141
Future Volume (vph)	481	1689	1029	290	1479	130	429	1258	253	33	1338	141
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	8.5	8.5	3.0	8.5	8.5	3.0	7.5	7.5	4.0	7.5	7.5
Lane Util. Factor	1.00	*1.00	1.00	1.00	*1.00	1.00	1.00	0.95	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)	1739	3916	1540	1773	3916	1587	1773	3758	1587	1739	3840	1526
Flt Permitted	0.08	1.00	1.00	0.08	1.00	1.00	0.08	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	145	3916	1540	157	3916	1587	154	3758	1587	165	3840	1526
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	481	1689	1029	290	1479	130	429	1258	253	33	1338	141
RTOR Reduction (vph)	0	0	127	0	0	90	0	0	81	0	0	99
Lane Group Flow (vph)	481	1689	902	290	1479	40	429	1258	172	33	1338	42
Heavy Vehicles (%)	2%	1%	3%	0%	1%	0%	0%	0%	0%	2%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Actuated Green, G (s)	69.5	55.5	55.5	56.5	46.5	46.5	64.5	54.9	54.9	50.1	44.5	44.5
Effective Green, g (s)	70.5	55.5	55.5	58.5	46.5	46.5	65.5	54.9	54.9	50.1	44.5	44.5
Actuated g/C Ratio	0.47	0.37	0.37	0.39	0.31	0.31	0.44	0.37	0.37	0.33	0.30	0.30
Clearance Time (s)	4.0	8.5	8.5	4.0	8.5	8.5	4.0	7.5	7.5	4.0	7.5	7.5
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)	280	1448	569	179	1213	491	250	1375	580	113	1139	452
v/s Ratio Prot	c0.23	0.43		0.12	0.38		c0.19	0.33		0.01	0.35	
v/s Ratio Perm	c0.58		0.59	0.51		0.03	c0.55		0.11	0.09		0.03
v/c Ratio	1.72	1.17	1.58	1.62	1.22	0.08	1.72	0.91	0.30	0.29	1.17	0.09
Uniform Delay, d1	49.0	47.2	47.2	41.9	51.8	36.6	47.6	45.3	33.8	38.7	52.8	38.1
Progression Factor	1.22	1.08	1.12	1.06	0.92	1.49	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	324.4	75.7	263.9	296.2	104.1	0.1	338.6	10.9	1.3	1.4	88.1	0.4
Delay (s)	384.4	126.8	316.7	340.6	151.8	54.8	386.2	56.3	35.1	40.2	140.9	38.6
Level of Service	F	F	F	F	F	D	F	E	D	D	F	D
Approach Delay (s)		226.7			174.0			126.5			129.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	175.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.82		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	141.9%	ICU Level of Service	H
Analysis Period (min)	15		

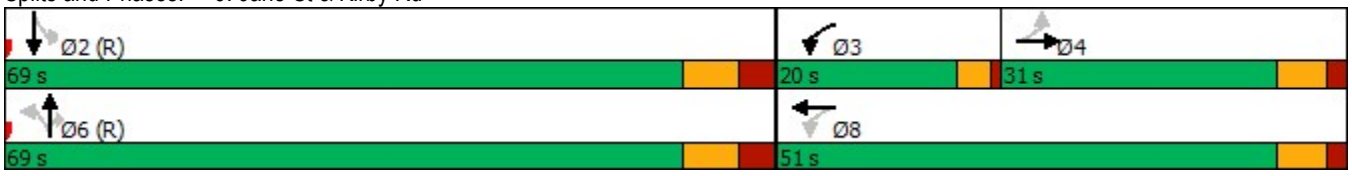
c Critical Lane Group

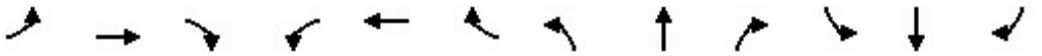
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	124	396	150	414	225	537	163	40	315
Future Volume (vph)	124	396	150	414	225	537	163	40	315
Lane Group Flow (vph)	124	664	150	499	225	537	163	40	347
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4	3	8		6			2
Permitted Phases	4		8		6		6	2	
Detector Phase	4	4	3	8	6	6	6	2	2
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	40.0	40.0	40.0	40.0	40.0
Minimum Split (s)	16.5	16.5	11.0	16.5	48.5	48.5	48.5	48.5	48.5
Total Split (s)	31.0	31.0	20.0	51.0	69.0	69.0	69.0	69.0	69.0
Total Split (%)	25.8%	25.8%	16.7%	42.5%	57.5%	57.5%	57.5%	57.5%	57.5%
Yellow Time (s)	4.5	4.5	3.0	4.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	1.0	2.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	4.0	6.5	8.5	8.5	8.5	8.5	8.5
Lead/Lag	Lag	Lag	Lead						
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.78	0.87	0.63	0.43	0.41	0.51	0.19	0.12	0.18
Control Delay	75.9	50.8	48.0	27.1	11.6	11.2	1.0	16.7	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.9	50.8	48.0	27.1	11.6	11.2	1.0	16.7	14.6
Queue Length 50th (m)	28.5	67.7	23.0	36.4	18.1	43.9	0.3	5.0	22.4
Queue Length 95th (m)	#61.3	#98.5	43.7	46.3	26.0	53.8	1.2	12.1	32.3
Internal Link Dist (m)		496.3		275.3		275.3			245.9
Turn Bay Length (m)	50.0		50.0		50.0			50.0	
Base Capacity (vph)	170	799	274	1274	545	1051	879	329	1950
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.83	0.55	0.39	0.41	0.51	0.19	0.12	0.18

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44 (37%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Jane St & Kirby Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	396	268	150	414	85	225	537	163	40	315	32
Future Volume (vph)	124	396	268	150	414	85	225	537	163	40	315	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5	6.5		4.0	6.5		8.5	8.5	8.5	8.5	8.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.94		1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	3354		1636	3399		1773	1958	1497	1642	3620	
Flt Permitted	0.47	1.00		0.14	1.00		0.54	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	816	3354		249	3399		1015	1958	1497	614	3620	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	124	396	268	150	414	85	225	537	163	40	315	32
RTOR Reduction (vph)	0	100	0	0	15	0	0	0	75	0	6	0
Lane Group Flow (vph)	124	564	0	150	484	0	225	537	88	40	341	0
Heavy Vehicles (%)	2%	0%	0%	3%	2%	4%	0%	1%	6%	8%	2%	6%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			6			2	
Permitted Phases	4			8			6		6	2		
Actuated Green, G (s)	23.7	23.7		40.5	40.5		64.5	64.5	64.5	64.5	64.5	
Effective Green, g (s)	23.7	23.7		40.5	40.5		64.5	64.5	64.5	64.5	64.5	
Actuated g/C Ratio	0.20	0.20		0.34	0.34		0.54	0.54	0.54	0.54	0.54	
Clearance Time (s)	6.5	6.5		4.0	6.5		8.5	8.5	8.5	8.5	8.5	
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)	161	662		231	1147		545	1052	804	330	1945	
v/s Ratio Prot		c0.17		c0.07	0.14			c0.27			0.09	
v/s Ratio Perm	0.15			0.15			0.22		0.06	0.07		
v/c Ratio	0.77	0.85		0.65	0.42		0.41	0.51	0.11	0.12	0.18	
Uniform Delay, d1	45.6	46.5		31.1	30.7		16.5	17.7	13.6	13.7	14.2	
Progression Factor	1.00	1.00		1.37	0.90		0.51	0.50	0.24	1.00	1.00	
Incremental Delay, d2	20.0	10.3		6.0	0.2		2.2	1.7	0.3	0.8	0.2	
Delay (s)	65.6	56.7		48.5	28.0		10.7	10.5	3.6	14.5	14.4	
Level of Service	E	E		D	C		B	B	A	B	B	
Approach Delay (s)		58.1			32.7			9.3			14.4	
Approach LOS		E			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	117.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	587	12	34	670	5	71
Future Vol, veh/h	587	12	34	670	5	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	35	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	587	12	34	670	5	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	599	0	996	300
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	403	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	988	-	245	702
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	649	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	988	-	237	702
Mov Cap-2 Maneuver	-	-	-	-	237	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	11.3
HCM LOS			B

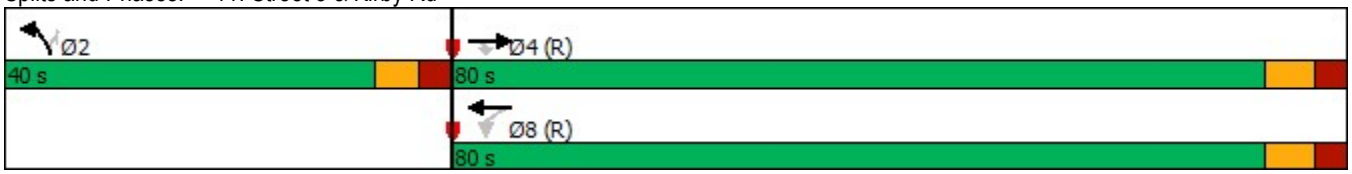
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	237	702	-	-	988	-
HCM Lane V/C Ratio	0.021	0.101	-	-	0.034	-
HCM Control Delay (s)	20.5	10.7	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	631	27	95	697	7	109
Future Volume (vph)	631	27	95	697	7	109
Lane Group Flow (vph)	631	27	95	697	7	109
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	37.5	37.5	37.5	37.5	34.0	34.0
Total Split (s)	80.0	80.0	80.0	80.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.23	0.02	0.17	0.26	0.04	0.41
Control Delay	2.7	0.9	3.5	2.9	43.4	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	0.9	3.5	2.9	43.4	12.6
Queue Length 50th (m)	7.7	0.0	2.9	11.6	1.6	0.0
Queue Length 95th (m)	m20.1	m0.3	m7.8	m24.1	5.5	15.1
Internal Link Dist (m)	519.6			532.2	262.3	
Turn Bay Length (m)		50.0	50.0			
Base Capacity (vph)	2686	1162	560	2686	463	493
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.02	0.17	0.26	0.02	0.22

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 63 (53%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Street 5 & Kirby Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	631	27	95	697	7	109
Future Volume (vph)	631	27	95	697	7	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1507	1685	3500	1685	1507
Flt Permitted	1.00	1.00	0.41	1.00	0.95	1.00
Satd. Flow (perm)	3500	1507	731	3500	1685	1507
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	631	27	95	697	7	109
RTOR Reduction (vph)	0	6	0	0	0	97
Lane Group Flow (vph)	631	21	95	697	7	12
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	92.1	92.1	92.1	92.1	13.4	13.4
Effective Green, g (s)	92.1	92.1	92.1	92.1	13.4	13.4
Actuated g/C Ratio	0.77	0.77	0.77	0.77	0.11	0.11
Clearance Time (s)	7.5	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2686	1156	561	2686	188	168
v/s Ratio Prot	0.18			c0.20	0.00	
v/s Ratio Perm		0.01	0.13			c0.01
v/c Ratio	0.23	0.02	0.17	0.26	0.04	0.07
Uniform Delay, d1	4.0	3.3	3.7	4.0	47.5	47.7
Progression Factor	0.54	0.38	0.60	0.57	1.00	1.00
Incremental Delay, d2	0.2	0.0	0.4	0.2	0.1	0.2
Delay (s)	2.3	1.3	2.7	2.5	47.6	47.9
Level of Service	A	A	A	A	D	D
Approach Delay (s)	2.3			2.5	47.9	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	740	0	127	791	2	158
Future Vol, veh/h	740	0	127	791	2	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	35	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	740	0	127	791	2	158

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	740	0	1390	370
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	876	-	136	633
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	876	-	116	633
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	416	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	116	633	-	-	876	-
HCM Lane V/C Ratio	0.017	0.25	-	-	0.145	-
HCM Control Delay (s)	36.6	12.6	-	-	9.8	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	1	-	-	0.5	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	677	220	0	918	0	337
Future Vol, veh/h	677	220	0	918	0	337
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	35	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	677	220	0	918	0	337

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	339
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	663
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	663
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.9
HCM LOS			C

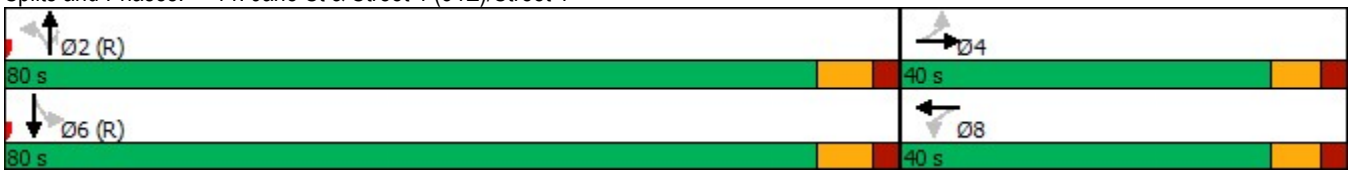
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	663	-	-	-
HCM Lane V/C Ratio	0.508	-	-	-
HCM Control Delay (s)	15.9	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	2.9	-	-	-

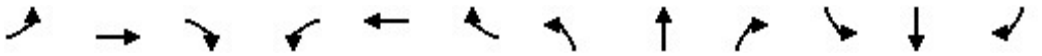
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	13	5	108	4	34	826	146	56	693
Future Volume (vph)	13	5	108	4	34	826	146	56	693
Lane Group Flow (vph)	13	59	108	64	34	826	146	56	694
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	35.0	35.0	37.5	37.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	40.0	40.0	80.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.08	0.23	0.60	0.23	0.06	0.30	0.12	0.12	0.26
Control Delay	41.7	14.1	61.9	13.9	3.6	3.4	0.4	4.1	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	14.1	61.9	13.9	3.6	3.4	0.4	4.1	3.5
Queue Length 50th (m)	2.9	1.1	25.7	0.9	1.0	13.4	0.1	2.3	17.7
Queue Length 95th (m)	8.1	12.2	40.4	12.6	2.7	17.8	1.4	m5.6	m31.8
Internal Link Dist (m)		213.9		69.1		445.9			275.3
Turn Bay Length (m)	35.0				50.0		35.0	50.0	
Base Capacity (vph)	322	461	350	487	532	2720	1207	456	2720
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.13	0.31	0.13	0.06	0.30	0.12	0.12	0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 33 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Jane St & Street 4 (34E)/Street 1





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	5	54	108	4	60	34	826	146	56	693	1
Future Volume (vph)	13	5	54	108	4	60	34	826	146	56	693	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		7.0	7.0		7.5	7.5	7.5	7.5	7.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.86		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1560	1537		1685	1615		1773	3684	1587	1773	3683	
Flt Permitted	0.72	1.00		0.72	1.00		0.39	1.00	1.00	0.33	1.00	
Satd. Flow (perm)	1174	1537		1274	1615		720	3684	1587	618	3683	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	5	54	108	4	60	34	826	146	56	693	1
RTOR Reduction (vph)	0	46	0	0	52	0	0	0	36	0	0	0
Lane Group Flow (vph)	13	13	0	108	12	0	34	826	110	56	694	0
Heavy Vehicles (%)	8%	0%	6%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	16.9	16.9		16.9	16.9		88.6	88.6	88.6	88.6	88.6	
Effective Green, g (s)	16.9	16.9		16.9	16.9		88.6	88.6	88.6	88.6	88.6	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.74	0.74	0.74	0.74	0.74	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.5	7.5	7.5	7.5	7.5	
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)	165	216		179	227		531	2720	1171	456	2719	
v/s Ratio Prot		0.01			0.01			c0.22			0.19	
v/s Ratio Perm	0.01			c0.08			0.05		0.07	0.09		
v/c Ratio	0.08	0.06		0.60	0.05		0.06	0.30	0.09	0.12	0.26	
Uniform Delay, d1	44.8	44.7		48.4	44.6		4.3	5.3	4.4	4.5	5.1	
Progression Factor	1.00	1.00		1.02	1.08		0.57	0.52	0.14	0.58	0.57	
Incremental Delay, d2	0.2	0.1		5.6	0.1		0.2	0.3	0.2	0.5	0.2	
Delay (s)	45.0	44.8		55.0	48.2		2.7	3.0	0.8	3.1	3.1	
Level of Service	D	D		D	D		A	A	A	A	A	
Approach Delay (s)		44.8			52.5			2.7			3.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	8	177	22	11	114	4	51	64	12	8	32	6
Future Vol, veh/h	8	177	22	11	114	4	51	64	12	8	32	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	9	0	0	0	0	8	0	0	0
Mvmt Flow	9	197	24	12	127	4	57	71	13	9	36	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	131	0	0	221	0	0	402	382	209	422	392	129
Stage 1	-	-	-	-	-	-	227	227	-	153	153	-
Stage 2	-	-	-	-	-	-	175	155	-	269	239	-
Critical Hdwy	4.1	-	-	4.19	-	-	7.1	6.5	6.28	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.281	-	-	3.5	4	3.372	3.5	4	3.3
Pot Cap-1 Maneuver	1467	-	-	1308	-	-	562	554	816	546	547	926
Stage 1	-	-	-	-	-	-	780	720	-	854	775	-
Stage 2	-	-	-	-	-	-	832	773	-	741	711	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1467	-	-	1308	-	-	523	545	816	477	538	926
Mov Cap-2 Maneuver	-	-	-	-	-	-	523	545	-	477	538	-
Stage 1	-	-	-	-	-	-	775	715	-	848	767	-
Stage 2	-	-	-	-	-	-	780	765	-	652	706	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.7	13.7	12.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	553	1467	-	-	1308	-	-	556
HCM Lane V/C Ratio	0.255	0.006	-	-	0.009	-	-	0.092
HCM Control Delay (s)	13.7	7.5	0	-	7.8	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	43	56	154	82	25	3	131	70	118	15	44	63
Future Vol, veh/h	43	56	154	82	25	3	131	70	118	15	44	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	48	62	171	91	28	3	146	78	131	17	49	70

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	463	619	60	526	589	105	119	0	0	209	0	0
Stage 1	118	118	-	436	436	-	-	-	-	-	-	-
Stage 2	345	501	-	90	153	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.92	7.5	6.5	6.9	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.31	3.5	4	3.3	2.21	-	-	2.2	-	-
Pot Cap-1 Maneuver	487	407	996	439	423	936	1474	-	-	1374	-	-
Stage 1	880	802	-	574	583	-	-	-	-	-	-	-
Stage 2	649	546	-	913	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	414	356	996	285	370	936	1474	-	-	1374	-	-
Mov Cap-2 Maneuver	414	356	-	285	370	-	-	-	-	-	-	-
Stage 1	780	792	-	509	517	-	-	-	-	-	-	-
Stage 2	542	484	-	688	765	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.9	24.3	3.2	0.9
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1474	-	-	608	307	1374	-	-
HCM Lane V/C Ratio	0.099	-	-	0.462	0.398	0.012	-	-
HCM Control Delay (s)	7.7	0.1	-	15.9	24.3	7.7	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	2.4	1.8	0	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	160	0	0	0	0	127
Future Vol, veh/h	160	0	0	0	0	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	178	0	0	0	0	141

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	71	71	141	0	-	0
Stage 1	71	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	938	997	1455	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	938	997	1455	-	-	-
Mov Cap-2 Maneuver	938	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

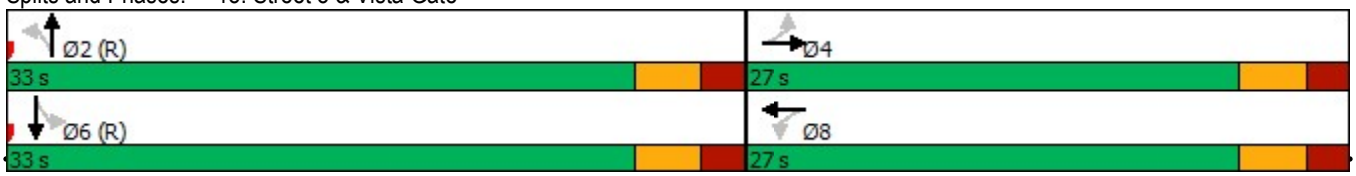
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1455	-	938	-	-
HCM Lane V/C Ratio	-	-	0.19	-	-
HCM Control Delay (s)	0	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

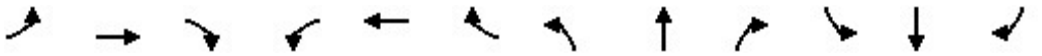
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	334	699	17	537	55	2	91	10
Future Volume (vph)	334	699	17	537	55	2	91	10
Lane Group Flow (vph)	371	905	19	598	61	5	86	158
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	26.0	26.0	26.0	26.0	23.0	23.0	23.0	23.0
Total Split (s)	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.77	0.41	0.06	0.26	0.27	0.01	0.36	0.24
Control Delay	24.6	6.3	5.0	5.6	22.4	13.5	20.5	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	6.3	5.0	5.6	22.4	13.5	20.5	4.5
Queue Length 50th (m)	22.7	19.0	0.6	13.8	6.3	0.2	9.5	2.3
Queue Length 95th (m)	#87.9	43.0	m4.1	53.2	13.3	2.2	13.9	4.7
Internal Link Dist (m)		46.0		156.2		607.0		152.9
Turn Bay Length (m)	25.0		35.0				35.0	
Base Capacity (vph)	479	2233	328	2268	536	799	567	1370
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.41	0.06	0.26	0.11	0.01	0.15	0.12

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 60
Offset: 25 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 18: Street 8 & Vista Gate





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	334	699	115	17	537	1	55	2	3	91	10	119
Future Volume (vph)	334	699	115	17	537	1	55	2	3	91	10	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.91	0.91	
Frt	1.00	0.98		1.00	1.00		1.00	0.91		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3494		1685	3569		1685	1710		1533	2977	
Flt Permitted	0.43	1.00		0.29	1.00		0.65	1.00		0.75	0.93	
Satd. Flow (perm)	755	3494		516	3569		1148	1710		1218	2790	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	371	777	128	19	597	1	61	2	3	101	11	132
RTOR Reduction (vph)	0	13	0	0	0	0	0	2	0	0	102	0
Lane Group Flow (vph)	371	892	0	19	598	0	61	3	0	86	56	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.1	38.1		38.1	38.1		11.9	11.9		11.9	11.9	
Effective Green, g (s)	38.1	38.1		38.1	38.1		11.9	11.9		11.9	11.9	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.20	0.20		0.20	0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	479	2218		327	2266		227	339		241	553	
v/s Ratio Prot		0.26			0.17			0.00				
v/s Ratio Perm	c0.49			0.04			0.05			c0.07	0.02	
v/c Ratio	0.77	0.40		0.06	0.26		0.27	0.01		0.36	0.10	
Uniform Delay, d1	7.9	5.4		4.1	4.8		20.4	19.3		20.7	19.7	
Progression Factor	1.00	1.00		0.86	1.02		1.00	1.00		0.82	0.75	
Incremental Delay, d2	7.7	0.1		0.1	0.1		2.9	0.0		4.1	0.4	
Delay (s)	15.5	5.5		3.7	5.0		23.3	19.4		21.0	15.2	
Level of Service	B	A		A	A		C	B		C	B	
Approach Delay (s)		8.4			4.9			23.0			17.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

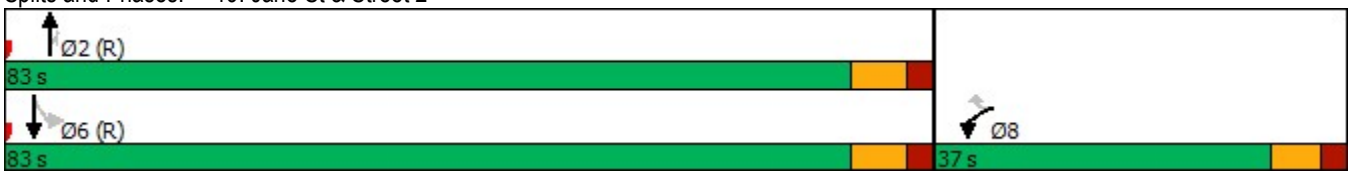
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	43	962	229	39	814
Future Volume (vph)	20	43	962	229	39	814
Lane Group Flow (vph)	20	43	962	229	39	814
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	37.5	37.5	37.5	37.5
Total Split (s)	37.0	37.0	83.0	83.0	83.0	83.0
Total Split (%)	30.8%	30.8%	69.2%	69.2%	69.2%	69.2%
Yellow Time (s)	4.5	4.5	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.5	7.5	7.5	7.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.11	0.21	0.32	0.17	0.09	0.27
Control Delay	45.6	14.3	0.8	0.3	2.8	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	14.3	0.8	0.3	2.8	2.1
Queue Length 50th (m)	4.7	0.0	4.1	0.2	0.8	9.3
Queue Length 95th (m)	10.7	9.7	7.3	0.0	4.3	28.5
Internal Link Dist (m)	71.6		362.7			445.9
Turn Bay Length (m)				35.0	50.0	
Base Capacity (vph)	401	409	2971	1318	434	2971
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.11	0.32	0.17	0.09	0.27

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 28 (23%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 19: Jane St & Street 2



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	43	962	229	39	814
Future Volume (vph)	20	43	962	229	39	814
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	7.0	7.0	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1604	1507	3684	1587	1773	3684
Flt Permitted	0.95	1.00	1.00	1.00	0.29	1.00
Satd. Flow (perm)	1604	1507	3684	1587	540	3684
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	43	962	229	39	814
RTOR Reduction (vph)	0	39	0	43	0	0
Lane Group Flow (vph)	20	4	962	186	39	814
Heavy Vehicles (%)	5%	0%	2%	0%	0%	2%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	11.6	11.6	93.9	93.9	93.9	93.9
Effective Green, g (s)	11.6	11.6	93.9	93.9	93.9	93.9
Actuated g/C Ratio	0.10	0.10	0.78	0.78	0.78	0.78
Clearance Time (s)	7.0	7.0	7.5	7.5	7.5	7.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	155	145	2882	1241	422	2882
v/s Ratio Prot	c0.01		c0.26			0.22
v/s Ratio Perm		0.00		0.12	0.07	
v/c Ratio	0.13	0.03	0.33	0.15	0.09	0.28
Uniform Delay, d1	49.6	49.1	3.8	3.2	3.1	3.6
Progression Factor	1.00	1.00	0.12	0.00	0.45	0.41
Incremental Delay, d2	0.4	0.1	0.3	0.2	0.4	0.2
Delay (s)	50.0	49.2	0.7	0.2	1.8	1.7
Level of Service	D	D	A	A	A	A
Approach Delay (s)	49.4		0.6			1.7
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	2.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	13.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	115	17	27	27	57	17	87	35	102	70	19
Future Vol, veh/h	136	115	17	27	27	57	17	87	35	102	70	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	4	0	0	1	0	0	1	0
Mvmt Flow	151	128	19	30	30	63	19	97	39	113	78	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	93	0	0	147	0	0	554	593	74	537	571	47
Stage 1	-	-	-	-	-	-	440	440	-	122	122	-
Stage 2	-	-	-	-	-	-	114	153	-	415	449	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.52	6.9	7.5	6.52	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.52	-	6.5	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.52	-	6.5	5.52	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.01	3.3	3.5	4.01	3.3
Pot Cap-1 Maneuver	1514	-	-	1447	-	-	419	419	979	431	431	1019
Stage 1	-	-	-	-	-	-	571	578	-	875	796	-
Stage 2	-	-	-	-	-	-	884	772	-	591	573	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1447	-	-	312	365	979	298	375	1019
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	365	-	298	375	-
Stage 1	-	-	-	-	-	-	509	515	-	780	778	-
Stage 2	-	-	-	-	-	-	762	755	-	411	511	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.9	1.8	18.3	30.1
HCM LOS			C	D

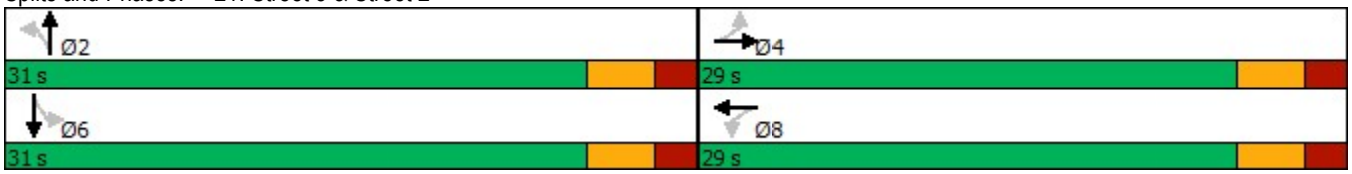
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	423	1514	-	-	1447	-	-	349
HCM Lane V/C Ratio	0.365	0.1	-	-	0.021	-	-	0.608
HCM Control Delay (s)	18.3	7.6	0.1	-	7.5	0	-	30.1
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.6	0.3	-	-	0.1	-	-	3.8

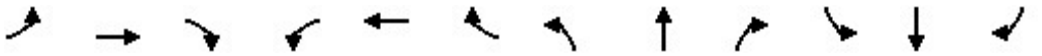
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	62	166	65	78	21	217	270	164
Future Volume (vph)	62	166	65	78	21	217	270	164
Lane Group Flow (vph)	69	210	72	374	23	362	300	195
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	29.0	29.0	29.0	29.0	31.0	31.0	31.0	31.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	51.7%	51.7%	51.7%	51.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min
v/c Ratio	0.24	0.19	0.21	0.32	0.05	0.24	0.73	0.13
Control Delay	14.2	10.4	13.5	4.3	8.0	5.4	23.6	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	10.4	13.5	4.3	8.0	5.4	23.6	7.1
Queue Length 50th (m)	3.5	4.8	3.7	2.2	0.8	4.2	13.7	3.1
Queue Length 95th (m)	12.7	12.8	12.7	10.4	5.1	15.8	#65.5	11.6
Internal Link Dist (m)		692.0		518.2		491.8		477.6
Turn Bay Length (m)	35.0		35.0		35.0		35.0	
Base Capacity (vph)	588	2182	687	2079	756	2337	644	2377
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.10	0.10	0.18	0.03	0.15	0.47	0.08

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 40.6
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Street 5 & Street 2





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	166	23	65	78	258	21	217	109	270	164	12
Future Volume (vph)	62	166	23	65	78	258	21	217	109	270	164	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.88		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3473		1685	3152		1685	3391		1685	3502	
Flt Permitted	0.53	1.00		0.62	1.00		0.63	1.00		0.54	1.00	
Satd. Flow (perm)	939	3473		1100	3152		1116	3391		950	3502	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	184	26	72	87	287	23	241	121	300	182	13
RTOR Reduction (vph)	0	18	0	0	197	0	0	68	0	0	7	0
Lane Group Flow (vph)	69	192	0	72	177	0	23	294	0	300	188	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.5	12.5		12.5	12.5		17.5	17.5		17.5	17.5	
Effective Green, g (s)	12.5	12.5		12.5	12.5		17.5	17.5		17.5	17.5	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.44	0.44		0.44	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	1085		343	985		488	1483		415	1532	
v/s Ratio Prot		0.06			0.06			0.09			0.05	
v/s Ratio Perm	c0.07			0.07			0.02			c0.32		
v/c Ratio	0.24	0.18		0.21	0.18		0.05	0.20		0.72	0.12	
Uniform Delay, d1	10.2	10.0		10.1	10.0		6.5	6.9		9.3	6.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.3	0.1		0.0	0.1		6.1	0.0	
Delay (s)	10.6	10.1		10.4	10.1		6.5	7.0		15.4	6.7	
Level of Service	B	B		B	B		A	A		B	A	
Approach Delay (s)		10.2			10.2			7.0			12.0	
Approach LOS		B			B			A			B	

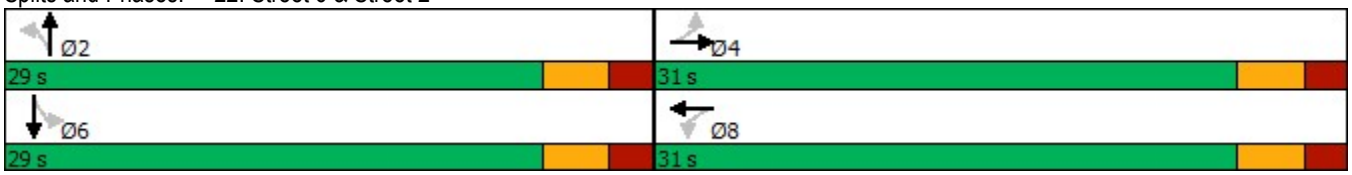
Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

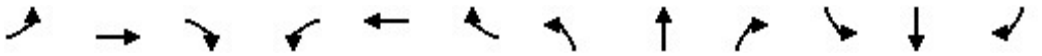
c Critical Lane Group

Lane Group	EBT	WBL	WBT	NBL	NBT	Ø6
Lane Configurations						
Traffic Volume (vph)	463	108	309	134	0	
Future Volume (vph)	463	108	309	134	0	
Lane Group Flow (vph)	628	120	343	0	263	
Turn Type	NA	Perm	NA	Perm	NA	
Protected Phases	4		8		2	6
Permitted Phases		8		2		
Detector Phase	4	8	8	2	2	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.0	23.0	23.0	29.0	29.0	29.0
Total Split (s)	31.0	31.0	31.0	29.0	29.0	29.0
Total Split (%)	51.7%	51.7%	51.7%	48.3%	48.3%	48%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.35	0.33	0.19		0.36	
Control Delay	8.4	12.8	8.3		9.1	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	8.4	12.8	8.3		9.1	
Queue Length 50th (m)	11.2	4.5	6.2		7.0	
Queue Length 95th (m)	34.1	21.4	20.0		30.9	
Internal Link Dist (m)	518.2		413.8		438.5	
Turn Bay Length (m)		25.0				
Base Capacity (vph)	2693	566	2754		1081	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.23	0.21	0.12		0.24	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 34.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 22: Street 6 & Street 2





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	463	103	108	309	0	134	0	103	0	0	0
Future Volume (vph)	0	463	103	108	309	0	134	0	103	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		5.0		5.0	5.0			5.0				
Lane Util. Factor		0.95		1.00	0.95			1.00				
Frt		0.97		1.00	1.00			0.94				
Flt Protected		1.00		0.95	1.00			0.97				
Satd. Flow (prot)		3473		1685	3570			1720				
Flt Permitted		1.00		0.41	1.00			0.82				
Satd. Flow (perm)		3473		734	3570			1458				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	514	114	120	343	0	149	0	114	0	0	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	596	0	120	343	0	0	207	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.0		15.0	15.0			9.6				
Effective Green, g (s)		15.0		15.0	15.0			9.6				
Actuated g/C Ratio		0.43		0.43	0.43			0.28				
Clearance Time (s)		5.0		5.0	5.0			5.0				
Vehicle Extension (s)		3.0		3.0	3.0			3.0				
Lane Grp Cap (vph)		1505		318	1547			404				
v/s Ratio Prot		c0.17			0.10							
v/s Ratio Perm				0.16				c0.14				
v/c Ratio		0.40		0.38	0.22			0.51				
Uniform Delay, d1		6.7		6.6	6.1			10.5				
Progression Factor		1.00		1.00	1.00			1.00				
Incremental Delay, d2		0.2		0.8	0.1			1.1				
Delay (s)		6.9		7.4	6.2			11.6				
Level of Service		A		A	A			B				
Approach Delay (s)		6.9			6.5			11.6			0.0	
Approach LOS		A			A			B			A	

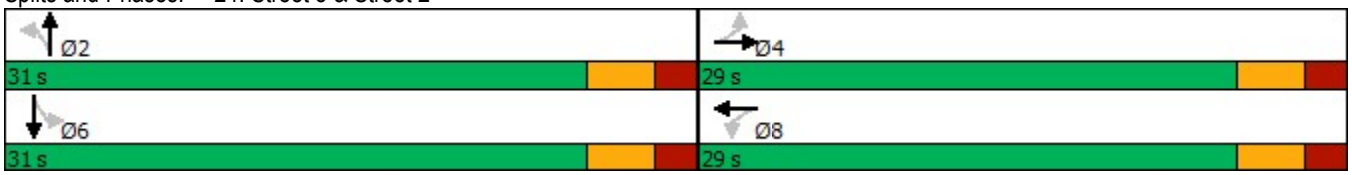
Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	34.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

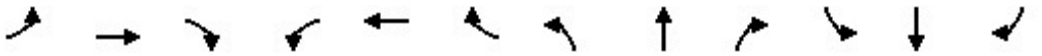
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	78	222	21	203	67	18	28	30
Future Volume (vph)	78	222	21	203	67	18	28	30
Lane Group Flow (vph)	87	541	23	286	74	27	31	197
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	29.0	29.0	29.0	29.0	31.0	31.0	31.0	31.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	51.7%	51.7%	51.7%	51.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min
v/c Ratio	0.24	0.40	0.08	0.23	0.19	0.02	0.07	0.16
Control Delay	10.9	5.1	9.6	7.2	10.2	7.4	9.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	5.1	9.6	7.2	10.2	7.4	9.0	3.2
Queue Length 50th (m)	3.0	4.3	0.8	4.0	2.5	0.3	1.0	0.5
Queue Length 95th (m)	14.3	17.7	5.3	14.6	12.2	2.6	6.2	6.1
Internal Link Dist (m)		413.8		213.8		322.8		607.0
Turn Bay Length (m)	35.0		35.0		35.0		35.0	
Base Capacity (vph)	737	2450	576	2516	872	2687	1025	2481
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.22	0.04	0.11	0.08	0.01	0.03	0.08

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 35.6
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 24: Street 8 & Street 2





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	222	265	21	203	54	67	18	6	28	30	148
Future Volume (vph)	78	222	265	21	203	54	67	18	6	28	30	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.92		1.00	0.97		1.00	0.96		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	3279		1685	3458		1685	3431		1685	3124	
Flt Permitted	0.58	1.00		0.45	1.00		0.63	1.00		0.74	1.00	
Satd. Flow (perm)	1022	3279		799	3458		1114	3431		1310	3124	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	87	247	294	23	226	60	74	20	7	31	33	164
RTOR Reduction (vph)	0	189	0	0	39	0	0	5	0	0	106	0
Lane Group Flow (vph)	87	352	0	23	247	0	74	22	0	31	91	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		12.4	12.4		12.4	12.4		12.4	12.4	
Effective Green, g (s)	12.4	12.4		12.4	12.4		12.4	12.4		12.4	12.4	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.36	0.36		0.36	0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	364	1168		284	1232		396	1222		466	1113	
v/s Ratio Prot		c0.11			0.07			0.01			0.03	
v/s Ratio Perm	0.09			0.03			c0.07			0.02		
v/c Ratio	0.24	0.30		0.08	0.20		0.19	0.02		0.07	0.08	
Uniform Delay, d1	7.9	8.1		7.4	7.8		7.7	7.3		7.4	7.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		0.1	0.1		0.2	0.0		0.1	0.0	
Delay (s)	8.2	8.2		7.5	7.8		8.0	7.3		7.4	7.5	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		8.2			7.8			7.8			7.5	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	34.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

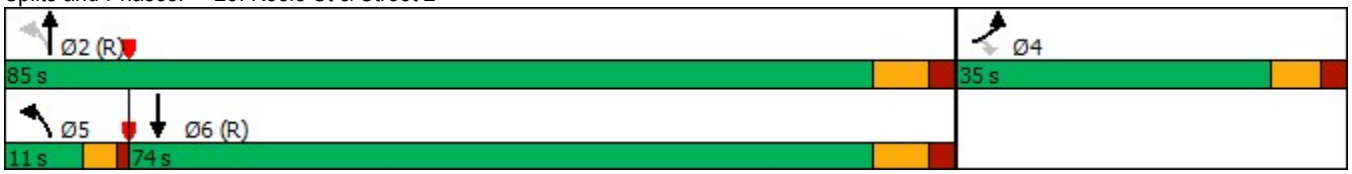
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	10	247	253	1690	976
Future Volume (vph)	10	247	253	1690	976
Lane Group Flow (vph)	10	247	253	1690	1001
Turn Type	Prot	Perm	pm+pt	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4	2		
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	30.0	30.0
Minimum Split (s)	35.0	35.0	11.0	37.5	37.5
Total Split (s)	35.0	35.0	11.0	85.0	74.0
Total Split (%)	29.2%	29.2%	9.2%	70.8%	61.7%
Yellow Time (s)	4.5	4.5	3.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.5	7.5
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	C-Max	C-Max
v/c Ratio	0.05	0.69	0.57	0.60	0.42
Control Delay	42.5	21.6	10.4	1.8	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	21.6	10.4	1.8	3.1
Queue Length 50th (m)	2.3	11.2	2.6	9.4	18.2
Queue Length 95th (m)	6.6	33.9	m19.4	10.7	21.1
Internal Link Dist (m)	213.8			338.6	204.2
Turn Bay Length (m)			35.0		
Base Capacity (vph)	393	504	447	2826	2401
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.49	0.57	0.60	0.42

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 10 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 25: Keele St & Street 2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	247	253	1690	976	25
Future Volume (vph)	10	247	253	1690	976	25
Ideal Flow (vphpl)	1900	1900	2000	2000	2000	2000
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0
Total Lost time (s)	7.0	7.0	4.0	7.5	7.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1685	1507	1773	3721	3672	
Flt Permitted	0.95	1.00	0.24	1.00	1.00	
Satd. Flow (perm)	1685	1507	446	3721	3672	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	247	253	1690	976	25
RTOR Reduction (vph)	0	176	0	0	1	0
Lane Group Flow (vph)	10	71	253	1690	1000	0
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	14.4	14.4	91.1	91.1	78.4	
Effective Green, g (s)	14.4	14.4	91.1	91.1	78.4	
Actuated g/C Ratio	0.12	0.12	0.76	0.76	0.65	
Clearance Time (s)	7.0	7.0	4.0	7.5	7.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	202	180	434	2824	2399	
v/s Ratio Prot	0.01		0.04	c0.45	0.27	
v/s Ratio Perm		c0.05	0.40			
v/c Ratio	0.05	0.39	0.58	0.60	0.42	
Uniform Delay, d1	46.7	48.8	5.5	6.4	9.9	
Progression Factor	1.00	1.00	1.45	0.15	0.24	
Incremental Delay, d2	0.1	1.4	1.4	0.7	0.5	
Delay (s)	46.8	50.2	9.4	1.6	2.9	
Level of Service	D	D	A	A	A	
Approach Delay (s)	50.1			2.6	2.9	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

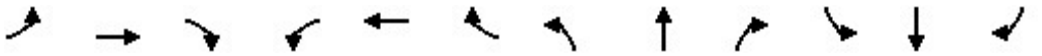
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	22	68	115	20	260	1121	290	87	670
Future Volume (vph)	22	68	115	20	260	1121	290	87	670
Lane Group Flow (vph)	22	344	115	68	260	1121	290	87	746
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA
Protected Phases		4	3	8	5	2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	3	8	5	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	7.0	10.0	7.0	30.0	30.0	30.0	30.0
Minimum Split (s)	35.0	35.0	11.0	35.0	11.0	37.5	37.5	37.5	37.5
Total Split (s)	35.0	35.0	14.0	49.0	17.0	71.0	71.0	54.0	54.0
Total Split (%)	29.2%	29.2%	11.7%	40.8%	14.2%	59.2%	59.2%	45.0%	45.0%
Yellow Time (s)	4.5	4.5	3.0	4.5	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.5	2.5	1.0	2.5	1.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	4.0	7.5	7.5	7.5	7.5
Lead/Lag	Lag	Lag	Lead		Lead			Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.11	0.87	0.58	0.13	0.57	0.50	0.29	0.40	0.44
Control Delay	40.0	46.6	41.1	12.1	16.3	15.9	6.4	26.6	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	46.6	41.1	12.1	16.3	15.9	6.4	26.6	19.6
Queue Length 50th (m)	4.7	46.3	20.9	3.6	26.9	81.1	12.7	9.7	33.5
Queue Length 95th (m)	11.7	78.0	33.1	13.4	48.1	115.4	31.8	25.8	47.6
Internal Link Dist (m)		201.9		71.1		187.8			362.7
Turn Bay Length (m)	35.0				50.0		35.0	50.0	
Base Capacity (vph)	278	492	204	619	469	2230	1008	219	1690
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.70	0.56	0.11	0.55	0.50	0.29	0.40	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 34 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 26: Jane St & Street 3 (34E)/Street 3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	68	276	115	20	48	260	1121	290	87	670	76
Future Volume (vph)	22	68	276	115	20	48	260	1121	290	87	670	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	2000	2000	2000	2000	2000	2000
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0		4.0	7.0		4.0	7.5	7.5	7.5	7.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.88		1.00	0.89		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1589	1589		1668	1680		1773	3721	1571	1773	3635	
Flt Permitted	0.71	1.00		0.17	1.00		0.28	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	1192	1589		293	1680		521	3721	1571	474	3635	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	22	68	276	115	20	48	260	1121	290	87	670	76
RTOR Reduction (vph)	0	133	0	0	35	0	0	0	67	0	6	0
Lane Group Flow (vph)	22	212	0	115	33	0	260	1121	223	87	740	0
Heavy Vehicles (%)	6%	4%	4%	1%	0%	0%	0%	1%	1%	0%	2%	0%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	20.0	20.0		33.6	33.6		71.9	71.9	71.9	55.6	55.6	
Effective Green, g (s)	20.0	20.0		33.6	33.6		71.9	71.9	71.9	55.6	55.6	
Actuated g/C Ratio	0.17	0.17		0.28	0.28		0.60	0.60	0.60	0.46	0.46	
Clearance Time (s)	7.0	7.0		4.0	7.0		4.0	7.5	7.5	7.5	7.5	
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)	198	264		192	470		440	2229	941	219	1684	
v/s Ratio Prot		c0.13		c0.05	0.02		c0.06	0.30			0.20	
v/s Ratio Perm	0.02			0.12			c0.29		0.14	0.18		
v/c Ratio	0.11	0.80		0.60	0.07		0.59	0.50	0.24	0.40	0.44	
Uniform Delay, d1	42.5	48.1		35.2	31.7		12.7	13.8	11.2	21.2	21.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.80	0.81	
Incremental Delay, d2	0.2	15.9		5.0	0.1		2.1	0.8	0.6	5.2	0.8	
Delay (s)	42.7	64.0		40.2	31.8		14.8	14.6	11.8	22.1	18.3	
Level of Service	D	E		D	C		B	B	B	C	B	
Approach Delay (s)		62.7			37.0			14.2			18.7	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	84	361	110	101	77	74
Future Vol, veh/h	84	361	110	101	77	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	93	401	122	112	86	82

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	234	0	-	0	765	178
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	587	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1345	-	-	-	374	870
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	560	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1345	-	-	-	348	870
Mov Cap-2 Maneuver	-	-	-	-	348	-
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	560	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	16
HCM LOS			C

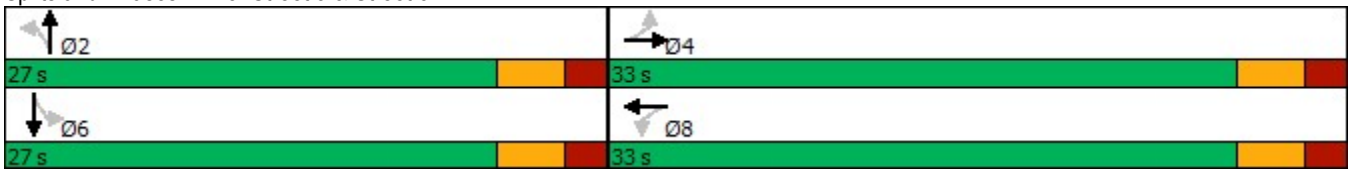
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1345	-	-	-	493
HCM Lane V/C Ratio	0.069	-	-	-	0.34
HCM Control Delay (s)	7.9	-	-	-	16
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.5

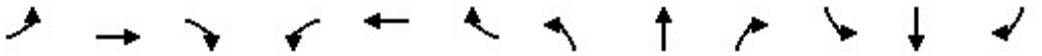
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	78	211	23	87	145	247	47	158
Future Volume (vph)	78	211	23	87	145	247	47	158
Lane Group Flow (vph)	87	435	26	128	161	323	52	216
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	29.0	23.0	23.0	23.0	23.0
Total Split (s)	33.0	33.0	33.0	33.0	27.0	27.0	27.0	27.0
Total Split (%)	55.0%	55.0%	55.0%	55.0%	45.0%	45.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min
v/c Ratio	0.19	0.61	0.09	0.18	0.44	0.27	0.16	0.18
Control Delay	9.1	11.4	8.7	7.0	15.1	9.1	11.3	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	11.4	8.7	7.0	15.1	9.1	11.3	8.2
Queue Length 50th (m)	3.0	13.2	0.9	3.2	6.7	5.8	2.0	3.4
Queue Length 95th (m)	11.9	43.6	5.0	13.2	25.6	17.8	9.7	12.1
Internal Link Dist (m)		543.6		710.7		849.4		491.8
Turn Bay Length (m)	35.0		35.0		35.0		35.0	
Base Capacity (vph)	958	1398	614	1445	688	2207	620	2179
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.31	0.04	0.09	0.23	0.15	0.08	0.10

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 36.7
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 28: Street 5 & Street 3





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	211	181	23	87	28	145	247	44	47	158	36
Future Volume (vph)	78	211	181	23	87	28	145	247	44	47	158	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	1722		1685	1797		1685	3489		1685	3443	
Flt Permitted	0.67	1.00		0.43	1.00		0.62	1.00		0.56	1.00	
Satd. Flow (perm)	1197	1722		767	1797		1093	3489		986	3443	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	87	234	201	26	97	31	161	274	49	52	176	40
RTOR Reduction (vph)	0	60	0	0	19	0	0	25	0	0	26	0
Lane Group Flow (vph)	87	375	0	26	109	0	161	298	0	52	190	0
Heavy Vehicles (%)	0%	2%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.9	13.9		13.9	13.9		12.3	12.3		12.3	12.3	
Effective Green, g (s)	13.9	13.9		13.9	13.9		12.3	12.3		12.3	12.3	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.34	0.34		0.34	0.34	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	459	661		294	690		371	1185		335	1169	
v/s Ratio Prot		c0.22			0.06			0.09			0.06	
v/s Ratio Perm	0.07			0.03			c0.15			0.05		
v/c Ratio	0.19	0.57		0.09	0.16		0.43	0.25		0.16	0.16	
Uniform Delay, d1	7.4	8.8		7.1	7.3		9.3	8.6		8.3	8.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.1		0.1	0.1		0.8	0.1		0.2	0.1	
Delay (s)	7.6	9.9		7.2	7.4		10.1	8.7		8.5	8.4	
Level of Service	A	A		A	A		B	A		A	A	
Approach Delay (s)		9.5			7.4			9.2			8.4	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	36.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	198	65	8	96	108	50	106	52	105	95	11
Future Vol, veh/h	23	198	65	8	96	108	50	106	52	105	95	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	26	220	72	9	107	120	56	118	58	117	106	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14	11.8	12.3	12.8
HCM LOS	B	B	B	B

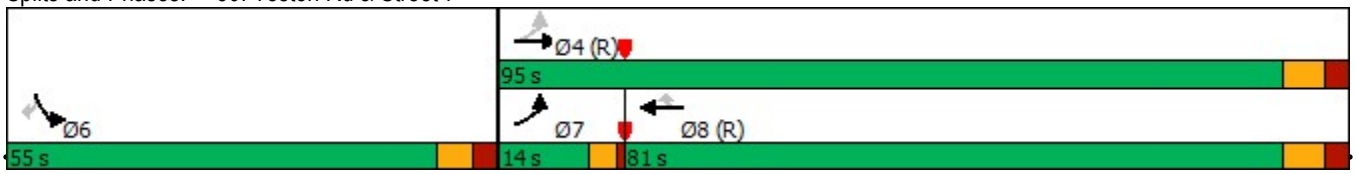
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	8%	4%	50%
Vol Thru, %	51%	69%	45%	45%
Vol Right, %	25%	23%	51%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	208	286	212	211
LT Vol	50	23	8	105
Through Vol	106	198	96	95
RT Vol	52	65	108	11
Lane Flow Rate	231	318	236	234
Geometry Grp	1	1	1	1
Degree of Util (X)	0.372	0.491	0.362	0.387
Departure Headway (Hd)	5.793	5.56	5.538	5.947
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	617	642	643	600
Service Time	3.878	3.637	3.624	4.03
HCM Lane V/C Ratio	0.374	0.495	0.367	0.39
HCM Control Delay	12.3	14	11.8	12.8
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.7	2.7	1.6	1.8

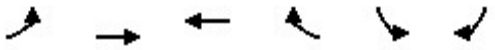
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	118	1856	1757	196	426	45
Future Volume (vph)	118	1856	1757	196	426	45
Lane Group Flow (vph)	118	1856	1757	196	426	45
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	7.0	30.0	30.0	30.0	10.0	10.0
Minimum Split (s)	11.0	37.5	37.5	37.5	34.0	34.0
Total Split (s)	14.0	95.0	81.0	81.0	55.0	55.0
Total Split (%)	9.3%	63.3%	54.0%	54.0%	36.7%	36.7%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.5	7.5	7.5	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.73	0.81	0.89	0.23	0.90	0.10
Control Delay	61.4	15.7	32.3	16.0	74.5	11.7
Queue Delay	0.0	0.2	0.2	0.0	0.0	0.0
Total Delay	61.4	15.9	32.5	16.0	74.5	11.7
Queue Length 50th (m)	23.4	112.3	165.0	21.4	127.2	0.9
Queue Length 95th (m)	m#41.8	127.8	m120.4	m17.0	167.1	10.6
Internal Link Dist (m)		309.1	274.8		778.4	
Turn Bay Length (m)	85.0			35.0	100.0	
Base Capacity (vph)	170	2284	1976	859	533	500
Starvation Cap Reductn	0	56	19	0	0	0
Spillback Cap Reductn	0	60	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.83	0.90	0.23	0.80	0.09

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 16 (11%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: Teston Rd & Street 7





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	118	1856	1757	196	426	45
Future Volume (vph)	118	1856	1757	196	426	45
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	4.0	7.5	7.5	7.5	7.0	7.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1756	3684	3721	1571	1668	1478
Flt Permitted	0.05	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	88	3684	3721	1571	1668	1478
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	118	1856	1757	196	426	45
RTOR Reduction (vph)	0	0	0	25	0	29
Lane Group Flow (vph)	118	1856	1757	171	426	16
Heavy Vehicles (%)	1%	2%	1%	1%	1%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	93.0	93.0	79.7	79.7	42.5	42.5
Effective Green, g (s)	93.0	93.0	79.7	79.7	42.5	42.5
Actuated g/C Ratio	0.62	0.62	0.53	0.53	0.28	0.28
Clearance Time (s)	4.0	7.5	7.5	7.5	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	157	2284	1977	834	472	418
v/s Ratio Prot	0.05	c0.50	c0.47		c0.26	
v/s Ratio Perm	0.42			0.11		0.01
v/c Ratio	0.75	0.81	0.89	0.20	0.90	0.04
Uniform Delay, d1	40.9	21.8	31.2	18.5	51.8	38.9
Progression Factor	1.51	0.57	0.97	1.09	1.00	1.00
Incremental Delay, d2	13.4	2.4	0.6	0.0	20.3	0.0
Delay (s)	75.1	14.9	30.9	20.1	72.0	39.0
Level of Service	E	B	C	C	E	D
Approach Delay (s)		18.5	29.8		68.9	
Approach LOS		B	C		E	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

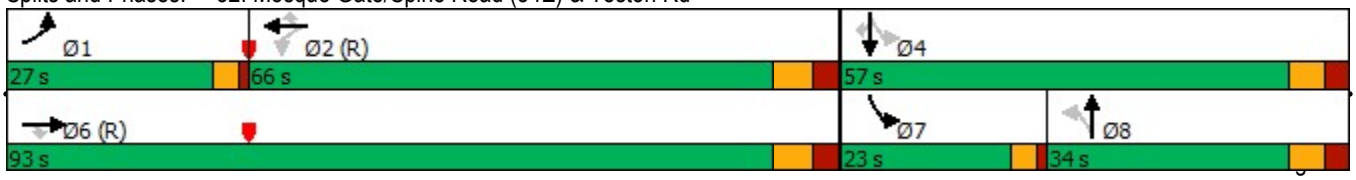
c Critical Lane Group

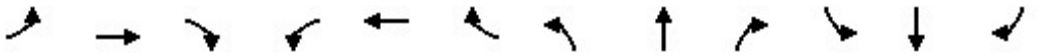
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBR
Lane Configurations										
Traffic Volume (vph)	755	2524	101	33	1853	148	56	0	603	745
Future Volume (vph)	755	2524	101	33	1853	148	56	0	603	745
Lane Group Flow (vph)	755	2524	101	33	1853	148	56	31	603	745
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	pm+pt	Perm
Protected Phases	1	6			2			8	7	
Permitted Phases			6	2		2	8		4	4
Detector Phase	1	6	6	2	2	2	8	8	7	4
Switch Phase										
Minimum Initial (s)	7.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0	7.0	10.0
Minimum Split (s)	11.0	37.5	37.5	37.5	37.5	37.5	34.0	34.0	11.0	34.0
Total Split (s)	27.0	93.0	93.0	66.0	66.0	66.0	34.0	34.0	23.0	57.0
Total Split (%)	18.0%	62.0%	62.0%	44.0%	44.0%	44.0%	22.7%	22.7%	15.3%	38.0%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0
Total Lost Time (s)	3.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0	3.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	1.37	1.13	0.11	0.66	1.21	0.22	0.27	0.11	1.24	1.09
Control Delay	215.0	92.1	7.9	29.2	118.5	4.5	57.2	0.7	165.0	88.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	215.0	92.1	7.9	29.2	118.5	4.5	57.2	0.7	165.0	88.6
Queue Length 50th (m)	~161.0	~457.1	5.9	2.7	~344.3	3.8	15.2	0.0	~241.2	~193.2
Queue Length 95th (m)	m#142.2	m#395.1	m4.8	m2.5	m64.0	m2.5	29.4	0.0	#317.8	#274.8
Internal Link Dist (m)		423.7			408.5			172.5		
Turn Bay Length (m)	125.0		75.0	60.0		60.0	35.0		35.0	
Base Capacity (vph)	550	2232	894	50	1527	672	236	322	485	684
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	1.13	0.11	0.66	1.21	0.22	0.24	0.10	1.24	1.09

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 38 (25%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 32: Mosque Gate/Spine Road (34E) & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	755	2524	101	33	1853	148	56	0	31	603	0	745
Future Volume (vph)	755	2524	101	33	1853	148	56	0	31	603	0	745
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		3.0		7.0
Lane Util. Factor	0.97	*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	0.96	1.00	1.00	1.00	1.00	1.00		1.00		1.00
Flpb, ped/bikes	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	0.85		1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95		1.00
Satd. Flow (prot)	3440	3916	1526	1756	3916	1587	1652	1377		1604		1436
Flt Permitted	0.95	1.00	1.00	0.07	1.00	1.00	0.76	1.00		0.65		1.00
Satd. Flow (perm)	3440	3916	1526	129	3916	1587	1316	1377		1099		1436
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	755	2524	101	33	1853	148	56	0	31	603	0	745
RTOR Reduction (vph)	0	0	25	0	0	54	0	27	0	0	0	203
Lane Group Flow (vph)	755	2524	76	33	1853	94	56	4	0	603	0	542
Confl. Peds. (#/hr)			6	6								
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	2%	0%	16%	5%	0%	5%
Turn Type	Prot	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt		Perm
Protected Phases	1	6			2			8		7	4	
Permitted Phases			6	2		2	8			4		4
Actuated Green, G (s)	23.0	84.1	84.1	57.1	57.1	57.1	21.6	21.6		51.4		51.4
Effective Green, g (s)	24.0	84.1	84.1	57.1	57.1	57.1	21.6	21.6		52.4		51.4
Actuated g/C Ratio	0.16	0.56	0.56	0.38	0.38	0.38	0.14	0.14		0.35		0.34
Clearance Time (s)	4.0	7.5	7.5	7.5	7.5	7.5	7.0	7.0		4.0		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
Lane Grp Cap (vph)	550	2195	855	49	1490	604	189	198		474		492
v/s Ratio Prot	c0.22	0.64			c0.47			0.00		c0.23		
v/s Ratio Perm			0.05	0.25		0.06	0.04			c0.22		0.38
v/c Ratio	1.37	1.15	0.09	0.67	1.24	0.16	0.30	0.02		1.27		1.10
Uniform Delay, d1	63.0	33.0	15.2	38.7	46.4	30.6	57.4	55.1		46.9		49.3
Progression Factor	1.03	1.05	1.16	0.45	0.42	0.34	1.00	1.00		1.00		1.00
Incremental Delay, d2	168.8	68.0	0.0	6.5	110.2	0.0	0.9	0.0		138.2		71.1
Delay (s)	233.5	102.7	17.6	23.8	129.8	10.4	58.3	55.2		185.1		120.4
Level of Service	F	F	B	C	F	B	E	E		F		F
Approach Delay (s)		129.3			119.4			57.2			149.4	
Approach LOS		F			F			E			F	

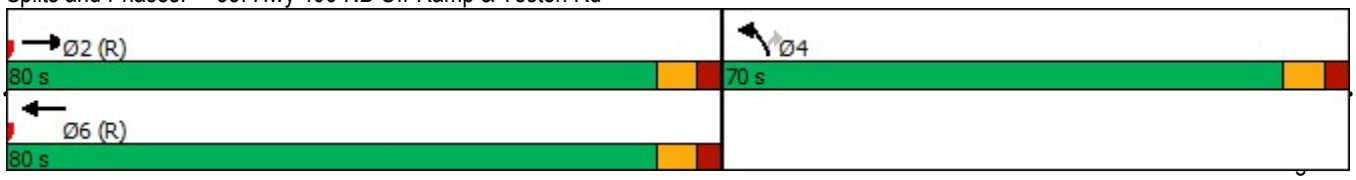
Intersection Summary			
HCM 2000 Control Delay	129.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	149.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1757	2253	369	1587
Future Volume (vph)	1757	2253	369	1587
Lane Group Flow (vph)	1757	2253	369	1587
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	20.0	20.0	15.0	15.0
Minimum Split (s)	27.5	27.5	36.5	36.5
Total Split (s)	80.0	80.0	70.0	70.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.5	4.5	4.5	4.5
All-Red Time (s)	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0
Total Lost Time (s)	7.5	7.5	7.5	6.5
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
v/c Ratio	0.97	1.20	0.53	1.25
Control Delay	12.5	109.8	36.2	155.6
Queue Delay	1.9	0.0	0.0	0.0
Total Delay	14.4	109.8	36.2	155.6
Queue Length 50th (m)	41.4	~420.9	85.8	~308.7
Queue Length 95th (m)	m35.3	m#315.0	119.3	#351.5
Internal Link Dist (m)	297.1	423.7	207.9	
Turn Bay Length (m)				90.0
Base Capacity (vph)	1816	1874	695	1271
Starvation Cap Reductn	26	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.98	1.20	0.53	1.25

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 51 (34%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: Hwy 400 NB Off-Ramp & Teston Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1757	0	0	2253	369	1587
Future Volume (vph)	1757	0	0	2253	369	1587
Ideal Flow (vphpl)	2000	2000	2000	2000	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	7.5			7.5	7.5	6.5
Lane Util. Factor	0.95			*1.00	1.00	*1.00
Frpb, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3758			3878	1668	2985
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3758			3878	1668	2985
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1757	0	0	2253	369	1587
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	1757	0	0	2253	369	1579
Confl. Peds. (#/hr)		5	5			
Heavy Vehicles (%)	0%	0%	0%	2%	1%	1%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	72.5			72.5	62.5	62.5
Effective Green, g (s)	72.5			72.5	62.5	63.5
Actuated g/C Ratio	0.48			0.48	0.42	0.42
Clearance Time (s)	7.5			7.5	7.5	7.5
Vehicle Extension (s)	4.0			4.0	3.0	3.0
Lane Grp Cap (vph)	1816			1874	695	1263
v/s Ratio Prot	0.47			c0.58	0.22	
v/s Ratio Perm						c0.53
v/c Ratio	0.97			1.20	0.53	1.25
Uniform Delay, d1	37.6			38.8	32.8	43.2
Progression Factor	0.23			0.37	1.00	1.00
Incremental Delay, d2	2.3			91.5	0.8	119.3
Delay (s)	11.1			105.8	33.6	162.5
Level of Service	B			F	C	F
Approach Delay (s)	11.1			105.8	138.2	
Approach LOS	B			F	F	

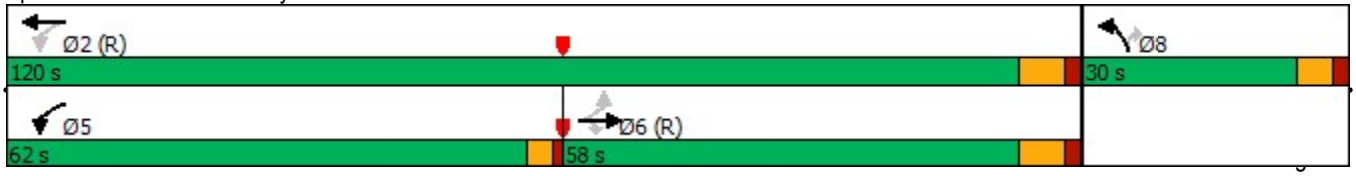
Intersection Summary			
HCM 2000 Control Delay	88.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	113.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

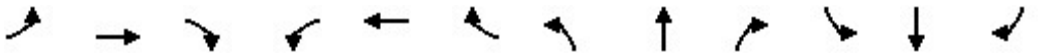
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1553	341	928	1725	353	436
Future Volume (vph)	1553	341	928	1725	353	436
Lane Group Flow (vph)	1553	341	928	1725	353	436
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	5	2	8	8
Switch Phase						
Minimum Initial (s)	30.0	30.0	7.0	30.0	7.0	7.0
Minimum Split (s)	37.0	37.0	11.0	37.0	38.0	38.0
Total Split (s)	58.0	58.0	62.0	120.0	30.0	30.0
Total Split (%)	38.7%	38.7%	41.3%	80.0%	20.0%	20.0%
Yellow Time (s)	5.0	5.0	3.0	5.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	-1.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	3.0	7.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	None	C-Max	None	None
v/c Ratio	1.15	0.52	1.22	0.60	0.78	0.75
Control Delay	122.5	21.6	135.1	19.1	74.5	13.5
Queue Delay	0.1	0.0	0.0	0.5	0.0	0.5
Total Delay	122.6	21.6	135.1	19.5	74.5	14.0
Queue Length 50th (m)	~285.7	40.6	~348.4	203.4	55.6	0.0
Queue Length 95th (m)	#328.3	73.0	m#280.5	m167.2	72.5	36.2
Internal Link Dist (m)	224.3			297.1		
Turn Bay Length (m)		80.0	230.0			
Base Capacity (vph)	1345	650	762	2877	517	604
Starvation Cap Reductn	0	0	0	599	0	0
Spillback Cap Reductn	50	0	0	0	0	24
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.52	1.22	0.76	0.68	0.75

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 41 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 34: Cityview Blvd & Teston Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1553	341	928	1725	0	353	0	436	0	0	0
Future Volume (vph)	0	1553	341	928	1725	0	353	0	436	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		7.0	7.0	3.0	7.0		6.0		6.0			
Lane Util. Factor		*1.00	1.00	1.00	0.95		0.97		1.00			
Frt		1.00	0.85	1.00	1.00		1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3956	1571	1722	3721		3236		1492			
Flt Permitted		1.00	1.00	0.07	1.00		0.95		1.00			
Satd. Flow (perm)		3956	1571	132	3721		3236		1492			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1553	341	928	1725	0	353	0	436	0	0	0
RTOR Reduction (vph)	0	0	116	0	0	0	0	0	375	0	0	0
Lane Group Flow (vph)	0	1553	225	928	1725	0	353	0	61	0	0	0
Heavy Vehicles (%)	0%	0%	1%	3%	1%	0%	1%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Prot		Perm			
Protected Phases		6		5	2		8					
Permitted Phases	6		6	2					8			
Actuated Green, G (s)		51.0	51.0	116.0	116.0		21.0		21.0			
Effective Green, g (s)		51.0	51.0	117.0	116.0		21.0		21.0			
Actuated g/C Ratio		0.34	0.34	0.78	0.77		0.14		0.14			
Clearance Time (s)		7.0	7.0	4.0	7.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		1345	534	760	2877		453		208			
v/s Ratio Prot		0.39		c0.50	0.46		c0.11					
v/s Ratio Perm			0.14	c0.45					0.04			
v/c Ratio		1.15	0.42	1.22	0.60		0.78		0.29			
Uniform Delay, d1		49.5	38.1	39.8	7.2		62.3		57.8			
Progression Factor		1.00	1.00	1.07	2.50		1.00		1.00			
Incremental Delay, d2		78.5	2.4	100.6	0.1		8.3		0.8			
Delay (s)		128.0	40.6	143.4	18.0		70.5		58.6			
Level of Service		F	D	F	B		E		E			
Approach Delay (s)		112.2			61.9			64.0			0.0	
Approach LOS		F			E			E			A	

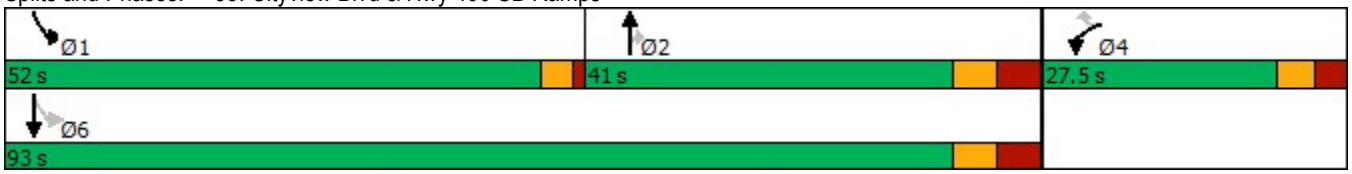
Intersection Summary			
HCM 2000 Control Delay	80.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	453	365	172	890	356
Future Volume (vph)	64	453	365	172	890	356
Lane Group Flow (vph)	64	453	365	172	890	356
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Detector Phase	4	4	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	33.0	33.0	7.0	33.0
Minimum Split (s)	27.5	27.5	41.0	41.0	11.0	41.0
Total Split (s)	27.5	27.5	41.0	41.0	52.0	93.0
Total Split (%)	22.8%	22.8%	34.0%	34.0%	43.2%	77.2%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	4.0	4.0	1.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
v/c Ratio	0.17	0.80	0.34	0.31	0.92	0.13
Control Delay	45.5	15.5	32.3	6.4	25.8	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.5	15.5	32.3	6.4	25.8	4.1
Queue Length 50th (m)	7.0	0.0	33.5	0.0	86.7	8.5
Queue Length 95th (m)	13.5	33.4	53.2	17.2	#234.5	18.8
Internal Link Dist (m)	165.8		211.9			105.1
Turn Bay Length (m)	100.0			55.0		
Base Capacity (vph)	612	647	1083	558	978	2707
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.70	0.34	0.31	0.91	0.13

Intersection Summary
Cycle Length: 120.5
Actuated Cycle Length: 112.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 35: Cityview Blvd & Hwy 400 SB Ramps



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	453	365	172	890	356
Future Volume (vph)	64	453	365	172	890	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3268	1492	3570	1445	1615	3570
Flt Permitted	0.95	1.00	1.00	1.00	0.46	1.00
Satd. Flow (perm)	3268	1492	3570	1445	781	3570
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	64	453	365	172	890	356
RTOR Reduction (vph)	0	402	0	120	0	0
Lane Group Flow (vph)	64	51	365	52	890	356
Confl. Peds. (#/hr)				7	7	
Heavy Vehicles (%)	0%	1%	0%	1%	4%	0%
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2	6	
Actuated Green, G (s)	12.6	12.6	34.1	34.1	85.1	85.1
Effective Green, g (s)	12.6	12.6	34.1	34.1	85.1	85.1
Actuated g/C Ratio	0.11	0.11	0.30	0.30	0.76	0.76
Clearance Time (s)	6.5	6.5	8.0	8.0	4.0	8.0
Vehicle Extension (s)	4.0	4.0	3.6	3.6	3.5	3.6
Lane Grp Cap (vph)	366	167	1085	439	941	2707
v/s Ratio Prot	0.02		0.10		c0.40	0.10
v/s Ratio Perm		c0.03		0.04	c0.32	
v/c Ratio	0.17	0.30	0.34	0.12	0.95	0.13
Uniform Delay, d1	45.1	45.8	30.3	28.2	11.5	3.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.4	0.8	0.6	17.7	0.1
Delay (s)	45.4	47.2	31.1	28.8	29.2	3.7
Level of Service	D	D	C	C	C	A
Approach Delay (s)	47.0		30.4			21.9
Approach LOS	D		C			C

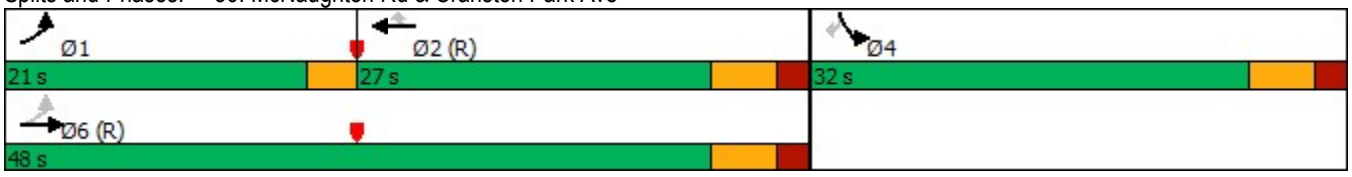
Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	112.2	Sum of lost time (s)	18.5
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

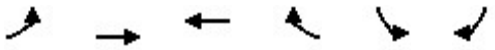
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	342	389	243	544	142	108
Future Volume (vph)	342	389	243	544	142	108
Lane Group Flow (vph)	380	432	270	604	158	120
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Detector Phase	1	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	6.0	16.0	16.0	16.0	8.0	8.0
Minimum Split (s)	9.0	27.0	27.0	27.0	32.0	32.0
Total Split (s)	21.0	48.0	27.0	27.0	32.0	32.0
Total Split (%)	26.3%	60.0%	33.8%	33.8%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.49	0.35	0.31	0.60	0.52	0.32
Control Delay	8.4	8.7	17.4	5.0	34.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	8.7	17.4	5.0	34.2	7.1
Queue Length 50th (m)	22.7	30.5	23.7	0.0	23.7	0.0
Queue Length 95th (m)	38.6	45.1	61.3	29.5	33.9	11.1
Internal Link Dist (m)		821.3	323.4		900.1	
Turn Bay Length (m)	65.0			40.0		100.0
Base Capacity (vph)	821	1244	877	1013	547	570
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.35	0.31	0.60	0.29	0.21

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 35 (44%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 36: McNaughton Rd & Cranston Park Ave





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	342	389	243	544	142	108
Future Volume (vph)	342	389	243	544	142	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.0	3.0
Total Lost time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1663	1860	1842	1463	1685	1507
Flt Permitted	0.53	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	927	1860	1842	1463	1685	1507
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	380	432	270	604	158	120
RTOR Reduction (vph)	0	0	0	316	0	98
Lane Group Flow (vph)	380	432	270	288	158	22
Confl. Peds. (#/hr)	5			5		
Heavy Vehicles (%)	1%	1%	2%	0%	0%	0%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		4	
Permitted Phases	6			2		4
Actuated Green, G (s)	53.5	53.5	38.1	38.1	14.5	14.5
Effective Green, g (s)	53.5	53.5	38.1	38.1	14.5	14.5
Actuated g/C Ratio	0.67	0.67	0.48	0.48	0.18	0.18
Clearance Time (s)	3.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	734	1243	877	696	305	273
v/s Ratio Prot	c0.08	0.23	0.15		c0.09	
v/s Ratio Perm	c0.27			0.20		0.01
v/c Ratio	0.52	0.35	0.31	0.41	0.52	0.08
Uniform Delay, d1	5.9	5.7	12.9	13.7	29.6	27.2
Progression Factor	1.14	1.17	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.7	0.9	1.8	1.5	0.1
Delay (s)	7.3	7.4	13.8	15.5	31.1	27.3
Level of Service	A	A	B	B	C	C
Approach Delay (s)		7.3	14.9		29.5	
Approach LOS		A	B		C	

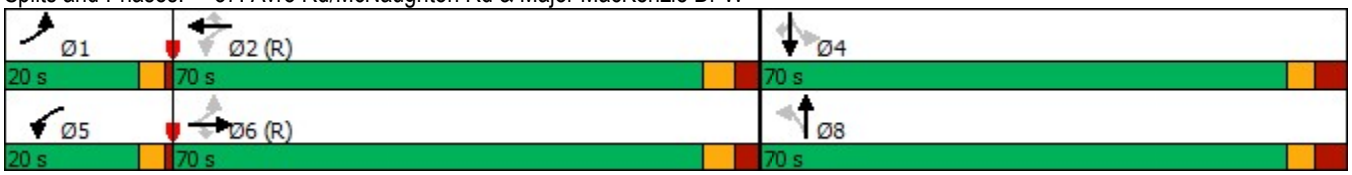
Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

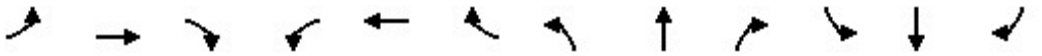
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	333	1402	9	127	1249	207	7	178	27	109	250
Future Volume (vph)	333	1402	9	127	1249	207	7	178	27	109	250
Lane Group Flow (vph)	333	1402	9	127	1249	207	7	303	27	109	250
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6		5	2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	37.0	37.0	11.0	37.0	37.0	40.5	40.5	40.5	40.5	40.5
Total Split (s)	20.0	70.0	70.0	20.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	12.5%	43.8%	43.8%	12.5%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?											
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.62	0.62	0.01	0.46	0.82	0.30	0.03	0.82	0.32	0.30	0.53
Control Delay	44.4	22.9	0.0	18.2	47.7	19.4	47.1	73.4	54.7	47.6	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	22.9	0.0	18.2	47.7	19.4	47.1	73.4	54.7	47.6	14.9
Queue Length 50th (m)	80.6	147.6	0.0	11.3	188.2	25.4	1.9	90.5	6.3	25.8	17.0
Queue Length 95th (m)	125.3	220.2	0.0	23.0	233.1	48.8	6.4	118.0	14.3	39.5	33.8
Internal Link Dist (m)		379.3			530.0			161.1		821.3	
Turn Bay Length (m)	95.0		45.0	50.0		50.0	35.0		60.0		60.0
Base Capacity (vph)	533	2268	960	325	1514	682	461	704	166	719	713
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.62	0.01	0.39	0.82	0.30	0.02	0.43	0.16	0.15	0.35

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 37: Avro Rd/McNaughton Rd & Major MacKenzie Dr W





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	1402	9	127	1249	207	7	178	125	27	109	250
Future Volume (vph)	333	1402	9	127	1249	207	7	178	125	27	109	250
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	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	0.97	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1756	3721	1538	1773	3684	1538	1674	1763		1685	1842	1464
Flt Permitted	0.06	1.00	1.00	0.18	1.00	1.00	0.67	1.00		0.24	1.00	1.00
Satd. Flow (perm)	109	3721	1538	332	3684	1538	1181	1763		426	1842	1464
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	333	1402	9	127	1249	207	7	178	125	27	109	250
RTOR Reduction (vph)	0	0	4	0	0	50	0	21	0	0	0	186
Lane Group Flow (vph)	333	1402	5	127	1249	157	7	282	0	27	109	64
Confl. Peds. (#/hr)	4		4	4		4	5					5
Heavy Vehicles (%)	1%	1%	0%	0%	2%	0%	0%	0%	0%	0%	2%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6		6	2		2	8			4		4
Actuated Green, G (s)	113.8	97.5	97.5	78.0	65.7	65.7	31.7	31.7		31.7	31.7	31.7
Effective Green, g (s)	113.8	97.5	97.5	78.0	65.7	65.7	31.7	31.7		31.7	31.7	31.7
Actuated g/C Ratio	0.71	0.61	0.61	0.49	0.41	0.41	0.20	0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	7.5	7.5		7.5	7.5	7.5
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
Lane Grp Cap (vph)	531	2267	937	272	1512	631	233	349		84	364	290
v/s Ratio Prot	c0.17	0.38		0.04	c0.34			c0.16			0.06	
v/s Ratio Perm	0.27		0.00	0.19		0.10	0.01			0.06		0.04
v/c Ratio	0.63	0.62	0.01	0.47	0.83	0.25	0.03	0.81		0.32	0.30	0.22
Uniform Delay, d1	40.4	19.6	12.3	22.7	42.1	30.9	51.7	61.3		54.9	54.7	53.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.85	0.86	1.46
Incremental Delay, d2	2.3	1.3	0.0	1.3	5.3	0.9	0.1	12.9		2.2	0.5	0.4
Delay (s)	42.7	20.9	12.3	24.0	47.3	31.9	51.8	74.1		49.1	47.5	78.8
Level of Service	D	C	B	C	D	C	D	E		D	D	E
Approach Delay (s)		25.0			43.5			73.6			67.9	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX M

Signal, Stop Control, and Lane Warrants

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 4 & Street 1
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: East-West

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	357	No	**All-way stop control is not warranted.**
2	101	No	
3	67%	Yes	

	Volumes Each Hour								Split
NBL	74	*54*	*36*	*46*	*43*	51	*48*	*38*	33%
NBT	37	*27*	*45*	*58*	*54*	64	*60*	*48*	
NBR	5	*4*	*8*	*11*	*10*	12	*11*	*9*	
SBL	2	*1*	*6*	*7*	*7*	8	*8*	*6*	
SBT	15	*11*	*23*	*29*	*27*	32	*30*	*24*	
SBR	6	*4*	*4*	*5*	*5*	6	*6*	*4*	
EBL	0	*0*	*6*	*7*	*7*	8	*8*	*6*	67%
EBT	141	*102*	*125*	*159*	*151*	177	*167*	*133*	
EBR	8	*6*	*16*	*20*	*19*	22	*21*	*16*	
WBL	5	*4*	*8*	*10*	*9*	11	*10*	*8*	
WBT	197	*143*	*80*	*103*	*97*	114	*108*	*85*	
WBR	1	*1*	*3*	*4*	*3*	4	*4*	*3*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	139	101	122	156	146	173	163	129	
Major	352	256	238	303	286	336	318	251	
Sum	491	357	360	459	432	509	481	380	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 5 & Street 1
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: North-South

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	380	Yes	**All-way stop control is warranted.**
2	217	Yes	
3	53%	Yes	

	Volumes Each Hour								Split
NBL	76	*55*	*92*	*118*	*111*	131	*124*	*98*	53%
NBT	23	*17*	*49*	*63*	*60*	70	*66*	*52*	
NBR	63	*46*	*83*	*106*	*100*	118	*111*	*88*	
SBL	10	*7*	*11*	*13*	*13*	15	*14*	*11*	
SBT	26	*19*	*31*	*40*	*37*	44	*41*	*33*	
SBR	26	*19*	*44*	*57*	*54*	63	*59*	*47*	
EBL	25	*18*	*30*	*39*	*37*	43	*41*	*32*	47%
EBT	64	*46*	*40*	*50*	*48*	56	*53*	*42*	
EBR	88	*64*	*109*	*139*	*131*	154	*145*	*115*	
WBL	61	*44*	*58*	*74*	*70*	82	*77*	*61*	
WBT	60	*44*	*18*	*22*	*21*	25	*24*	*19*	
WBR	2	*1*	*2*	*3*	*3*	3	*3*	*2*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	300	217	257	327	310	363	343	271	
Major	224	163	310	397	375	441	415	329	
Sum	524	380	567	724	685	804	758	600	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 8 & Vista Gate / GO Station
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: East-West

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	1180	Yes	**All-way stop control is not warranted.**
2	197	Yes	
3	85%	No	

	Volumes Each Hour								Split
NBL	38	*28*	*39*	*49*	*47*	55	*52*	*41*	15%
NBT	6	*4*	*1*	*2*	*2*	2	*2*	*1*	
NBR	4	*3*	*2*	*3*	*3*	3	*3*	*2*	
SBL	83	*60*	*64*	*82*	*77*	91	*86*	*68*	
SBT	5	*4*	*7*	*9*	*9*	10	*9*	*7*	
SBR	148	*107*	*84*	*107*	*101*	119	*112*	*89*	
EBL	204	*148*	*236*	*300*	*284*	334	*315*	*250*	85%
EBT	268	*194*	*493*	*629*	*595*	699	*659*	*524*	
EBR	101	*73*	*81*	*103*	*98*	115	*108*	*86*	
WBL	3	*2*	*12*	*15*	*14*	17	*16*	*13*	
WBT	768	*557*	*379*	*483*	*457*	537	*506*	*402*	
WBR	0	*0*	*1*	*1*	*1*	1	*1*	*1*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	284	206	197	252	239	280	264	208	
Major	1344	974	1202	1531	1449	1703	1605	1276	
Sum	1628	1180	1399	1783	1688	1983	1869	1484	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 4 & Street 2
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: East-West

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	301	No	**All-way stop control is not warranted.**
2	152	Yes	
3	53%	Yes	

	Volumes Each Hour								Split
NBL	14	*10*	*12*	*15*	*14*	17	*16*	*13*	47%
NBT	43	*31*	*61*	*78*	*74*	87	*82*	*65*	
NBR	13	*9*	*25*	*31*	*30*	35	*33*	*26*	
SBL	67	*49*	*72*	*92*	*87*	102	*96*	*76*	
SBT	72	*52*	*49*	*63*	*60*	70	*66*	*52*	
SBR	2	*1*	*13*	*17*	*16*	19	*18*	*14*	
EBL	67	*49*	*96*	*122*	*116*	136	*128*	*102*	53%
EBT	53	*38*	*81*	*103*	*98*	115	*108*	*86*	
EBR	8	*6*	*12*	*15*	*14*	17	*16*	*13*	
WBL	19	*14*	*19*	*24*	*23*	27	*25*	*20*	
WBT	18	*13*	*19*	*24*	*23*	27	*25*	*20*	
WBR	40	*29*	*40*	*51*	*48*	57	*54*	*43*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	211	152	232	296	281	330	311	246	
Major	205	149	267	339	322	379	356	284	
Sum	416	301	499	635	603	709	667	530	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 5 & Street 2
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: North-South

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	660	Yes	**All-way stop control is warranted.**
2	305	Yes	
3	55%	Yes	

	Volumes Each Hour								Split
NBL	6	*4*	*15*	*19*	*18*	21	*20*	*16*	55%
NBT	75	*54*	*153*	*195*	*185*	217	*205*	*163*	
NBR	36	*26*	*77*	*98*	*93*	109	*103*	*82*	
SBL	268	*194*	*191*	*243*	*230*	270	*255*	*202*	
SBT	97	*70*	*116*	*148*	*140*	164	*155*	*123*	
SBR	9	*7*	*8*	*11*	*10*	12	*11*	*9*	
EBL	37	*27*	*44*	*56*	*53*	62	*58*	*46*	45%
EBT	88	*64*	*117*	*149*	*141*	166	*157*	*124*	
EBR	8	*6*	*16*	*21*	*20*	23	*22*	*17*	
WBL	46	*33*	*46*	*58*	*55*	65	*61*	*49*	
WBT	62	*45*	*55*	*70*	*66*	78	*74*	*58*	
WBR	179	*130*	*182*	*232*	*219*	258	*243*	*193*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	420	305	460	586	554	652	615	487	
Major	491	355	560	714	676	793	749	595	
Sum	911	660	1020	1300	1230	1445	1364	1082	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 6 & Street 2
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Three
Major Direction: East-West

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **75%**

Condition	Value	Condition Met?	Conclusion
1	659	Yes	**All-way stop control is not warranted.**
2	106	No	
3	81%	No	

	Volumes Each Hour								Split
NBL	109	*79*	*95*	*121*	*114*	134	*126*	*100*	19%
NBT	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
NBR	37	*27*	*73*	*93*	*88*	103	*97*	*77*	
SBL	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
SBT	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
SBR	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
EBL	0	*0*	*0*	*0*	*0*	0	*0*	*0*	81%
EBT	280	*203*	*327*	*417*	*394*	463	*437*	*347*	
EBR	169	*123*	*73*	*93*	*88*	103	*97*	*77*	
WBL	92	*67*	*76*	*97*	*92*	108	*102*	*81*	
WBT	221	*160*	*218*	*278*	*263*	309	*291*	*231*	
WBR	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	146	106	168	214	202	237	223	177	
Major	762	553	694	885	837	983	927	736	
Sum	908	659	862	1099	1039	1220	1150	913	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 8 & Street 2
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: East-West

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	540	Yes	**All-way stop control is not warranted.**
2	203	Yes	
3	72%	No	

	Volumes Each Hour								Split
NBL	47	*34*	*47*	*60*	*57*	67	*63*	*50*	28%
NBT	3	*2*	*13*	*16*	*15*	18	*17*	*13*	
NBR	2	*1*	*4*	*5*	*5*	6	*6*	*4*	
SBL	33	*24*	*20*	*25*	*24*	28	*26*	*21*	
SBT	52	*38*	*21*	*27*	*26*	30	*28*	*22*	
SBR	143	*104*	*104*	*133*	*126*	148	*140*	*111*	
EBL	50	*36*	*55*	*70*	*66*	78	*74*	*58*	72%
EBT	115	*83*	*157*	*200*	*189*	222	*209*	*166*	
EBR	152	*110*	*187*	*238*	*225*	265	*250*	*199*	
WBL	1	*1*	*15*	*19*	*18*	21	*20*	*16*	
WBT	123	*89*	*143*	*183*	*173*	203	*191*	*152*	
WBR	25	*18*	*38*	*49*	*46*	54	*51*	*40*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	280	203	209	266	253	297	280	221	
Major	466	337	595	759	717	843	795	631	
Sum	746	540	804	1025	970	1140	1075	852	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 4 & Street 3
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Three
Major Direction: East-West

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **75%**

Condition	Value	Condition Met?	Conclusion
1	457	Yes	**All-way stop control is not warranted.**
2	106	No	
3	79%	No	

	Volumes Each Hour								Split
NBL	0	*0*	*0*	*0*	*0*	0	*0*	*0*	21%
NBT	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
NBR	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
SBL	54	*39*	*54*	*69*	*65*	77	*73*	*58*	
SBT	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
SBR	119	*86*	*52*	*67*	*63*	74	*70*	*55*	
EBL	60	*44*	*59*	*76*	*71*	84	*79*	*63*	79%
EBT	203	*147*	*255*	*325*	*307*	361	*340*	*270*	
EBR	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
WBL	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
WBT	149	*108*	*78*	*99*	*94*	110	*104*	*82*	
WBR	45	*33*	*71*	*91*	*86*	101	*95*	*76*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	173	125	106	136	128	151	143	113	
Major	457	332	463	591	558	656	618	491	
Sum	630	457	569	727	686	807	761	604	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 5 & Street 3
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: North-South

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	486	Yes	**All-way stop control is warranted.**
2	275	Yes	
3	51%	Yes	

	Volumes Each Hour								Split
NBL	37	*27*	*102*	*130*	*123*	145	*137*	*109*	51%
NBT	20	*15*	*174*	*222*	*210*	247	*233*	*185*	
NBR	30	*22*	*31*	*40*	*37*	44	*41*	*33*	
SBL	37	*27*	*33*	*42*	*40*	47	*44*	*35*	
SBT	107	*78*	*112*	*142*	*134*	158	*149*	*118*	
SBR	58	*42*	*25*	*32*	*31*	36	*34*	*27*	
EBL	95	*69*	*55*	*70*	*66*	78	*74*	*58*	49%
EBT	112	*81*	*149*	*190*	*179*	211	*199*	*158*	
EBR	45	*33*	*128*	*163*	*154*	181	*171*	*136*	
WBL	38	*28*	*16*	*21*	*20*	23	*22*	*17*	
WBT	65	*47*	*61*	*78*	*74*	87	*82*	*65*	
WBR	24	*17*	*20*	*25*	*24*	28	*26*	*21*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	379	275	429	547	517	608	574	455	
Major	289	211	477	608	575	677	638	507	
Sum	668	486	906	1155	1092	1285	1212	962	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

ALL-WAY STOP CONTROL WARRANT

INTERSECTION: Street 6 & Street 3 / Street 7
HORIZON / DESCRIPTION: Future Total (2031)

Road Type: Collector
Number of Legs: Four
Major Direction: East-West

All-way stop control may be considered where the following conditions are met:

1. The total vehicle volume on all intersection approaches, for all of the highest eight hours of the day, exceeds the threshold: **375**

2. The combined vehicle and pedestrian volume on the minor street, for each of the same eight hours of the day, exceeds the threshold*: **150**

3. The major volume split, over the whole eight hours, doesn't exceed 70% for four-way control or 75% for three-way control. **70%**

Condition	Value	Condition Met?	Conclusion
1	502	Yes	**All-way stop control is warranted.**
2	269	Yes	
3	53%	Yes	

	Volumes Each Hour								Split
NBL	37	*27*	*35*	*45*	*43*	50	*47*	*37*	47%
NBT	69	*50*	*75*	*95*	*90*	106	*100*	*79*	
NBR	4	*3*	*37*	*47*	*44*	52	*49*	*39*	
SBL	124	*90*	*74*	*94*	*89*	105	*99*	*79*	
SBT	124	*90*	*67*	*85*	*81*	95	*90*	*71*	
SBR	13	*9*	*8*	*10*	*9*	11	*10*	*8*	
EBL	6	*4*	*16*	*21*	*20*	23	*22*	*17*	53%
EBT	114	*83*	*140*	*178*	*168*	198	*187*	*148*	
EBR	61	*44*	*46*	*58*	*55*	65	*61*	*49*	
WBL	3	*2*	*6*	*7*	*7*	8	*8*	*6*	
WBT	68	*49*	*68*	*86*	*82*	96	*91*	*72*	
WBR	71	*51*	*76*	*97*	*92*	108	*102*	*81*	
Pedestrians	0	*0*	*0*	*0*	*0*	0	*0*	*0*	
Minor	371	269	296	376	356	419	395	313	
Major	323	233	352	447	424	498	471	373	
Sum	694	502	648	823	780	917	866	686	100%

* A lower threshold may be acceptible if the minor delay is greater than 30 seconds.

Methodology from Chapter 2 of Ontario Traffic Manual Book 5: Regulatory Signs. Additional warrants based on collisions and visibility are also found in Chapter 2 and should be considered.

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Keele St & Vista Gate

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Justified by J1
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
1403.5	100%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
328	100%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
1075.5	80%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
115.75	100%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	221	313	534	133.5
NBT	432	1167	1599	399.75
NBR	40	76	116	29
SBL	23	33	56	14
SBT	745	459	1204	301
SBR	550	243	793	198.25
EBL	16	353	369	92.25
EBT	0	0	0	0
EBR	339	440	779	194.75
WBL	56	38	94	23.5
WBT	0	0	0	0
WBR	31	39	70	17.5
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Keele St & North Maple Regional Park

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
1596.5	100%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
160.75	63%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
1435.75	100%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
6	5%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	24	121	145	36.25
NBT	863	1936	2799	699.75
NBR	7	33	40	10
SBL	3	15	18	4.5
SBT	1493	1243	2736	684
SBR	0	5	5	1.25
EBL	4	5	9	2.25
EBT	0	0	0	0
EBR	280	322	602	150.5
WBL	6	9	15	3.75
WBT	0	0	0	0
WBR	2	15	17	4.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Kirby Rd & Street 4

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 3 (T-intersection)
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
596.25	44%

B. Base volume requirement (minor street): 255
Requirement after 150% expansion: 382.5

Value	Percent Met
28.5	7%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
567.75	42%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
1.75	2%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	2	5	7	1.75
NBT	0	0	0	0
NBR	36	71	107	26.75
SBL	0	0	0	0
SBT	0	0	0	0
SBR	0	0	0	0
EBL	0	0	0	0
EBT	559	587	1146	286.5
EBR	8	12	20	5
WBL	15	34	49	12.25
WBT	386	670	1056	264
WBR	0	0	0	0
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Kirby Rd & Street 5

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 3 (T-intersection)
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
663	49%

B. Base volume requirement (minor street): 255
Requirement after 150% expansion: 382.5

Value	Percent Met
41.5	11%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
621.5	46%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
2.75	2%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	4	7	11	2.75
NBT	0	0	0	0
NBR	46	109	155	38.75
SBL	0	0	0	0
SBT	0	0	0	0
SBR	0	0	0	0
EBL	0	0	0	0
EBT	577	631	1208	302
EBR	18	27	45	11.25
WBL	44	95	139	34.75
WBT	397	697	1094	273.5
WBR	0	0	0	0
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Kirby Rd & Street 6

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 3 (T-intersection)
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
759	56%

B. Base volume requirement (minor street): 255
Requirement after 150% expansion: 382.5

Value	Percent Met
68	18%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
691	51%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
0.75	1%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	1	2	3	0.75
NBT	0	0	0	0
NBR	111	158	269	67.25
SBL	0	0	0	0
SBT	0	0	0	0
SBR	0	0	0	0
EBL	0	0	0	0
EBT	623	740	1363	340.75
EBR	0	0	0	0
WBL	43	127	170	42.5
WBT	440	791	1231	307.75
WBR	0	0	0	0
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Kirby Rd & Street 8 (RIRO)

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2

Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)

Number of approach legs: 3 (T-intersection)

Number of existing roads: 1 (three or fewer existing approach legs)

Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.

Justification 2: if both Justification 2A and 2B are 100% fulfilled.

Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900

Requirement after 150% expansion: 1350

Value	Percent Met
894.75	66%

B. Base volume requirement (minor street): 255

Requirement after 150% expansion: 382.5

Value	Percent Met
136.75	36%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900

Requirement after 150% expansion: 1350

Value	Percent Met
758	56%

B. Base volume requirement (crossing major): 75

Requirement after 150% expansion: 112.5

Value	Percent Met
0	0%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	0	0	0	0
NBT	0	0	0	0
NBR	210	337	547	136.75
SBL	0	0	0	0
SBT	0	0	0	0
SBR	0	0	0	0
EBL	0	0	0	0
EBT	498	677	1175	293.75
EBR	236	220	456	114
WBL	0	0	0	0
WBT	483	918	1401	350.25
WBR	0	0	0	0
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Jane St & Street 1

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
978.5	72%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
134.5	53%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
844	63%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
93.75	83%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	88	34	122	30.5
NBT	407	826	1233	308.25
NBR	127	146	273	68.25
SBL	20	56	76	19
SBT	974	693	1667	416.75
SBR	4	1	5	1.25
EBL	1	13	14	3.5
EBT	2	5	7	1.75
EBR	14	54	68	17
WBL	246	108	354	88.5
WBT	2	4	6	1.5
WBR	29	60	89	22.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 4 & Street 1

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: 1
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 720
Requirement after 150% expansion: 1080

Value	Percent Met
250	23%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
78	31%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 720
Requirement after 150% expansion: 1080

Value	Percent Met
172	16%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
59	52%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	74	51	125	31.25
NBT	37	64	101	25.25
NBR	5	12	17	4.25
SBL	2	8	10	2.5
SBT	15	32	47	11.75
SBR	6	6	12	3
EBL	0	8	8	2
EBT	141	177	318	79.5
EBR	8	22	30	7.5
WBL	5	11	16	4
WBT	197	114	311	77.75
WBR	1	4	5	1.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 5 & Street 1

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
332	25%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
165.75	65%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
166.25	12%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
82.75	74%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	76	131	207	51.75
NBT	23	70	93	23.25
NBR	63	118	181	45.25
SBL	10	15	25	6.25
SBT	26	44	70	17.5
SBR	26	63	89	22.25
EBL	25	43	68	17
EBT	64	56	120	30
EBR	88	154	242	60.5
WBL	61	82	143	35.75
WBT	60	25	85	21.25
WBR	2	3	5	1.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 8 & Vista Gate / GO Station

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
902.75	67%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
141	55%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
761.75	56%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
70.5	63%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	38	55	93	23.25
NBT	6	2	8	2
NBR	4	3	7	1.75
SBL	83	91	174	43.5
SBT	5	10	15	3.75
SBR	148	119	267	66.75
EBL	204	334	538	134.5
EBT	268	699	967	241.75
EBR	101	115	216	54
WBL	3	17	20	5
WBT	768	537	1305	326.25
WBR	0	1	1	0.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Jane St & Street 2

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
1020.5	76%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
24.25	10%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
996.25	74%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
6	5%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	0	0	0	0
NBT	591	962	1553	388.25
NBR	115	229	344	86
SBL	13	39	52	13
SBT	1222	814	2036	509
SBR	0	0	0	0
EBL	0	0	0	0
EBT	0	0	0	0
EBR	0	0	0	0
WBL	4	20	24	6
WBT	0	0	0	0
WBR	30	43	73	18.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 4 & Street 2

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
281.25	21%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
135.25	53%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
146	11%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
85.5	76%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	14	17	31	7.75
NBT	43	87	130	32.5
NBR	13	35	48	12
SBL	67	102	169	42.25
SBT	72	70	142	35.5
SBR	2	19	21	5.25
EBL	67	136	203	50.75
EBT	53	115	168	42
EBR	8	17	25	6.25
WBL	19	27	46	11.5
WBT	18	27	45	11.25
WBR	40	57	97	24.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 5 & Street 2

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
589	44%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
268	100%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
321	24%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
116	100%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	6	21	27	6.75
NBT	75	217	292	73
NBR	36	109	145	36.25
SBL	268	270	538	134.5
SBT	97	164	261	65.25
SBR	9	12	21	5.25
EBL	37	62	99	24.75
EBT	88	166	254	63.5
EBR	8	23	31	7.75
WBL	46	65	111	27.75
WBT	62	78	140	35
WBR	179	258	437	109.25
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 6 & Street 2

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 3 (T-intersection)
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
532	39%

B. Base volume requirement (minor street): 255
Requirement after 150% expansion: 382.5

Value	Percent Met
95.75	25%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
436.25	32%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
60.75	54%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	109	134	243	60.75
NBT	0	0	0	0
NBR	37	103	140	35
SBL	0	0	0	0
SBT	0	0	0	0
SBR	0	0	0	0
EBL	0	0	0	0
EBT	280	463	743	185.75
EBR	169	103	272	68
WBL	92	108	200	50
WBT	221	309	530	132.5
WBR	0	0	0	0
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 8 & Street 2

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
471.5	35%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
144.25	57%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
327.25	24%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
64.25	57%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	47	67	114	28.5
NBT	3	18	21	5.25
NBR	2	6	8	2
SBL	33	28	61	15.25
SBT	52	30	82	20.5
SBR	143	148	291	72.75
EBL	50	78	128	32
EBT	115	222	337	84.25
EBR	152	265	417	104.25
WBL	1	21	22	5.5
WBT	123	203	326	81.5
WBR	25	54	79	19.75
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Keele St & Street 2

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 3 (T-intersection)
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
1381.5	100%

B. Base volume requirement (minor street): 255
Requirement after 150% expansion: 382.5

Value	Percent Met
101.75	27%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
1279.75	95%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
4.5	4%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	138	253	391	97.75
NBT	724	1690	2414	603.5
NBR	0	0	0	0
SBL	0	0	0	0
SBT	1302	976	2278	569.5
SBR	11	25	36	9
EBL	8	10	18	4.5
EBT	0	0	0	0
EBR	142	247	389	97.25
WBL	0	0	0	0
WBT	0	0	0	0
WBR	0	0	0	0
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Jane & Street 3

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
1416.25	100%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
214	84%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
1202.25	89%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
110	98%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	184	260	444	111
NBT	669	1121	1790	447.5
NBR	226	290	516	129
SBL	34	87	121	30.25
SBT	1135	670	1805	451.25
SBR	57	76	133	33.25
EBL	4	22	26	6.5
EBT	2	68	70	17.5
EBR	33	276	309	77.25
WBL	229	115	344	86
WBT	5	20	25	6.25
WBR	34	48	82	20.5
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 4 & Street 3

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: 1
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 3 (T-intersection)
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 720
Requirement after 150% expansion: 1080

Value	Percent Met
359.25	33%

B. Base volume requirement (minor street): 255
Requirement after 150% expansion: 382.5

Value	Percent Met
81	21%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 720
Requirement after 150% expansion: 1080

Value	Percent Met
278.25	26%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
32.75	29%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	0	0	0	0
NBT	0	0	0	0
NBR	0	0	0	0
SBL	54	77	131	32.75
SBT	0	0	0	0
SBR	119	74	193	48.25
EBL	60	84	144	36
EBT	203	361	564	141
EBR	0	0	0	0
WBL	0	0	0	0
WBT	149	110	259	64.75
WBR	45	101	146	36.5
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 5 & Street 3

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
488.25	36%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
246.75	97%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
241.5	18%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
139.25	100%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	37	145	182	45.5
NBT	20	247	267	66.75
NBR	30	44	74	18.5
SBL	37	47	84	21
SBT	107	158	265	66.25
SBR	58	36	94	23.5
EBL	95	78	173	43.25
EBT	112	211	323	80.75
EBR	45	181	226	56.5
WBL	38	23	61	15.25
WBT	65	87	152	38
WBR	24	28	52	13
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 6 & Street 3 / Street 7

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: 1
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 4
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: North-South

Result
Condition not met
Condition not met
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 720
Requirement after 150% expansion: 1080

Value	Percent Met
402.75	37%

B. Base volume requirement (minor street): 170
Requirement after 150% expansion: 255

Value	Percent Met
205.25	80%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 720
Requirement after 150% expansion: 1080

Value	Percent Met
197.5	18%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
88	78%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	37	50	87	21.75
NBT	69	106	175	43.75
NBR	4	52	56	14
SBL	124	105	229	57.25
SBT	124	95	219	54.75
SBR	13	11	24	6
EBL	6	23	29	7.25
EBT	114	198	312	78
EBR	61	65	126	31.5
WBL	3	8	11	2.75
WBT	68	96	164	41
WBR	71	108	179	44.75
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

M.T.O. MINIMUM REQUIREMENTS
FOR INSTALLATION OF TRAFFIC SIGNAL

INTERSECTION: Street 7 & Teston Rd

HORIZON / DESCRIPTION: Future Total (2031)

Number of lanes on main road: ≥2
Flow conditions: Restricted (speeds less than 70 km/h with frequent side friction)
Number of approach legs: 3 (T-intersection)
Number of existing roads: 1 (three or fewer existing approach legs)
Major direction: East-West

Result
Condition not met
Justified by J2
Condition not met

Justification 1: if both Justification 1A and 1B are 100% fulfilled.
Justification 2: if both Justification 2A and 2B are 100% fulfilled.
Justification 3: if all of Justifications 1A, 1B, 2A, and 2B are at least 80% fulfilled (only if both roads exist).

All justifications modified by Justification 7 to use peak hour projected volumes.

Justification 1: Minimum Vehicle Volume

A. Base volume requirement: 900
Requirement after 150% expansion: 1350

Value	Percent Met
1902.25	100%

B. Base volume requirement (minor street): 255
Requirement after 150% expansion: 382.5

Value	Percent Met
204.25	53%

Justification 2: Delay to Cross Traffic

A. Base volume requirement (major street): 900
Requirement after 150% expansion: 1350

Value	Percent Met
1698	100%

B. Base volume requirement (crossing major): 75
Requirement after 150% expansion: 112.5

Value	Percent Met
178.5	100%

	Volumes		Sum	Average Hourly
	AM	PM		
NBL	0	0	0	0
NBT	0	0	0	0
NBR	0	0	0	0
SBL	288	426	714	178.5
SBT	0	0	0	0
SBR	58	45	103	25.75
EBL	66	118	184	46
EBT	1387	1856	3243	810.75
EBR	0	0	0	0
WBL	0	0	0	0
WBT	1222	1757	2979	744.75
WBR	190	196	386	96.5
Peds	0	0	0	0

Pedestrians crossing major road

Methodology from Section 4 of *Ontario Traffic Manual Book 12: Traffic Signals*

LEFT TURN WARRANT

INTERSECTION: Street 4 & Kirby Rd

HORIZON / DESCRIPTION: Future Total (2031)

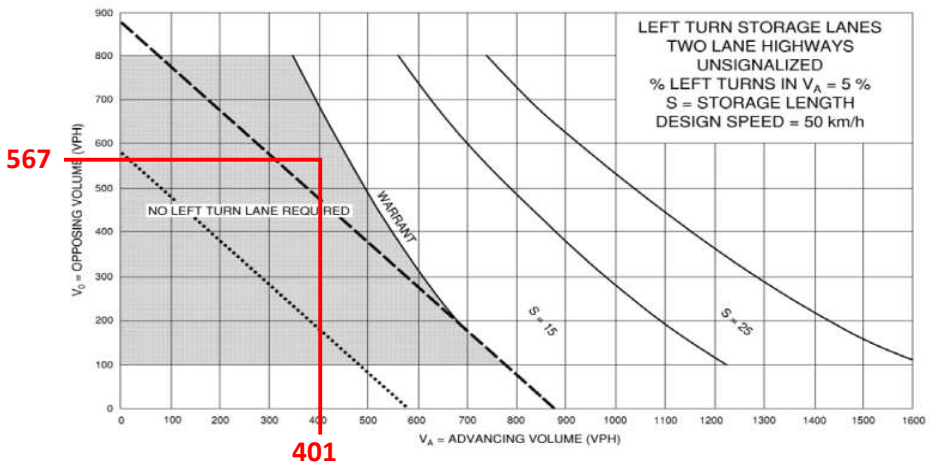
	Volumes	
	AM	PM
NBL	2	5
NBT	0	0
NBR	36	71
SBL	0	0
SBT	0	0
SBR	0	0
EBL	0	0
EBT	559	587
EBR	8	12
WBL	15	34
WBT	386	670
WBR	0	0

Major Direction: East-West

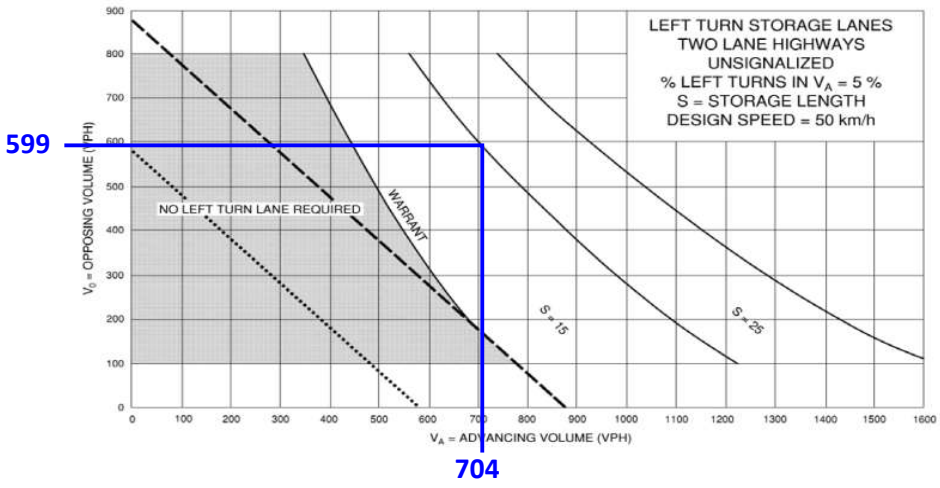
Turning Lane: Westbound

Criteria / Value	AM	PM
Design Speed (km/h)	50	
Advance Volume (vph) (VA)	401	704
Left Turning Volume (vph) (VL)	15	34
% of Left Turning Volume	4%	5%
Opposing Volume (vph) (VO)	567	599
Warrant Met?	no	yes
Storage Lane (m)	n/a	15

AM



PM



Methodology from Appendix 9A of *MTO Design Supplement For TAC Geometric Design Guide (GDG) for Canadian Roads*

LEFT TURN WARRANT

INTERSECTION: Street 4 & Kirby Rd

HORIZON / DESCRIPTION: Future Total (2031)

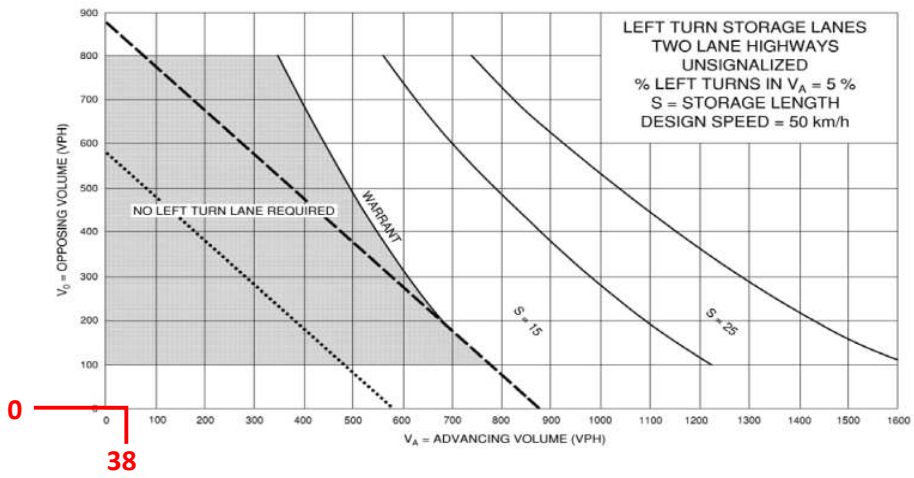
	Volumes	
	AM	PM
NBL	2	5
NBT	0	0
NBR	36	71
SBL	0	0
SBT	0	0
SBR	0	0
EBL	0	0
EBT	559	587
EBR	8	12
WBL	15	34
WBT	386	670
WBR	0	0

Major Direction: East-West

Turning Lane: Northbound

Criteria / Value	AM	PM
Design Speed (km/h)	50	
Advance Volume (vph) (VA)	38	76
Left Turning Volume (vph) (VL)	2	5
% of Left Turning Volume	5%	7%
Opposing Volume (vph) (VO)	0	0
Warrant Met?	no	no
Storage Lane (m)	n/a	n/a

AM



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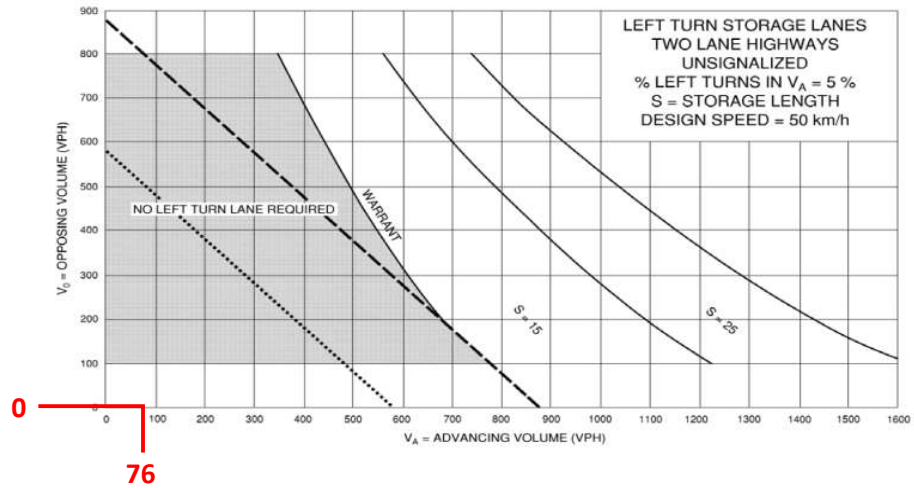


Methodology from Appendix 9A of *MTO Design Supplement For TAC Geometric Design Guide (GDG) for Canadian Roads*

LEFT TURN WARRANT

INTERSECTION: Street 6 & Kirby Rd

HORIZON / DESCRIPTION: Future Total (2031)

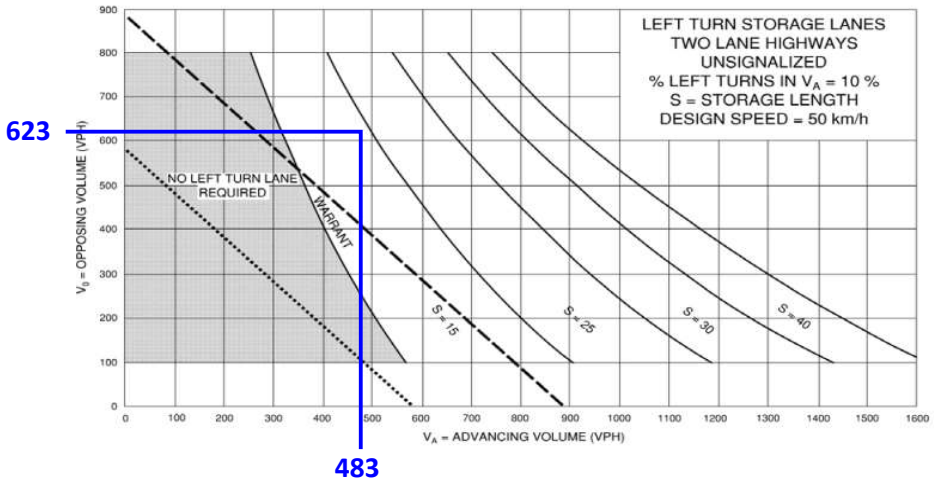
	Volumes	
	AM	PM
NBL	1	2
NBT	0	0
NBR	111	158
SBL	0	0
SBT	0	0
SBR	0	0
EBL	0	0
EBT	623	740
EBR	0	0
WBL	43	127
WBT	440	791
WBR	0	0

Major Direction: East-West

Turning Lane: Westbound

Criteria / Value	AM	PM
Design Speed (km/h)	50	
Advance Volume (vph) (VA)	483	918
Left Turning Volume (vph) (VL)	43	127
% of Left Turning Volume	9%	14%
Opposing Volume (vph) (VO)	623	740
Warrant Met?	yes	yes
Storage Lane (m)	15	60

AM



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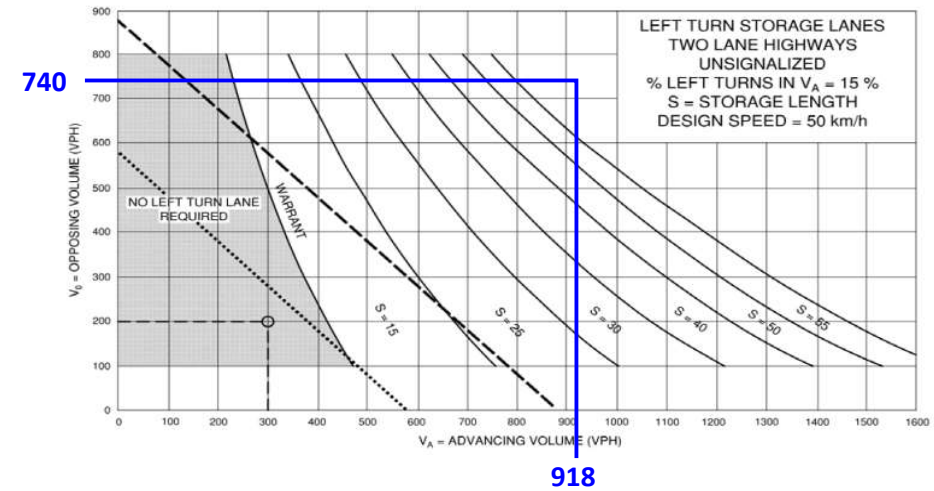


Methodology from Appendix 9A of *MTO Design Supplement For TAC Geometric Design Guide (GDG) for Canadian Roads*

LEFT TURN WARRANT

INTERSECTION: Street 6 & Kirby Rd

HORIZON / DESCRIPTION: Future Total (2031)

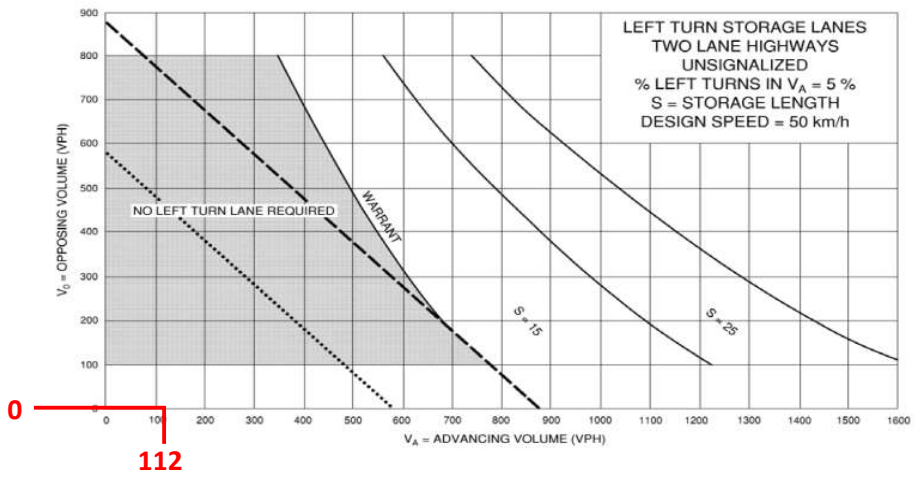
	Volumes	
	AM	PM
NBL	1	2
NBT	0	0
NBR	111	158
SBL	0	0
SBT	0	0
SBR	0	0
EBL	0	0
EBT	623	740
EBR	0	0
WBL	43	127
WBT	440	791
WBR	0	0

Major Direction: East-West

Turning Lane: Northbound

Criteria / Value	AM	PM
Design Speed (km/h)	50	
Advance Volume (vph) (VA)	112	160
Left Turning Volume (vph) (VL)	1	2
% of Left Turning Volume	1%	1%
Opposing Volume (vph) (VO)	0	0
Warrant Met?	no	no
Storage Lane (m)	n/a	n/a

AM



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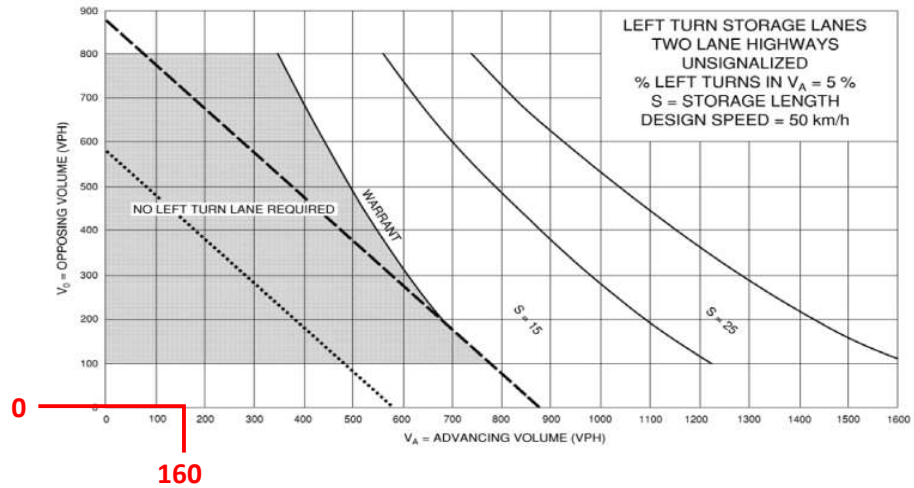


Methodology from Appendix 9A of *MTO Design Supplement For TAC Geometric Design Guide (GDG) for Canadian Roads*

LEFT TURN WARRANT

INTERSECTION: Street 4 & Street 3

HORIZON / DESCRIPTION: Future Total (2031)

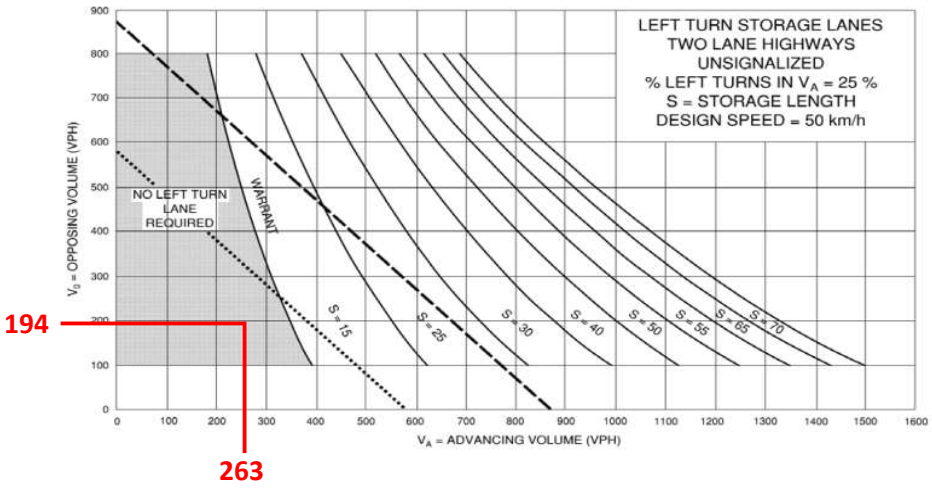
	Volumes	
	AM	PM
NBL	0	0
NBT	0	0
NBR	0	0
SBL	54	77
SBT	0	0
SBR	119	74
EBL	60	84
EBT	203	361
EBR	0	0
WBL	0	0
WBT	149	110
WBR	45	101

Major Direction: East-West

Turning Lane: Eastbound

Criteria / Value	AM	PM
Design Speed (km/h)	50	
Advance Volume (vph) (VA)	263	445
Left Turning Volume (vph) (VL)	60	84
% of Left Turning Volume	23%	19%
Opposing Volume (vph) (VO)	194	211
Warrant Met?	no	yes
Storage Lane (m)	n/a	15

AM



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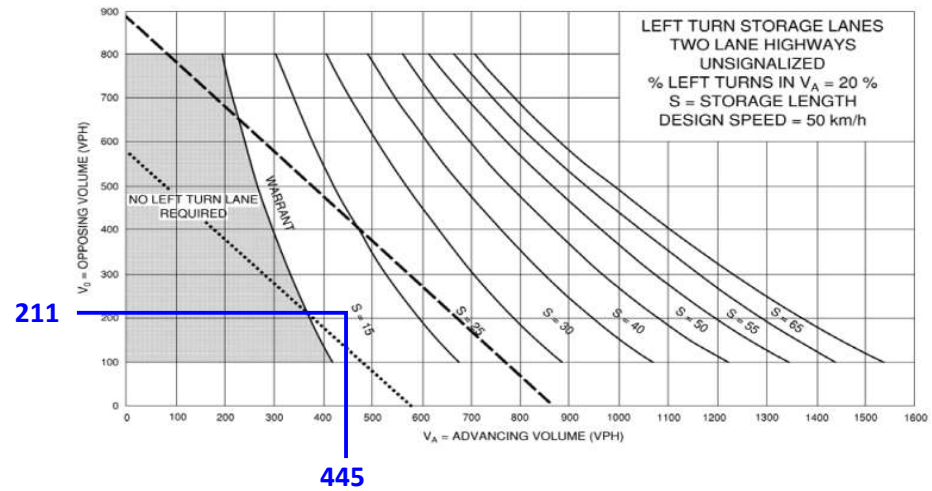


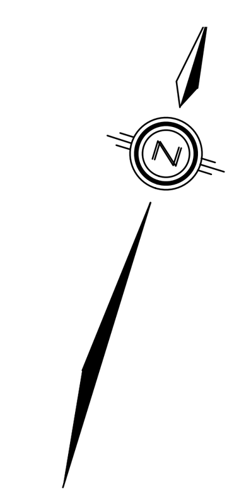
Methodology from Appendix 9A of *MTO Design Supplement For TAC Geometric Design Guide (GDG) for Canadian Roads*

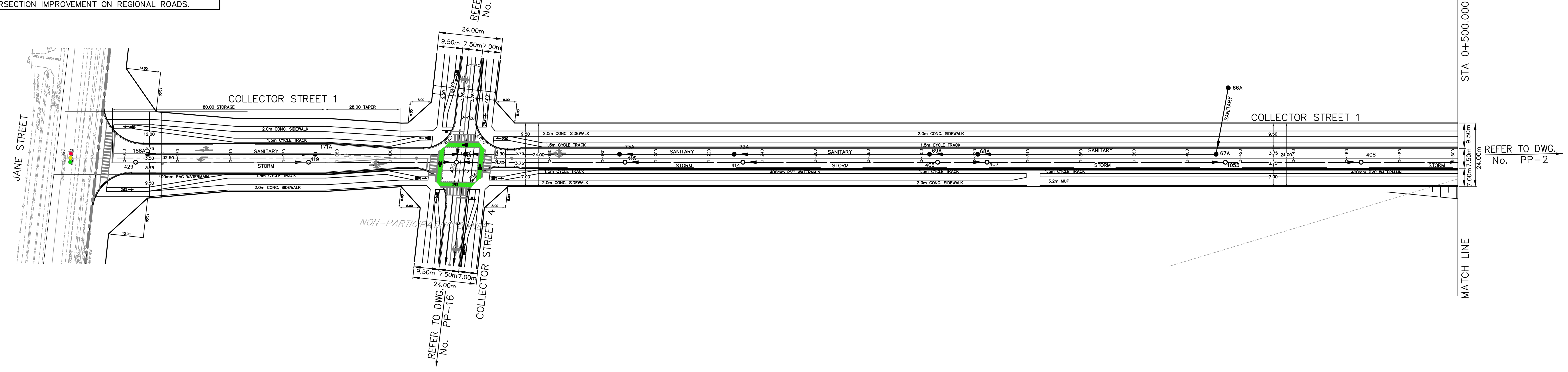
APPENDIX N

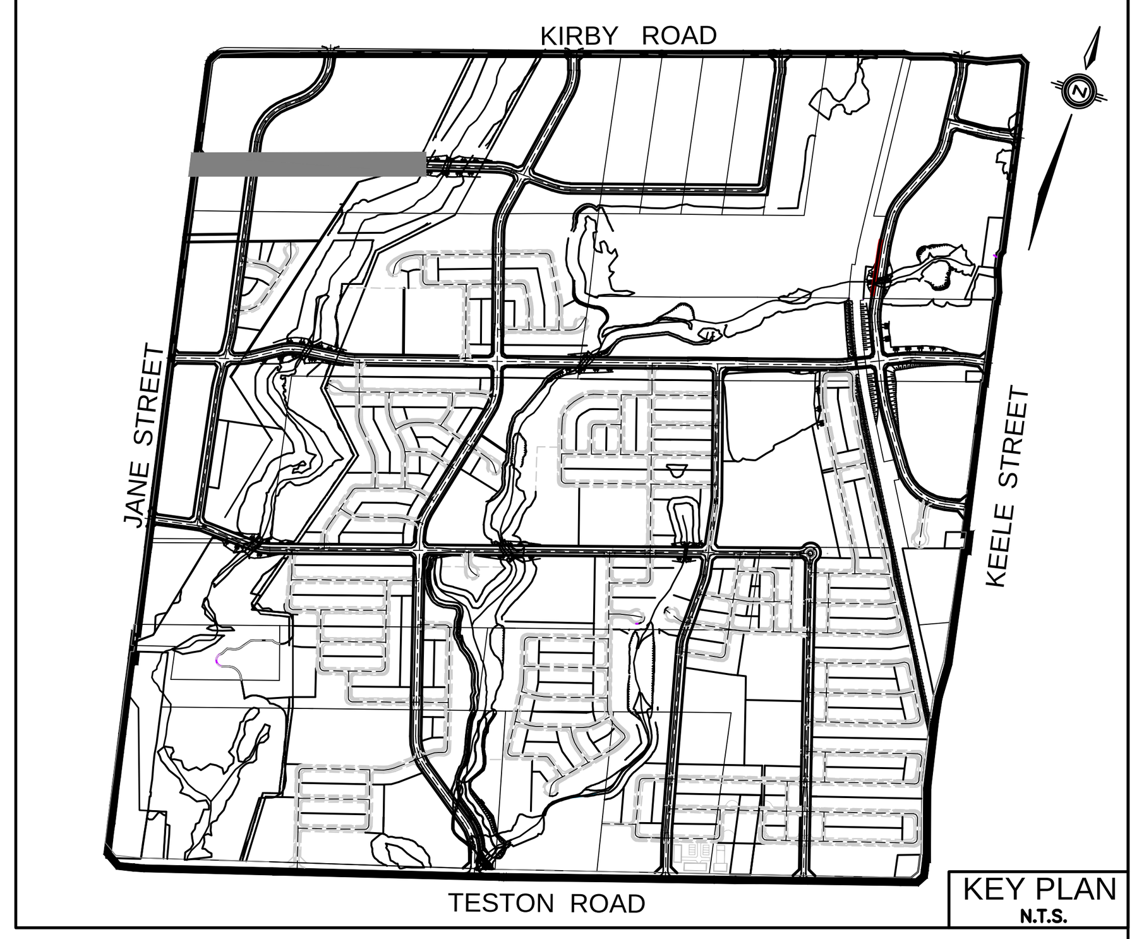
Functional Design Plan

REVISIONS			
No.	DESCRIPTION	By	Date

NOTE:
BLOCK 27 COLLECTOR ROAD INTERSECTIONS TO YORK REGION ROADS ARE PRELIMINARY AND CONCEPTUAL. THE CONFIGURATION OF THESE INTERSECTIONS ARE SUBJECT TO YORK REGIONS APPROVAL DURING THE DETAILED DESIGN/DEVELOPMENT APPROVALS PHASE AND MAY INCLUDE THE NEED FOR DEDICATED TURNING LANES, ILLUMINATION, AND OTHER INTERSECTION IMPROVEMENT ON REGIONAL ROADS.

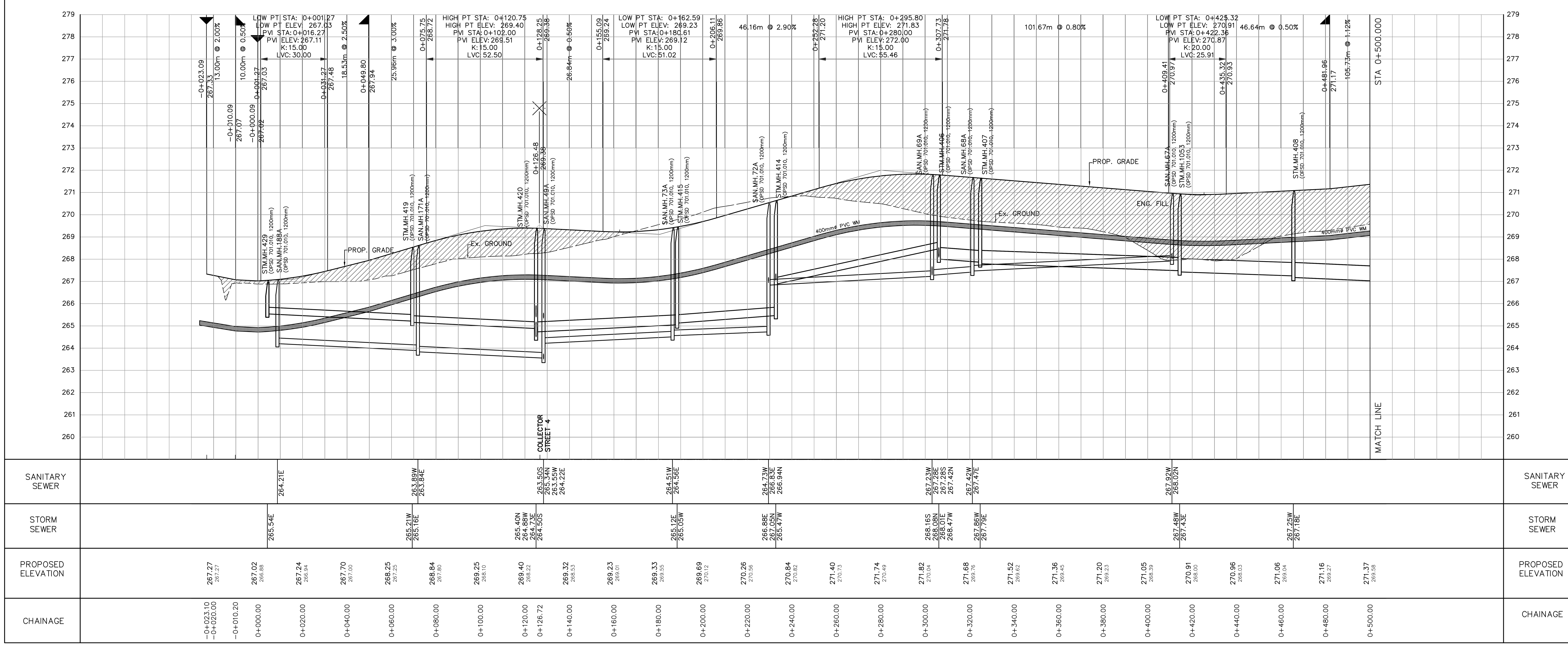






LEGEND

	DENOTES INTERLOCK DRIVEWAY
	DENOTES VALVE AND CHAMBER
	DENOTES HYDRANT
	DENOTES CATCHBASIN
	DENOTES HYDRO TRANSFORMER
	DENOTES EXISTING SANITARY MANHOLE
	DENOTES EXISTING STORM MANHOLE
	DENOTES SANITARY MANHOLE
	DENOTES STORM MANHOLE
	DENOTES EXISTING WATERMAIN
	DENOTES EXISTING STORM SEWER
	DENOTES EXISTING SANITARY SEWER
	DENOTES WATERMAIN
	DENOTES STORM SEWER
	DENOTES SANITARY SEWER
	DENOTES LIMIT OF SUBDIVISION
	DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)



BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

BLOCK 27
RESIDENTIAL SUBDIVISION

SCHAEFFERS
CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail: design@schaeffers.com

VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 1
FROM STA. −0+020.000 TO STA. 0+500.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-1
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE:	
DESIGNED BY: F.T.	APPROVED BY: P.S	MARCH 2022	

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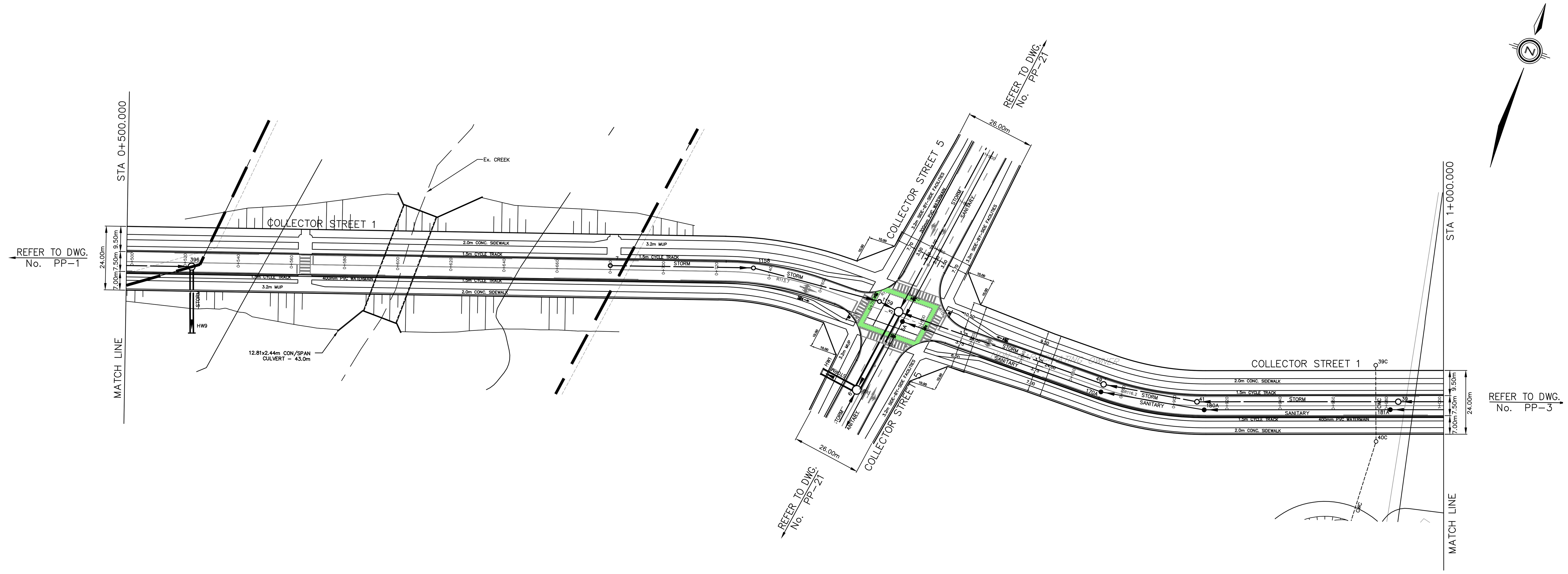
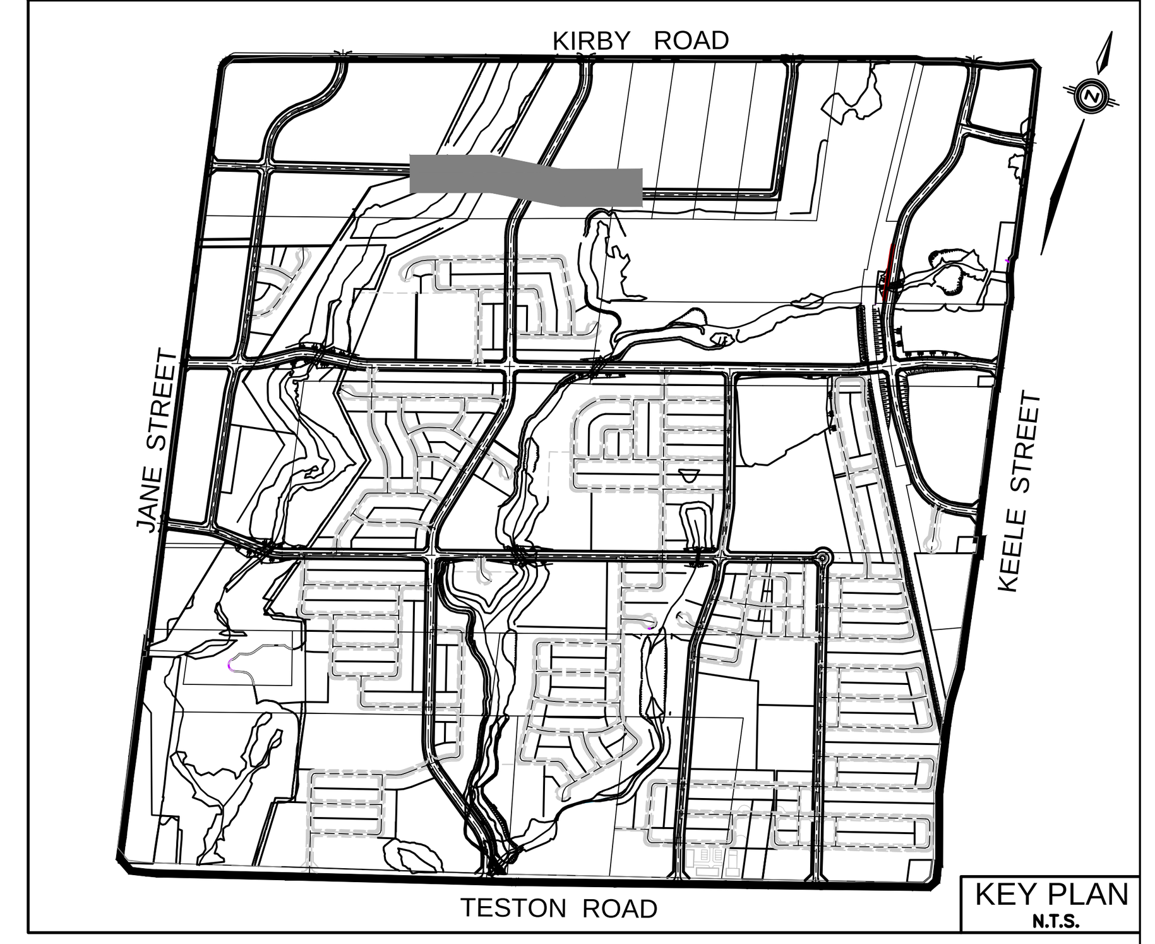


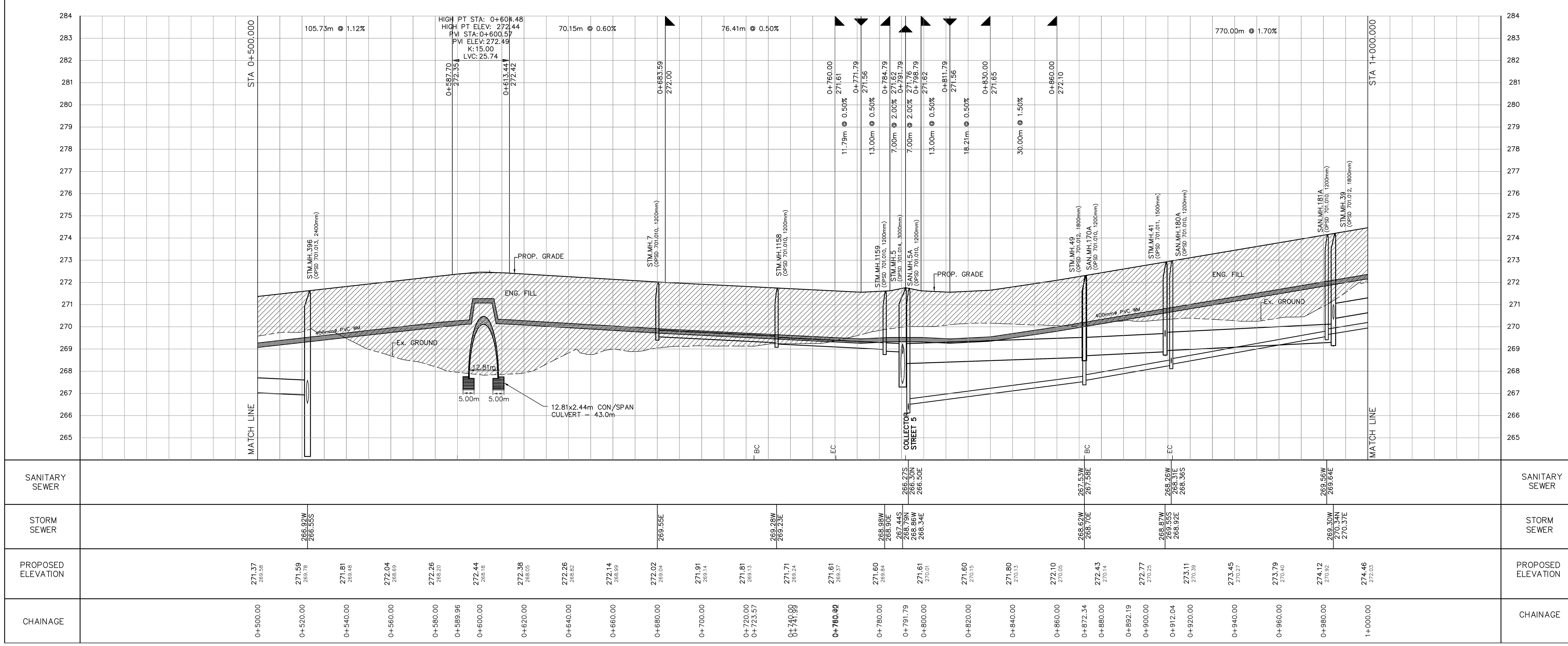


KEY PLAN
N.T.S.

REVISIONS			
No.	DESCRIPTION	By	Date

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES EXISTING WATERMAIN
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)
- DENOTES GREENBELT



BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

BLOCK 27
RESIDENTIAL SUBDIVISION

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CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail: design@schaeffers.com

VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 1
FROM STA. 0+500.000 TO STA. 1+000.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-2
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

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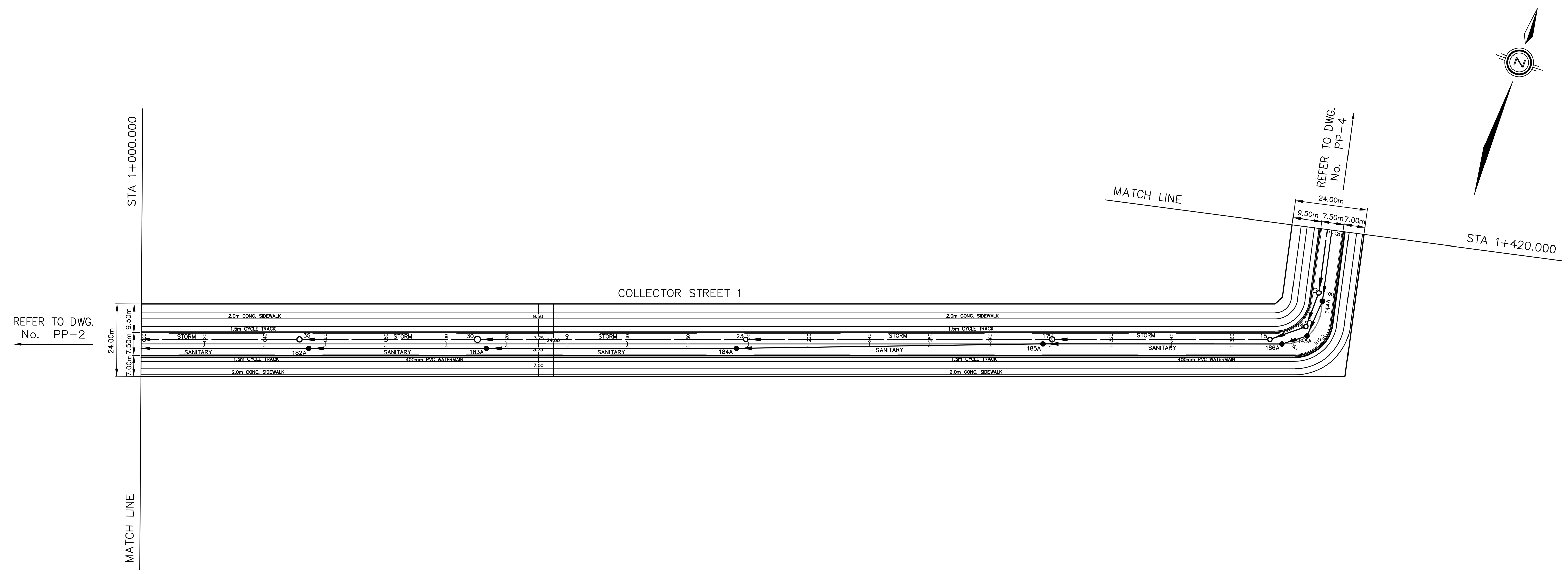
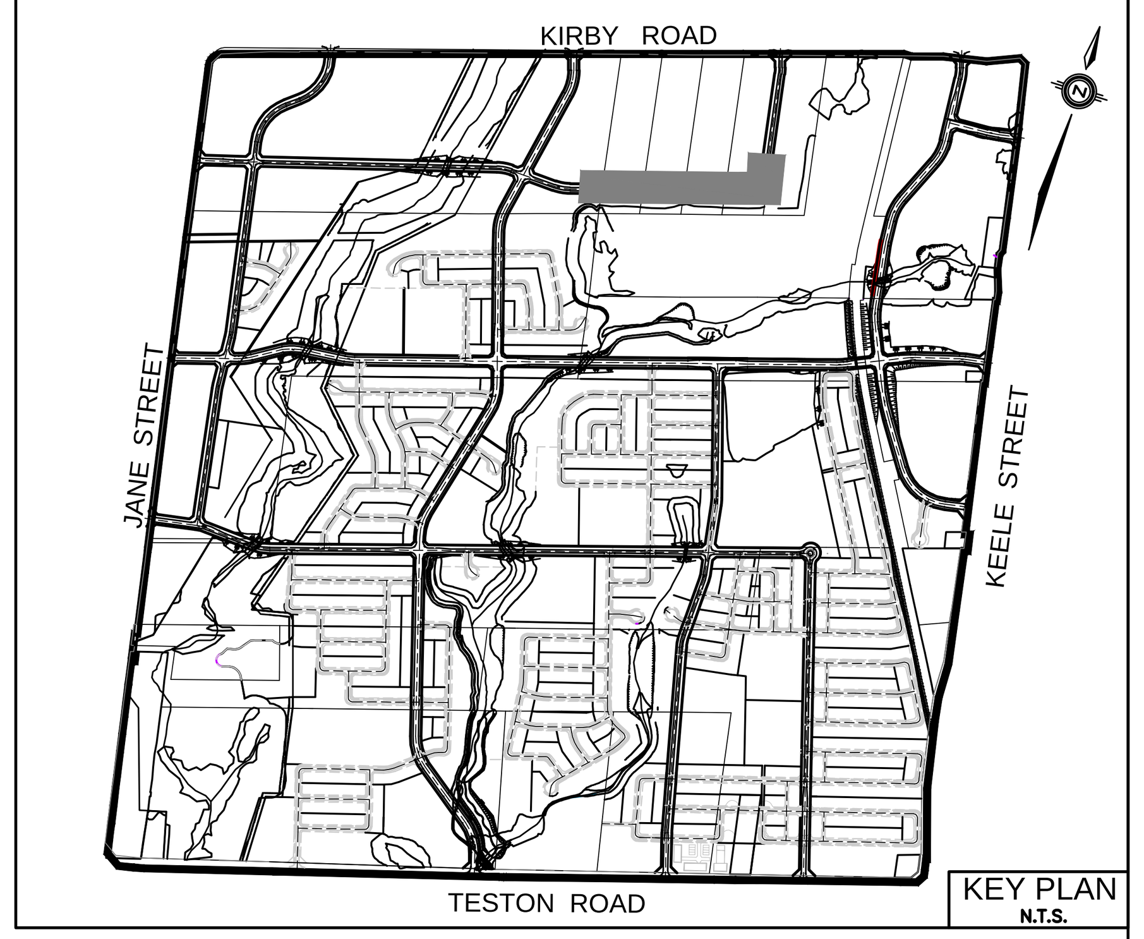




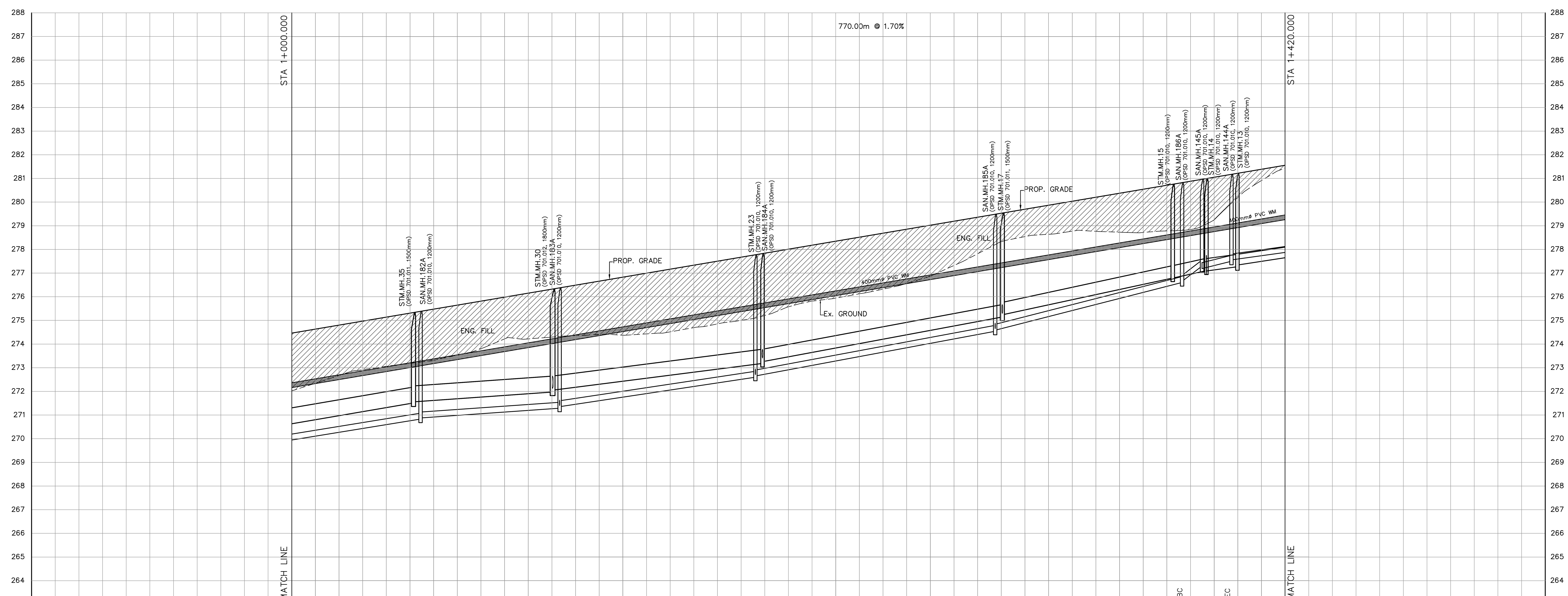
KEY PLAN
N.T.S.

REVISIONS

No.	DESCRIPTION	By	Date

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES EXISTING WATERMAIN
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION



SANITARY SEWER: 270.83W, 270.88E | 271.29W, 271.39N, 271.35E | 272.60W, 272.70N, 272.65E | 274.54W, 274.59E, 274.64N | 276.60W, 276.65NE | 277.30SW | 277.50S, 277.55N

STORM SEWER: 271.51W, 271.56E | 271.97W, 272.05E, 272.12N | 273.18W, 273.40N, 273.26E | 275.14W, 275.29N, 275.24E | 276.79W, 276.79NE | 277.10SW | 277.26S, 277.34N

CHAINAGE	PROPOSED ELEVATION	
1+000.00	274.46	272.03
1+020.00	274.80	272.68
1+040.00	275.14	273.06
1+060.00	275.47	273.32
1+080.00	275.81	273.81
1+100.00	276.15	274.22
1+120.00	276.49	274.36
1+140.00	276.82	274.37
1+160.00	277.16	274.51
1+180.00	277.50	274.85
1+200.00	277.84	275.21
1+220.00	278.18	275.81
1+240.00	278.51	276.12
1+260.00	278.85	276.56
1+280.00	279.19	277.32
1+300.00	279.53	278.32
1+320.00	279.86	278.64
1+340.00	280.20	278.76
1+360.00	280.54	278.72
1+374.19		
1+380.00	280.88	278.84
1+385.52		
1+396.84		
1+400.00	281.22	280.19
1+420.00	281.55	281.43

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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E-mail: design@schaeffers.com

VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 1
FROM STA. 1+000.000 TO STA. 1+420.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-3	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

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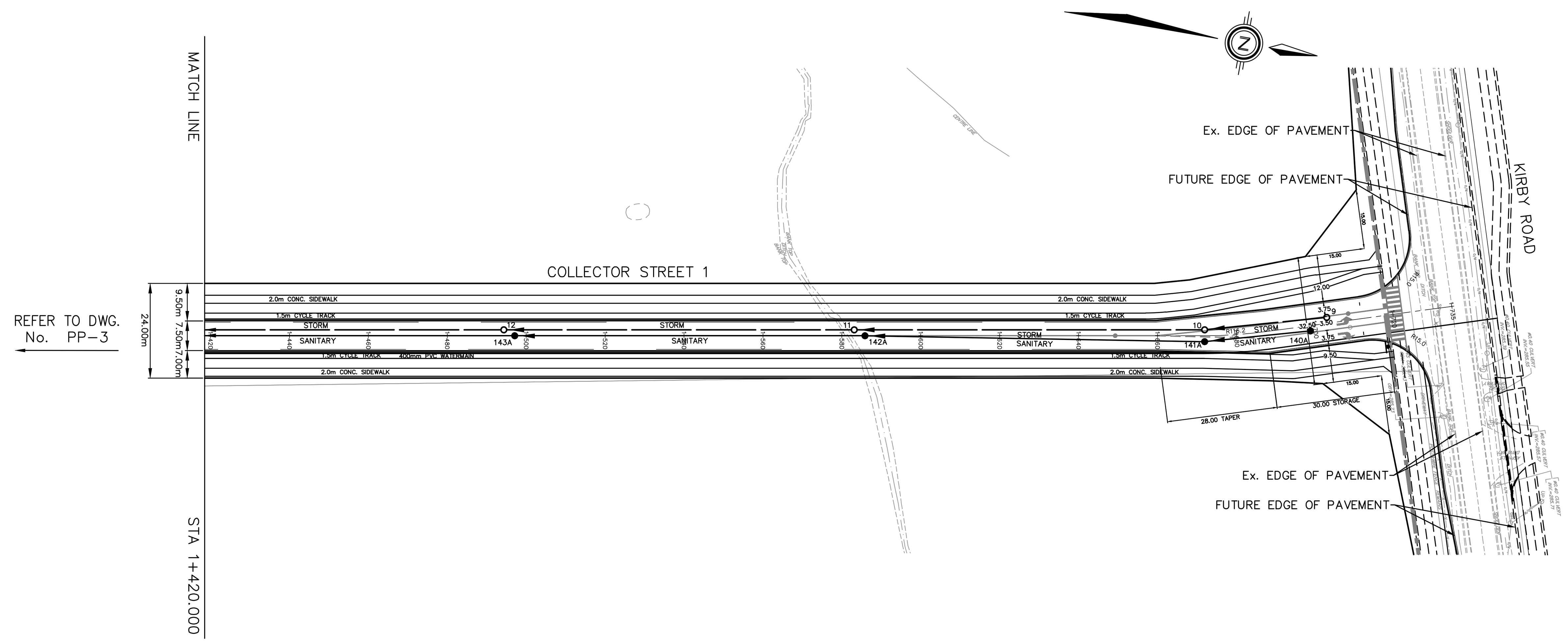
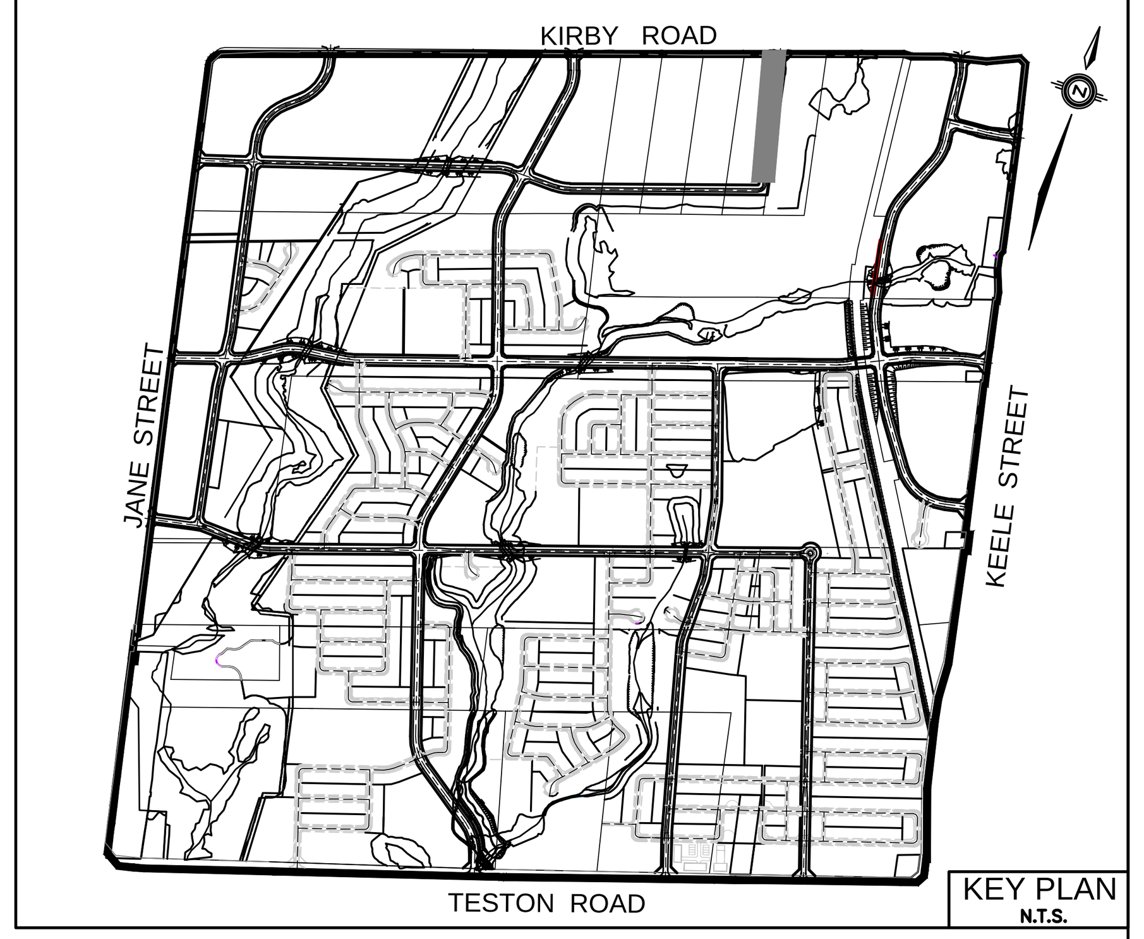


NOTE:
FUTURE KIRBY ROAD DESIGN SHOWN AS PER RECOMMENDED KIRBY ROAD ENVIRONMENTAL ASSESSMENT DESIGN.

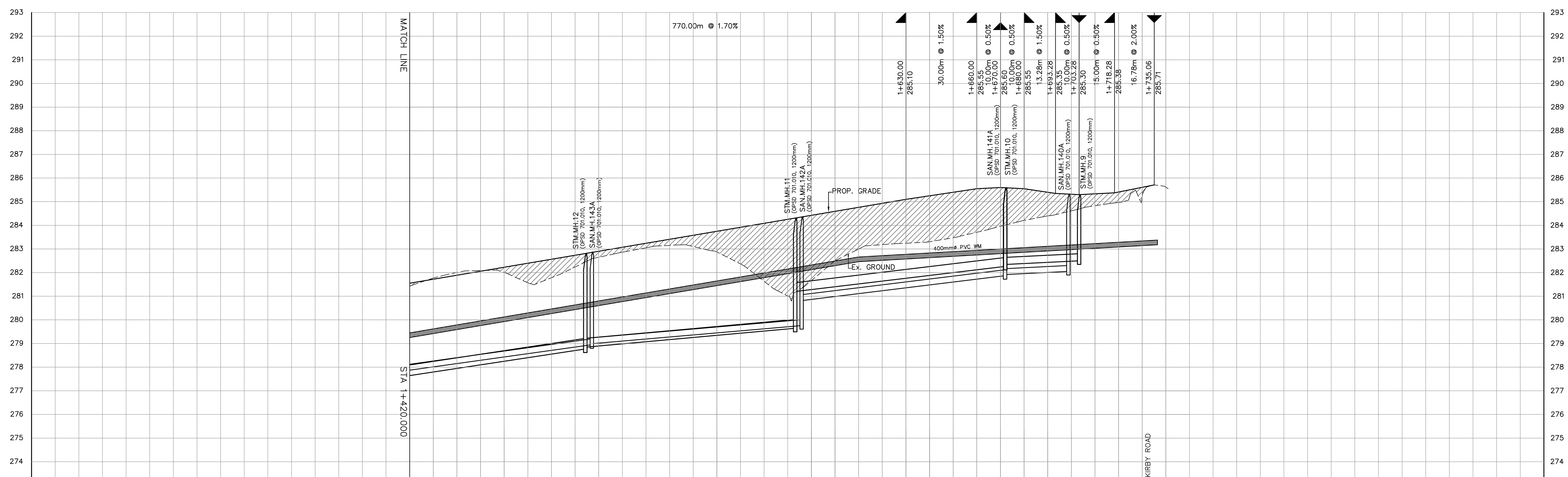
REVISIONS			
No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES EXISTING WATERMAIN
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)



SANITARY SEWER: 250ø PVC SAN–99.8m @ 1.40% | 278.95S 279.00N | 250ø PVC SAN–88.8m @ 0.86% | 279.76S 280.82N | 250ø PVC SAN–86.1m @ 1.23% | 281.87S 281.92N | 250ø PVC SAN–27.0m @ 0.50% | 282.05S

STORM SEWER: 450ø PVC STM–94.5m @ 1.51% | 278.77S 278.84N | 375ø PVC STM–88.8m @ 0.90% | 279.64S 281.20N | 375ø PVC STM–88.8m @ 1.20% | 282.26S 282.34N | 300ø PVC STM–31.1m @ 0.50% | 282.50S

PROPOSED ELEVATION	CHAINAGE
281.55 (281.43)	1+420.00
281.89 (282.00)	1+440.00
282.23 (282.01)	1+460.00
282.57 (281.78)	1+480.00
282.90 (282.65)	1+500.00
283.24 (283.05)	1+520.00
283.58 (283.10)	1+540.00
283.92 (282.37)	1+560.00
284.25 (281.01)	1+580.00
284.59 (282.50)	1+600.00
284.93 (283.18)	1+620.00
285.25 (283.30)	1+640.00
285.55 (283.71)	1+660.00
	1+671.94
285.55 (284.21)	1+680.00
	1+687.62
285.32 (284.61)	1+700.00
	1+703.28
	1+718.28
285.41 (284.97)	1+720.00
	1+735.06
	1+740.00

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

BLOCK 27 RESIDENTIAL SUBDIVISION

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E-mail: design@schaeffers.com

VAUGHAN

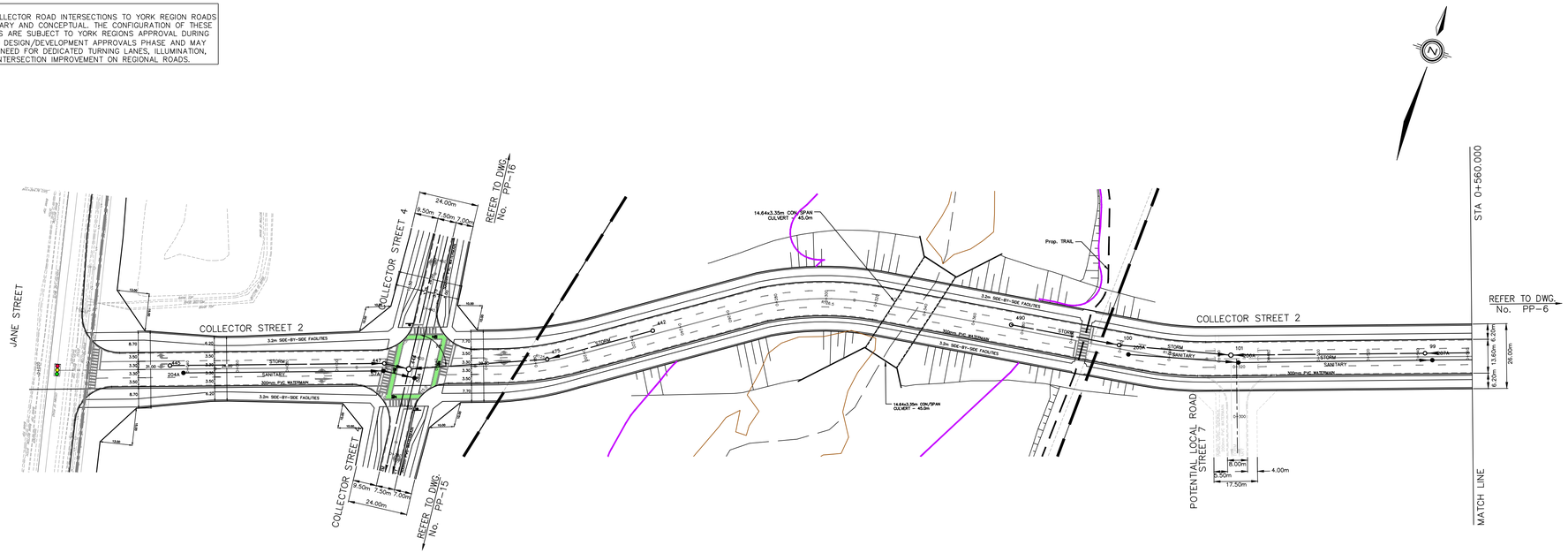
PLAN AND PROFILE OF
COLLECTOR STREET 1
FROM STA. 1+420.000 TO STA. 1+740.000

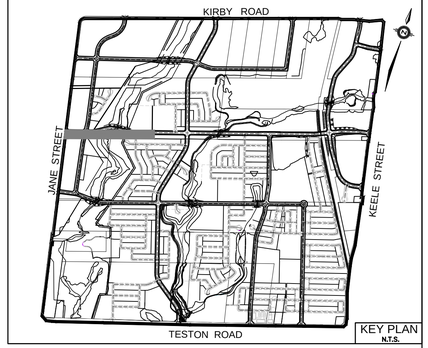
REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-4
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE:	
DESIGNED BY: F.T.	APPROVED BY: P.S	MARCH 2022	

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

NOTE:
BLOCK 27 COLLECTOR ROAD INTERSECTIONS TO YORK REGION ROADS ARE PRELIMINARY AND CONCEPTUAL. THE CONFIGURATION OF THESE INTERSECTIONS ARE SUBJECT TO YORK REGIONS APPROVAL DURING THE DETAILED DESIGN/DEVELOPMENT APPROVALS PHASE AND MAY INCLUDE THE NEED FOR DEDICATED TURNING LANES, ILLUMINATION, AND OTHER INTERSECTION IMPROVEMENT ON REGIONAL ROADS.





REVISIONS			
No.	DESCRIPTION	By	Date

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
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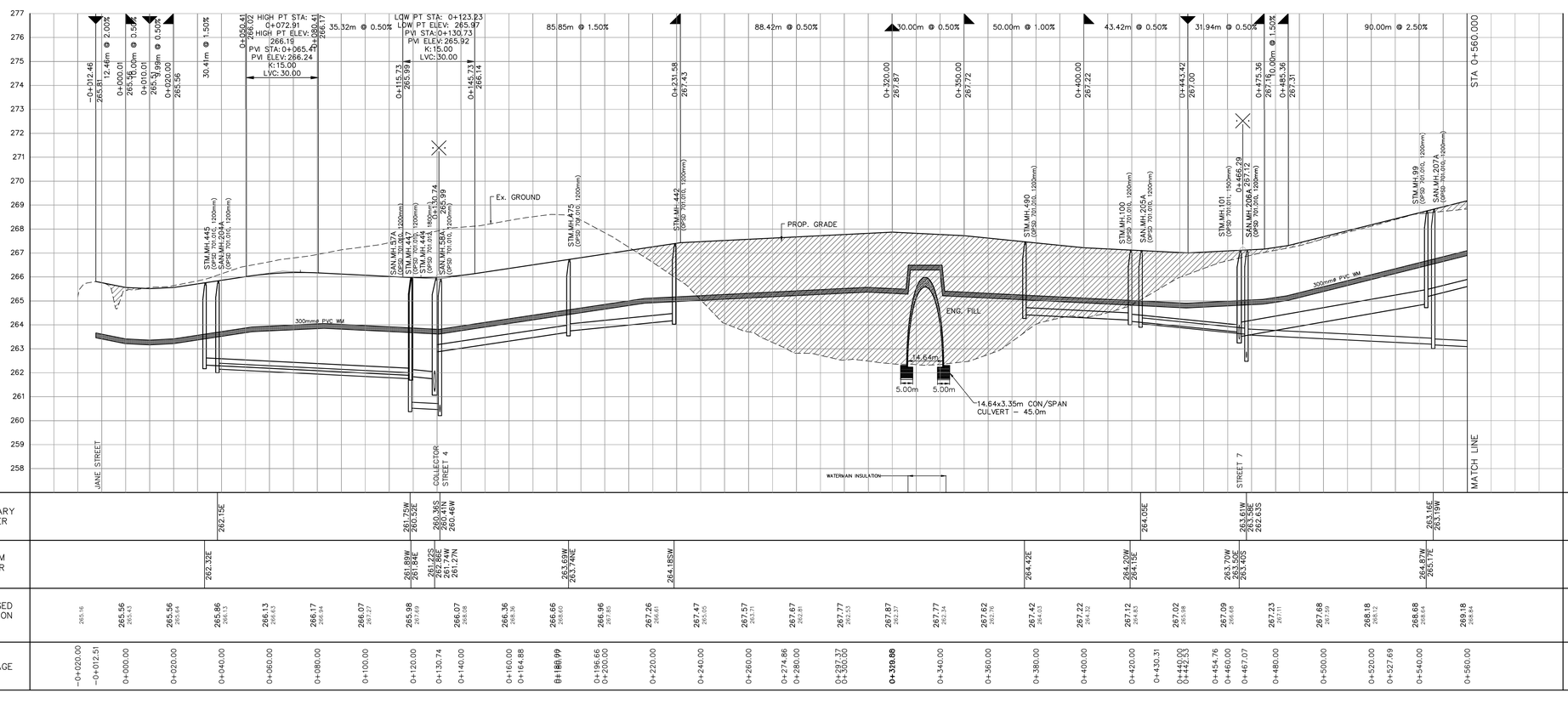
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)
- DENOTES GREENBELT
- DENOTES TRAIL



BENCHMARK NOTE

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 2
FROM STA. -0+020.000 TO STA. 0+560.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-5
DRAWN BY:	K.M.	CHECKED BY:	F.T.
DESIGNED BY:	F.T.	APPROVED BY:	P.S
DATE:	MARCH 2022		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

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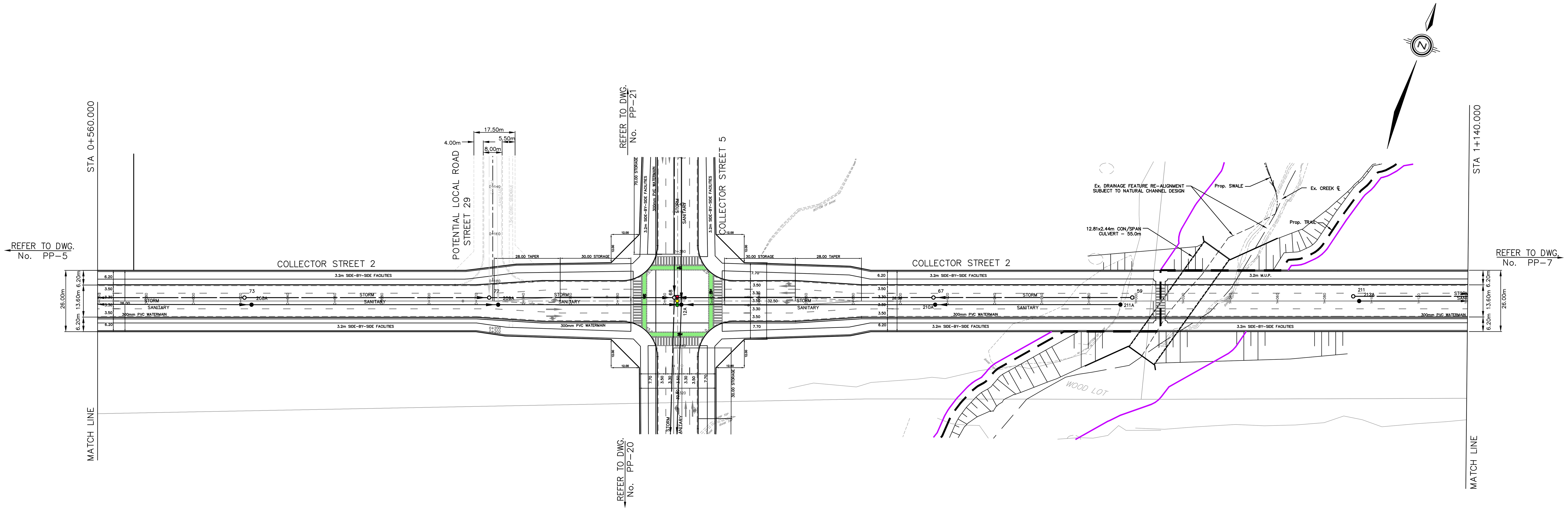

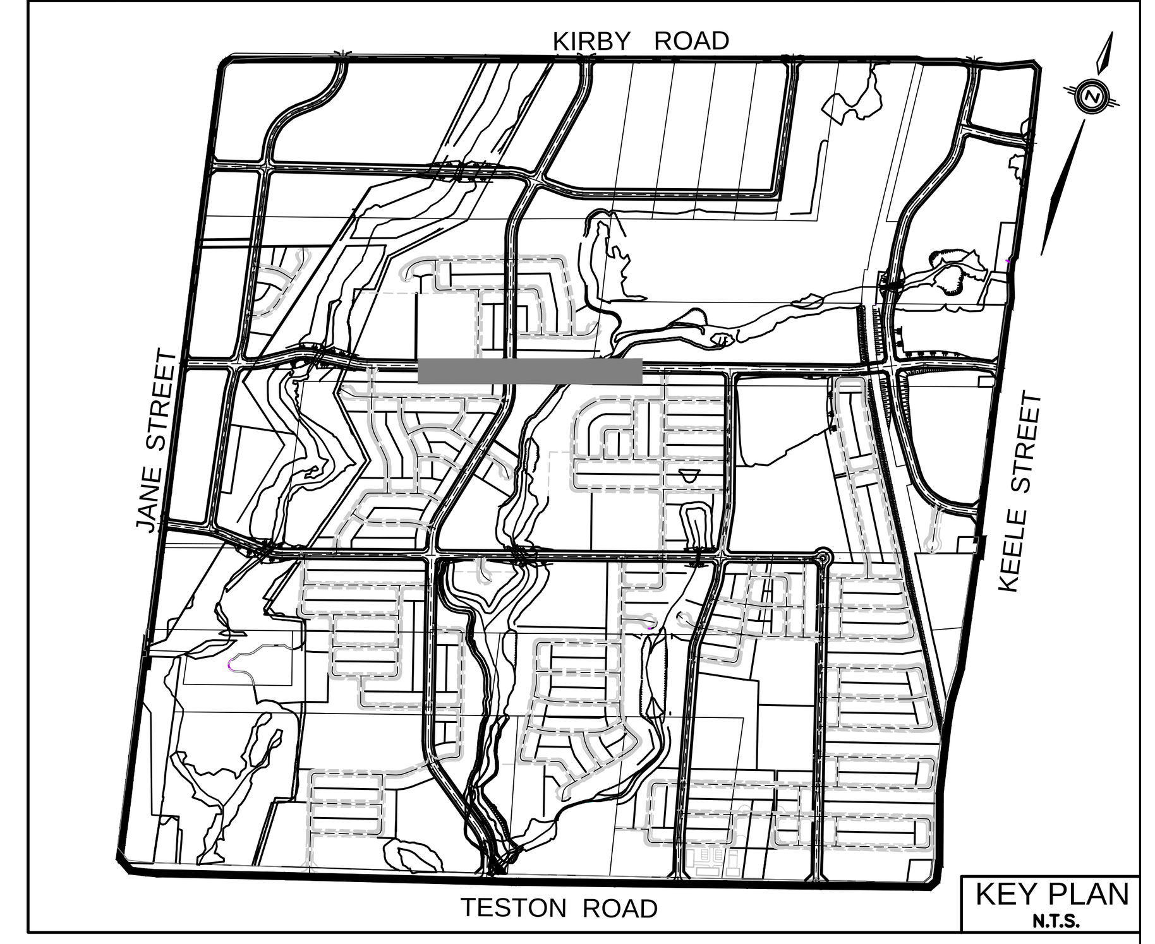

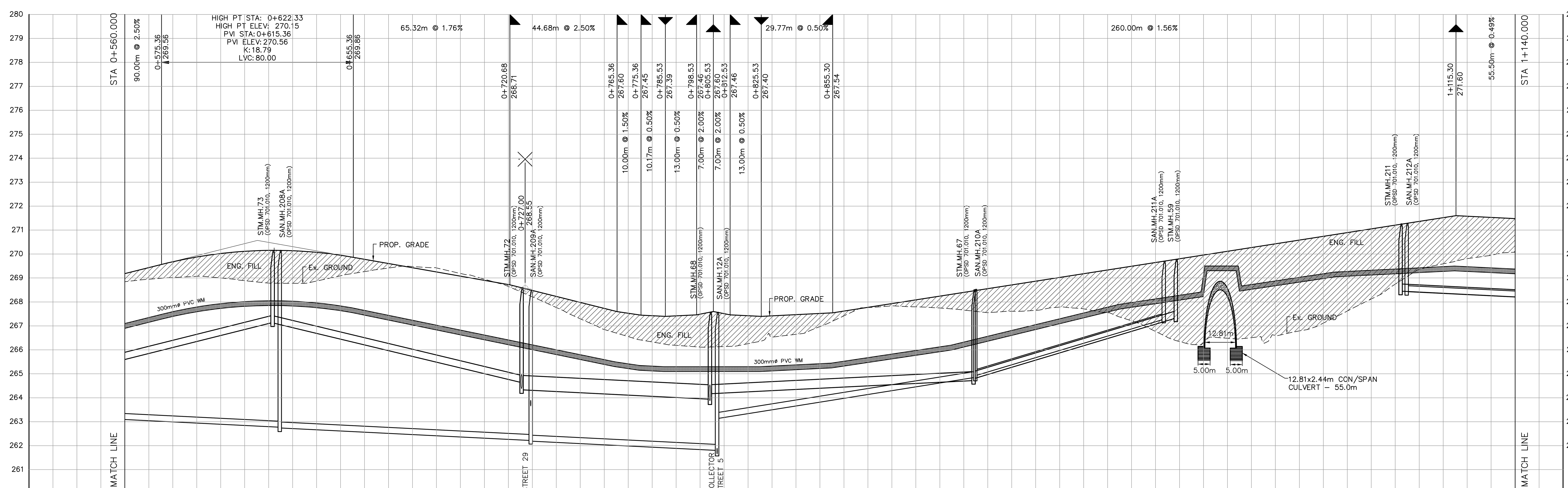

CHAINAGE	PROPOSED ELEVATION	SANITARY SEWER	STORM SEWER
0+560.00	269.18 (268.84)		
0+580.00	269.67 (269.01)		
0+600.00	270.02 (269.00)		
0+620.00	270.15 (268.79)	262.77W 262.74E	267.12E 267.14W
0+640.00	270.07 (268.87)		
0+660.00	269.78 (269.26)		
0+680.00	269.43 (269.48)		
0+700.00	269.08 (269.19)		
0+710.92			
0+720.00	268.73 (268.64)		
0+727.02		262.22W 263.65N 262.19E	264.38N 264.63W 264.33E
0+740.00	268.23 (267.77)		
0+760.00	267.73 (266.85)		
0+780.00	267.42 (266.33)		
0+800.00	267.49 (266.11)		
0+805.52		261.65S 263.15N 263.13E 261.80W	263.87S 264.02N 264.17E 263.94W
0+820.00	267.42 (266.26)		
0+840.00	267.47 (266.65)		
0+860.00	267.62 (267.42)		
0+880.00	267.93 (267.84)		
0+900.00	268.24 (267.74)		
0+920.00	268.55 (267.55)	264.85W 264.92E	264.72W 264.79E
0+940.00	268.86 (267.65)		
0+960.00	269.18 (267.71)		
0+980.00	269.49 (267.21)		
1+000.00	269.80 (266.35)	267.28W	267.32W
1+020.00	270.11 (266.48)		
1+040.00	270.42 (266.60)		
1+060.00	270.74 (267.12)		
1+080.00	271.05 (268.12)		
1+100.00	271.36 (269.35)	268.43E	268.45E
1+120.00	271.57 (269.81)		
1+140.00	271.48 (270.08)		

REVISIONS

No.	DESCRIPTION	By	Date

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
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- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)
- DENOTES TRAIL

BENCHMARK NOTE

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1.	23/08/03	ENVIRONMENTAL STUDY REPORT

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

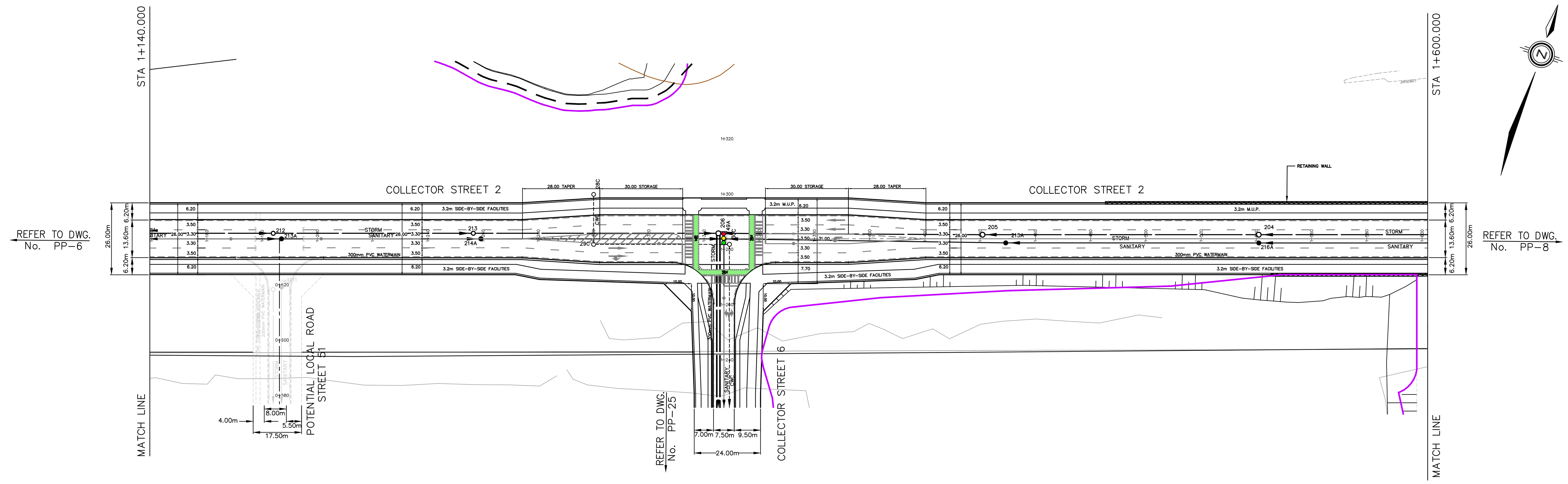
PLAN AND PROFILE OF COLLECTOR STREET 2

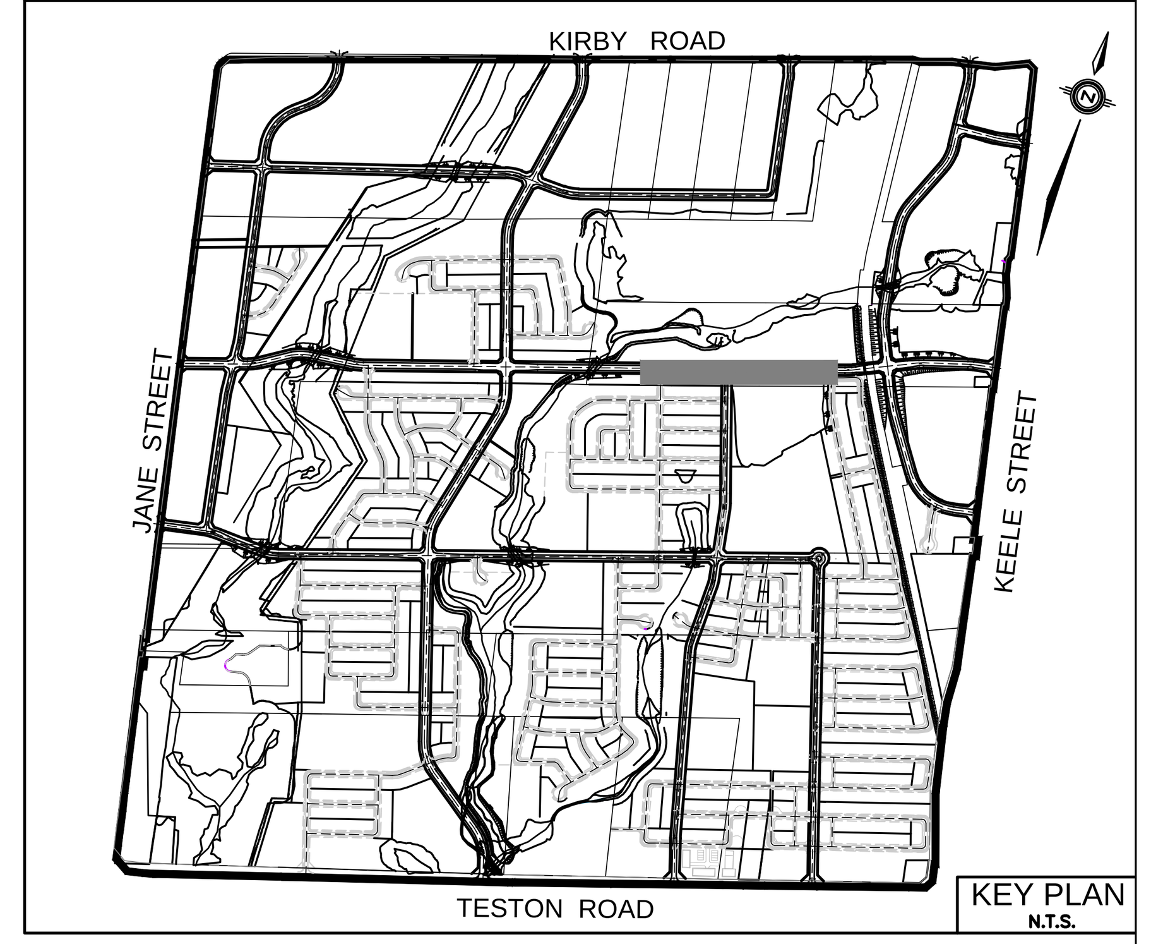
FROM STA. 0+560.000 TO STA. 1+140.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-6	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m





KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
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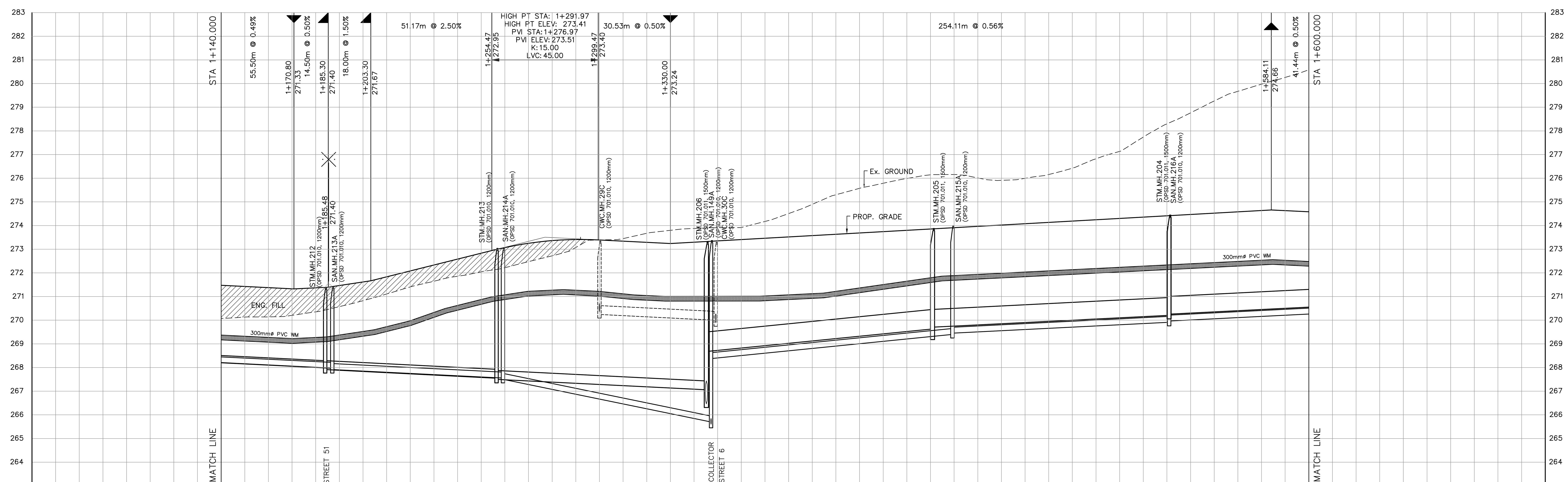

CLEAN WATER COLLECTOR	270.35N 270.25E	270.00W 269.90S			
SANITARY SEWER	267.92E 267.97W	267.51E 267.56W	265.60S 265.70W 268.38E	269.40W 269.45E	269.92W 269.97E
STORM SEWER	267.99W 267.92E	267.50E 267.55W	268.68E 267.06W 266.46S	269.64W 269.71E	270.21W 270.26E

CHAINAGE	PROPOSED ELEVATION
1+140.00	271.48 (270.08)
1+160.00	271.38 (270.14)
1+180.00	271.37 (270.36)
1+186.26	
1+200.00	271.62 (270.83)
1+220.00	272.08 (271.41)
1+240.00	272.58 (271.86)
1+260.00	273.07 (272.22)
1+280.00	273.37 (272.72)
1+300.00	273.39 (273.39)
1+320.00	273.29 (273.68)
1+340.00	273.30 (273.88)
1+347.20	
1+360.00	273.41 (273.92)
1+380.00	273.52 (274.51)
1+400.00	273.63 (275.30)
1+420.00	273.75 (275.79)
1+440.00	273.86 (276.15)
1+460.00	273.97 (276.01)
1+480.00	274.08 (276.00)
1+500.00	274.19 (276.43)
1+520.00	274.31 (277.14)
1+540.00	274.42 (278.30)
1+560.00	274.53 (279.27)
1+580.00	274.64 (279.98)
1+600.00	274.58 (280.58)

REVISIONS

No.	DESCRIPTION	By	Date

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 2
FROM STA. 1+140.000 TO STA. 1+600.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-7	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

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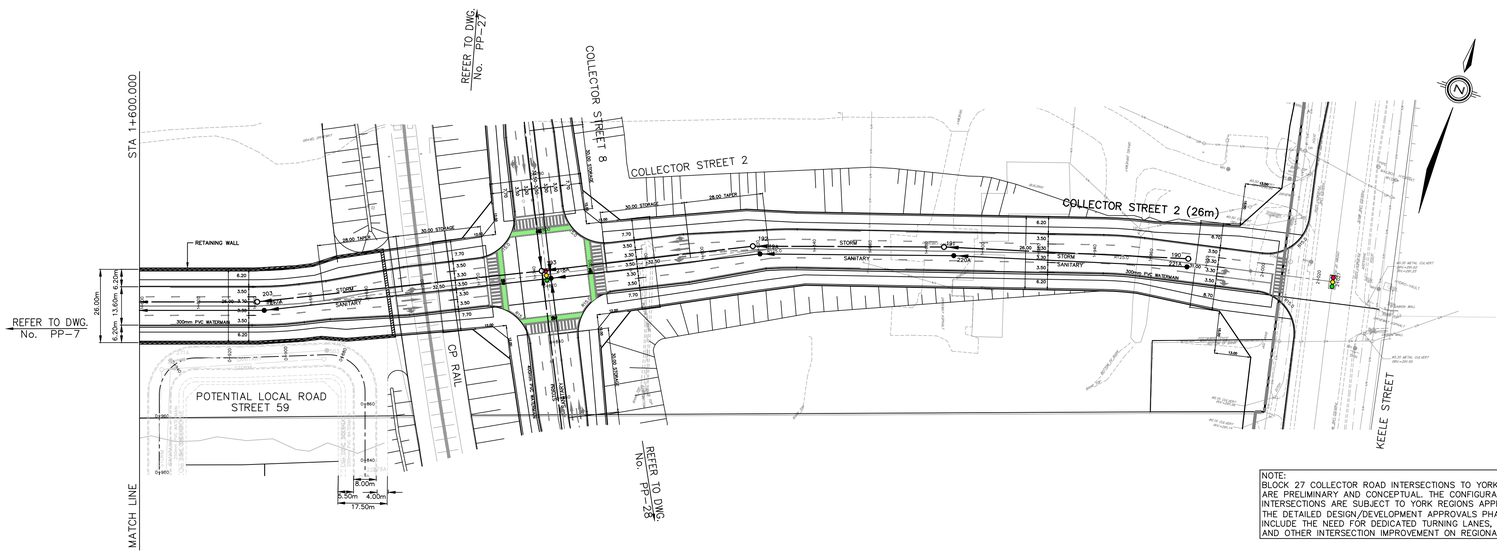
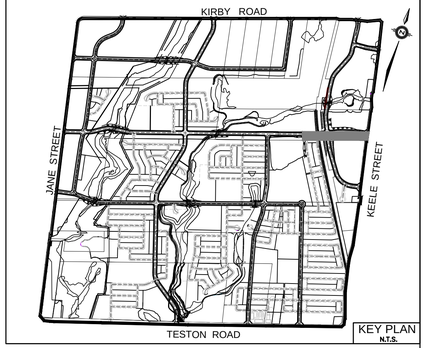
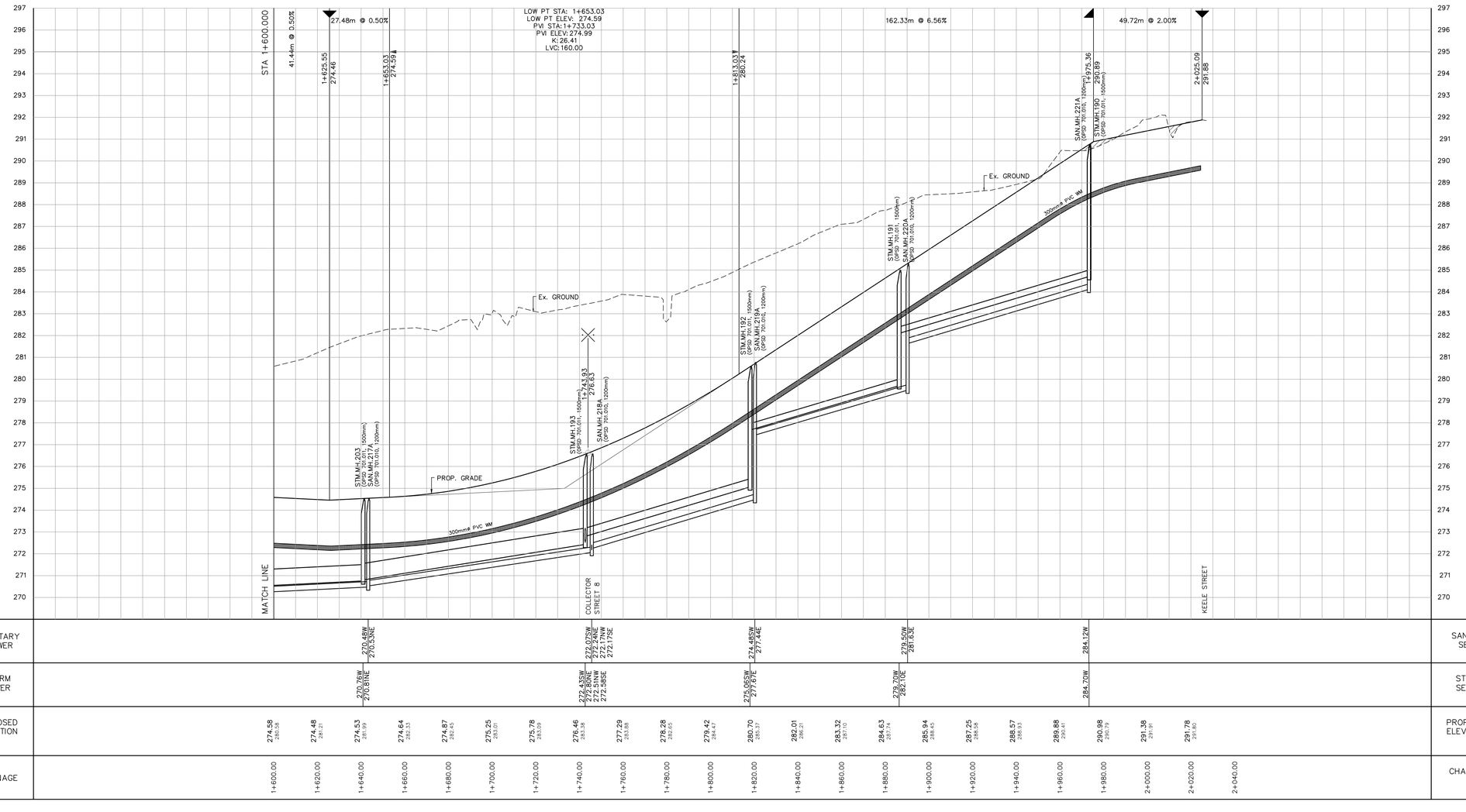


NOTE:
BLOCK 27 COLLECTOR ROAD INTERSECTIONS TO YORK REGION ROADS ARE PRELIMINARY AND CONCEPTUAL. THE CONFIGURATION OF THESE INTERSECTIONS ARE SUBJECT TO YORK REGIONS APPROVAL DURING THE DETAILED DESIGN/DEVELOPMENT APPROVALS PHASE AND MAY INCLUDE THE NEED FOR DEDICATED TURNING LANES, ILLUMINATION, AND OTHER INTERSECTION IMPROVEMENT ON REGIONAL ROADS.

REVISIONS			
No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.



LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
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- DENOTES LIMIT OF SUBDIVISION

BENCHMARK NOTE

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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 2
FROM STA. 1+600.000 TO STA. 2+040.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-8
DRAWN BY:	K.M.	CHECKED BY:	F.T.
DESIGNED BY:	F.T.	APPROVED BY:	P.S
DATE:	MARCH 2022		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

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NOTE:
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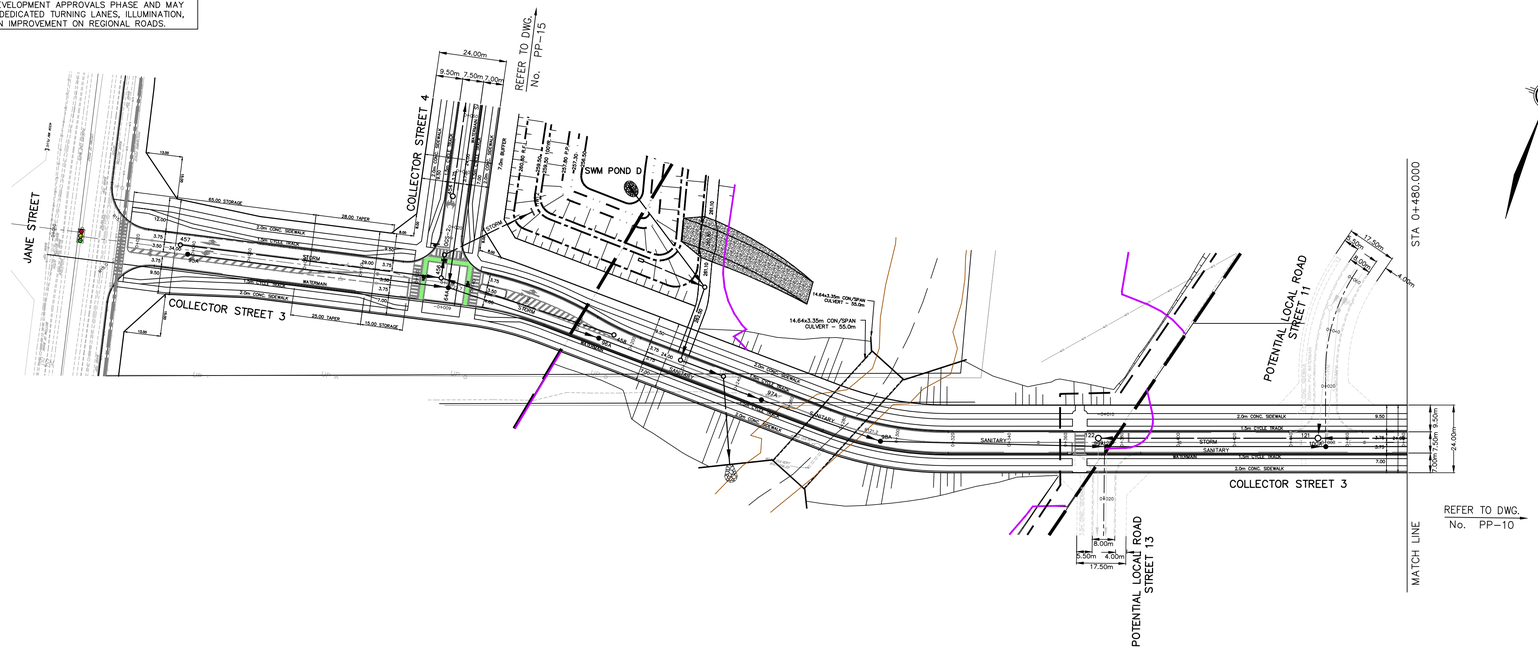
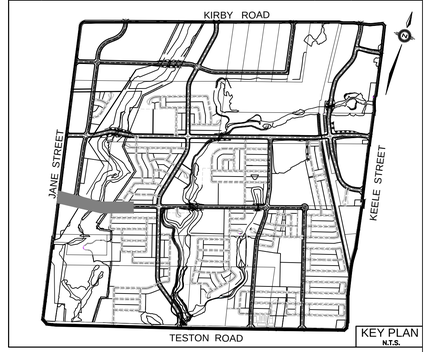
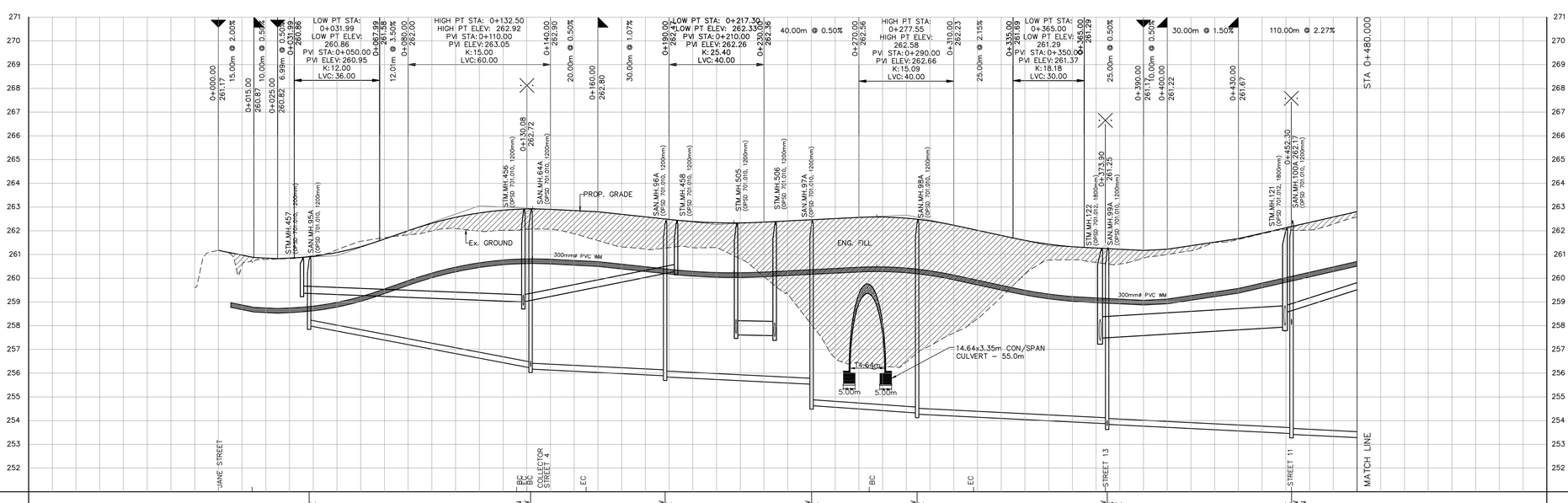




REVISIONS

No.	DESCRIPTION	By	Date



LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 3
FROM STA. 0+000.000 TO STA. 0+480.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-9
DRAWN BY:	K.M.	CHECKED BY:	F.T.
DESIGNED BY:	F.T.	APPROVED BY:	P.S
		DATE:	MARCH 2022

SCALE H 1:1000 0 5 10 15 20 25 30 35 40 45 50m
V 1:100 0

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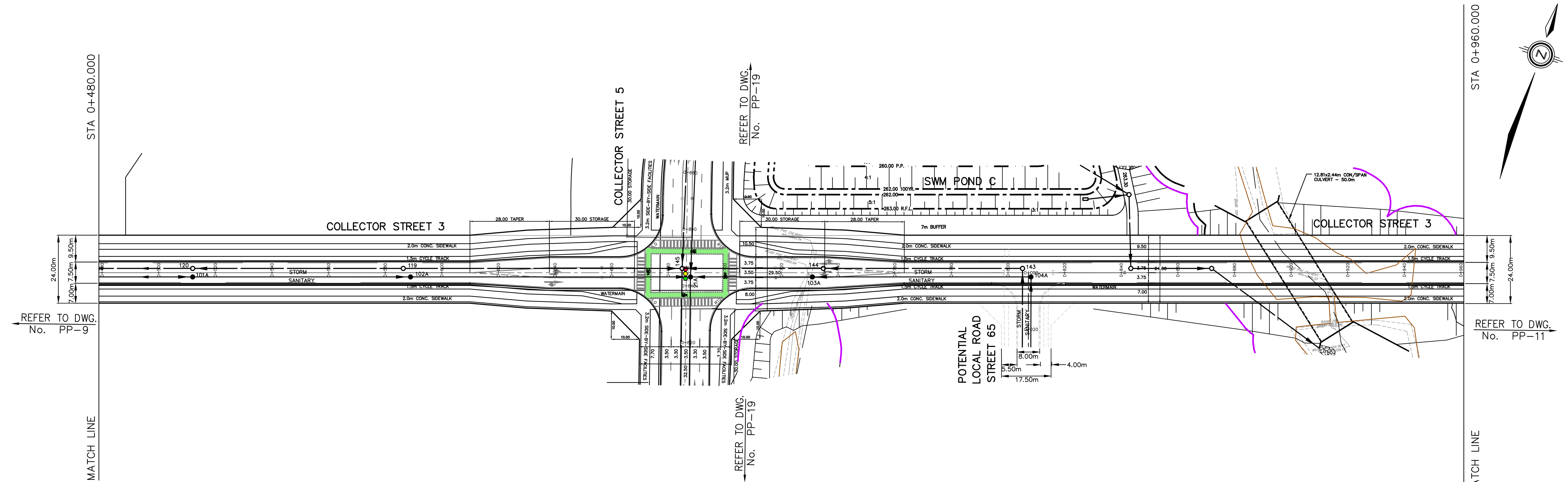
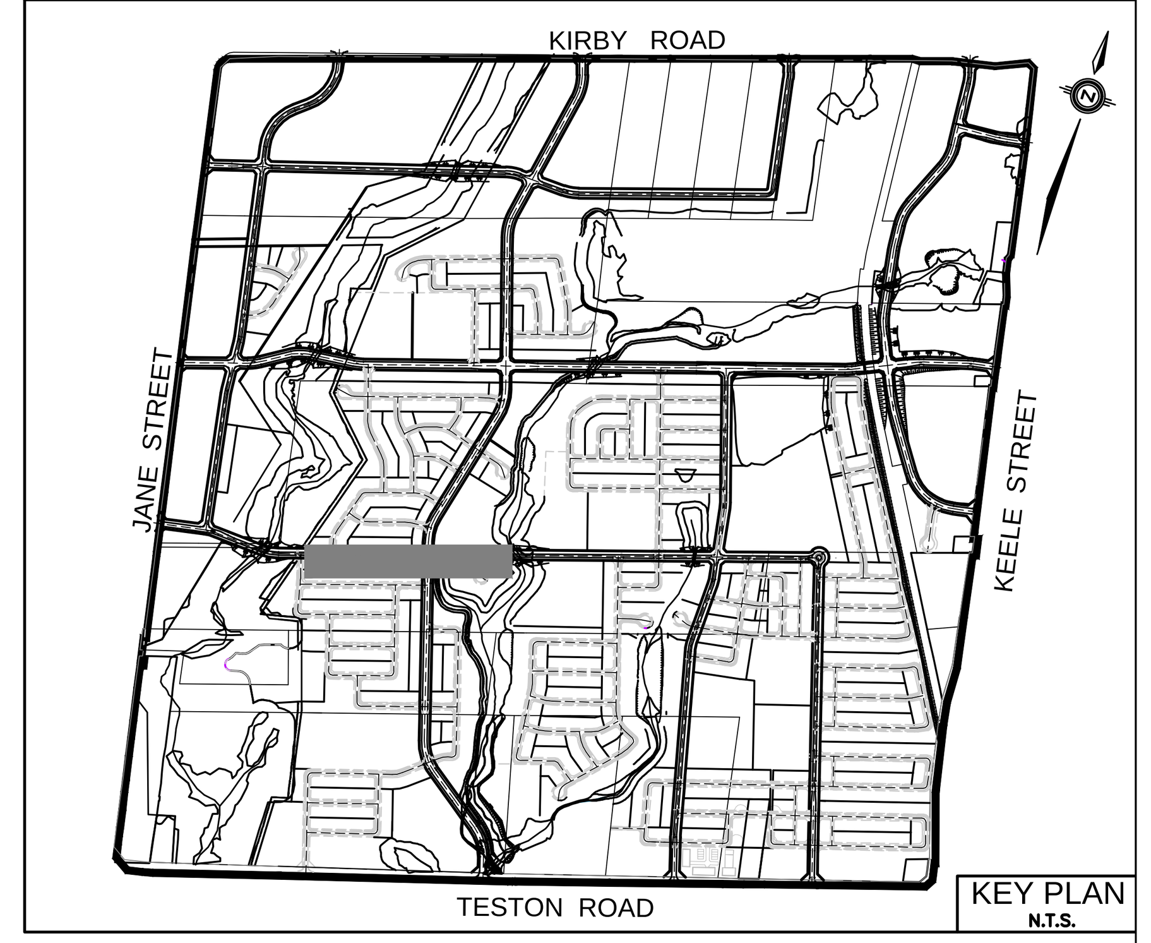
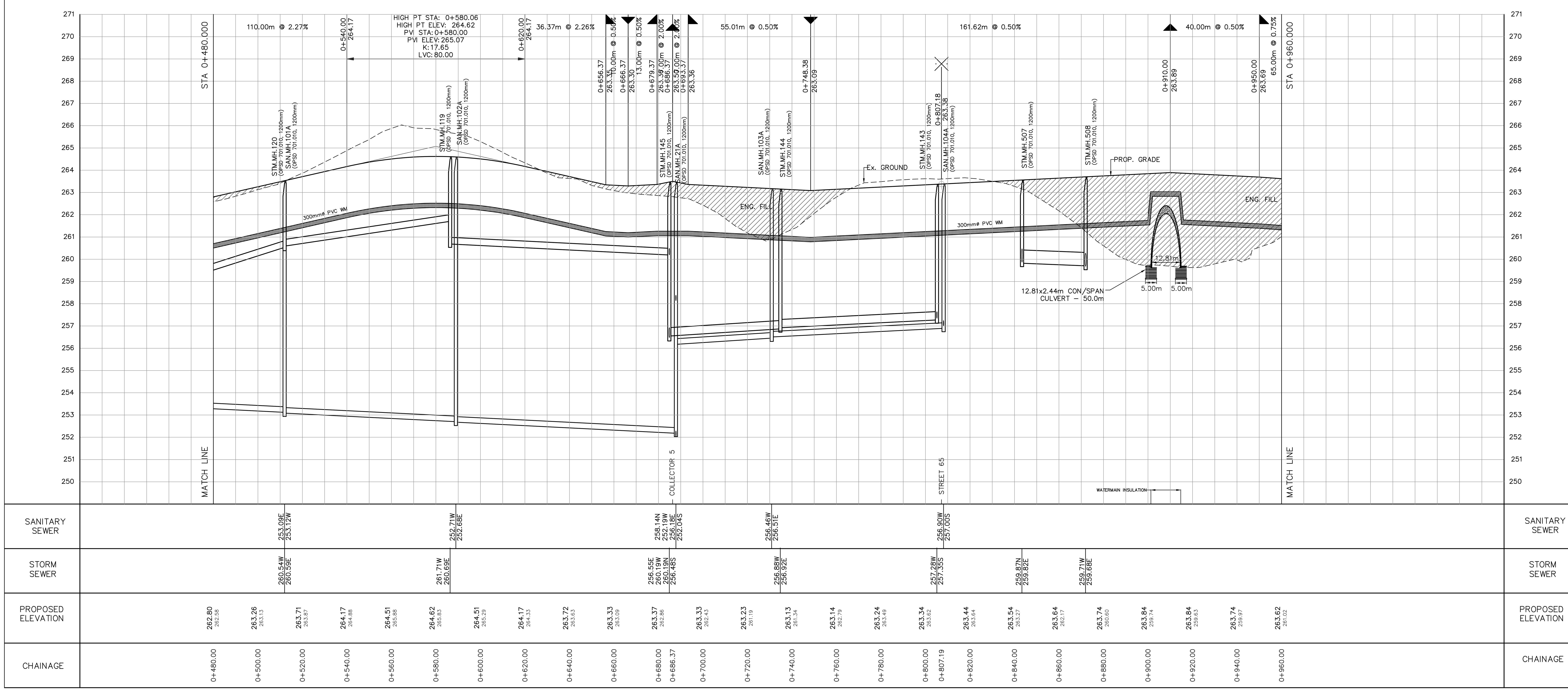
REVISIONS			
No.	DESCRIPTION	By	Date





LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES EXISTING WATERMAIN
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)
- DENOTES TRAIL



BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

BLOCK 27 RESIDENTIAL SUBDIVISION

SCHAEFFERS CONSULTING ENGINEERS
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E-mail: design@schaeffers.com

VAUGHAN

PLAN AND PROFILE OF

COLLECTOR STREET 3

FROM STA. 0+480.000 TO STA. 0+960.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766	DRAWING No. PP-10	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022
DESIGNED BY: F.T.	APPROVED BY: P.S	

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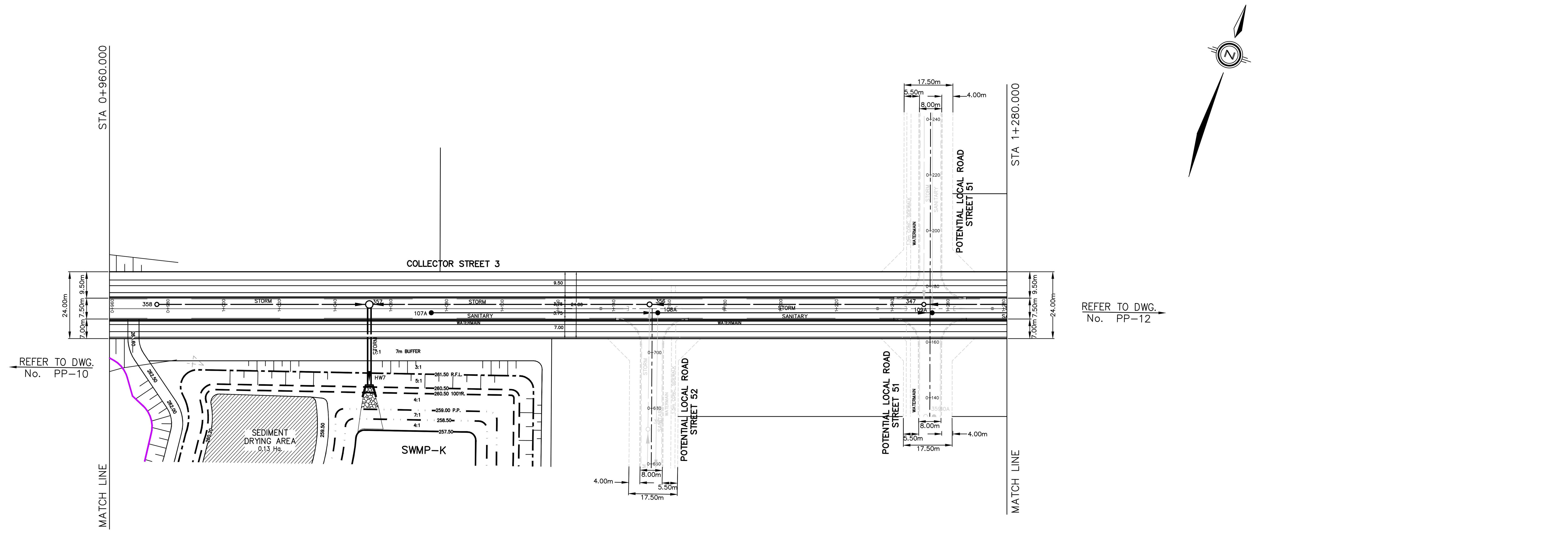
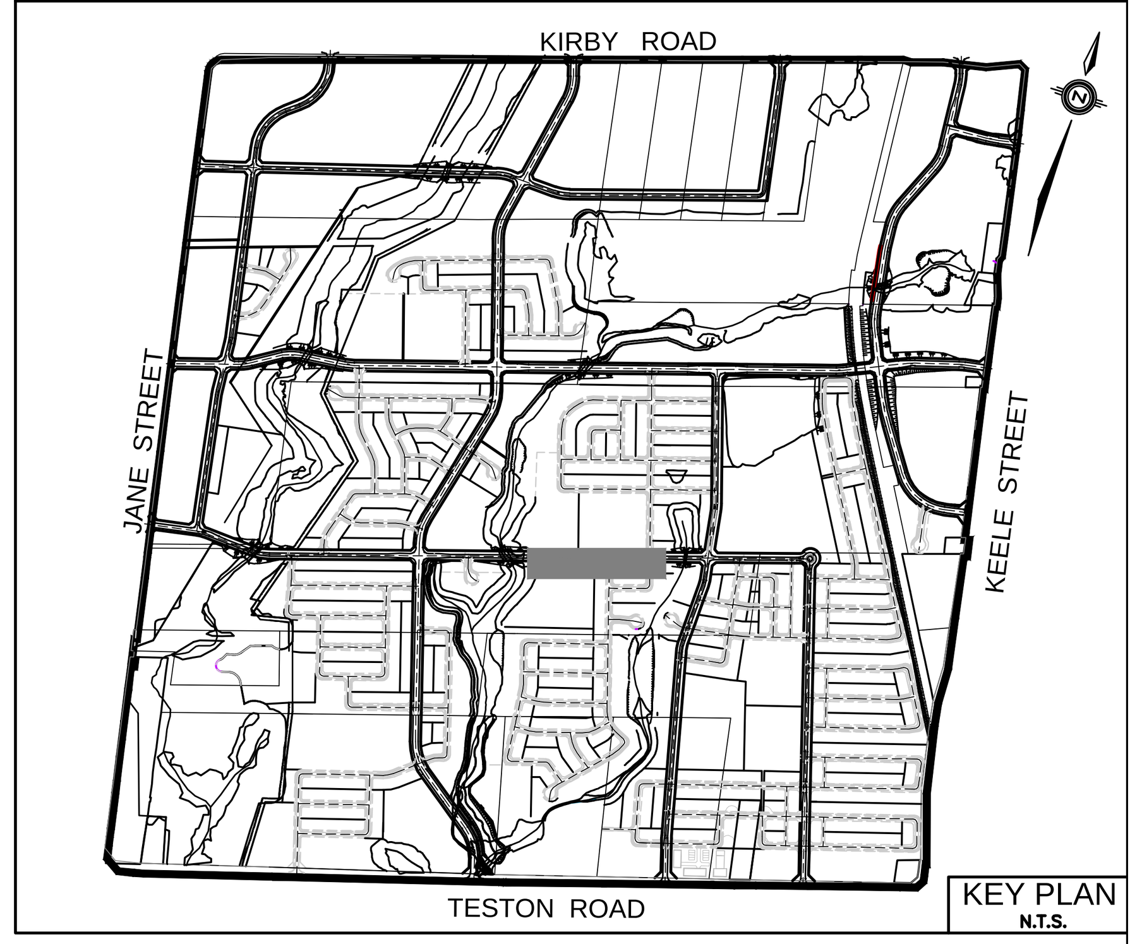


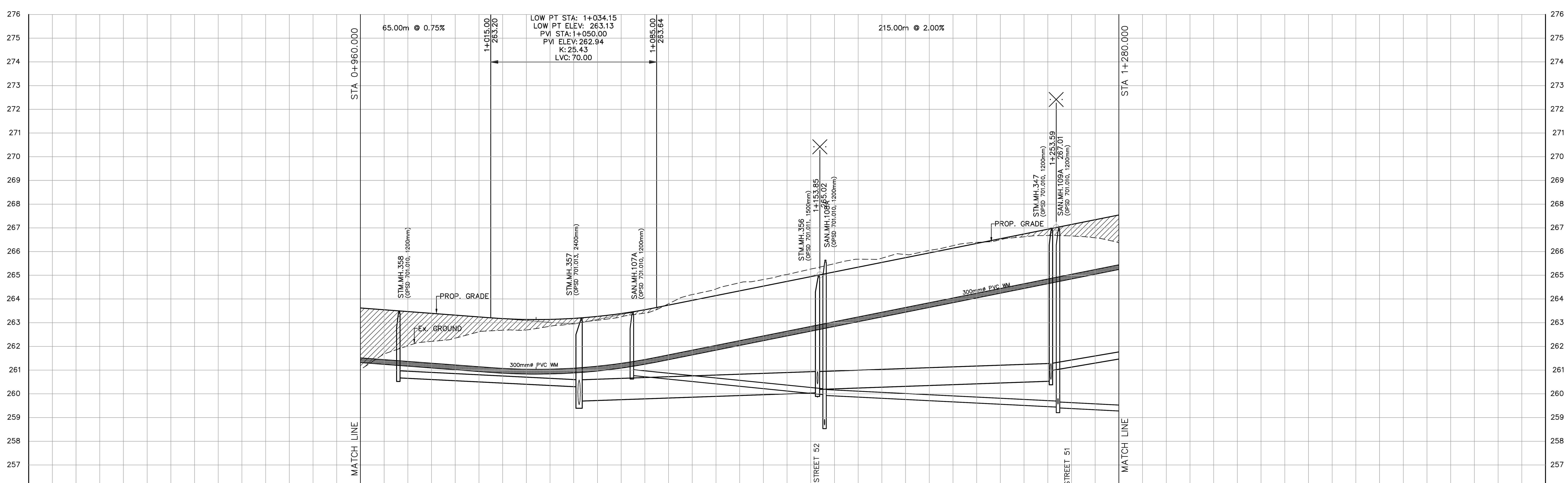


REVISIONS

No.	DESCRIPTION	By	Date

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES EXISTING WATERMAIN
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)



CHAINAGE	PROPOSED ELEVATION
0+960.00	263.62 (261.02)
0+980.00	263.47 (262.02)
1+000.00	263.32 (262.35)
1+020.00	263.17 (262.68)
1+040.00	263.14 (262.85)
1+060.00	263.26 (263.10)
1+080.00	263.54 (263.40)
1+100.00	263.94 (264.18)
1+120.00	264.34 (264.68)
1+140.00	264.74 (265.03)
1+153.86	
1+160.00	265.14 (265.49)
1+180.00	265.54 (265.72)
1+200.00	265.94 (266.05)
1+220.00	266.34 (266.39)
1+240.00	266.74 (266.62)
1+253.60	
1+260.00	267.14 (266.66)
1+280.00	267.54 (266.37)

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

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1.	23/08/03	ENVIRONMENTAL STUDY REPORT

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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design@schaeffers.com

VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 3
FROM STA. 0+960.000 TO STA. 1+280.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-11	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 (0 5 10 15 20 25 30 35 40 45 50m)

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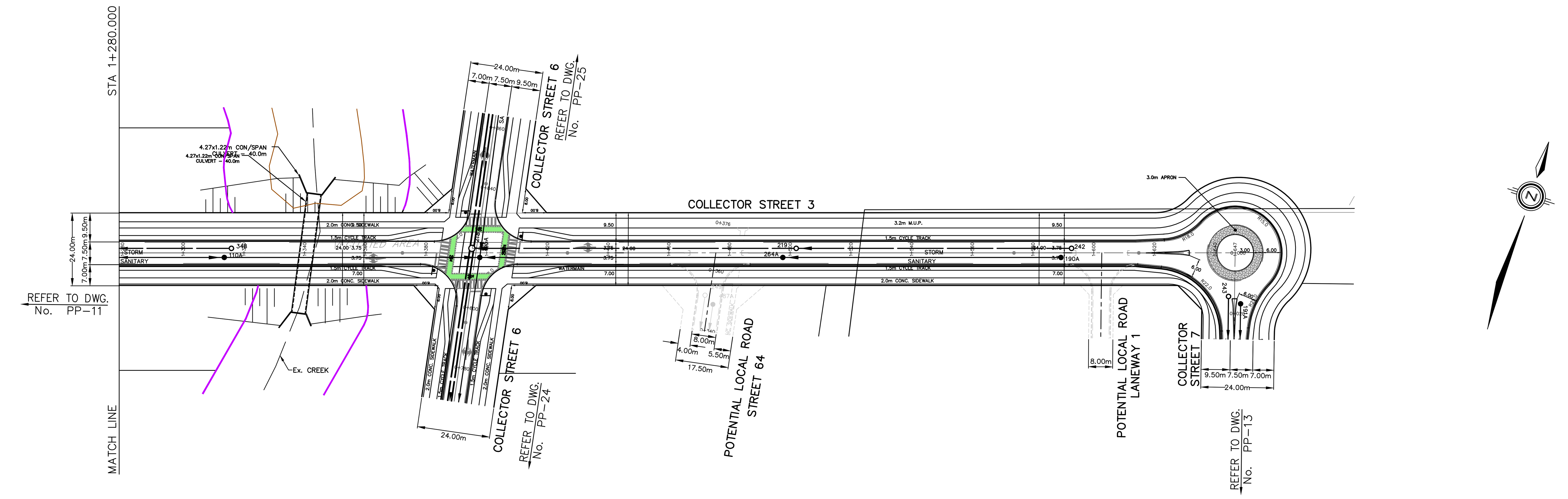
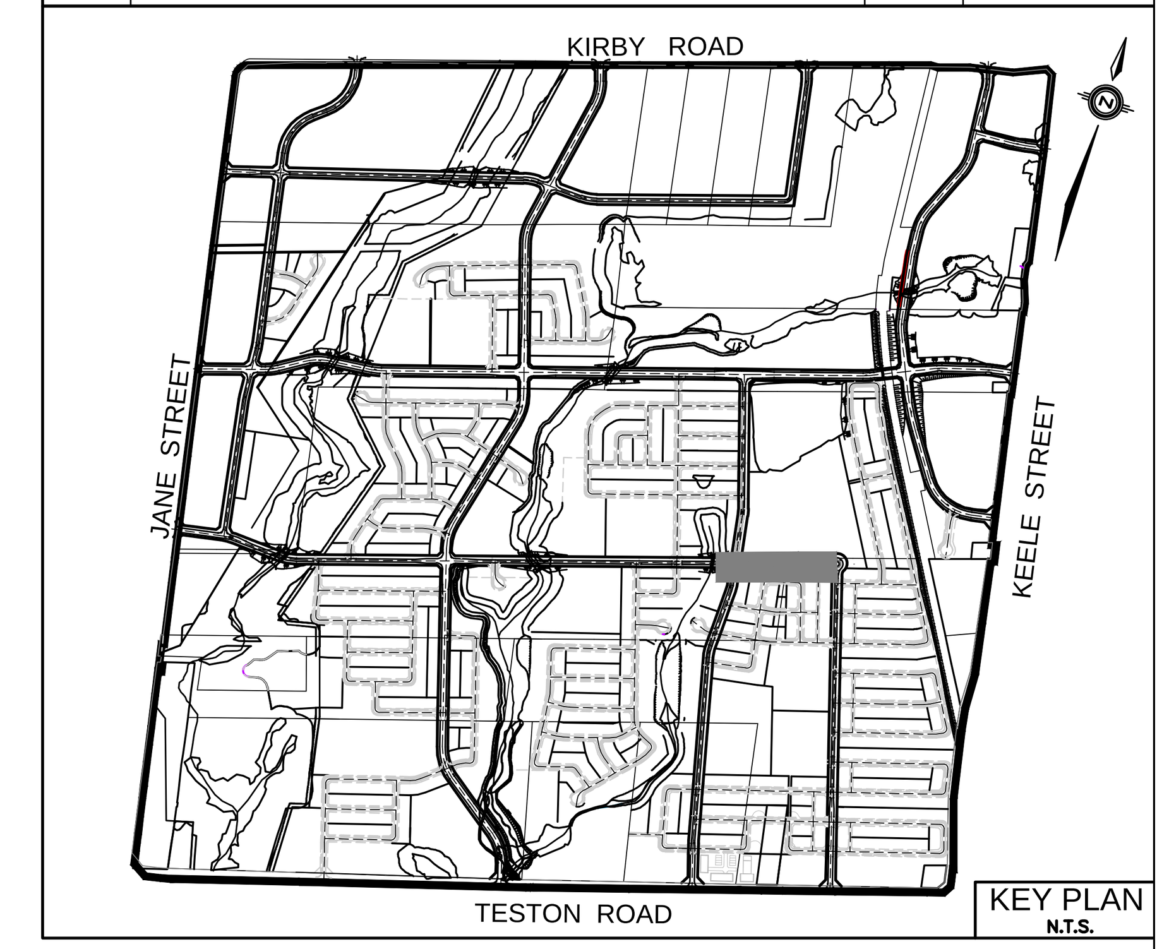
REVISIONS			
No.	DESCRIPTION	By	Date





LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
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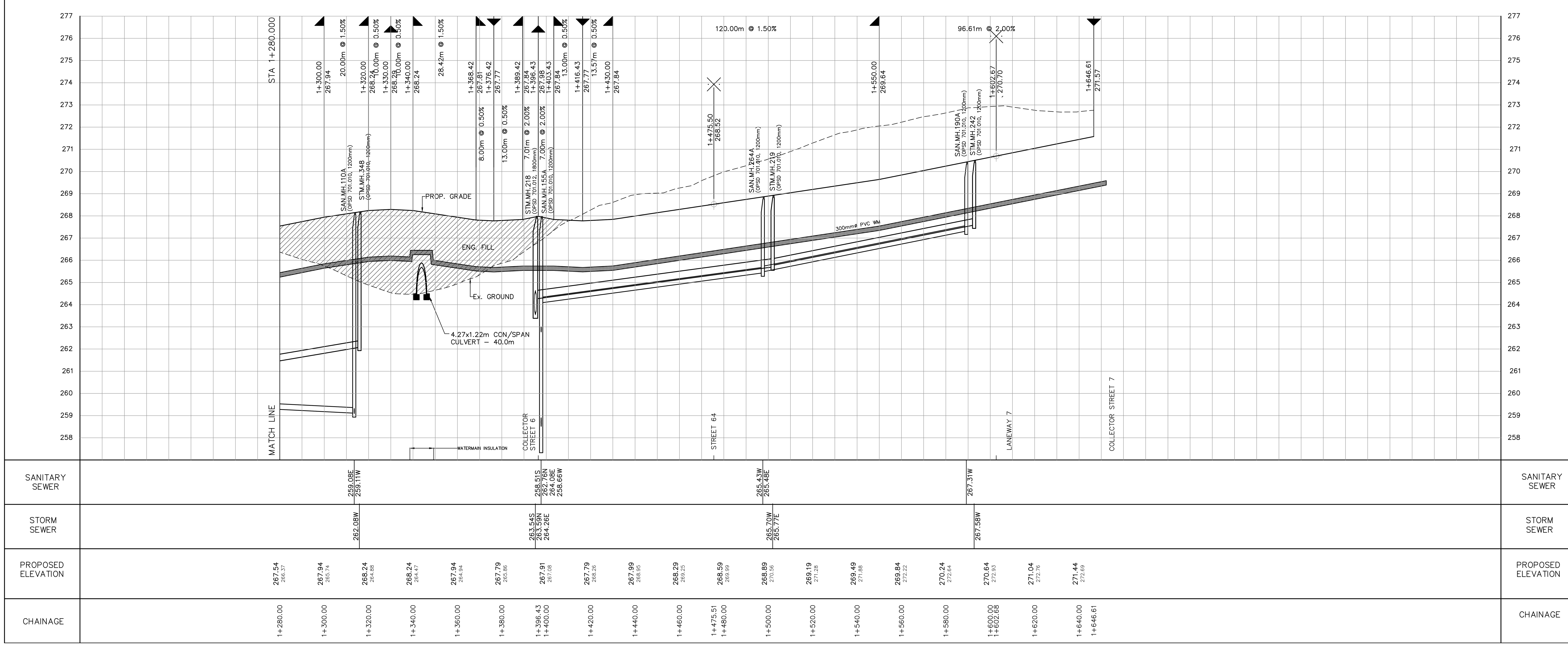

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

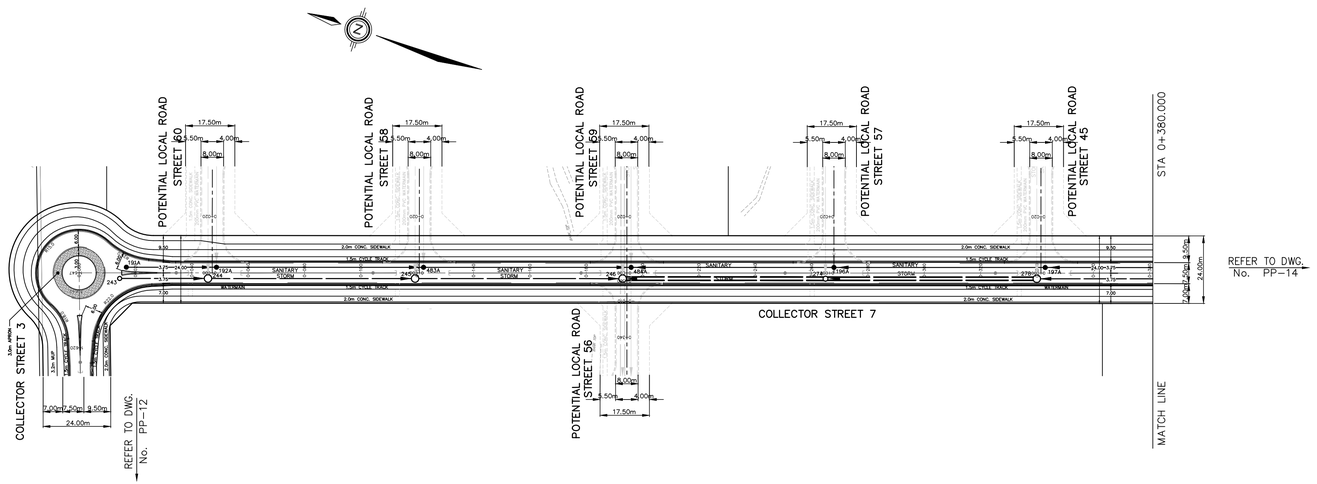
PLAN AND PROFILE OF
COLLECTOR STREET 3
FROM STA. 1+280.000 TO STA. 1+646.610

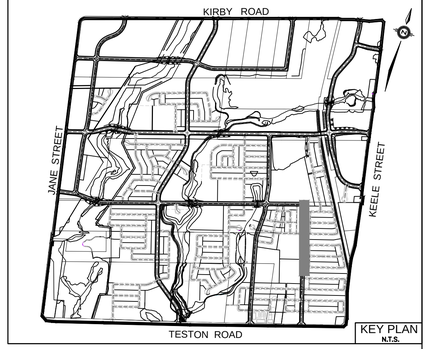
REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-12	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

REVISIONS			
No.	DESCRIPTION	By	Date





LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
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- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)

BENCHMARK NOTE

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No.	Date	Issued for
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1.	23/08/03	ENVIRONMENTAL STUDY REPORT

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 7
FROM STA. 0+000.000 TO STA. 0+380.00

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-13
DRAWN BY:	K.M.	CHECKED BY:	F.T.
DESIGNED BY:	F.T.	APPROVED BY:	P.S
DATE:	MARCH 2022		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

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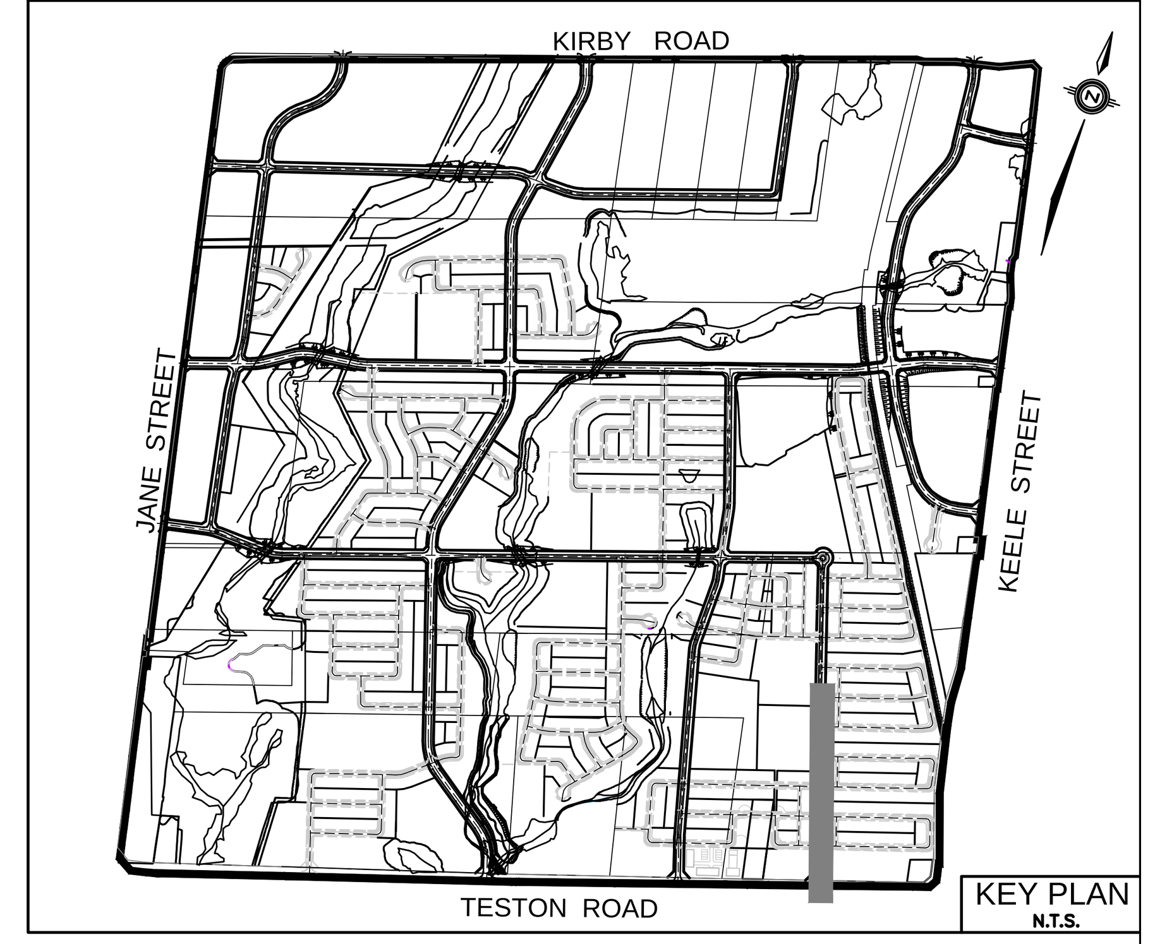
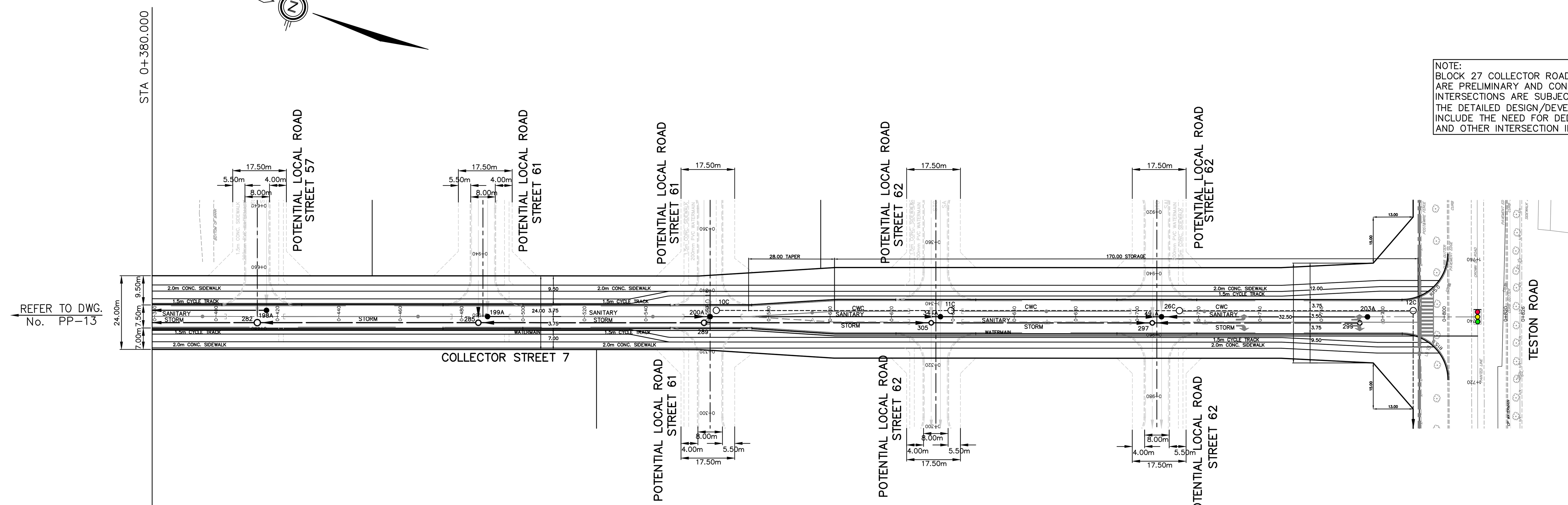
REVISIONS			
No.	DESCRIPTION	By	Date



NOTE:
BLOCK 27 COLLECTOR ROAD INTERSECTIONS TO YORK REGION ROADS ARE PRELIMINARY AND CONCEPTUAL. THE CONFIGURATION OF THESE INTERSECTIONS ARE SUBJECT TO YORK REGIONS APPROVAL DURING THE DETAILED DESIGN/DEVELOPMENT APPROVALS PHASE AND MAY INCLUDE THE NEED FOR DEDICATED TURNING LANES, ILLUMINATION, AND OTHER INTERSECTION IMPROVEMENT ON REGIONAL ROADS.



LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
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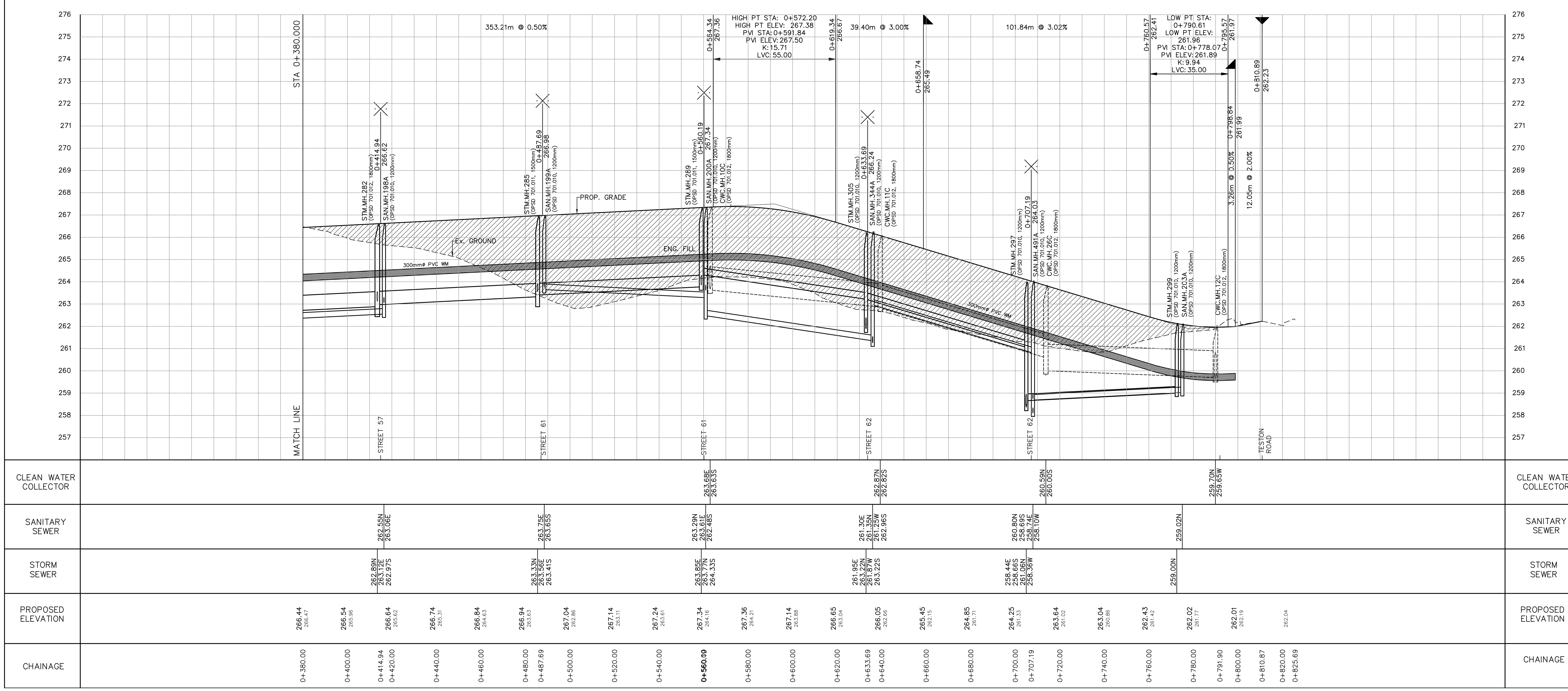

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BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
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VAUGHAN

PLAN AND PROFILE OF COLLECTOR STREET 7

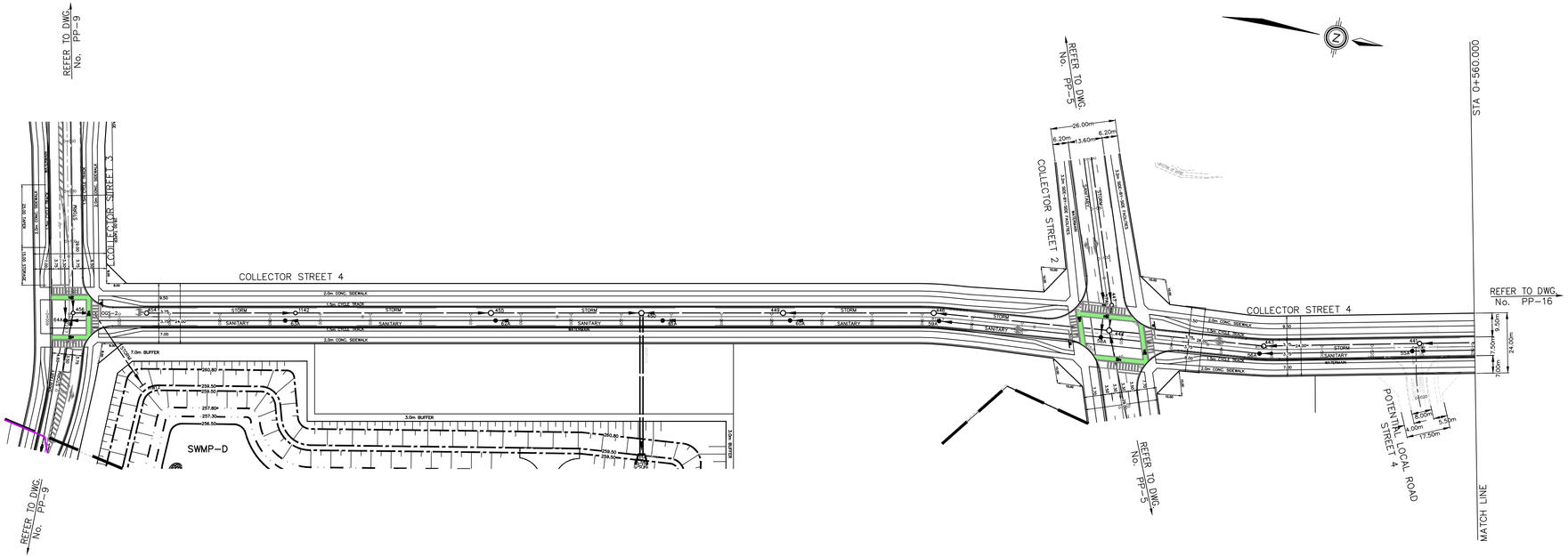
FROM STA. 0+380.000 TO STA. 0+810.890

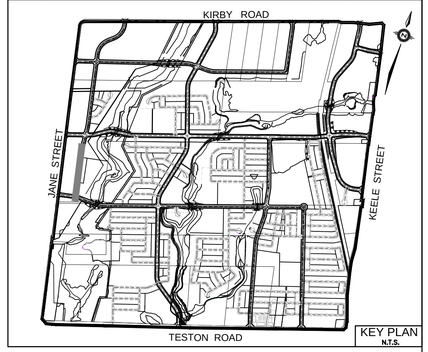
REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-14	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

REVISIONS			
No.	DESCRIPTION	By	Date





LEGEND

- DENOTES INTERLOCK DRIVEWAY
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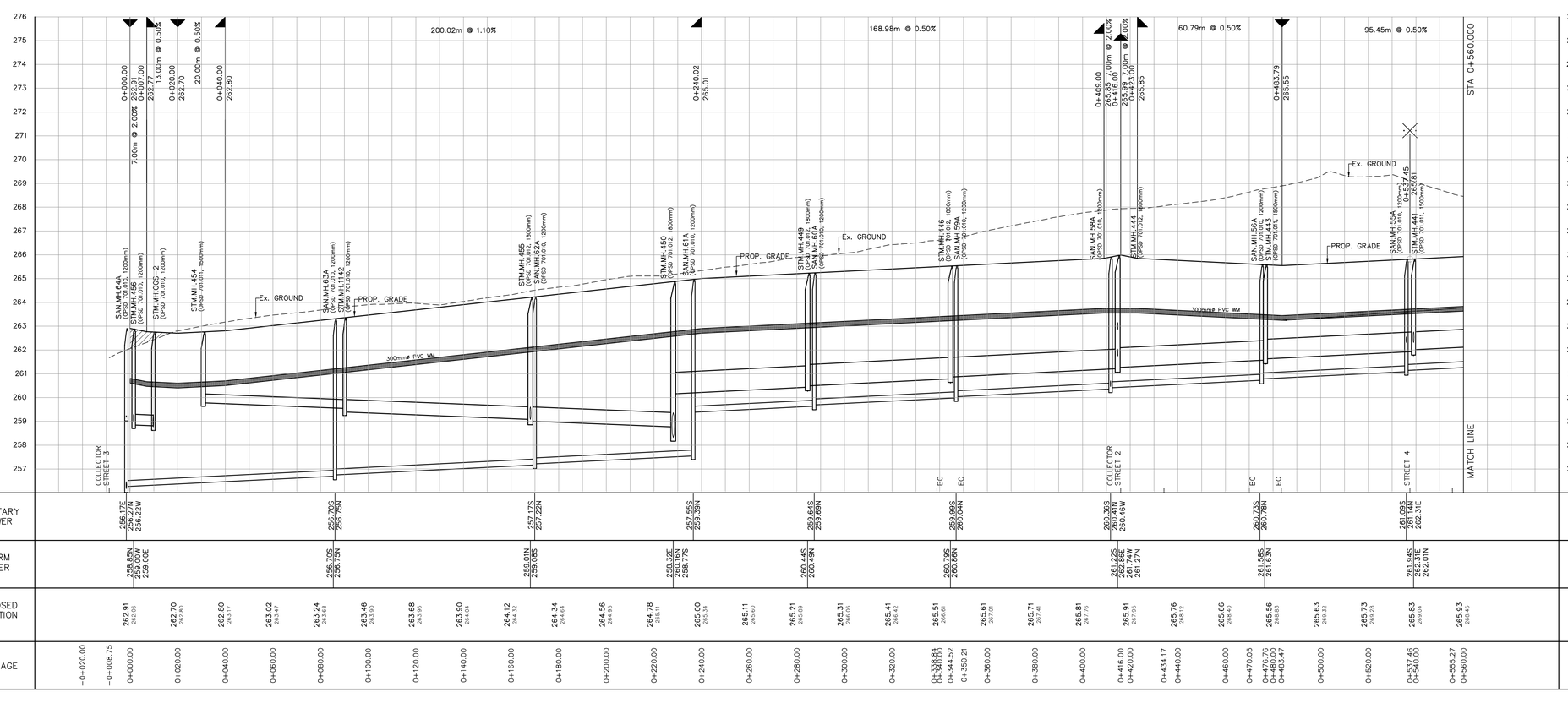

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 4
FROM STA. 0+000.000 TO STA. 0+560.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-15
DRAWN BY:	K.M.	CHECKED BY:	F.T.
DESIGNED BY:	F.T.	APPROVED BY:	P.S
DATE:	MARCH 2022		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

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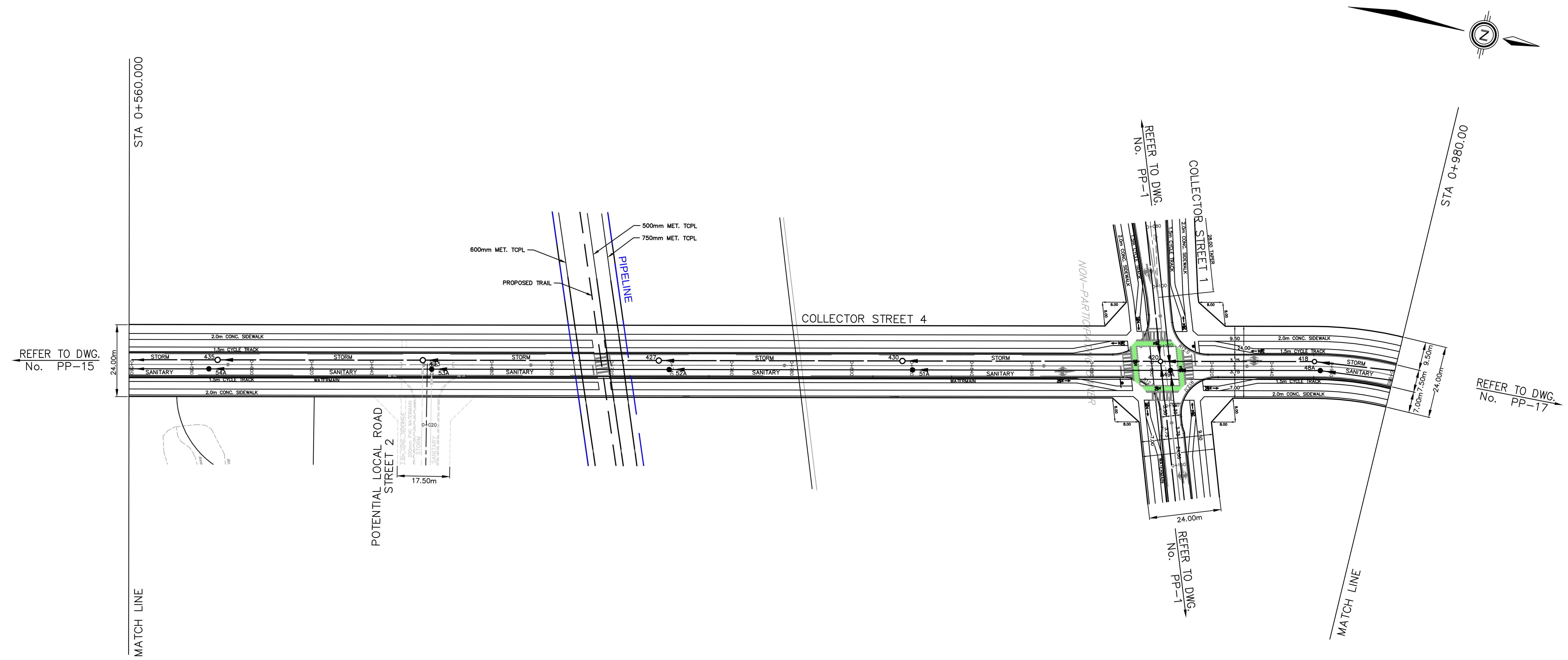
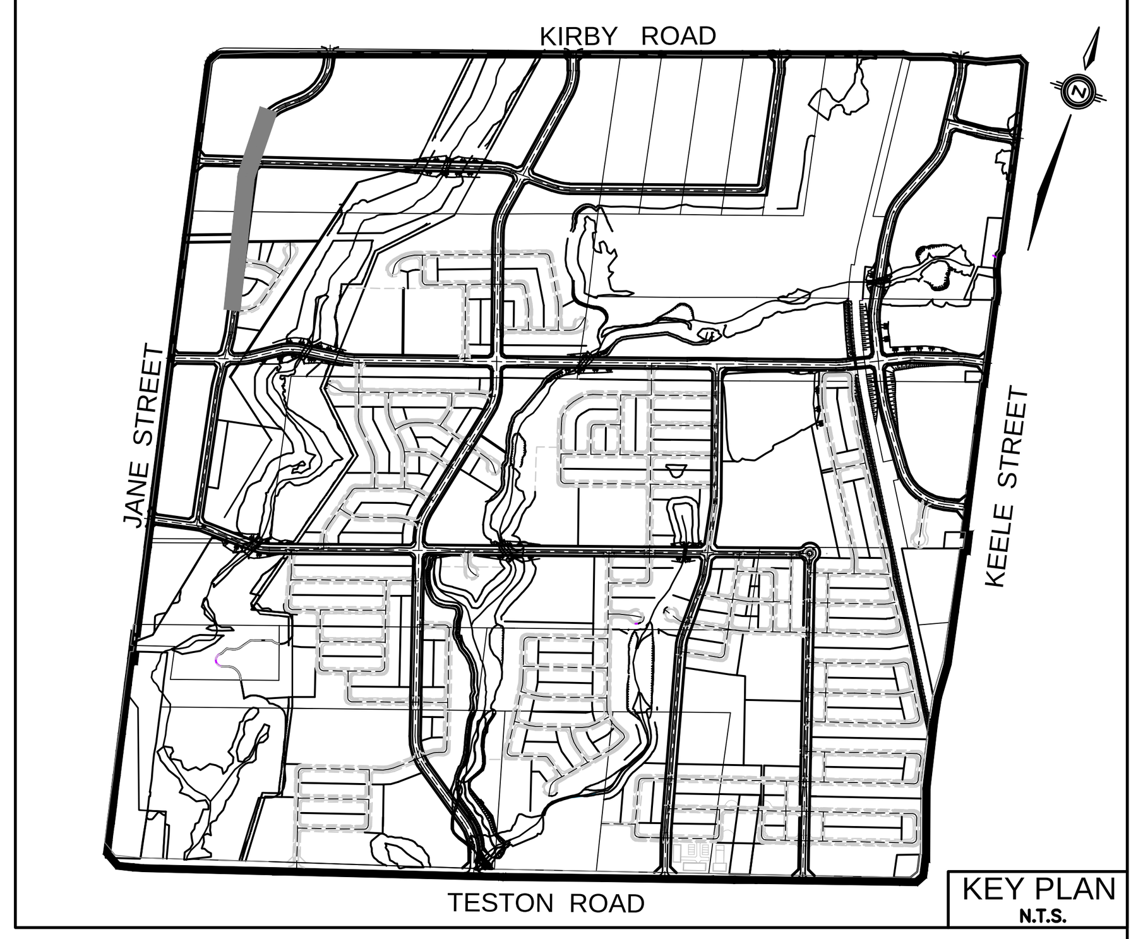
REVISIONS			
No.	DESCRIPTION	By	Date





LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
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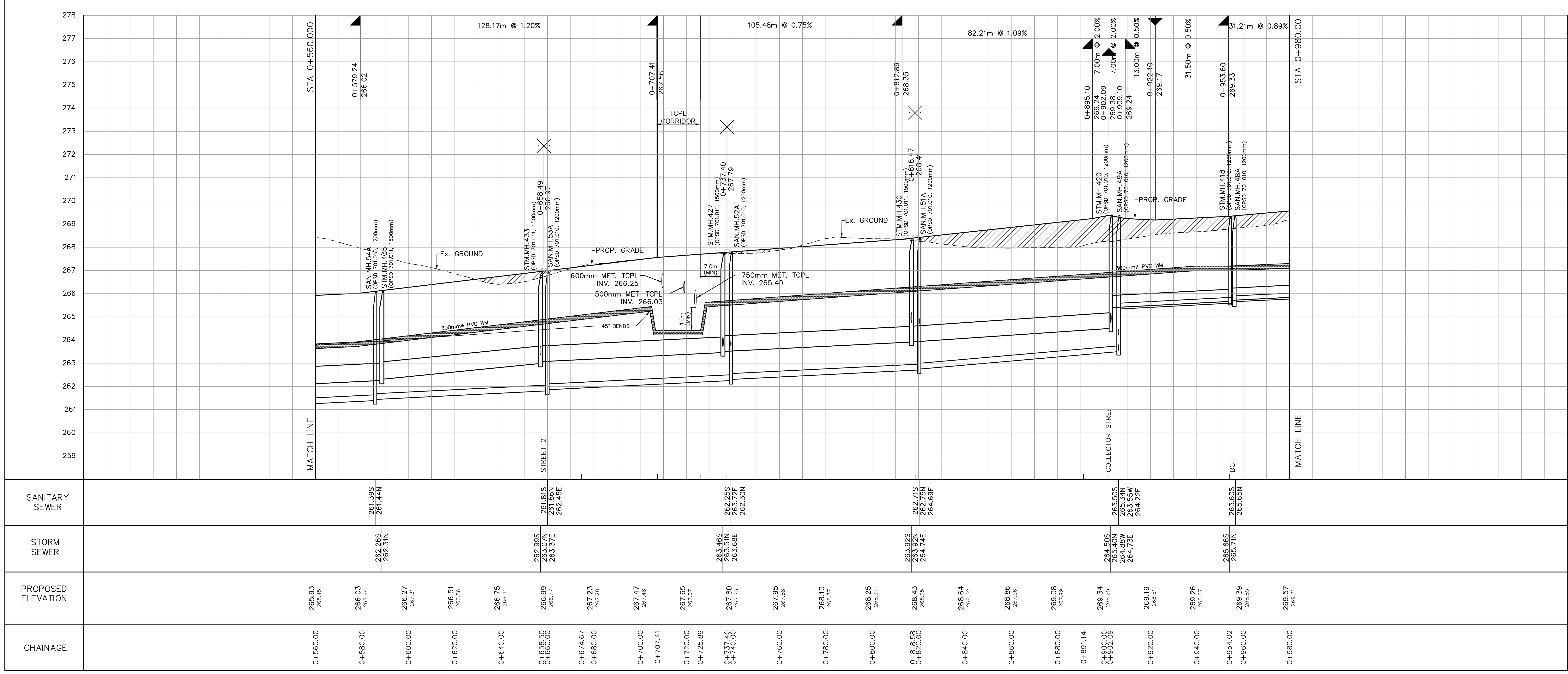

BENCHMARK NOTE

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No.	Date	Issued for
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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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E-mail: design@schaeffers.com

VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 4
FROM STA. 0+560.000 TO STA. 0+980.000

REGION FILE:		CITY FILE: BL.27.2020	
PROJECT No.	2021 - 4766	DRAWING No.	PP-16
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 — 0 5 10 15 20 25 30 35 40 45 50m

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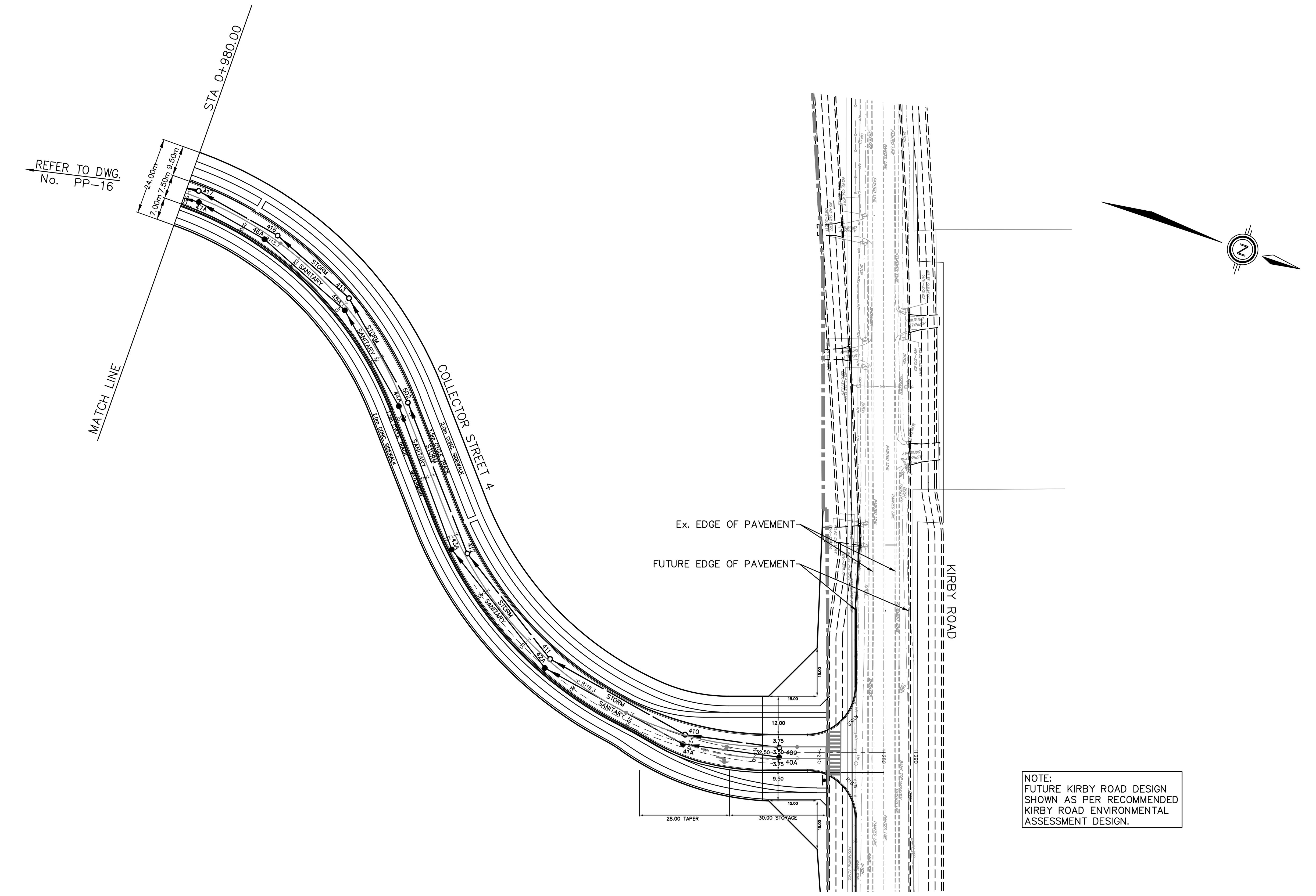
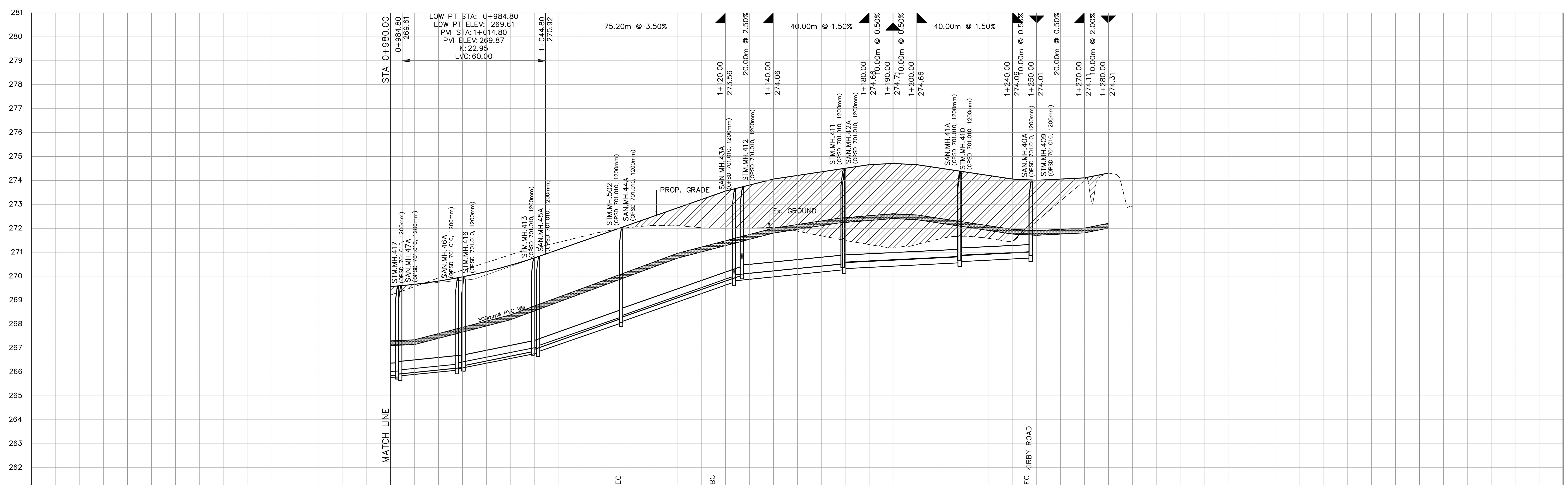


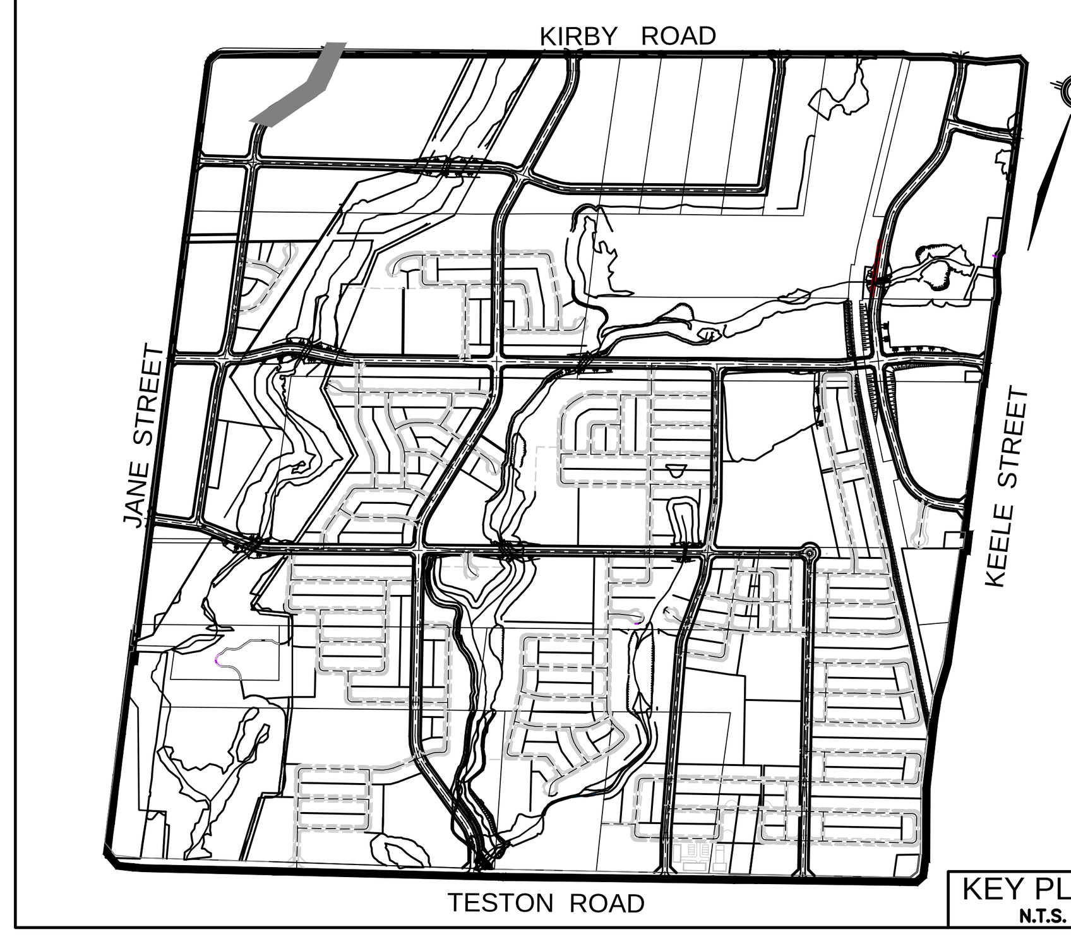
NOTE:
FUTURE KIRBY ROAD DESIGN SHOWN AS PER RECOMMENDED KIRBY ROAD ENVIRONMENTAL ASSESSMENT DESIGN.



SANITARY SEWER	265.79S 265.84N; 266.07S 266.12NE; 266.79SW 266.84NE; 268.04SW 268.09NE; 269.75SW 270.08SE 269.80NE; 270.27SW 270.32N; 270.56S 270.61N; 270.76S
STORM SEWER	265.86S 265.90N; 266.18S 266.26NE; 266.85SW 266.92NE; 268.22SW 268.27NE; 270.04SW 270.68SE 270.09NE; 270.50SW 270.58N; 270.82S 270.87N; 271.02S
PROPOSED ELEVATION	269.57 (269.21); 269.79 (269.93); 270.19 (270.57); 270.76 (271.17); 271.46 (271.65); 272.16 (272.03); 272.86 (272.11); 273.56 (272.00); 274.06 (272.03); 274.36 (271.69); 274.66 (271.32); 274.66 (271.33); 274.36 (271.67); 274.06 (271.46); 274.06 (273.14); 274.31 (274.31)
CHAINAGE	0+980.00; 1+000.00; 1+015.17; 1+020.00; 1+040.00; 1+060.00; 1+076.32; 1+080.00; 1+100.00; 1+113.18; 1+120.00; 1+140.00; 1+160.00; 1+180.00; 1+200.00; 1+220.00; 1+240.00; 1+247.02; 1+260.00; 1+262.55; 1+280.00

REVISIONS

No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
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- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

BLOCK 27 RESIDENTIAL SUBDIVISION

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E-mail: design@schaeffers.com

VAUGHAN

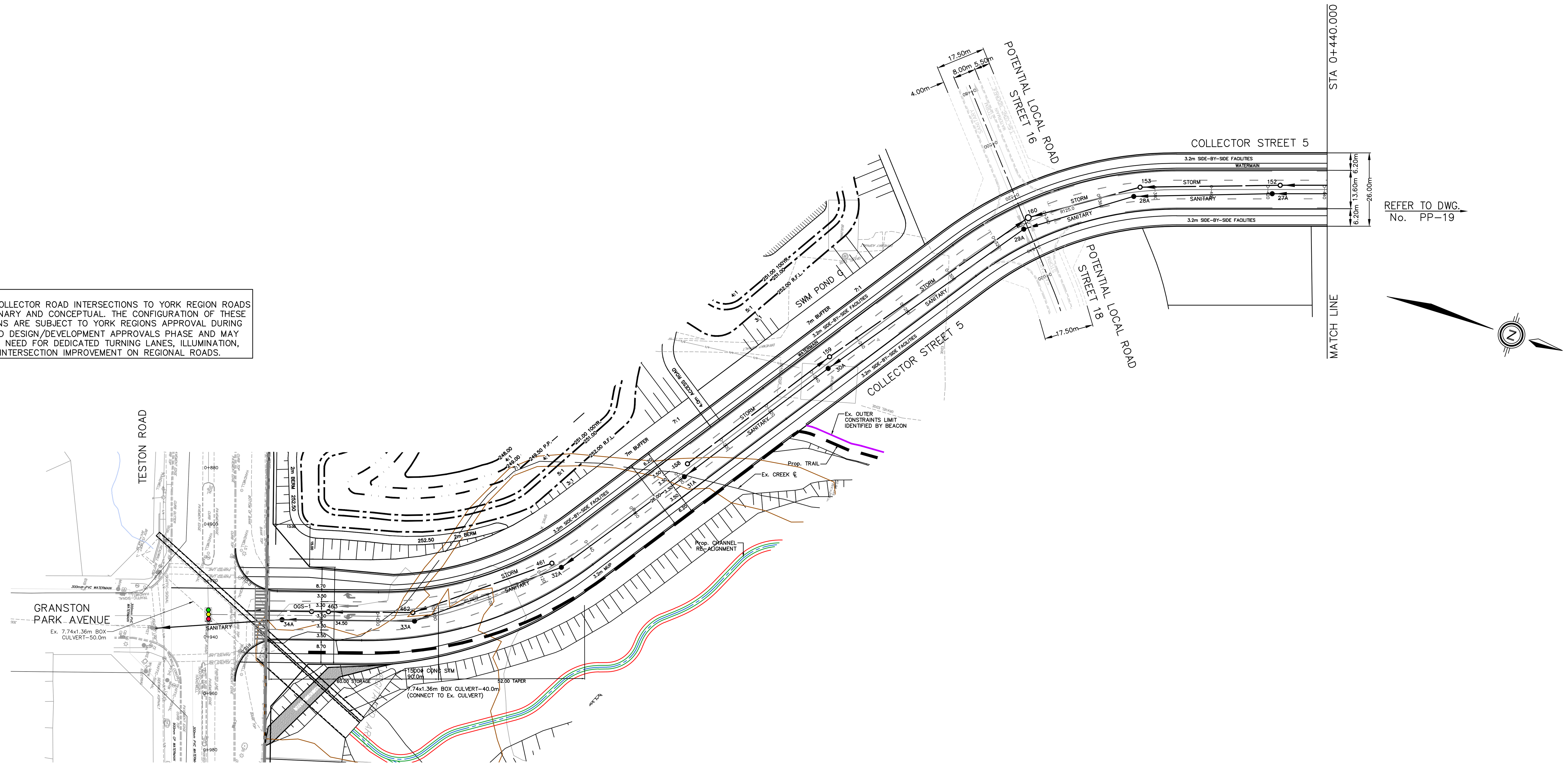
PLAN AND PROFILE OF
COLLECTOR STREET 4
FROM STA. 0+980.000 TO STA. 1+280.000

REGION FILE: CITY FILE: BL.27.2020

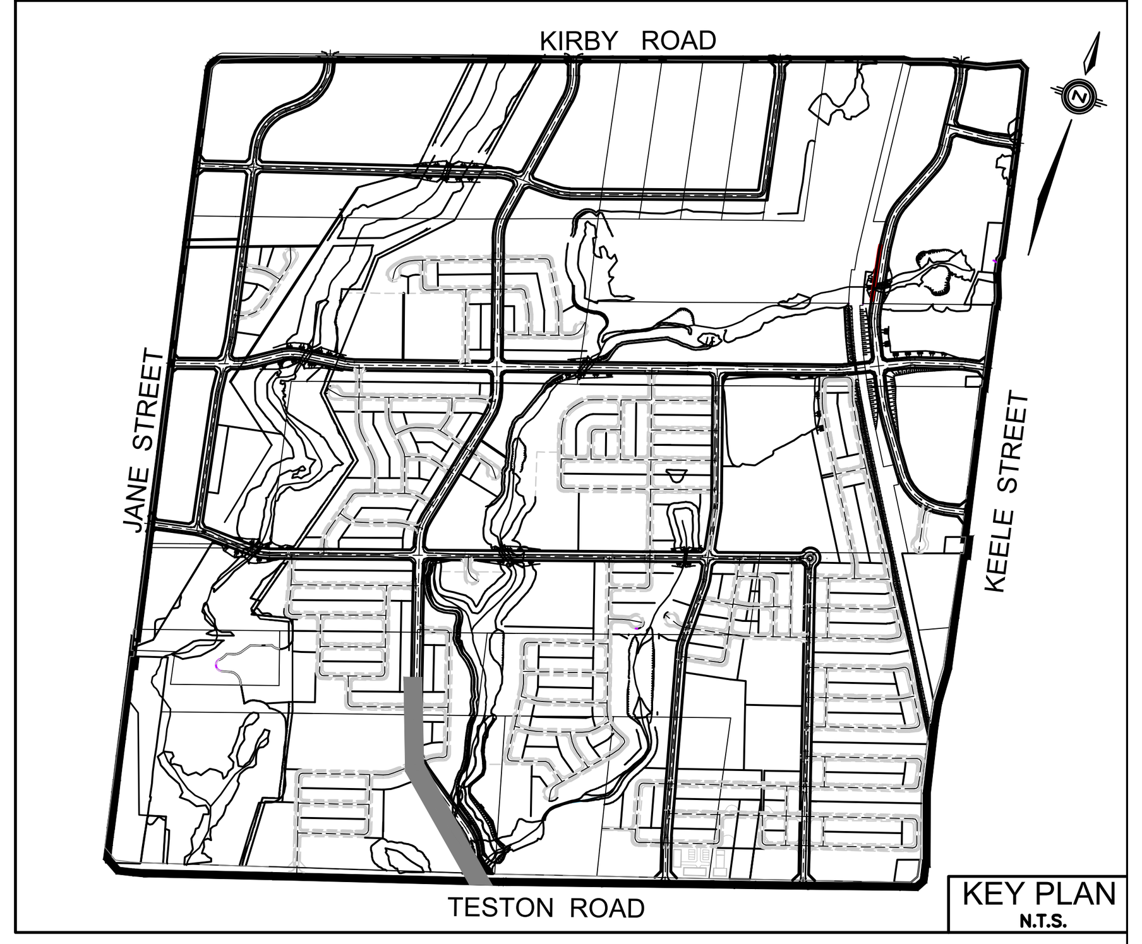
PROJECT No. 2021 - 4766		DRAWING No. PP-17	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

NOTE:
BLOCK 27 COLLECTOR ROAD INTERSECTIONS TO YORK REGION ROADS ARE PRELIMINARY AND CONCEPTUAL. THE CONFIGURATION OF THESE INTERSECTIONS ARE SUBJECT TO YORK REGIONS APPROVAL DURING THE DETAILED DESIGN/DEVELOPMENT APPROVALS PHASE AND MAY INCLUDE THE NEED FOR DEDICATED TURNING LANES, ILLUMINATION, AND OTHER INTERSECTION IMPROVEMENT ON REGIONAL ROADS.



REVISIONS			
No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

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- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
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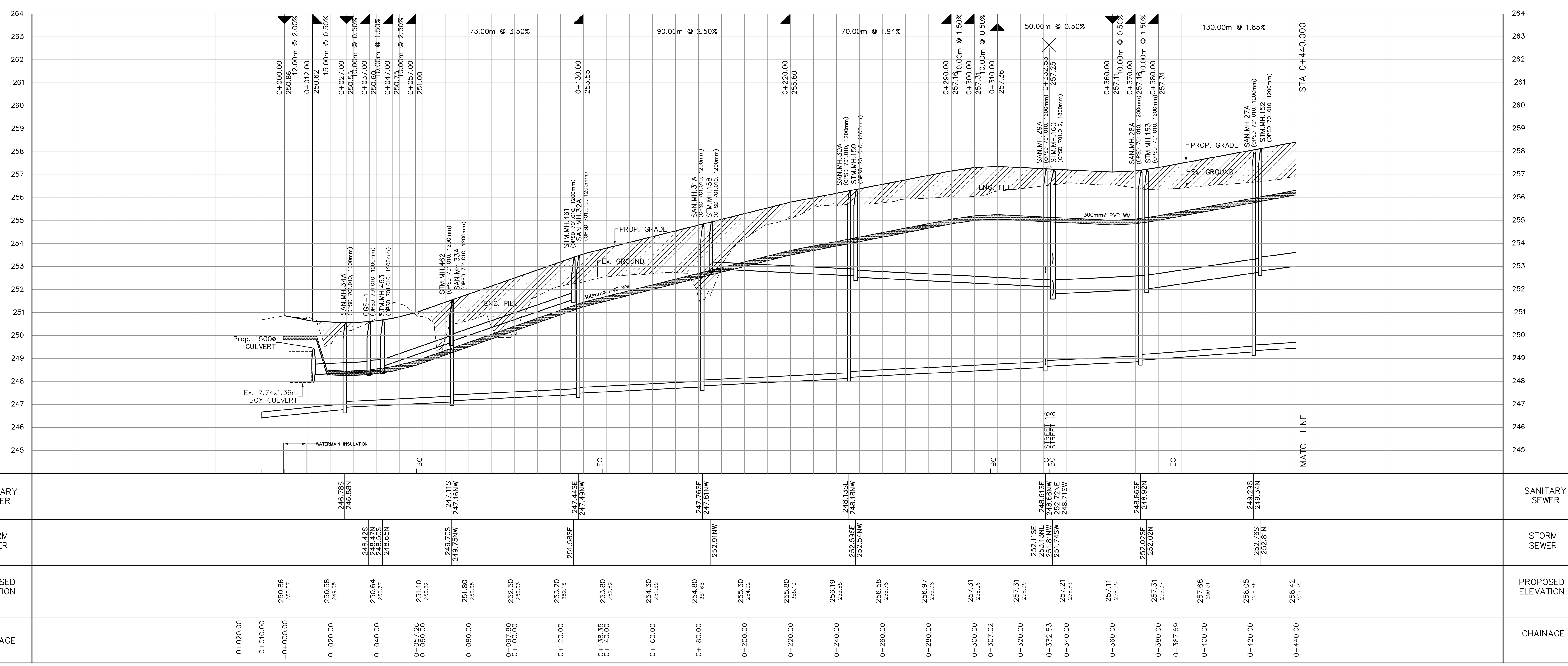
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)
- DENOTES TRAIL



BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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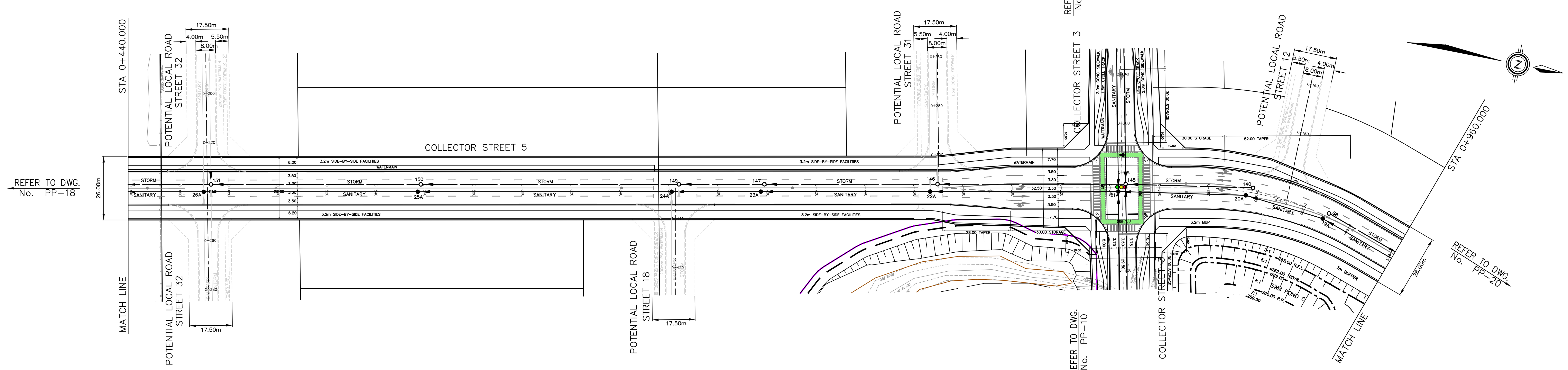
VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 5
FROM STA. 0+000.000 TO STA. 0+440.000

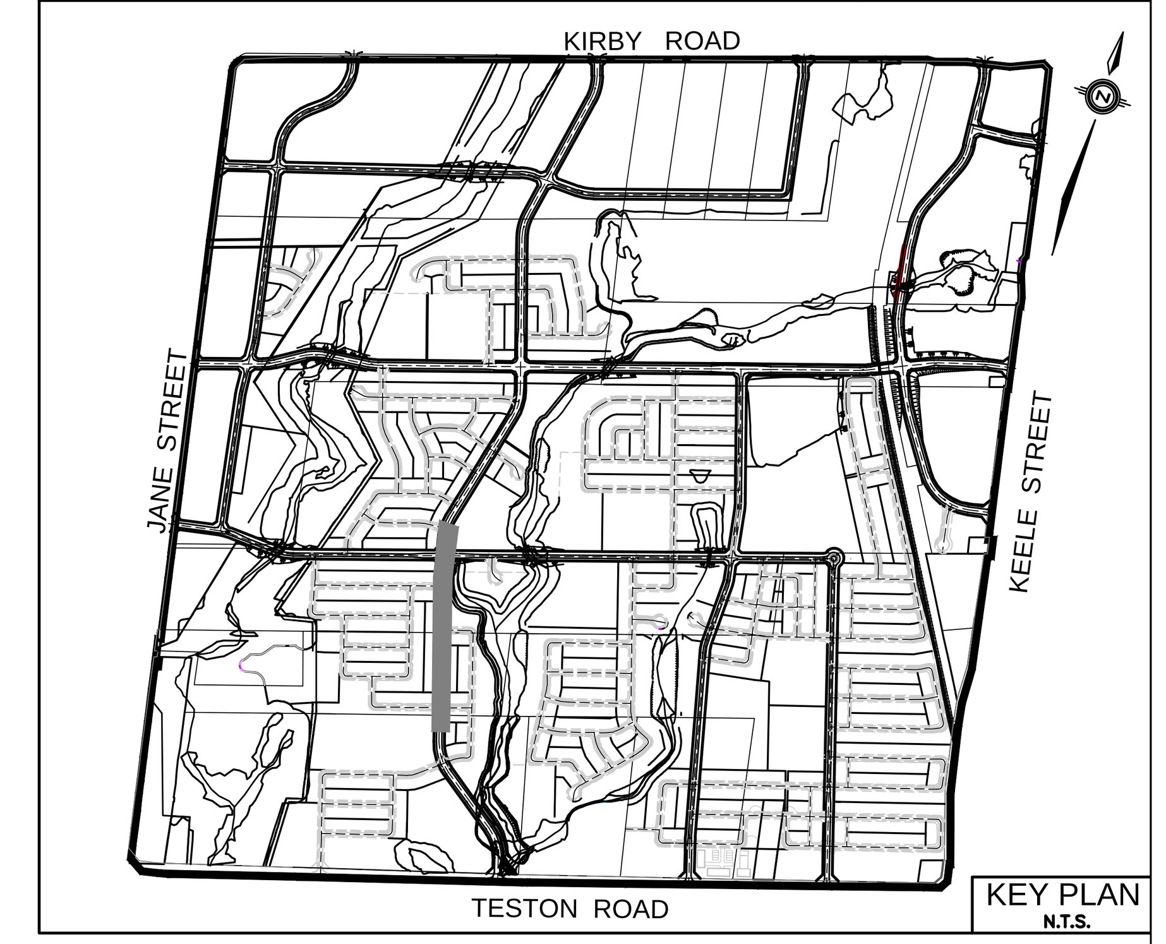
REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-18	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		
SCALE H 1:1000 V 1:100	0 5 10 15 20 25 30 35 40 45 50m		



REVISIONS

No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
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- DENOTES SANITARY SEWER
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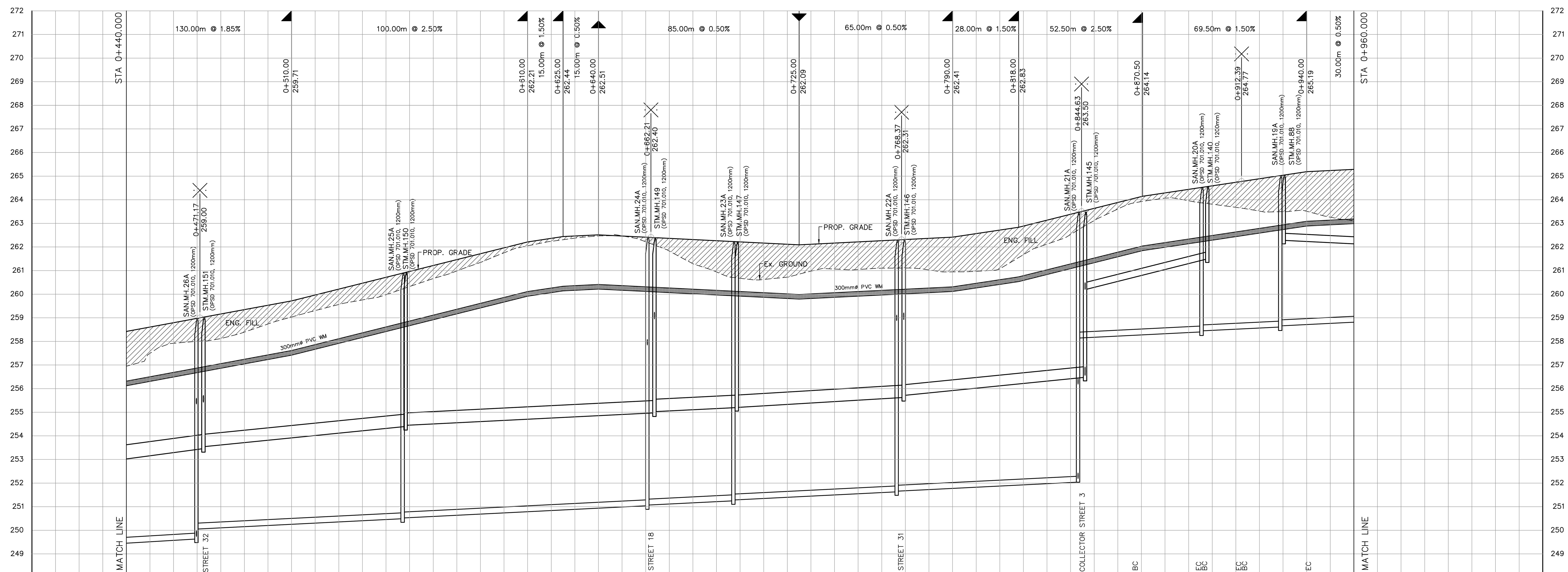
- DENOTES TRAIL



Chainage	Sanitary Sewer	Storm Sewer
0+471.17	249.63S 250.05N 249.73W 255.34E	253.46S 253.54N 255.42W 255.42E
0+560.00	250.49S 250.52N	254.40S 254.44N
0+662.21	251.04S 251.07N 257.84E	254.97S 255.02N 258.95E
0+700.00	251.25S 251.28N	255.20S 255.20N
0+768.37	251.63S 251.66N 258.87W	255.62S 255.71N 258.91W
0+844.63	252.04S 258.14N 252.19W 256.18E	256.48S 256.55E 260.19W 260.19N
0+900	258.40S 258.45N	261.49S
0+940	258.61S 258.66N	262.28N

Chainage	Proposed Elevation	
0+440.00	258.42	256.95
0+460.00	258.79	257.92
0+471.17		
0+480.00	259.16	258.12
0+500.00	259.53	258.74
0+520.00	259.96	259.30
0+540.00	260.46	259.76
0+560.00	260.96	260.32
0+580.00	261.46	260.98
0+600.00	261.96	261.75
0+620.00	262.36	262.24
0+640.00	262.51	262.46
0+644.71		
0+660.00	262.41	262.22
0+662.21		
0+680.00	262.31	261.29
0+700.00	262.21	260.67
0+720.00	262.11	260.72
0+740.00	262.16	261.06
0+760.00	262.26	261.10
0+768.37		
0+780.00	262.36	261.03
0+800.00	262.56	260.97
0+820.00	262.88	261.67
0+840.00	263.38	262.53
0+844.63		
0+860.00	263.88	263.61
0+866.07		
0+880.00	264.29	264.07
0+895.45		
0+900.00	264.59	263.81
0+903.92		
0+912.39		
0+920.00	264.89	263.52
0+927.17		
0+940.00	265.19	263.51
0+941.96		
0+960.00	265.29	263.11

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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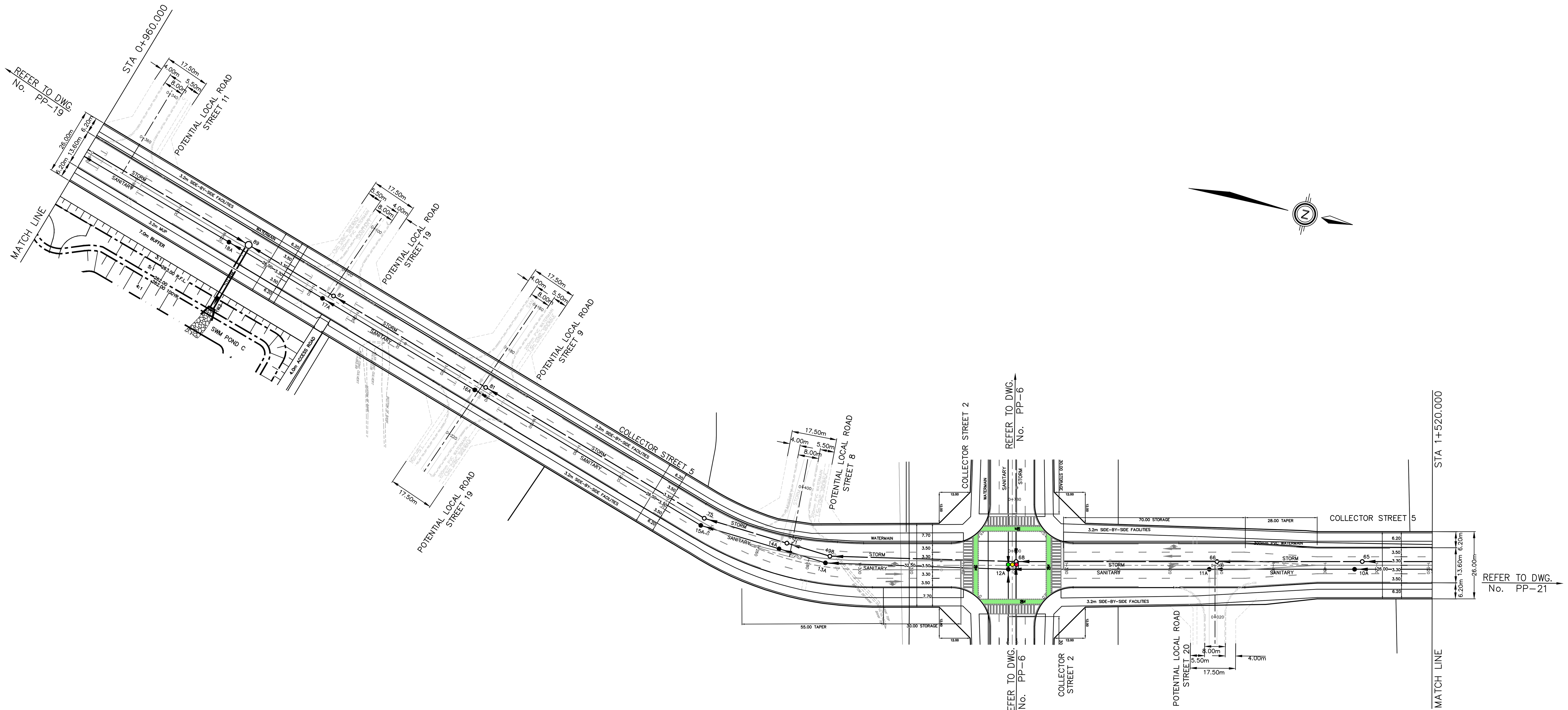
VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 5
FROM STA. 0+440.000 TO STA. 0+960.000

REGION FILE: CITY FILE: BL.27.2020

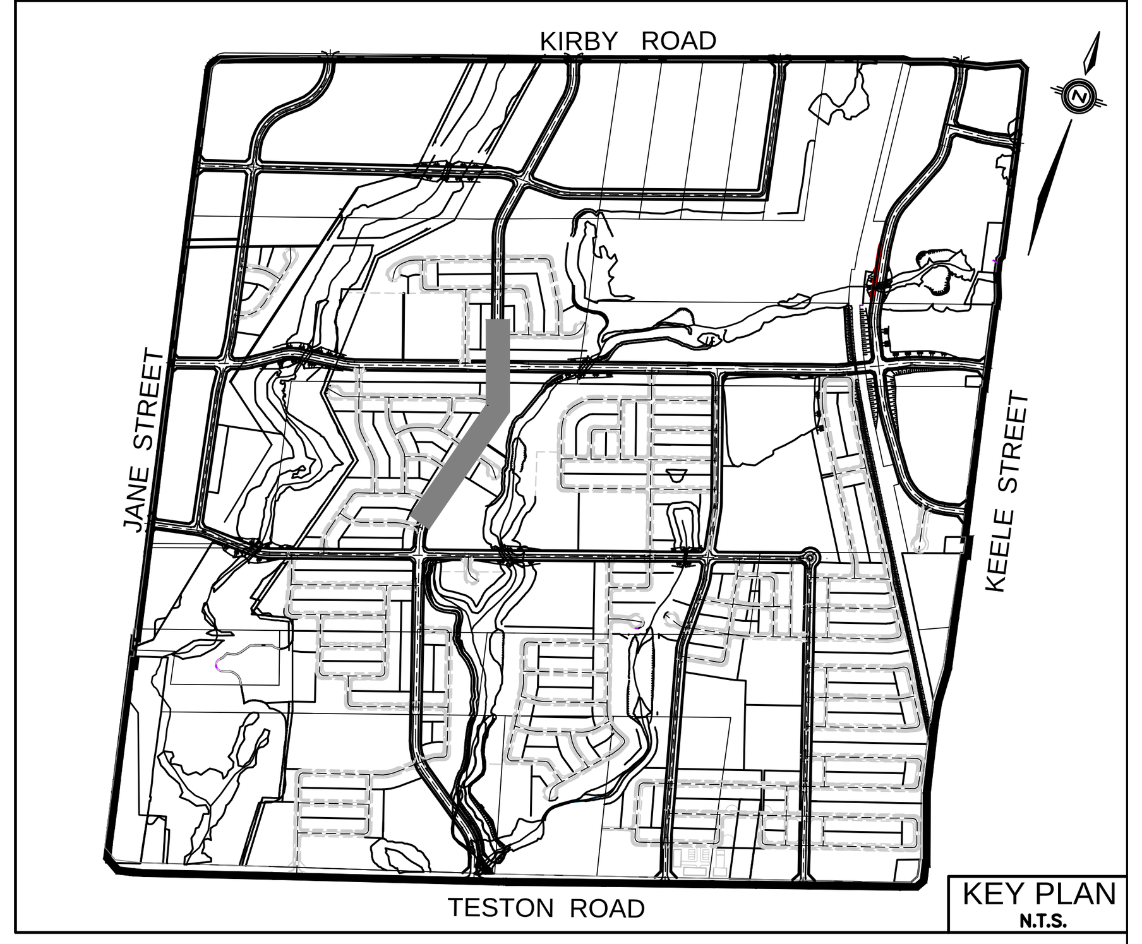
PROJECT No. 2021 - 4766		DRAWING No. PP-19	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m



REVISIONS

No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
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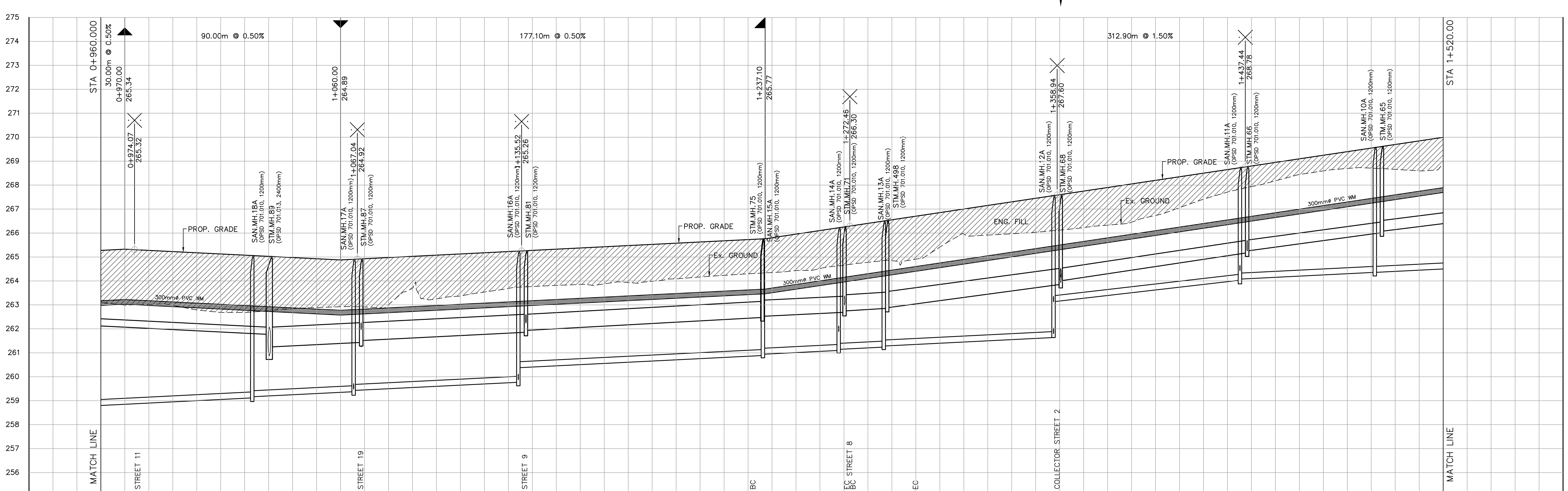

CHAINAGE	PROPOSED ELEVATION	SANITARY SEWER	STORM SEWER
0+960.00	265.29 (263.11)		
0+974.07			
0+980.00	265.29 (263.03)		
1+000.00	265.19 (262.81)		
1+020.00	265.09 (262.69)	259.13S 259.18N	261.78S 261.26N 260.88E
1+040.00	264.99 (262.85)		
1+060.00	264.89 (262.94)		
1+067.04		259.39S 259.44N 259.49W	261.45S 261.97W 261.52N
1+080.00	264.99 (263.02)		
1+100.00	265.09 (263.26)		
1+120.00	265.19 (263.55)		
1+135.52		259.78S 260.39N 259.88W 259.88E	261.87S 262.25W 261.95N 262.32E
1+140.00	265.29 (263.78)		
1+160.00	265.39 (263.86)		
1+180.00	265.49 (263.95)		
1+200.00	265.59 (264.10)		
1+220.00	265.69 (264.24)		
1+230.71			
1+240.00	265.82 (264.36)	260.90S 260.95N	262.49S 262.54N
1+251.58			
1+260.00	266.11 (264.53)		
1+272.46		261.11S 261.89W 261.16N	262.70S 263.00W 262.76N
1+280.00	266.41 (264.79)		
1+286.77		261.25S 261.30N	262.87S 262.90N
1+300.00 / 1+301.08	266.71 (264.92)		
1+320.00	267.01 (265.97)		
1+337.97 / 1+340.00	267.31 (265.98)		
1+358.94 / 1+360.00	267.61 (266.13)	261.65S 263.15N 263.13E 261.80W	263.87S 264.02N 264.17E 263.94W
1+380.00	267.91 (266.34)		
1+400.00	268.21 (266.74)		
1+420.00	268.51 (267.42)		
1+437.44 / 1+440.00	268.81 (267.95)	264.04S 264.09N 264.43E	265.18S 265.26N 265.26E
1+460.00	269.11 (268.45)		
1+480.00	269.41 (268.71)		
1+500.00	269.71 (268.67)	264.37S 264.37N	266.03S 266.08N
1+520.00	270.00 (268.86)		

BENCHMARK NOTE

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No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 5
FROM STA. 0+960.000 TO STA. 1+520.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-20	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

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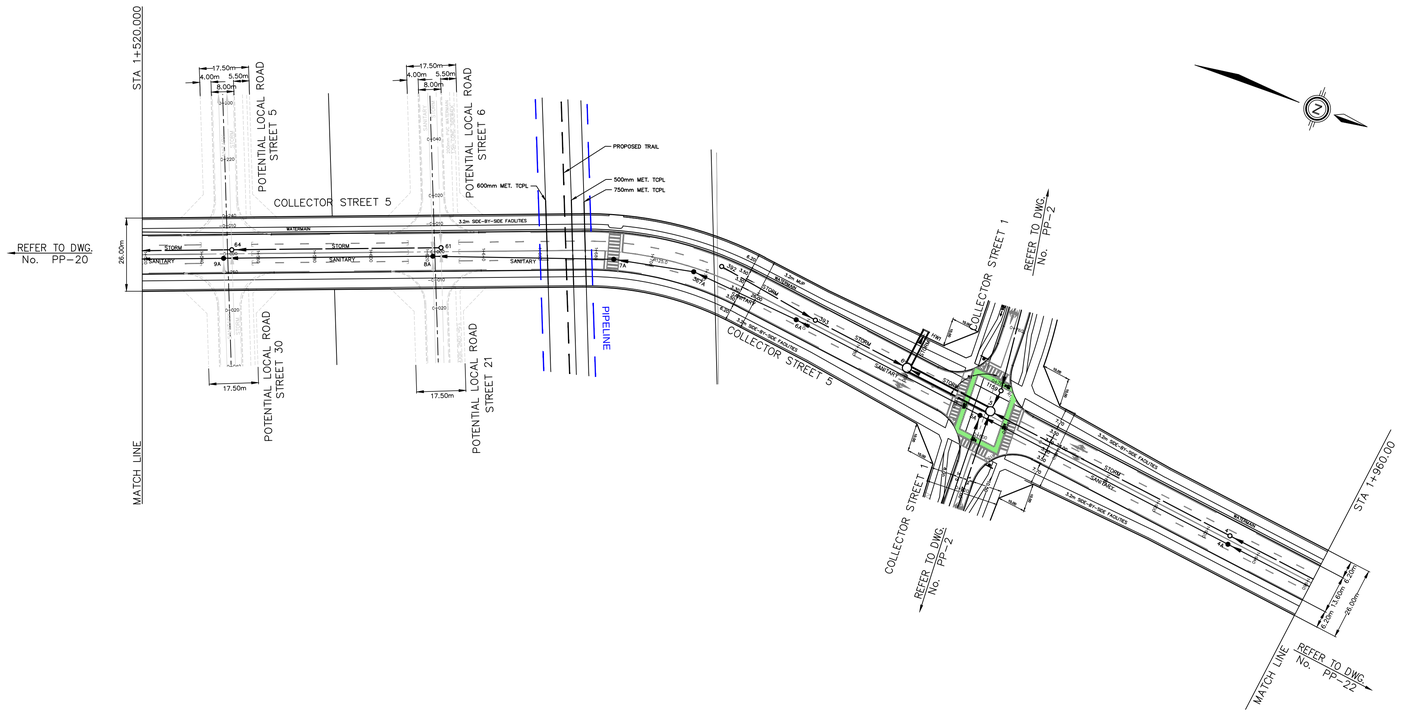
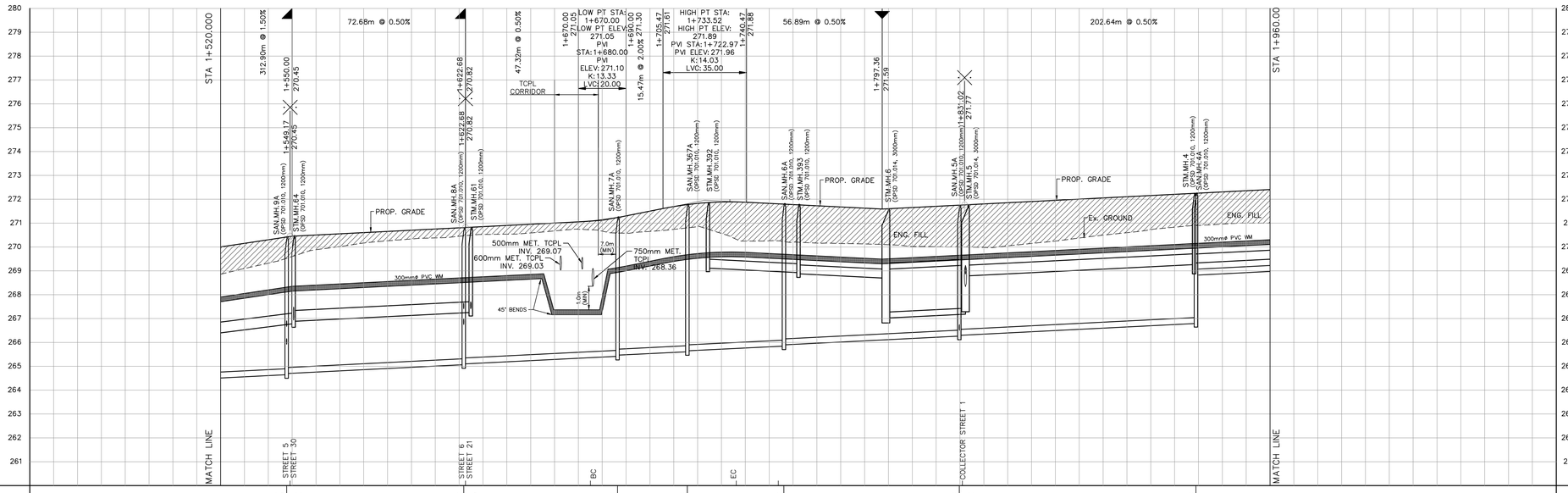
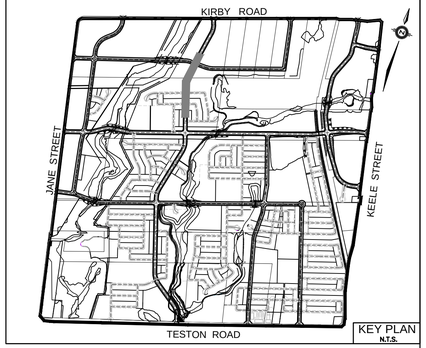




SANITARY SEWER	264.65S 265.92W 264.76N 266.67E / 265.07S 265.70N 265.72W 267.41E / 265.42S 265.47N / 265.61S 265.65N / 265.85S 265.90N / 266.27S 265.47N 265.50E / 266.80S 266.82N
STORM SEWER	266.79S 267.19W 266.76N 266.94E / 267.26S 267.41E 267.41W / 268.12N / 268.92S 268.88N / 267.27N 267.27S 267.27W / 267.44S 266.79N 268.86W 268.34E / 269.27S 268.00N
PROPOSED ELEVATION	270.00 270.30 270.50 270.60 270.70 270.80 270.90 271.00 271.14 271.50 271.83 271.88 271.78 271.68 271.61 271.71 271.81 271.91 272.01 272.11 272.21 272.31 272.41
CHAINAGE	1+520.00 1+540.00 1+549.17 1+560.00 1+580.00 1+600.00 1+620.00 1+622.68 1+640.00 1+660.00 1+675.04 1+680.00 1+700.00 1+705.63 1+720.00 1+736.23 1+740.00 1+753.84 1+760.00 1+780.00 1+800.00 1+820.00 1+831.02 1+840.00 1+860.00 1+880.00 1+900.00 1+920.00 1+940.00 1+960.00

REVISIONS

No.	DESCRIPTION	By	Date



KEY PLAN N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
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- DENOTES GREENBELT
- DENOTES TRAIL

BENCHMARK NOTE

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 5
FROM STA. 1+520.000 TO STA. 1+960.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No.	2021 - 4766	DRAWING No.	PP-21
DRAWN BY:	K.M.	CHECKED BY:	F.T.
DESIGNED BY:	F.T.	APPROVED BY:	P.S
DATE:	MARCH 2022		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

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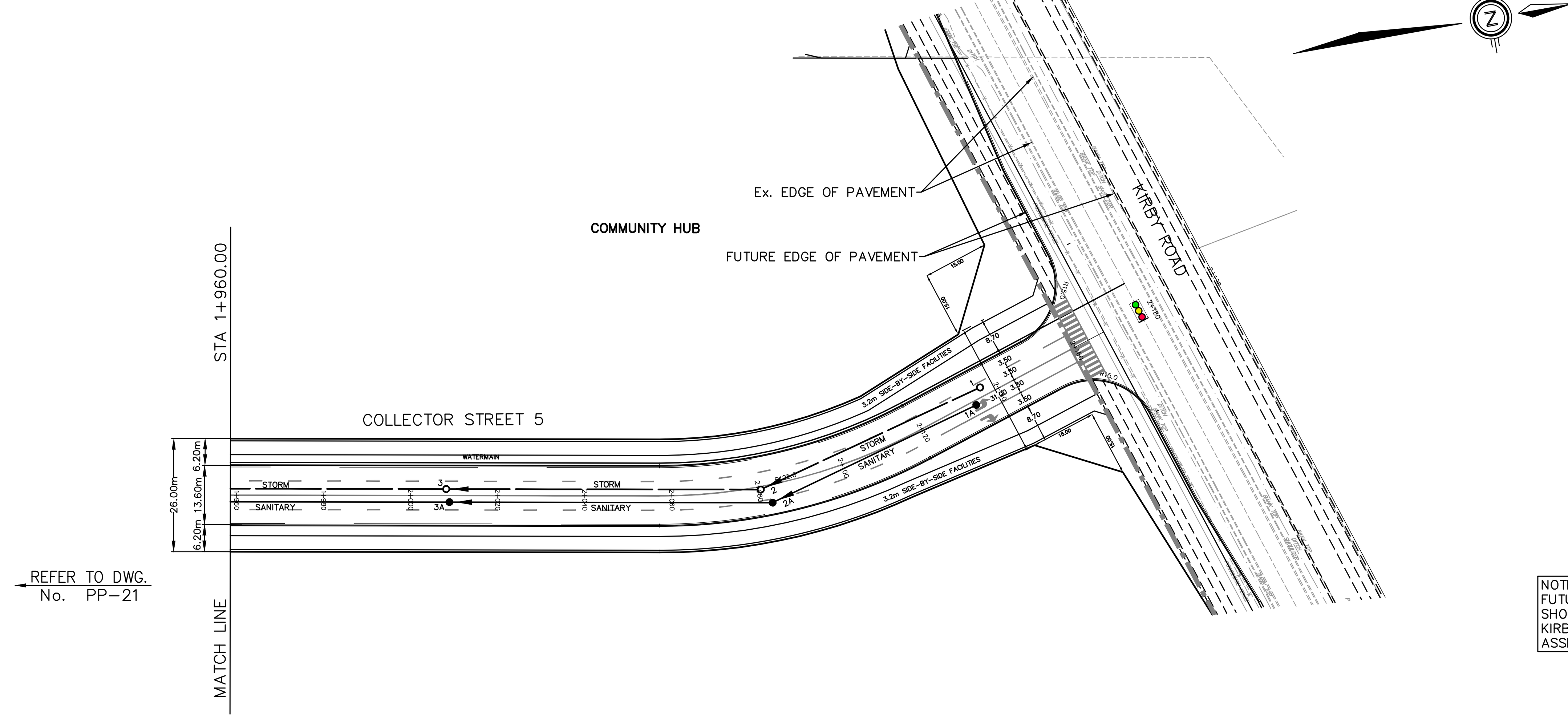
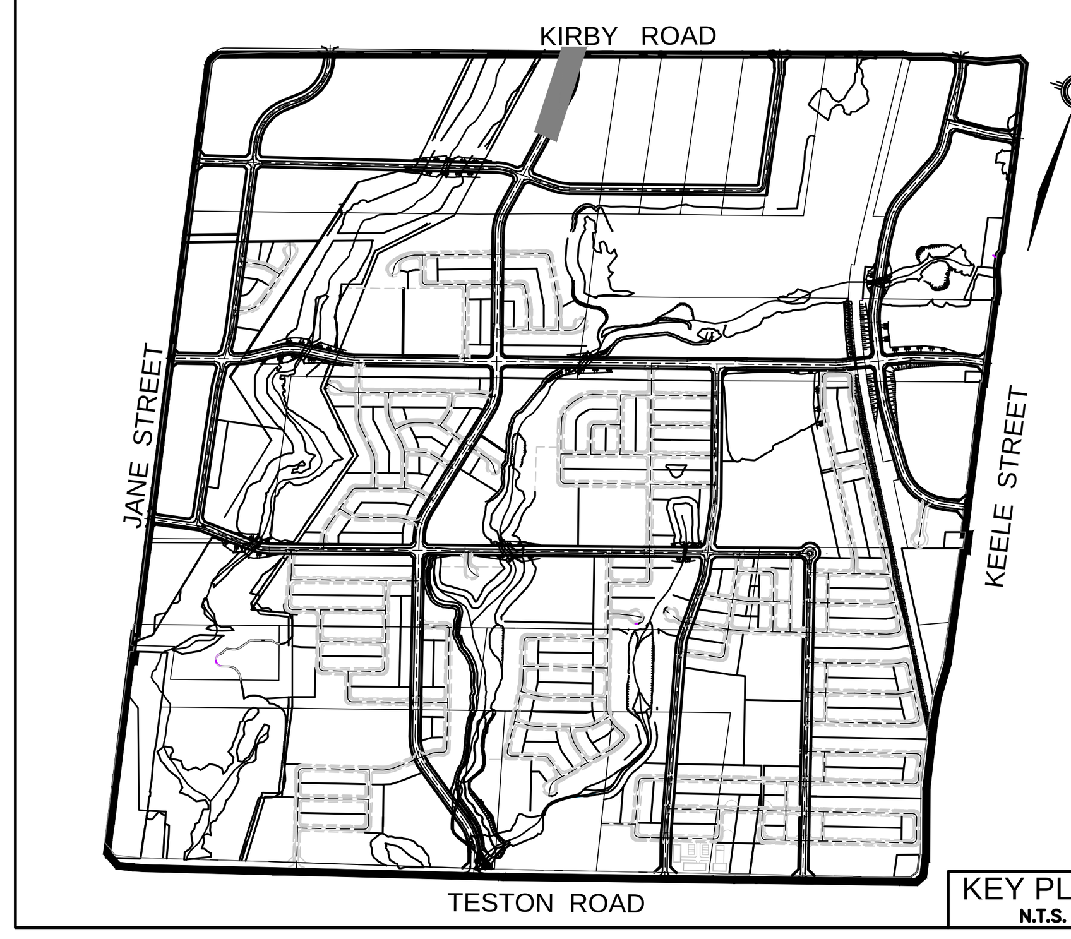
REVISIONS

No.	DESCRIPTION	By	Date



NOTE:
FUTURE KIRBY ROAD DESIGN SHOWN AS PER RECOMMENDED KIRBY ROAD ENVIRONMENTAL ASSESSMENT DESIGN.



LEGEND

DENOTES INTERLOCK DRIVEWAY
DENOTES VALVE AND CHAMBER
DENOTES HYDRANT
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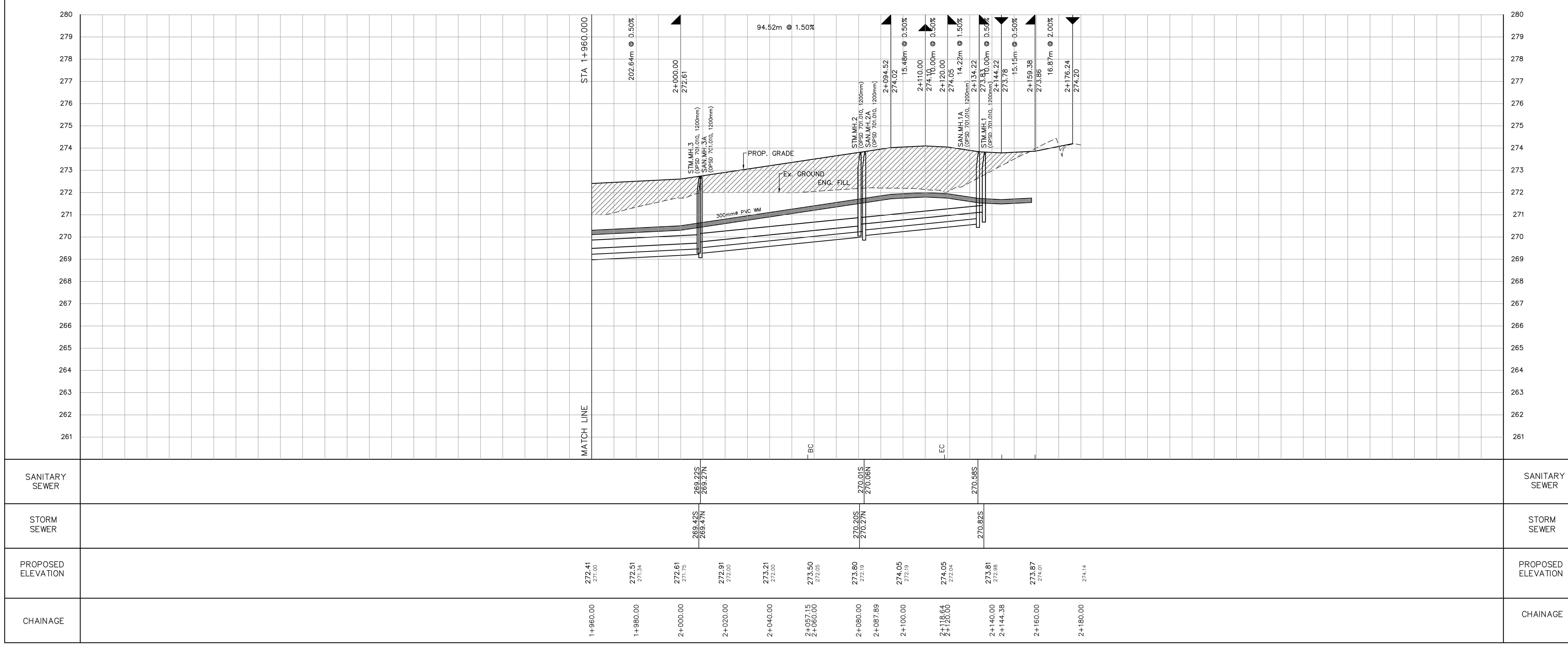

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RESIDENTIAL SUBDIVISION

SCHAEFFERS
CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.
6 Ronrose Drive, Concord, Ontario L4K 4R3
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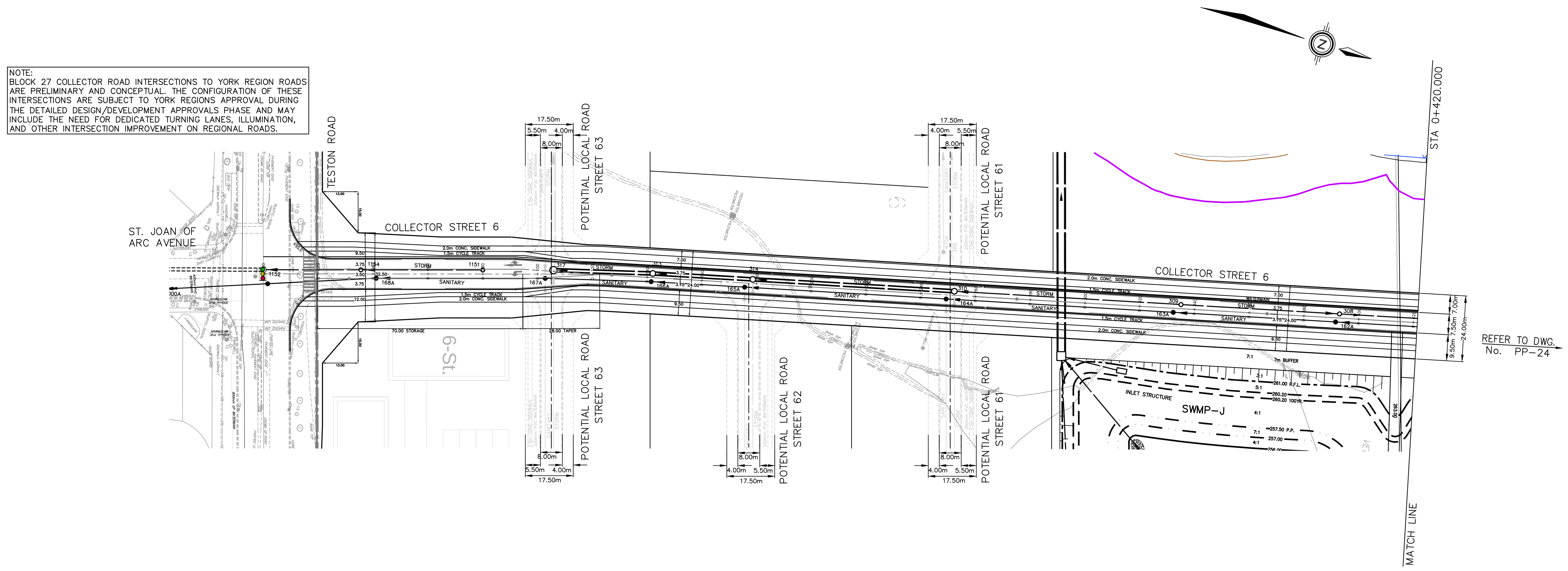
E-mail: design@schaeffers.com

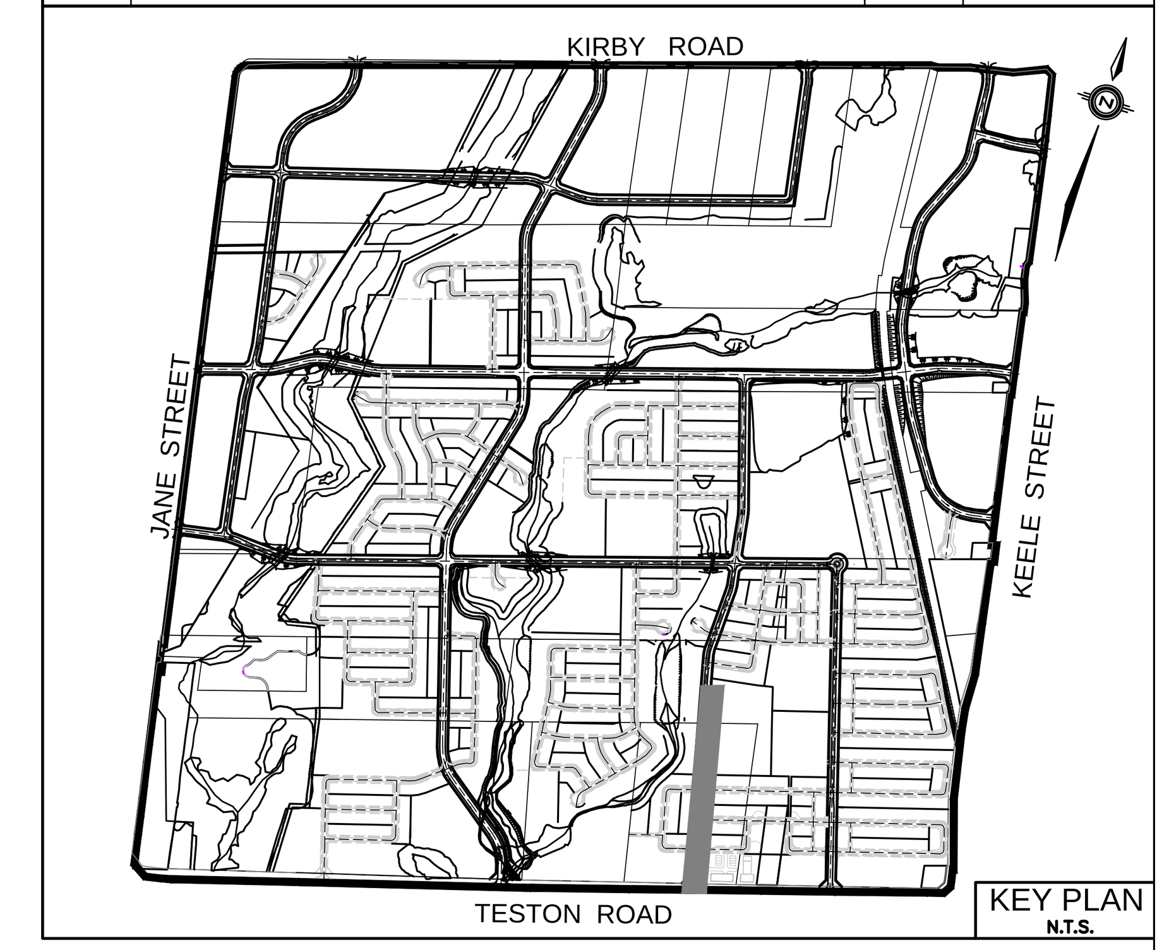
VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 5
FROM STA. 1+960.00 TO STA. 2+180.000

REGION FILE:	CITY FILE: BL.27.2020
PROJECT No. 2021 - 4766	DRAWING No. PP-22
DRAWN BY: K.M.	CHECKED BY: F.T.
DESIGNED BY: F.T.	APPROVED BY: P.S
DATE: MARCH 2022	

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m



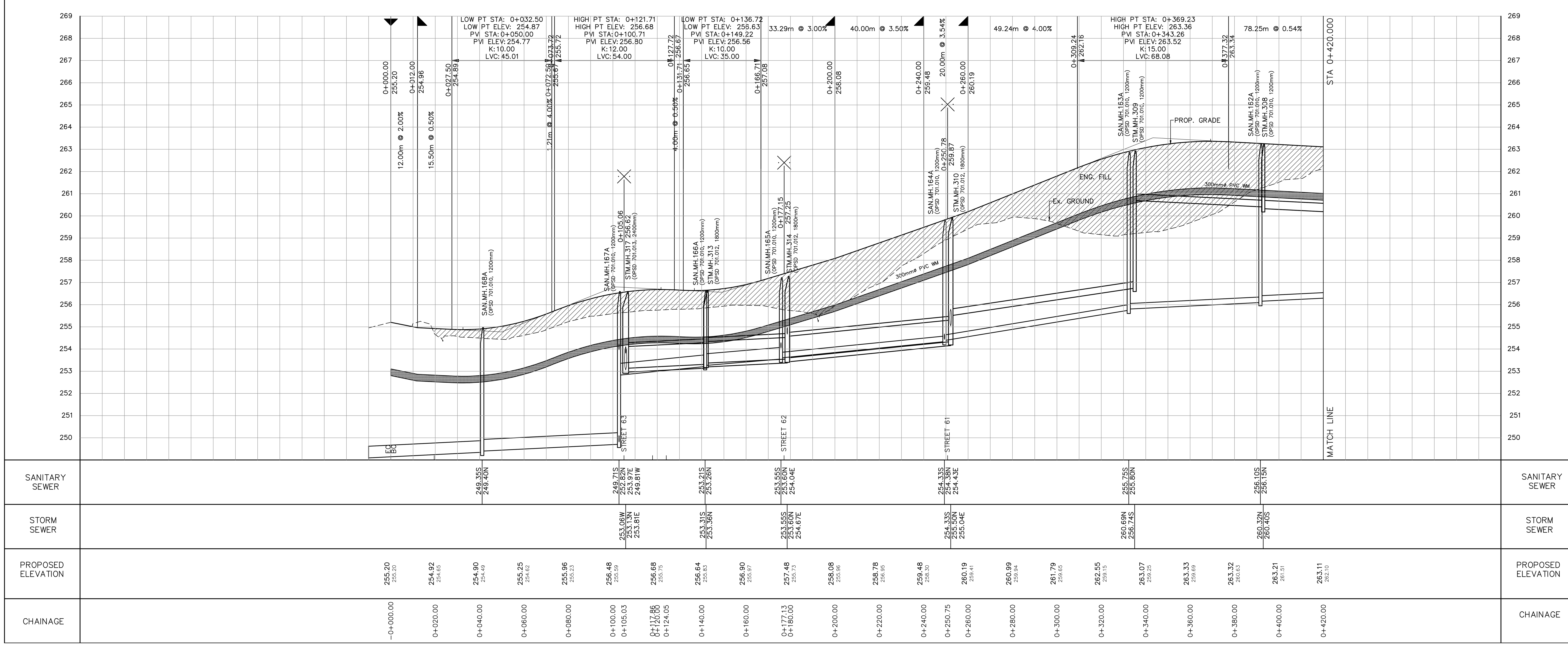


REVISIONS

No.	DESCRIPTION	By	Date

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES EXISTING WATERMAIN
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)



BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

BLOCK 27 RESIDENTIAL SUBDIVISION

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VAUGHAN

PLAN AND PROFILE OF COLLECTOR STREET 6

FROM STA. 0+000.000 TO STA. 0+420.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-23	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

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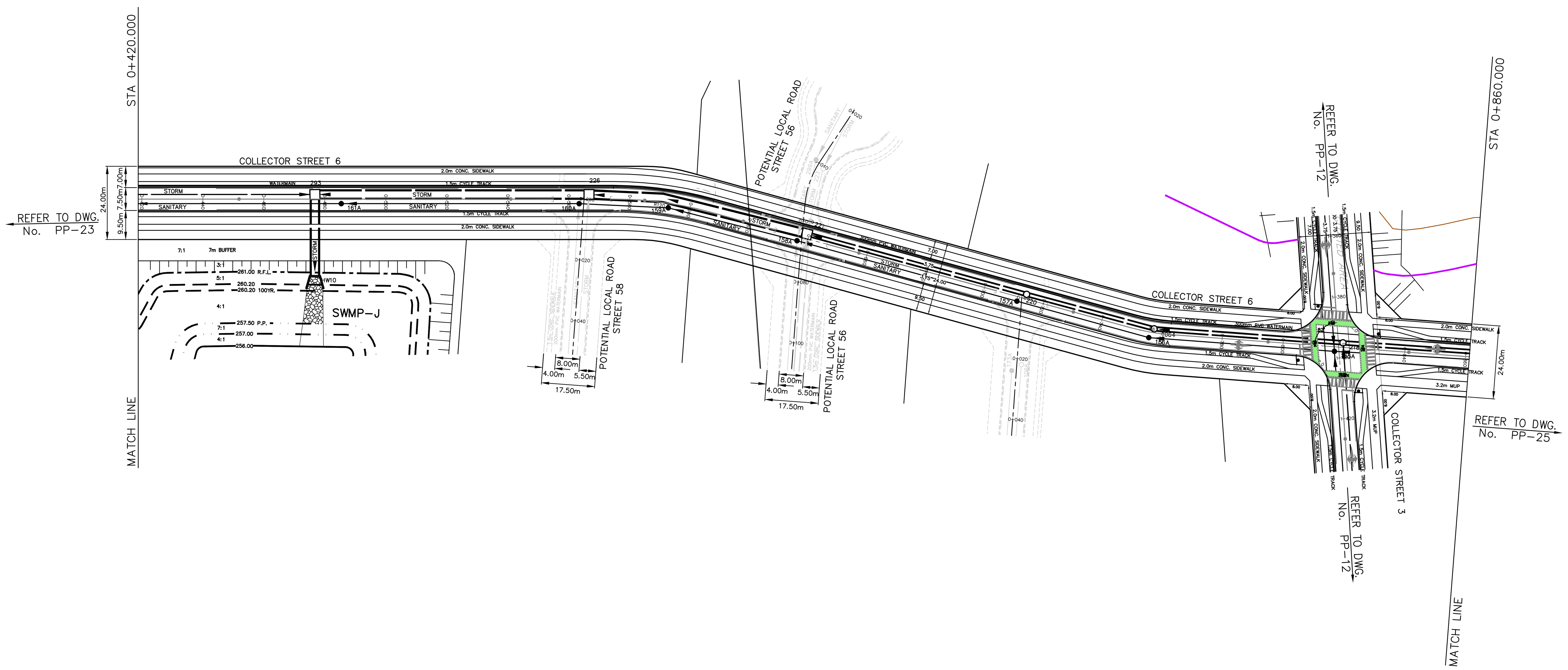
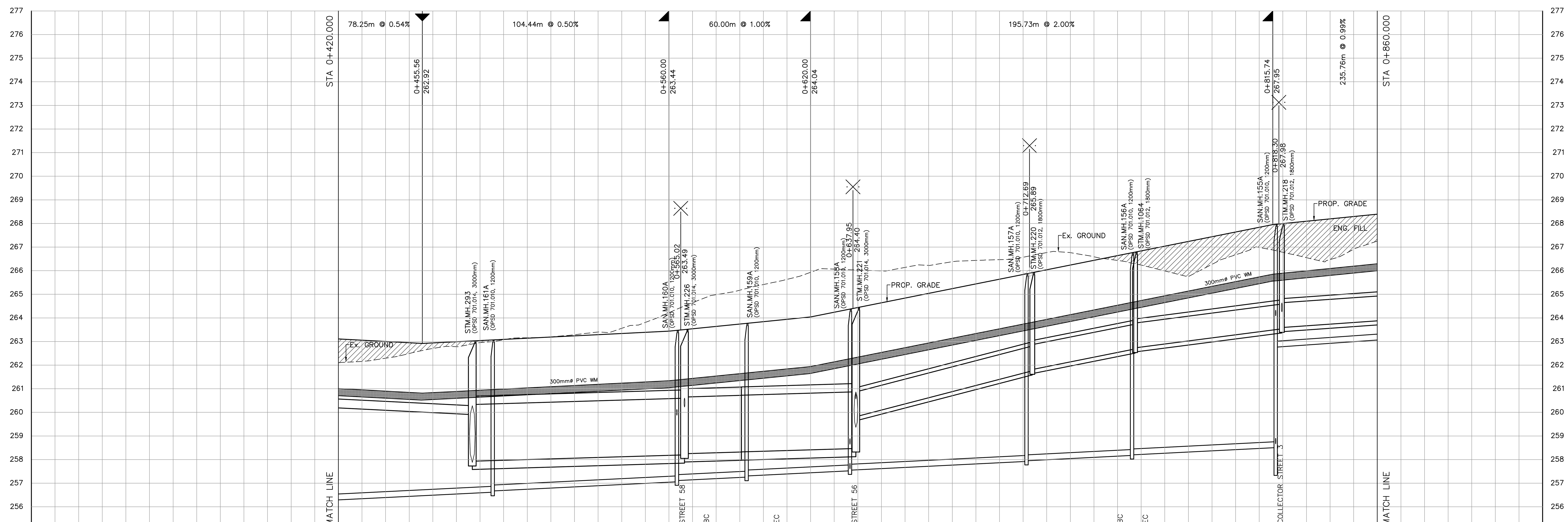
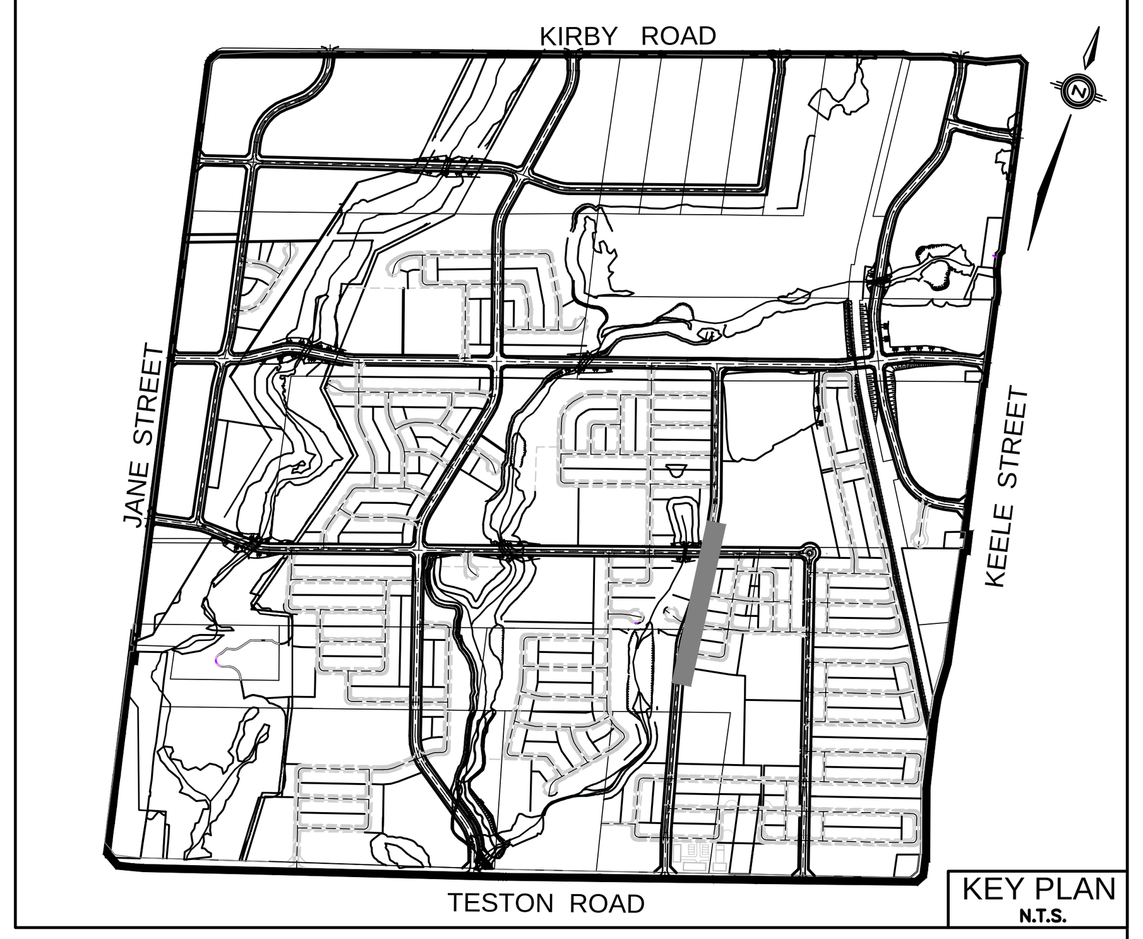




SANITARY SEWER	256.62S 256.67N	257.06S 259.87E 257.11N	257.26S 257.31N	257.52S 257.55N 257.60W 258.64E	257.92S 257.95N	258.17S 258.20N	258.51S 262.76N 264.08E 258.66W																
STORM SEWER	257.88E 257.93N 259.90S	258.20S 258.25N 260.22E	258.47S 259.82N 260.57W 259.37E	261.76S 261.81N	262.68S 262.73N	263.54S 263.59N 264.26E																	
PROPOSED ELEVATION	263.11 262.10	263.00 262.29	262.94 262.70	263.04 262.95	263.14 263.16	263.24 263.29	263.34 263.56	263.44 264.22	263.64 264.98	263.84 265.41	264.04 265.93	264.44 266.03	264.84 266.14	265.24 266.38	265.64 266.46	266.04 266.76	266.44 266.59	266.84 266.23	267.24 265.75	267.64 266.67	267.99 266.78	268.19 266.47	268.39 267.25
CHAINAGE	0+420.00	0+440.00	0+460.00	0+480.00	0+500.00	0+520.00	0+540.00	0+560.00 0+564.99	0+574.61 0+580.00	0+590.71 0+600.00 0+606.81	0+620.00	0+637.92 0+640.00	0+660.00	0+680.00	0+700.00	0+712.67 0+720.00	0+740.00	0+749.81 0+756.39 0+760.00 0+762.98	0+780.00	0+800.00	0+818.28 0+820.00	0+840.00	0+860.00

REVISIONS

No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
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- DENOTES EXISTING SANITARY SEWER
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- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

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2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

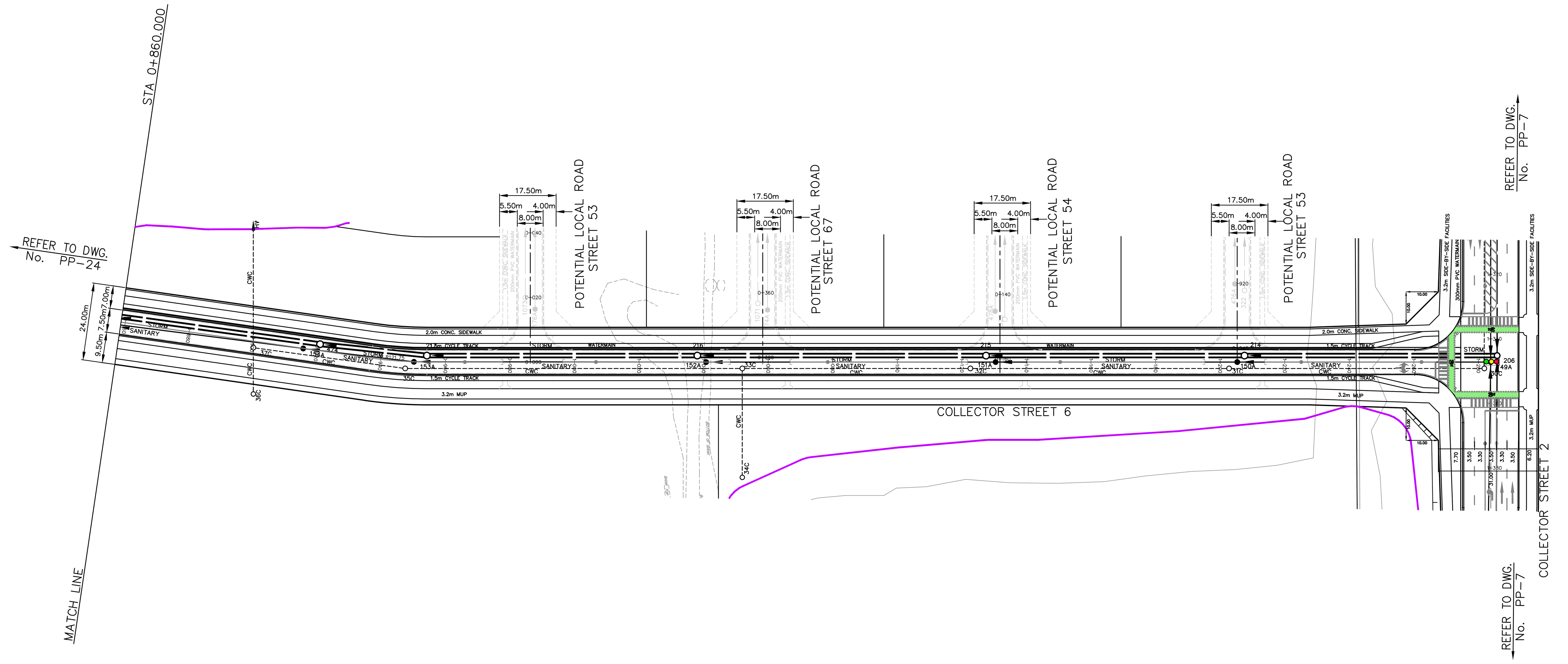
PLAN AND PROFILE OF
COLLECTOR STREET 6
FROM STA. 0+400.000 TO STA. 0+860.000

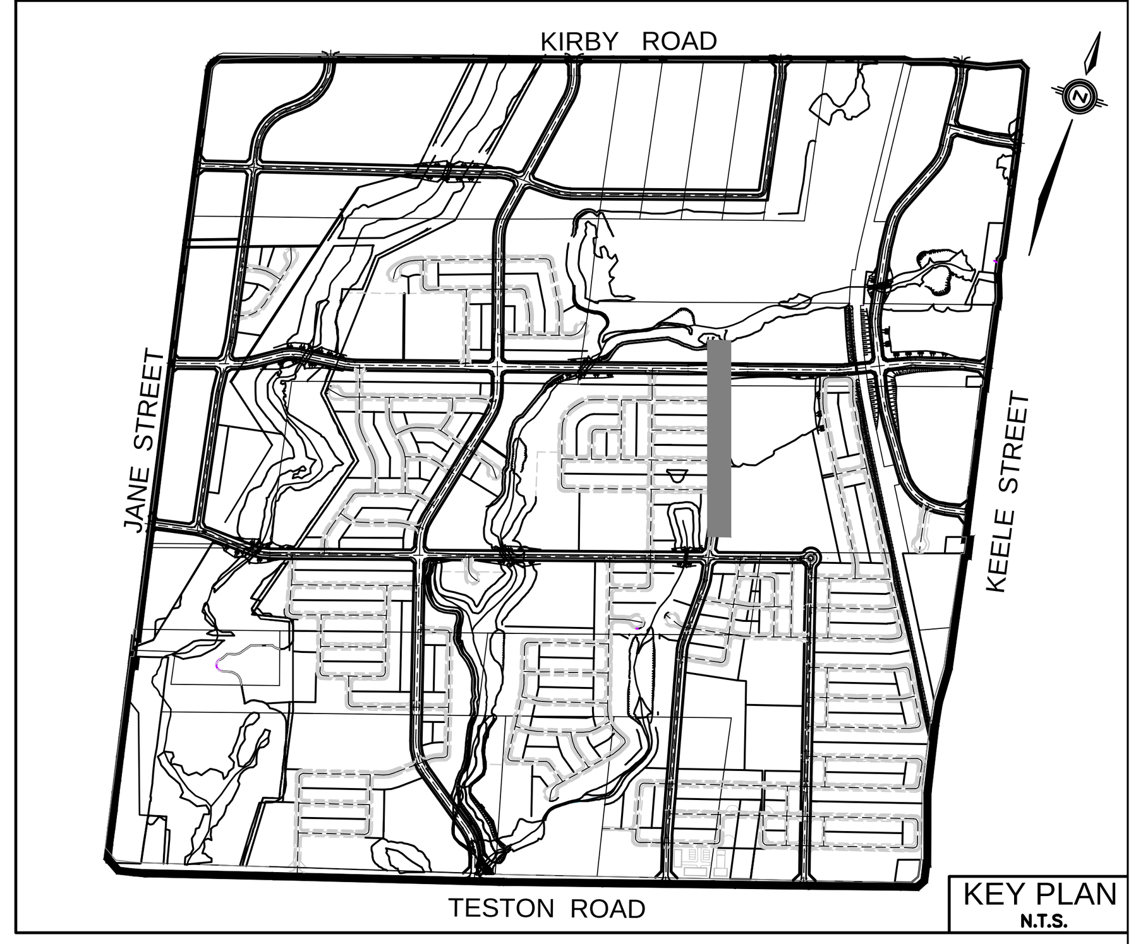
REGION FILE:
CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-24	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

REVISIONS			
No.	DESCRIPTION	By	Date





LEGEND

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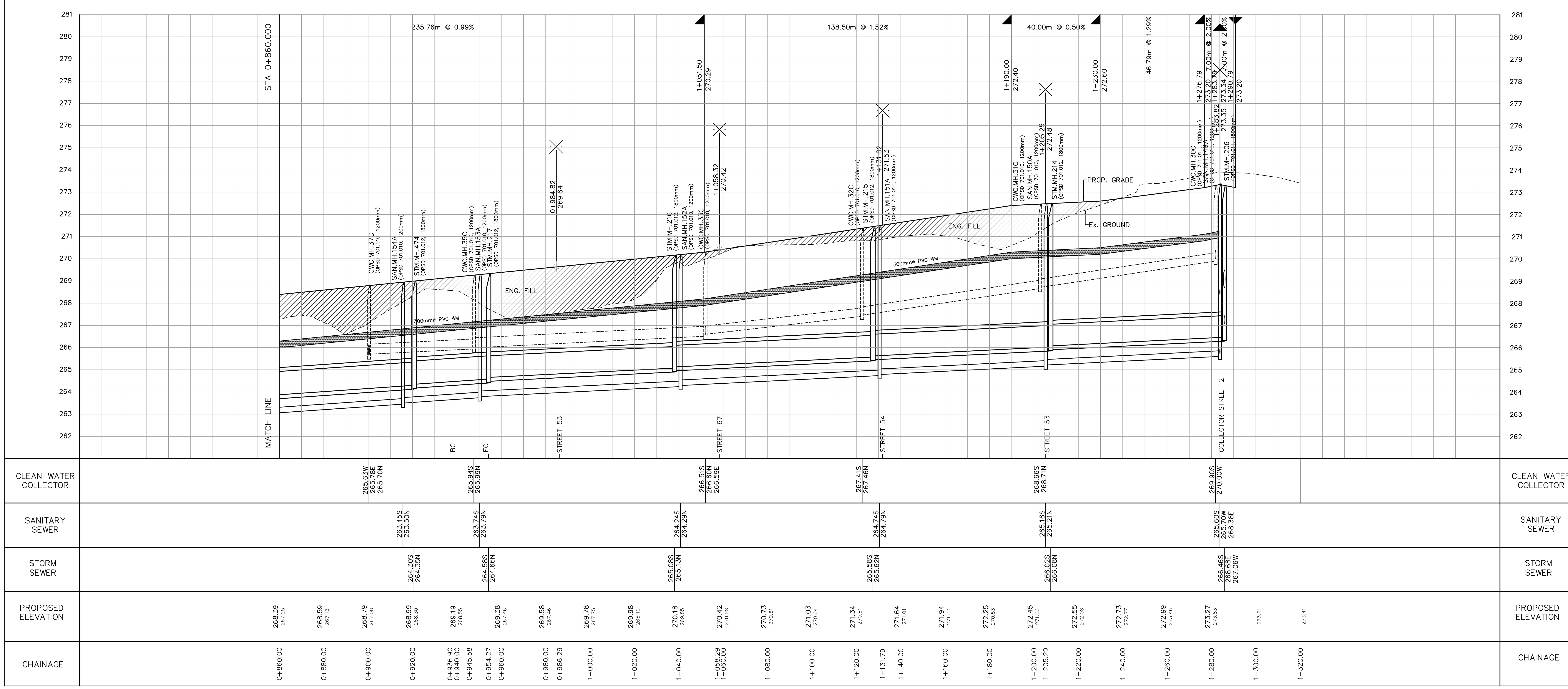

BENCHMARK NOTE

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1.	23/08/03	ENVIRONMENTAL STUDY REPORT

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

PLAN AND PROFILE OF

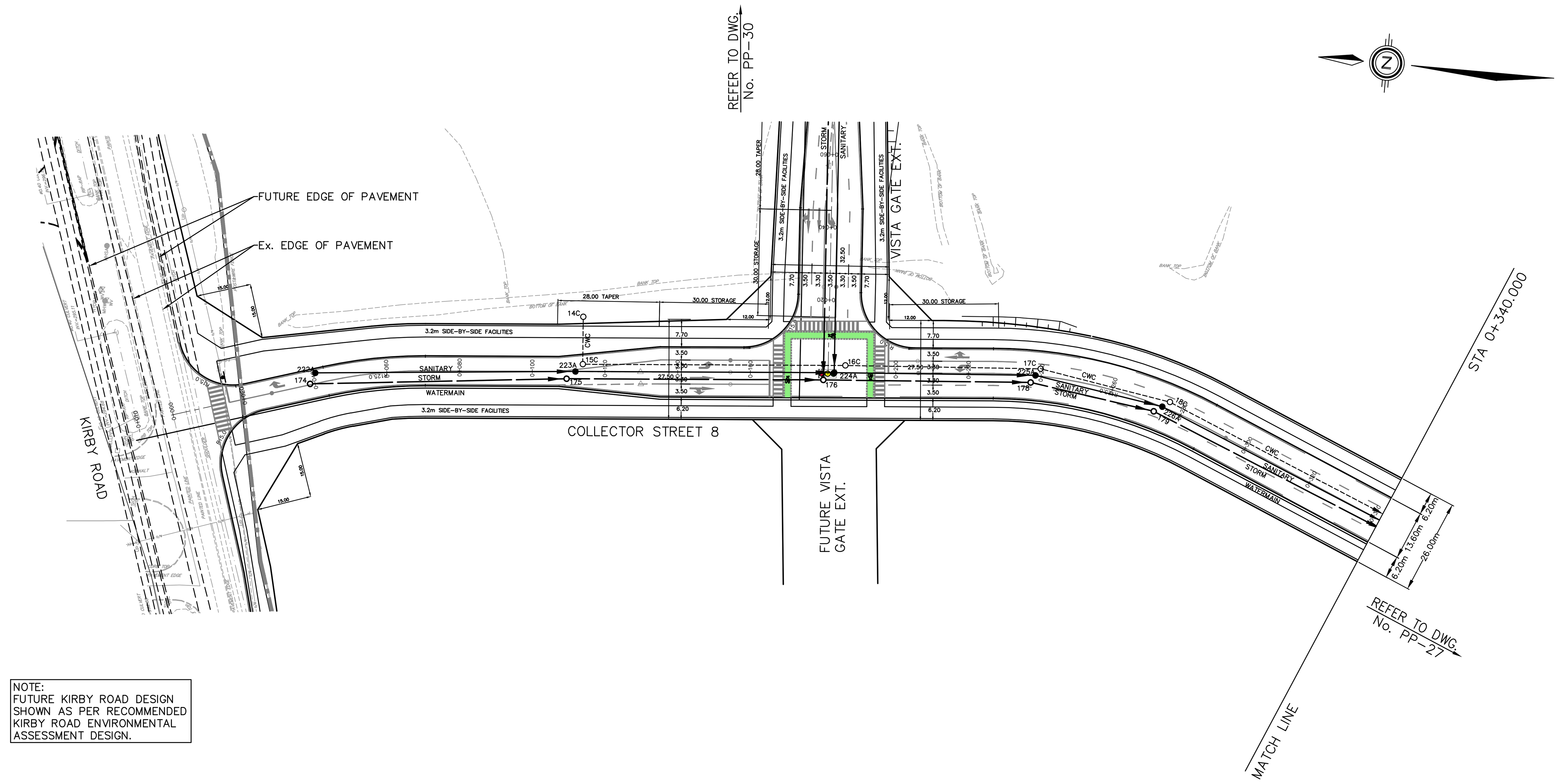
COLLECTOR STREET 6

FROM STA. 0+860.000 TO STA. 1+320.000

REGION FILE: CITY FILE: BL.27.2020

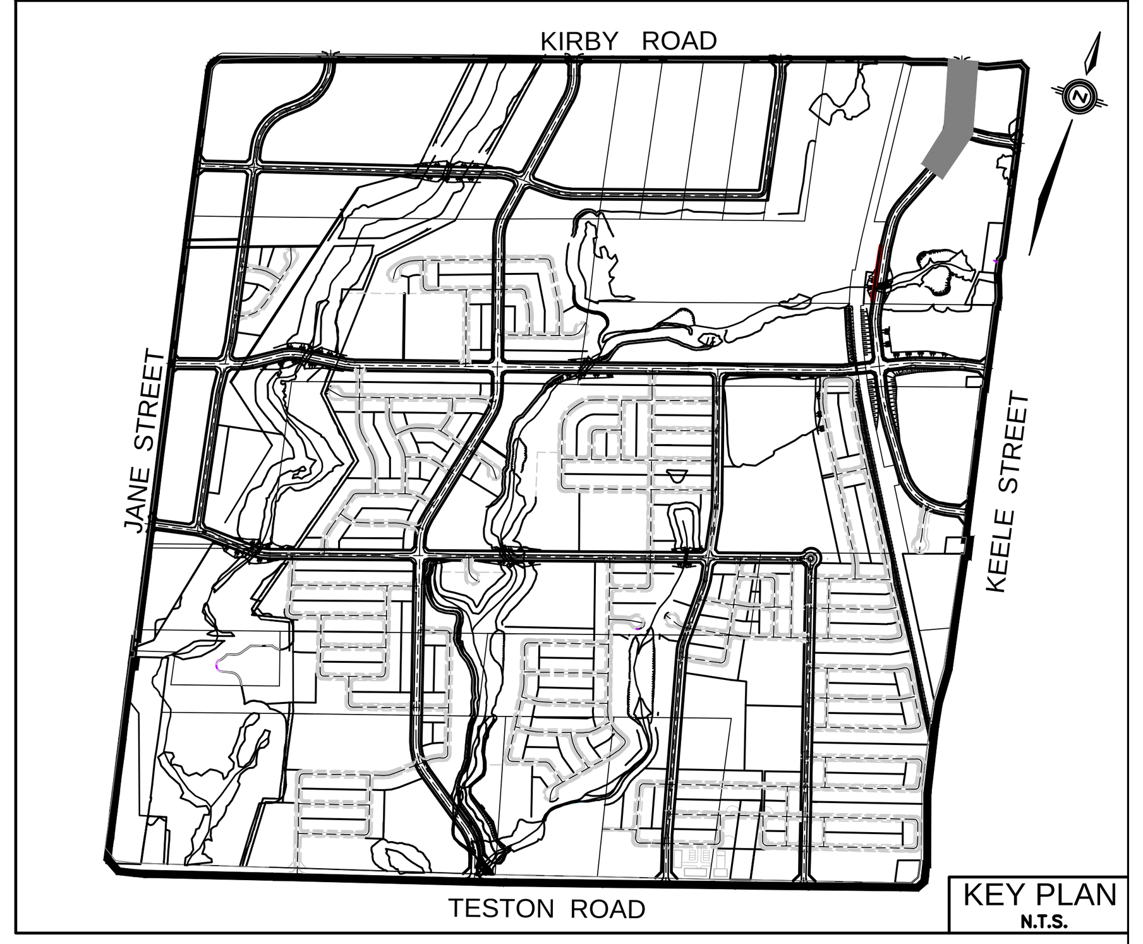
PROJECT No. 2021 - 4766	DRAWING No. PP-25	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022
DESIGNED BY: F.T.	APPROVED BY: P.S	

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m



NOTE:
FUTURE KIRBY ROAD DESIGN
SHOWN AS PER RECOMMENDED
KIRBY ROAD ENVIRONMENTAL
ASSESSMENT DESIGN.

REVISIONS			
No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
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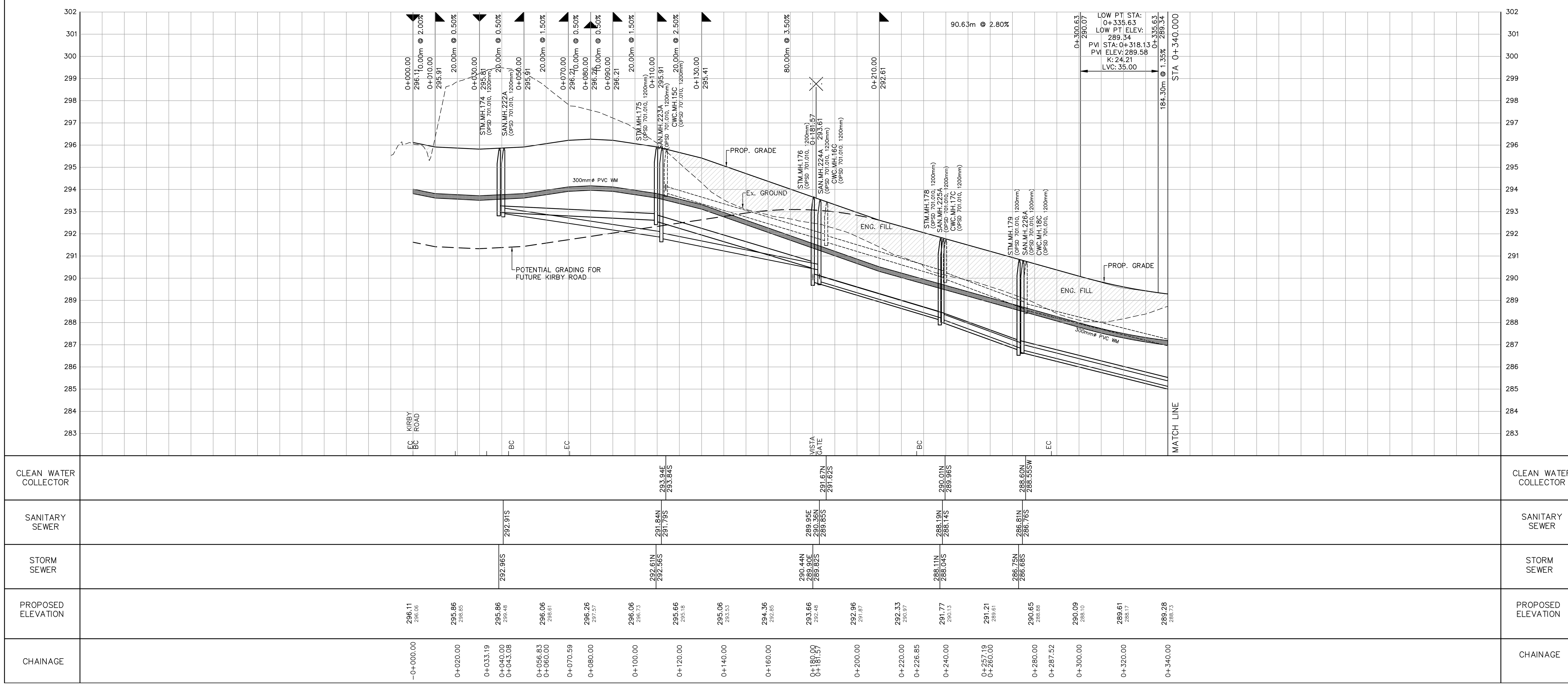

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 8
FROM STA. 0+000.000 TO STA. 0+340.000

REGION FILE:		CITY FILE: BL.27.2020	
PROJECT No.	2021 - 4766	DRAWING No.	PP-26
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

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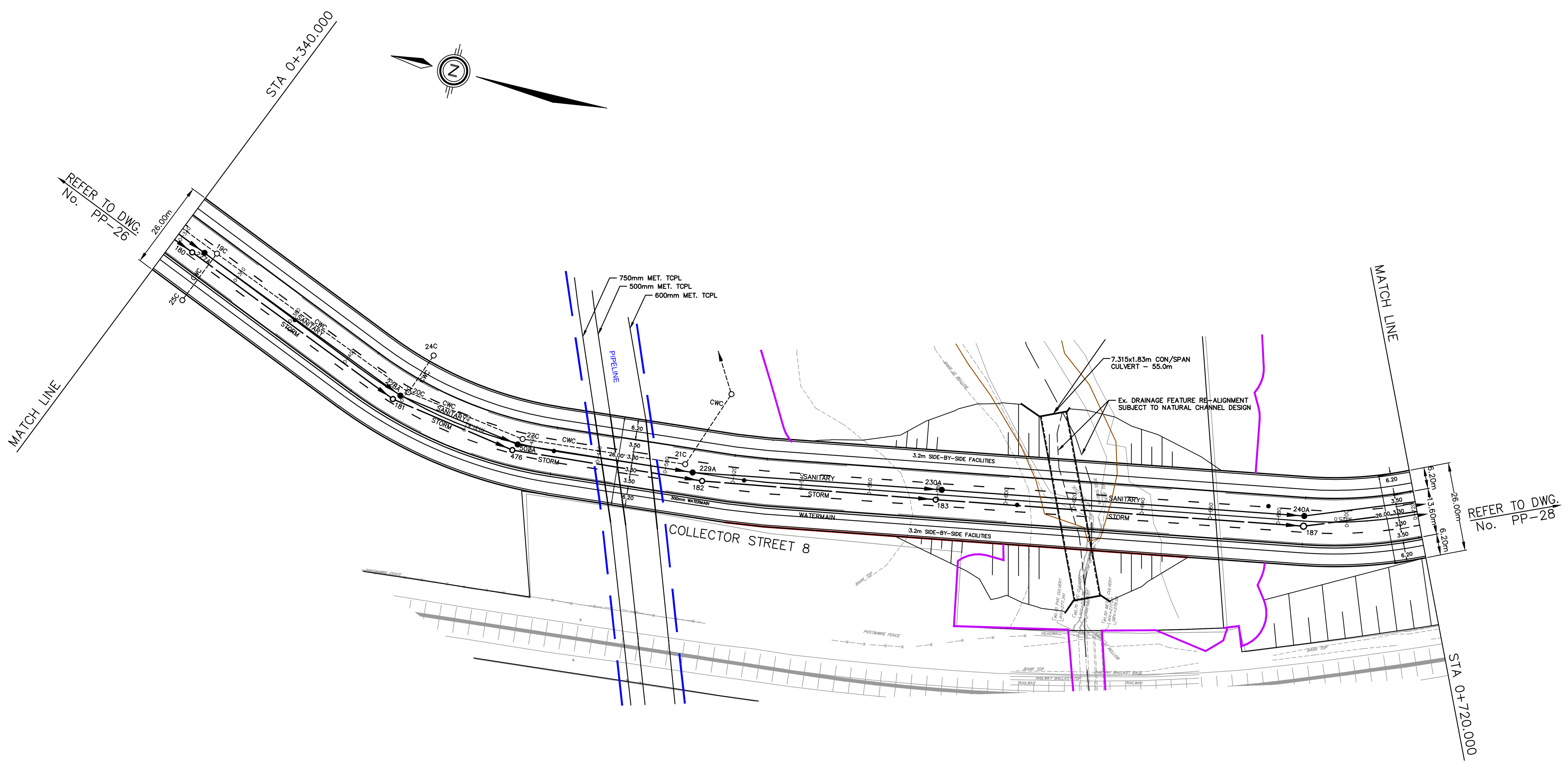
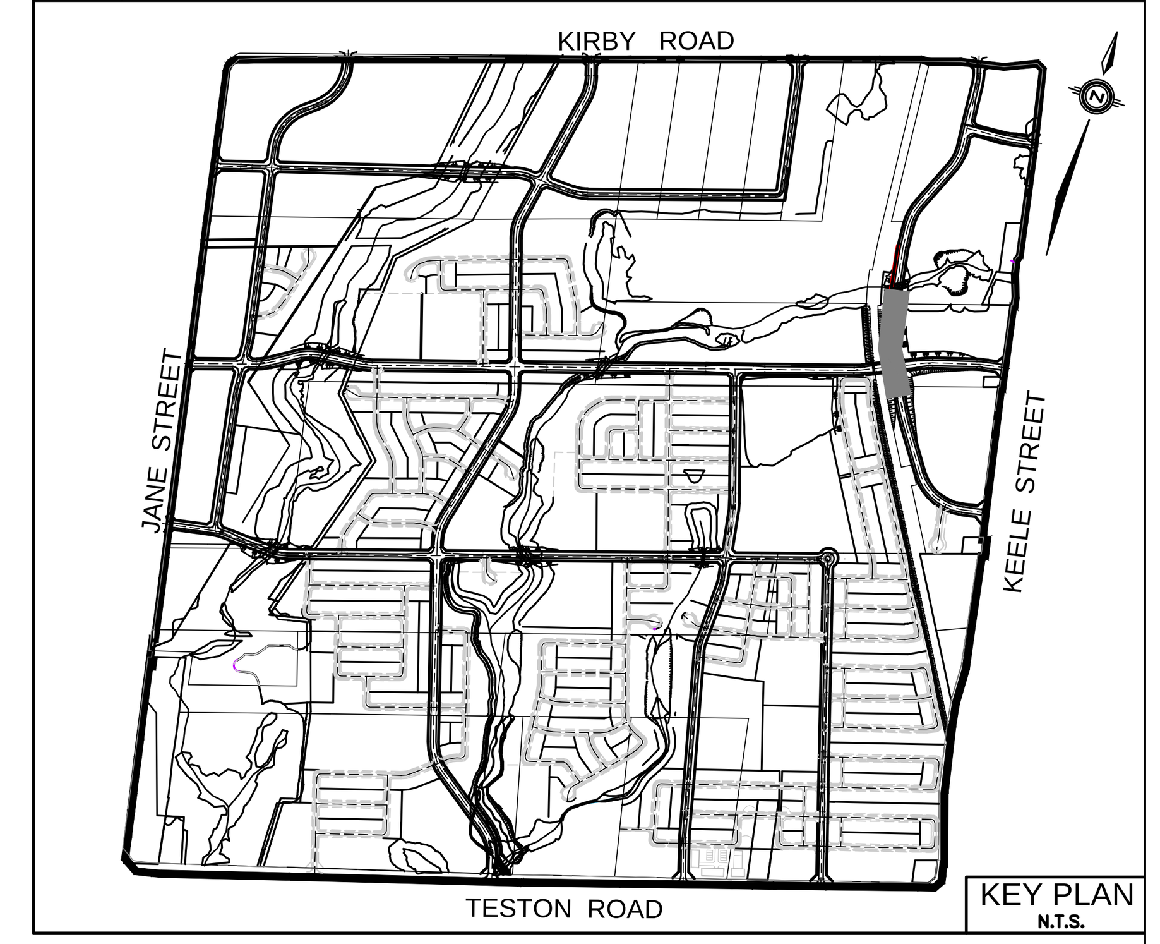


REVISIONS

No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
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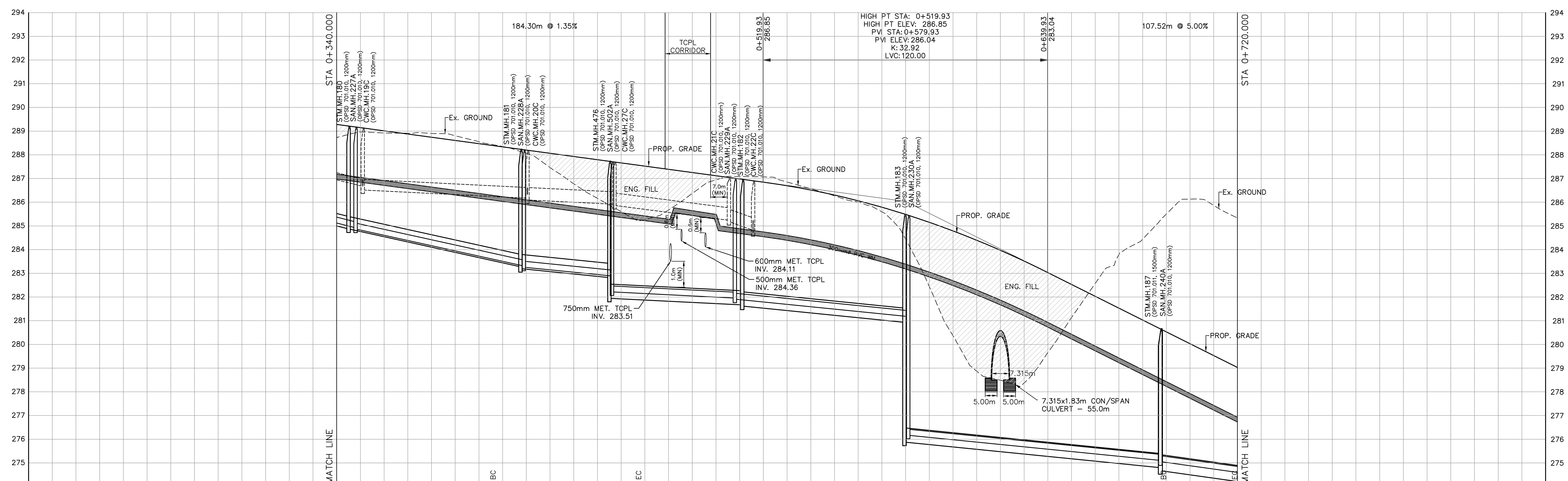
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)



CLEAN WATER COLLECTOR	286.67NE 286.67NW 286.52S	286.17N 286.32E 286.10S	285.92N 285.87S	285.24N 285.18E	284.82W 284.72NE			
SANITARY SEWER	284.92N 284.87S	283.31N 283.26S	282.89N 282.22S	281.96N 281.91S	281.18N 276.17S	275.11N 275.06S		
STORM SEWER	284.87N 284.88SW	283.28NE 283.20S	282.82N 281.95S	281.67N 281.62S	280.93N 275.88S	274.80N 274.68S		

PROPOSED ELEVATION	CHAINAGE
289.28 (288.73)	0+340.00
289.01 (288.92)	0+360.00
288.74 (288.90)	0+380.00
288.47 (288.55)	0+400.00
	0+406.38
288.20 (288.06)	0+420.00
	0+436.68
287.93 (286.78)	0+440.00
287.66 (285.60)	0+460.00
	0+466.98
287.39 (285.67)	0+480.00
287.12 (286.94)	0+500.00
286.85 (287.07)	0+520.00
286.52 (286.57)	0+540.00
286.06 (286.01)	0+560.00
285.49 (284.45)	0+580.00
284.79 (280.37)	0+600.00
283.97 (278.49)	0+620.00
283.03 (279.66)	0+640.00
282.03 (282.58)	0+660.00
281.03 (284.44)	0+680.00
	0+745.19
280.03 (286.13)	0+700.00
	0+763.52
279.03 (285.34)	0+720.00

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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VAUGHAN

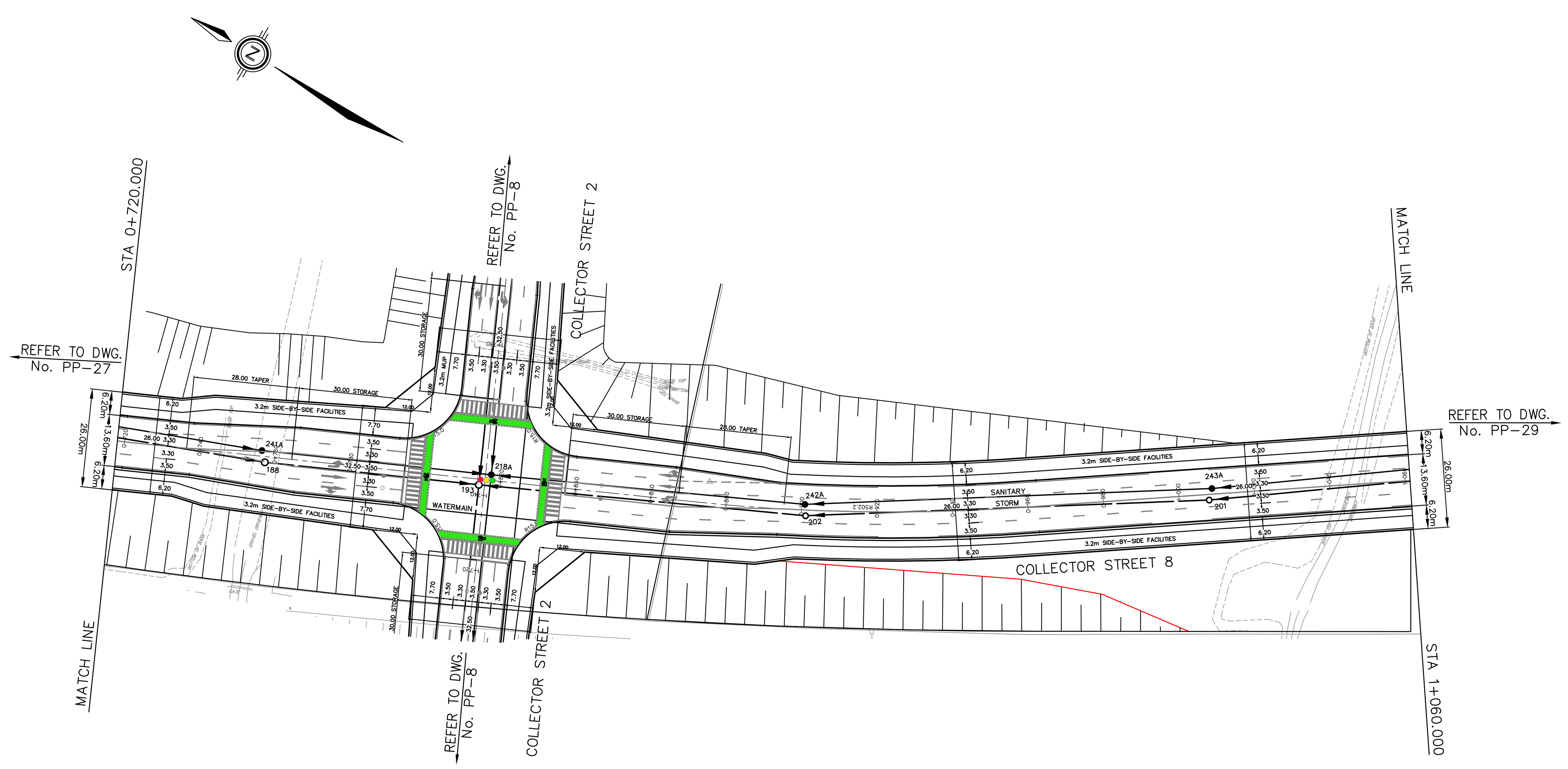
PLAN AND PROFILE OF
COLLECTOR STREET 8
FROM STA. 0+340.000 TO STA. 0+720.000

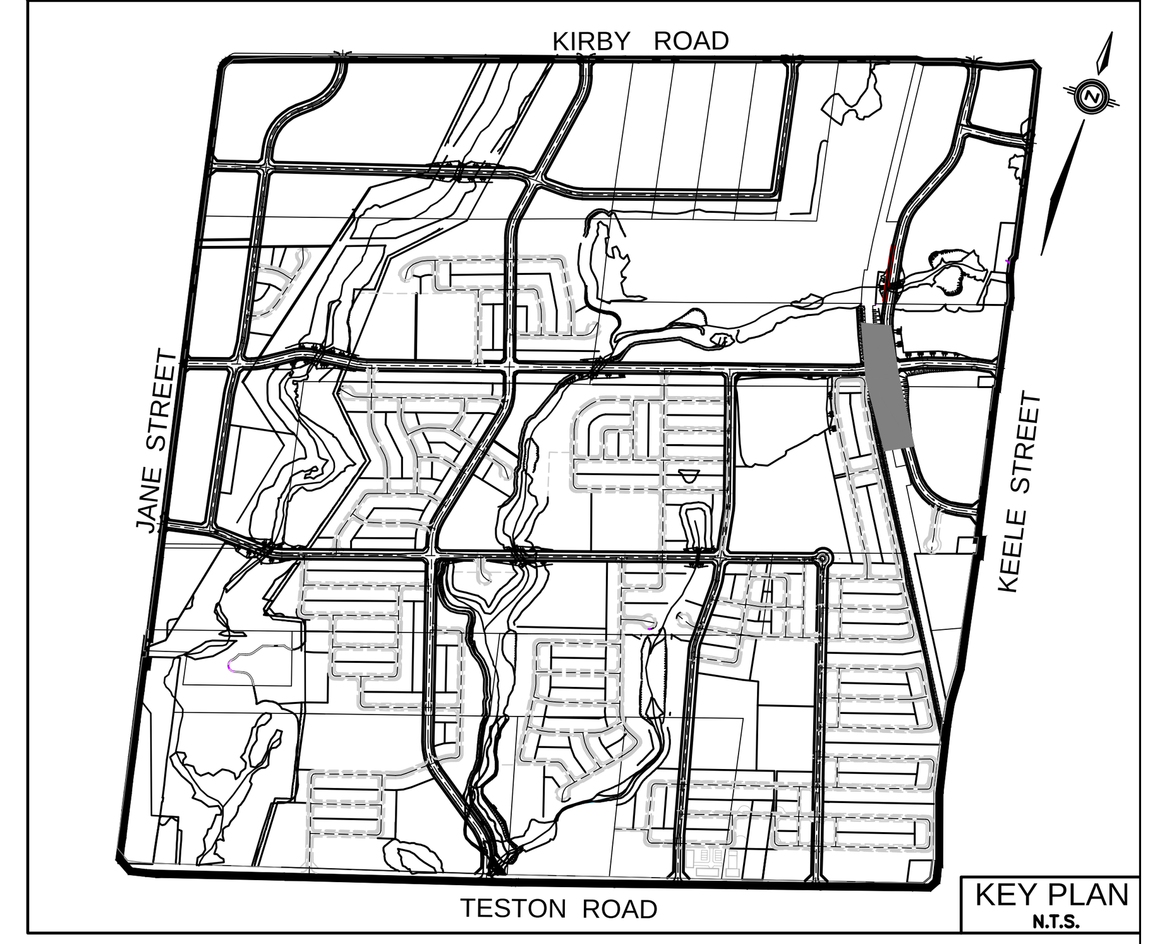
REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-27	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 — 0 5 10 15 20 25 30 35 40 45 50m

REVISIONS			
No.	DESCRIPTION	By	Date





LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
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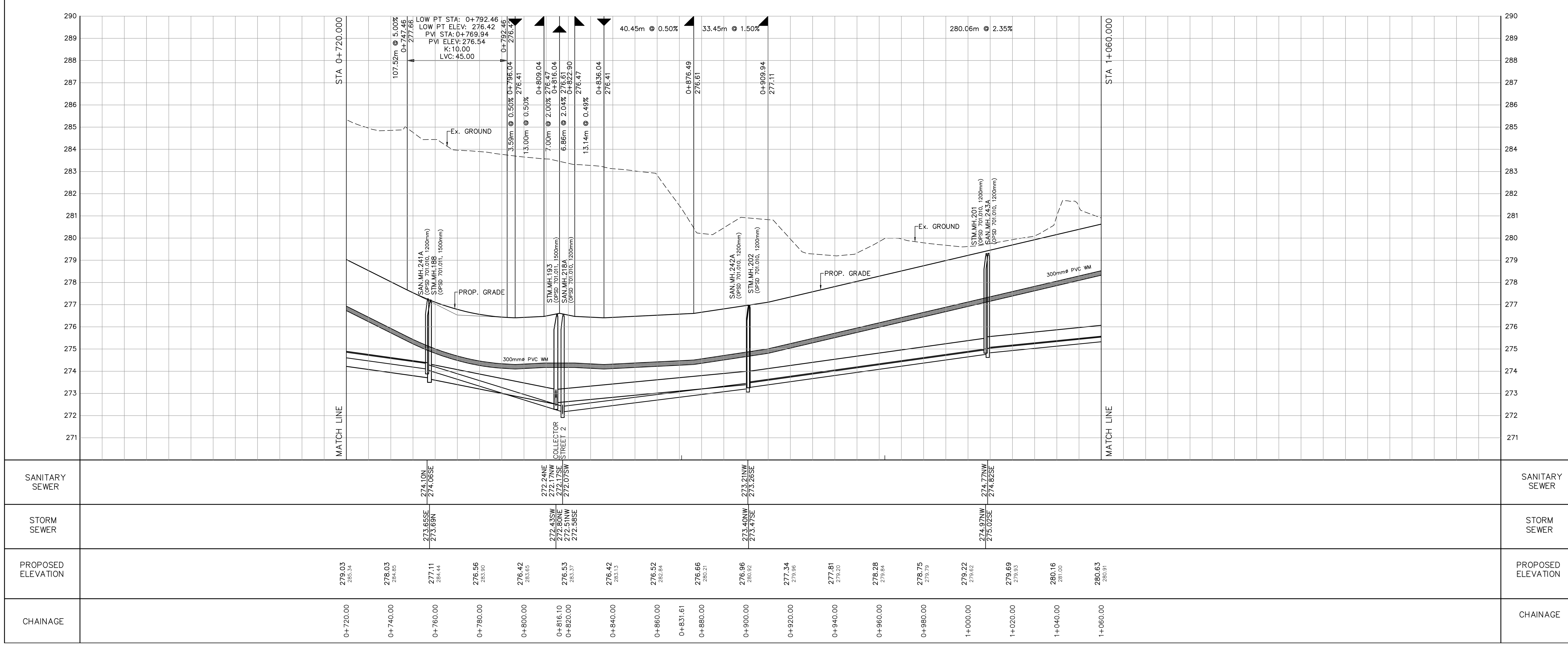
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)
- DENOTES TRAIL



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BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

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DIRECTOR OF DEVELOPMENT ENGINEERING DATE

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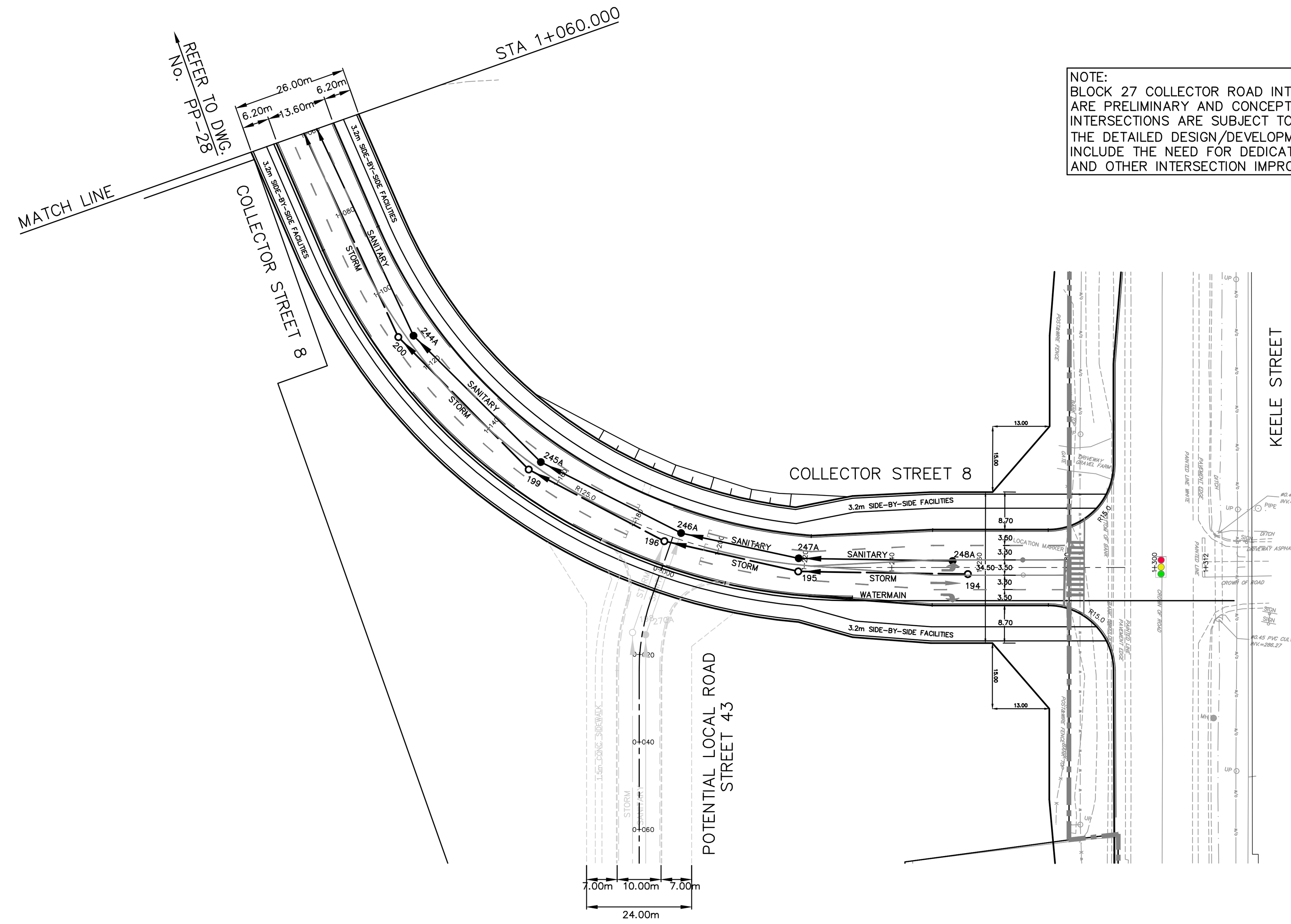
VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 8
FROM STA. 0+720.000 TO STA. 1+060.000

REGION FILE:		CITY FILE: BL.27.2020
PROJECT No. 2021 - 4766	DRAWING No. PP-28	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022
DESIGNED BY: F.T.	APPROVED BY: P.S	

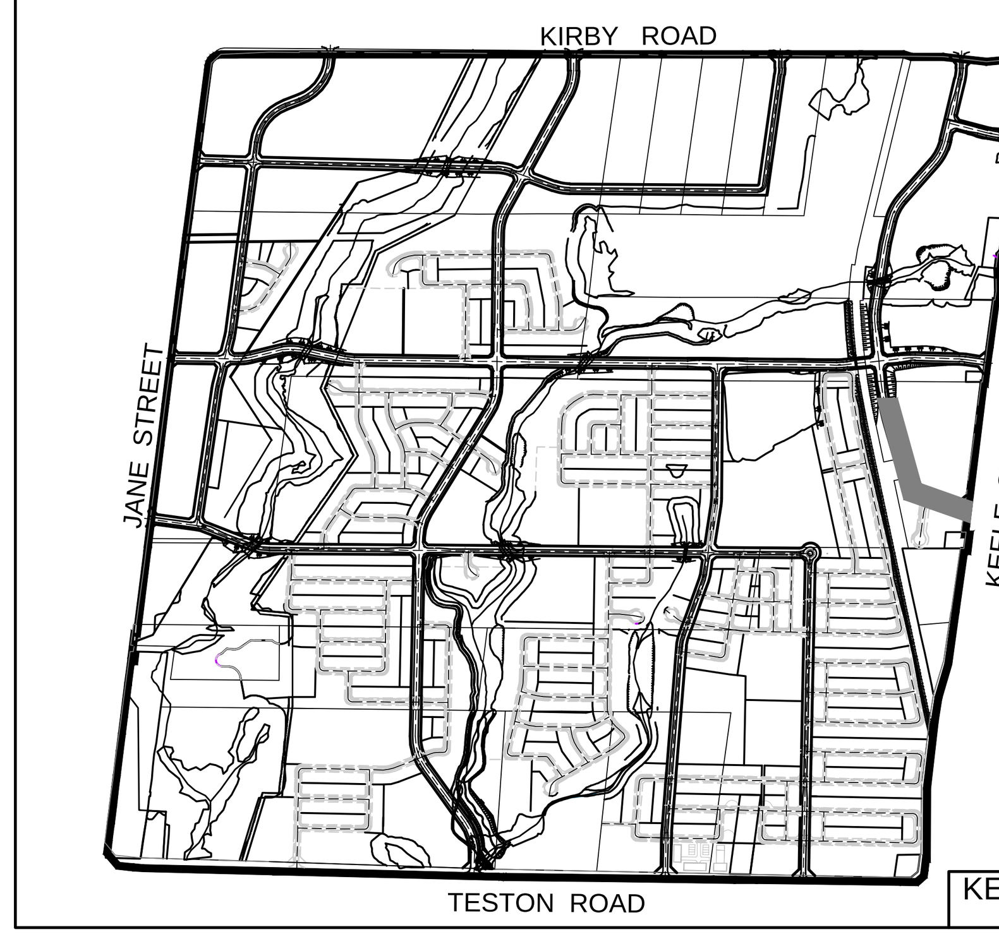
SCALE H 1:1000 V 1:100 — 0 5 10 15 20 25 30 35 40 45 50m



NOTE:
BLOCK 27 COLLECTOR ROAD INTERSECTIONS TO YORK REGION ROADS ARE PRELIMINARY AND CONCEPTUAL. THE CONFIGURATION OF THESE INTERSECTIONS ARE SUBJECT TO YORK REGIONS APPROVAL DURING THE DETAILED DESIGN/DEVELOPMENT APPROVALS PHASE AND MAY INCLUDE THE NEED FOR DEDICATED TURNING LANES, ILLUMINATION, AND OTHER INTERSECTION IMPROVEMENT ON REGIONAL ROADS.

REVISIONS

No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
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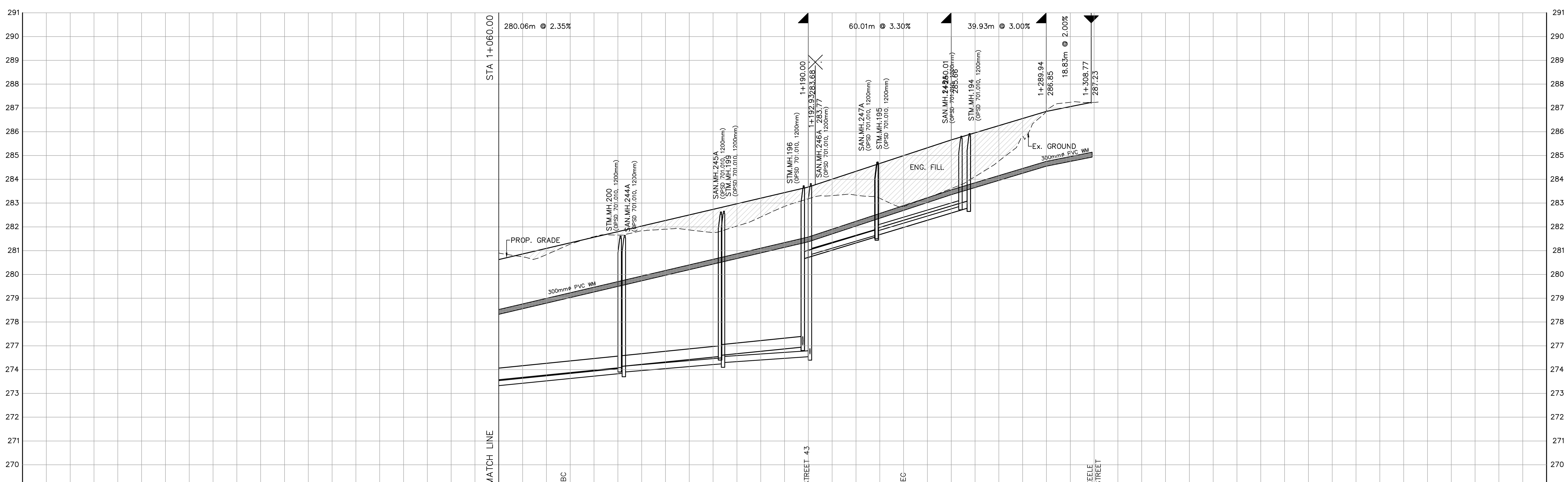

SANITARY SEWER				275.85NW 275.90SE		276.25NW 276.30E		276.55W 276.65S 280.83E		281.65W 281.82E			282.87W						
STORM SEWER				276.05NW 276.13SE		276.55NW 276.60E		276.95W 280.65E 277.03S		281.59W 281.64E			282.80W						
PROPOSED ELEVATION	280.63 280.91	281.10 280.83	281.57 281.59	282.04 281.83	282.50 281.87	282.97 282.04	283.44 282.86	284.01 283.31	284.67 283.20	285.33 283.22	285.96 284.11	286.56 285.80	287.06 287.24						
CHAINAGE	1+060.00	1+080.00	1+086.00	1+100.00	1+120.00	1+140.00	1+139.46	1+160.00	1+180.00	1+200.00	1+220.00	1+192.93	1+240.00	1+260.00	1+280.00	1+300.00	1+308.76	1+320.00	

BENCHMARK NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO CITY OF VAUGHAN MONUMENT NO. 105980075 HAVING A PUBLISHED ELEVATION OF 265.404 METRES

No.	Date	Issued for
2.	24/07/31	ENVIRONMENTAL STUDY REPORT
1.	23/08/03	ENVIRONMENTAL STUDY REPORT

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SKILL AND ABILITY OF SCHAEFFERS CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATION

DIRECTOR OF DEVELOPMENT ENGINEERING DATE

BLOCK 27 RESIDENTIAL SUBDIVISION

SCHAEFFERS
CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail: design@schaeffers.com

VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 8
FROM STA. 1+060.000 TO STA. 1+309.000

REGION FILE: CITY FILE: BL.27.2020

PROJECT No. 2021 - 4766		DRAWING No. PP-29	
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 0 5 10 15 20 25 30 35 40 45 50m

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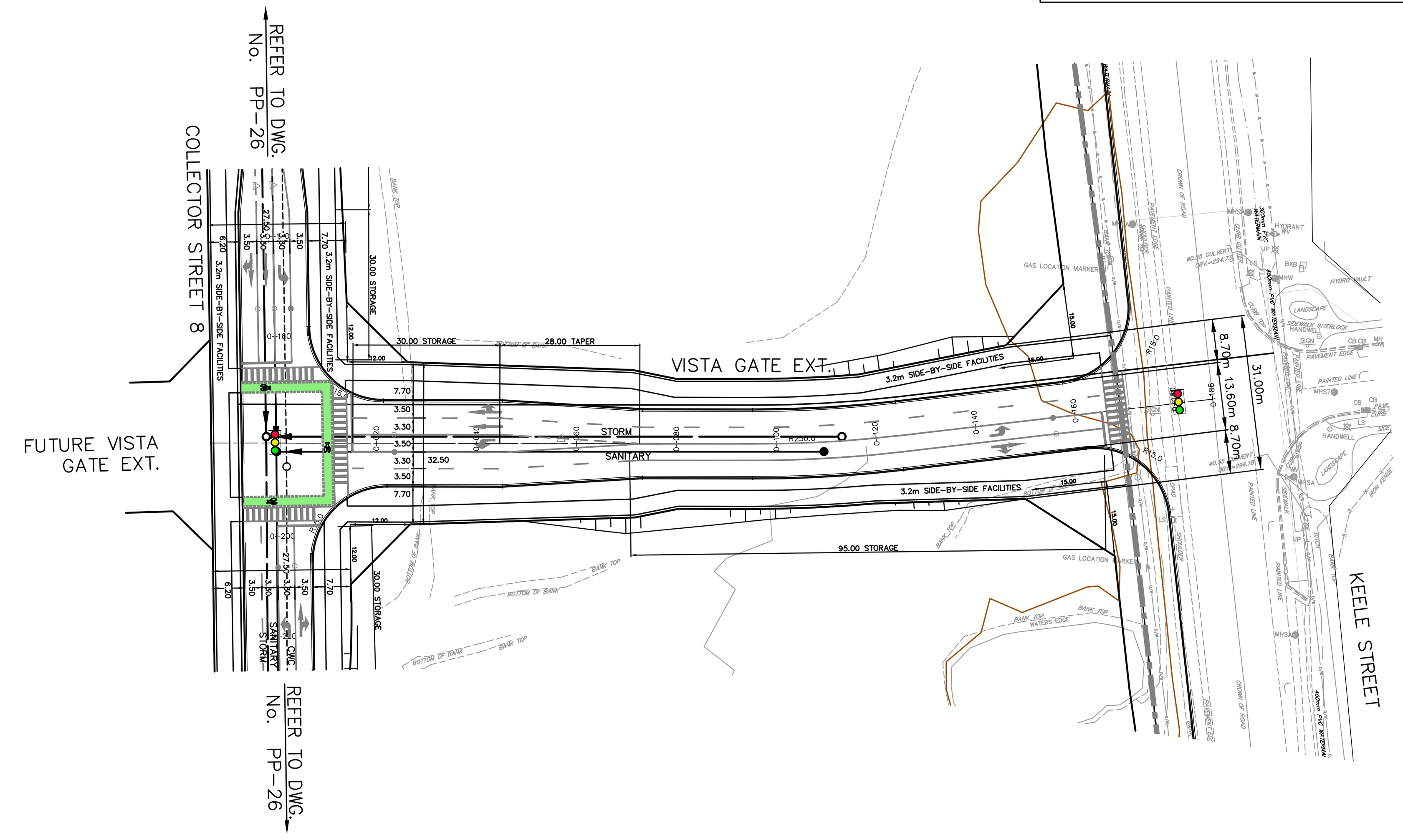
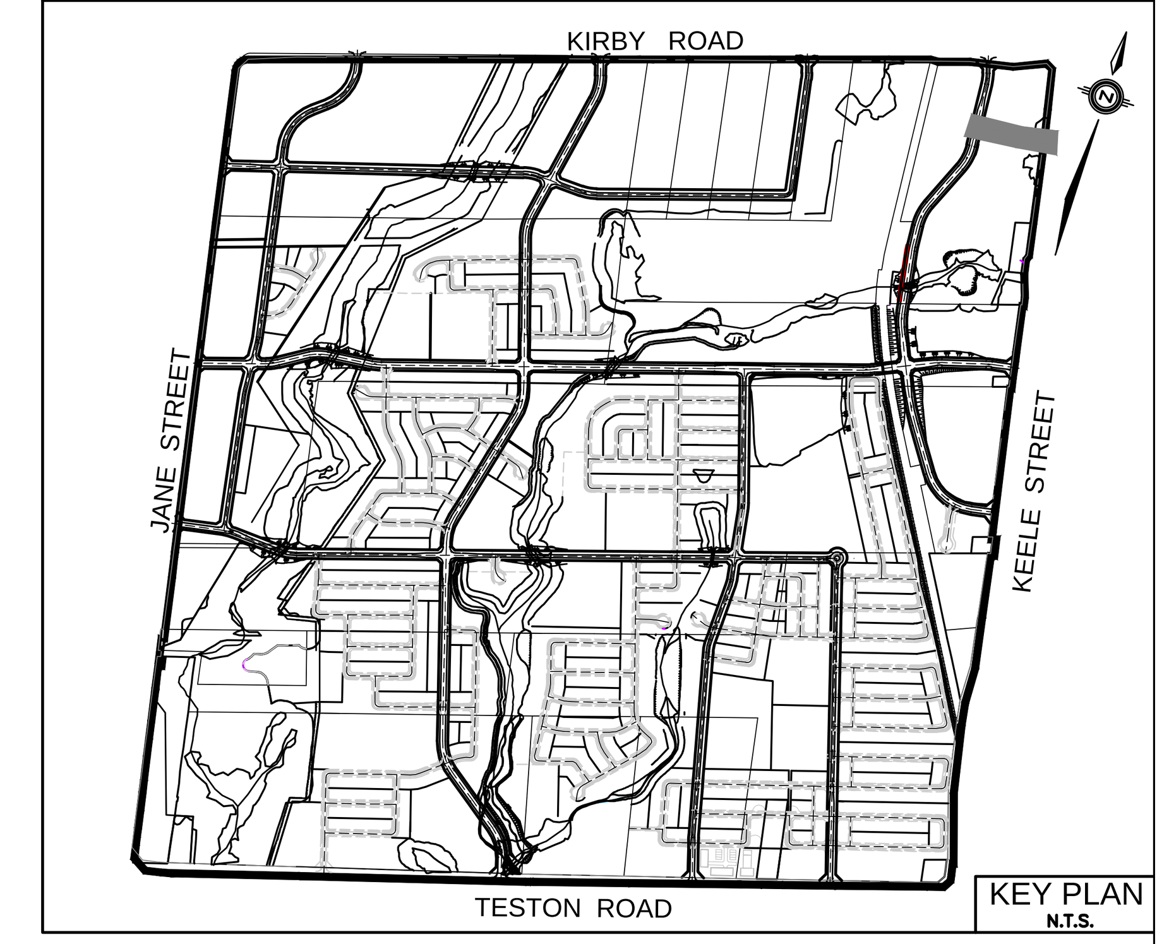
NOTE:
BLOCK 27 COLLECTOR ROAD INTERSECTIONS TO YORK REGION ROADS ARE PRELIMINARY AND CONCEPTUAL. THE CONFIGURATION OF THESE INTERSECTIONS ARE SUBJECT TO YORK REGIONS APPROVAL DURING THE DETAILED DESIGN/DEVELOPMENT APPROVALS PHASE AND MAY INCLUDE THE NEED FOR DEDICATED TURNING LANES, ILLUMINATION, AND OTHER INTERSECTION IMPROVEMENT ON REGIONAL ROADS.



REVISIONS

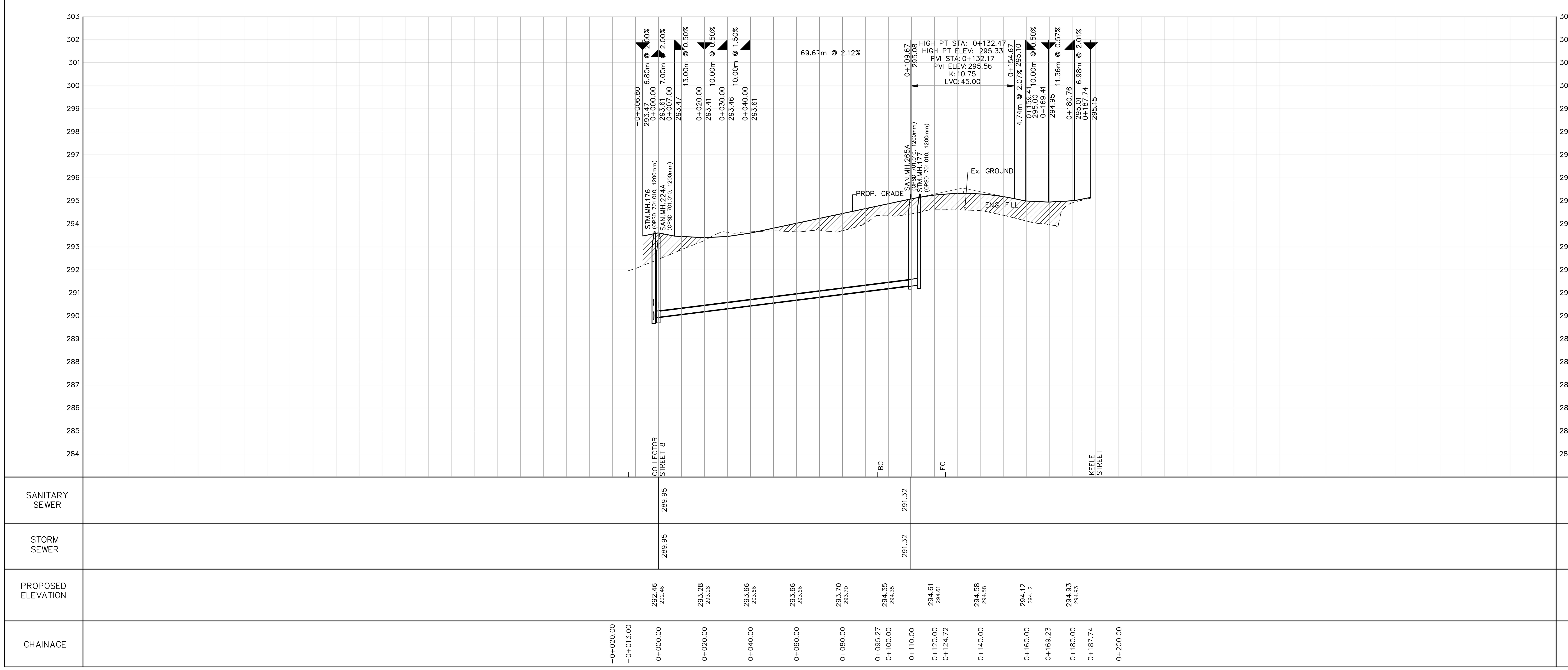
No.	DESCRIPTION	By	Date



KEY PLAN
N.T.S.

LEGEND

- DENOTES INTERLOCK DRIVEWAY
- DENOTES VALVE AND CHAMBER
- DENOTES HYDRANT
- DENOTES CATCHBASIN
- DENOTES HYDRO TRANSFORMER
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES EXISTING STORM MANHOLE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES EXISTING WATERMAIN
- DENOTES EXISTING STORM SEWER
- DENOTES EXISTING SANITARY SEWER
- DENOTES WATERMAIN
- DENOTES STORM SEWER
- DENOTES SANITARY SEWER
- DENOTES LIMIT OF SUBDIVISION
- DENOTES OUTER CONSTRAINTS LIMIT (IDENTIFIED BY BEACON)



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VAUGHAN

PLAN AND PROFILE OF
COLLECTOR STREET 8
FROM STA. 0+000.000 TO STA. 0+200.000

REGION FILE:		CITY FILE: BL.27.2020	
PROJECT No.	2021 - 4766	DRAWING No.	PP-30
DRAWN BY: K.M.	CHECKED BY: F.T.	DATE: MARCH 2022	
DESIGNED BY: F.T.	APPROVED BY: P.S		

SCALE H 1:1000 V 1:100 — 0 5 10 15 20 25 30 35 40 45 50m

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BLOCK 27 LANDOWNERS
GROUP INC.