



TOWNSHIP OF WELLINGTON NORTH

TO: Mayor and Council
DATE: 2024-09-23
MEETING TYPE: Open
SUBMITTED BY: Tammy Stevenson, Senior Project Manager
REPORT #: INF 2024-015
REPORT TITLE: John Street Reconstruction Update

RECOMMENDED MOTION

THAT the Council of the Corporation of the Township of Wellington North receive Report INF 2024-015 being a report on the John Street Reconstruction Update.

PREVIOUS REPORTS/BY-LAWS/RESOLUTIONS

OPS 2023-043 Public Information Centre – Capital Projects

INF 2024-010 Spring Traffic Count

BACKGROUND

A Site Plan Agreement was entered with the Township of Wellington North and Peter Mitges Holdings Limited (319 Main Street South property owner) for Tim Hortons in September 1995.

Regulation of Traffic Bylaw was updated in November 1995 to include parking regulations of no-parking anytime on the west side of John Street from Queen Street West to 40 metres south of Queen Street West. The Regulation of Traffic Bylaw was further amended in May 2003 to expediently erect “No Stopping” and “No Parking” signs on both sides of John Street to include the addition of No-Parking and No Stopping Zone anytime on both sides of John Street from Queen Street West south to Waterloo Street a distance of ± 191 metres (except the east side of John Street from a point ± 79 metres south of Queen Street to a point ± 89 metres south of Queen Street West for mail pick up and delivery).

This Regulation of Traffic By-law and parking restrictions were implemented to support the intent of the Tim Hortons’ John Street access for service vehicles only following the signing of the Site Plan Agreement.

On October 24 and October 25, 2023, the Township hosted a Public Information Centre (PIC) for Capital Projects at the Mount Forest and District Sports Complex and Arthur Community Centre Hall respectively.

John Street Reconstruction project between Queen Street West and Waterloo Street were on display at the PIC for residents and stakeholder's review. A survey was made available to solicit feedback on the capital projects that were presented. A large portion of the survey feedback was concerns over the removal of large mature trees, the proposed design of John Street including a left turn lane into the John Street access, and Tim Hortons' drive through traffic queuing on John Street.

Additional funds were included in the 2024 Capital Budget to further investigate the reconstruction project to consider public feedback where possible.

ANALYSIS

Township staff and the Township's Consulting Engineers, Triton Engineering Services Limited (Triton), had a series of meetings to discuss this project to bring it closer to design completion. The design update reviewed Design Alternatives Options for the reconstruction of John Street as outlined in Triton's memo found in Attachment 1. Highlights of design considerations and revisions are as follows:

Design Objectives

- Replacement of aging infrastructure (ie. watermain and sanitary sewers) to align with Asset Management Planning
- Design John Street roadway cross-section to urban standards
- Improve drainage with the installation of new storm sewers and structures
- Address the existing traffic issues from overflow drive through traffic from the commercial property at 319 Main Street South (Tim Hortons)
- Limit the impact to trees, where possible

Land Use

The majority of the properties on the east and west side of John Street are residential (zoned R2 medium and R3 high-density) with two (2) commercial properties at the northeast corner of John Street that also have frontage onto Main Street South and Queen Street West located at 301 and 319 Main Street South as illustrated in figure 1.



Figure 1: Zoning Map

Roadway

John Street is classified as a local road in our 2023 Road Needs Study. Roadway design has been updated to follow the Municipal Servicing Standards (MSS). Roadway includes two through lanes of travel, one in each direction, with a road width of 8.5m, curb and gutter, storm sewers and sidewalk located on the west side of John Street.

Sidewalk

Sidewalk location was reviewed and narrowed from the 1.8m width when adjacent to curb requirement to 1.5m width. This sidewalk width will continue to allow for safe pedestrian traffic.

Trees

Service locations have been reviewed and adjusted where possible to limit the disturbed tree roots areas for installation of services during construction. Coupled with the review of service locations and narrowing the sidewalk width from 1.8m to 1.5m, impacts to trees have been reduced and results are illustrated in Table 1 below.

Impacted Trees	Location	0+022 Rt	0+033 Rt	0+058 Rt	0+099 Rt	0+106 Rt	0+132 Rt	0+140 Rt	0+163 Rt	0+171 Lt	0+182 Rt	Total Proposed Tree Removals
	Diameter (mm)	500	250	600	500	500	1100	300	200	50	1000	
Design Alternative	PIC Proposed Design	X	X	X	X	X	X		X	X	X	9
	Option 1A					X				X		2
	Option 1B					X				X		2
	Option 2					X				X		2
	Option 3					X				X		2
	Option 4	X	X	X		X				X		5
	Option 5		X			X				X		3
Note:												
	Removal due to conflict with sanitary service											
X	Removal due to conflict with water service											
X	Removal due to conflict with proposed sidewalk											
X	Removal due to conflict with proposed sidewalk and water service											

Table 1: Summary of Tree Conflicts Resulting from East Design Alternative (Source: Triton August 7, 2024, Memo)

Tim Hortons – John Street Traffic

It should be noted that since the business opened, drive through traffic volume has increased as Tim Hortons expanded their service (i.e., hours, “tap” payment methods, etc.) and menu, which has been observed to have generated an increased volume of non-residential/local traffic on John Street in the immediate area of the Tim Hortons access. Tim Hortons drive through overflow of vehicles currently queue on John Street despite the no parking and no stopping signage. This traffic situation has been problematic for Township and local residents.

Traffic Counts

An existing traffic count was completed on Wednesday April 24, 2024, at two locations on John Street and two locations on Main Street South.

A second traffic count was completed to evaluate traffic of Tim Hortons John Street access when closed during the busiest 8-hours of traffic, to understand impacts, if any, to traffic volume and movement on Main Street South, signalized intersection at Queen Street and Main Street, and within the 319 Main Street South (Tim Hortons) property, and to support the recommended design alternative. Traffic within 319 Main Street South (Tim Hortons) is the responsibility of the property and/or business owner.

Results of the second traffic study are found in Triton’s Traffic Impact Brief found in Attachment 2, indicating that during the busiest 8-hours of traffic volumes, restricting the John Street entrance has minimal impact for traffic on Main Street South, traffic at Main Street and Queen Street signalized intersection, and to the volume of vehicles entering and exiting Tim Hortons.

Consultations

Staff and Triton met with various stake holders to discuss the project and their concerns. Staff and Triton also had three (3) meetings with property owner of 319 Main Street South and Tim Hortons to discuss this project, how the project will impact the property and operations, and the economic contribution that Tim Hortons has on the Township. Tim Hortons was also notified that their John Street access will not be accessible for the duration of construction of John Street and to review their current operations to plan appropriately.

Recommended Design

It is appropriate to design John Street to current land use (residential) and urban standards for local street. The recommended design for the reconstruction of John Street is to implement the Township's municipal standard for an urban local street, with two through lanes of travel, one in each direction, curb and gutter, sidewalk on the west side of the road and restriction of the Tim Hortons John Street access such that it is reduced to northbound exit only onto John Street as found in Triton's Traffic Impact Brief.

Next Steps

Letters will be mailed out to property owners within the projects limits of John Street to receive feedback to confirm the placement of their municipal services (ie. water, sanitary and storm) to assist with the completion of the final design and tender package.

A survey will be posted to solicit feedback on the John Street design, and an electronic version will be available on the Township website with paper forms available at the municipal offices in Kenilworth and the Mount Forest Arena Upper Office or mailed out upon request to ensure survey is accessible to all residents. Survey will be open Wednesday September 25 and comments will be received until Wednesday October 9, at which time comments will be consolidated and brought to Council meeting with an aim at finalizing a preferred John Street Reconstruction design.

CONSULTATION

Brooke Lambert, Chief Administrative Officer
Jerry Idialu, Director of Finance/Treasurer
Dale Clark, Manager of Transportation Services
Corey Schmidt, Manager of Environmental Services
Triton Engineering Services Limited

FINANCIAL CONSIDERATIONS

\$75,000 was allotted to further design investigation as part of the 2024 Capital Budget.

There are no financial consideration in receiving this report for information.

ATTACHMENTS

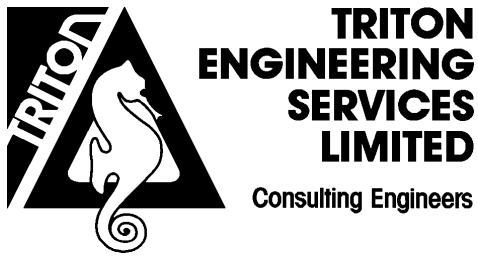
Attachment 1 – Memorandum, Re: Road Design Alternatives, Reconstruction of John Street, Mount Forest, dated August 7, 2024, prepared by Triton Engineering Services Limited

Attachment 2 – Traffic Impact Brief, dated September 9, 2024, prepared by Triton Engineering Services Limited

STRATEGIC PLAN 2024

- ☐ Shape and support sustainable growth
How:
- ☐ Deliver quality, efficient community services aligned with the Township's mandate and capacity
How:
- ☐ Enhance information sharing and participation in decision-making
How:
- ☒ N/A Core-Service

Approved by: Brooke Lambert, Chief Administrative Officer ☒



DATE:	August 7, 2024
TO:	Tammy Stevenson, C.E.T. , Senior Project Manager, Township of Wellington North
FROM:	Lindsay Scott, P.Eng., Paul Ziegler, C.E.T
RE:	Road Design Alternatives, Reconstruction of John St, Mount Forest
FILE:	M5982A

1.0 Introduction

This Road Design Alternatives Technical Memo (Memo) has been prepared by Triton Engineering Services Limited (Triton), on behalf of the Township of Wellington North (Township), to identify and assess feasible design alternatives for the Reconstruction of John St, Mount Forest between Queen St W (Highway 89) and Waterloo St (project). The feasibility of the design alternatives considered is dependent on the project purpose and objectives, and each alternative is evaluated based on its relative merits to identify the preferred design alternative. A review of road design alternatives is required to address and incorporate (where appropriate and practical) public feedback that was received at and following the Township's presentation of the preliminary preferred design for the project at the Township's Capital Projects Public Information Centre (PIC) held in October 2023.

2.0 Background

The Township and Triton presented a preliminary design for the Reconstruction of John Street at the Township's Capital Projects PIC that was held on October 24 and 25, 2023, in Mount Forest and Arthur respectively. Drawings of the preliminary design were presented to the public at the PIC meetings. Refer to Attachment A for the PIC drawings.

The Township's Asset Management Plan provides a strategy to effectively manage the Township's water, wastewater, stormwater and transportation assets and prioritizes projects based on key concepts including the asset replacement value, estimated value life, lifecycle maintenance, condition assessments, risk and levels of service. In accordance with the Township's capital projects prioritization and planning strategies, John St requires reconstruction as the existing water and sanitary infrastructure on John St has reached the end of its useful service life and requires replacement.

The proposed preliminary design included replacement of existing underground infrastructure (sanitary sewers and watermain) and an upgraded road cross-section, complete with sidewalk, curb and gutter and new storm sewers to support the new road cross-section. The proposed road cross-section between Queen St W and the Tim Hortons (319 Main St S) entrance from John St included a 9.5 m (1 m wider than the municipal standard) road width to accommodate a left turn lane in the southbound direction. The road width to the south of the Tim Hortons property tapered to 8.5 m, with one lane in either direction of travel, which is consistent with the Township's standard for a local urban street.

As a result of stakeholder feedback received from the PIC meetings and from associated private meetings with stakeholders held in March, April and June 2024, the Township is evaluating alternative designs for the Project to mitigate stakeholder concerns. A 24-hour traffic count was also conducted by the Township to define typical traffic movement in the area to support the evaluation of alternative designs. A copy of the stakeholder feedback

received in response to the Reconstruction of John St, Mount Forest project and other proposed capital projects presented at the same PIC meetings was received by Township Council for information in the Staff Report, subject matter *OPS 2023-043 Public Information Centre – Capital Projects* at the November 20, 2023 Council meeting. In general, the consensus from feedback received from public stakeholders and residents of adjacent properties regarding the preliminary design for the Reconstruction of John St is summarized as follows:

- The proposed design negatively impacts adjacent residential properties, particularly those between Queen St W and 319 Main St S by the:
 - Removal of mature trees on the west side of the road.
 - Restriction of left-turn movements from private driveways on the west side of John St between Queen St W and the entrance to 319 Main St S property.
 - Noise from idling vehicles queuing to access 319 Main St S (Tim Hortons) property, consistent with existing conditions.
- Overflow traffic from the commercial property at 319 Main St S (Tim Hortons) should not be allowed to use a residential street for queuing. (Note: John Street currently has “no parking” signs posted on the southbound lane from Queen Street W to 345 John Street and on the northbound lane from 310 John Street to Queen Street W.)
- Due to lack of enforcement (perceived), residents anticipate that vehicular traffic will also use southbound through lane as a queuing lane to access 319 Main St S property, consistent with existing conditions and there will be no localized operational improvements to traffic flow. Taxpayer money should not be used to benefit private corporations (i.e., Tim Hortons).

3.0 Existing Conditions

The existing road cross-section on John St is urbanized (i.e., asphalt surface and sidewalk on the west side of the road). The existing asphalt section of the road is approximately 7.5 m to 8.0 m in width and the existing sidewalk is 1.2 m in width. John St is a residential local road, meant to operate with one through lane of traffic in each direction of travel (i.e., northbound and southbound). Per the Township’s current Municipal Servicing Standards document(Revision No. 7, March 2023), local roads “are to provide land access; they are not intended to move large volumes of traffic”. Land use adjacent to the east west sides of John St is residential (medium and high-density), except for the properties of 301 and 319 Main St S, located on the east side of John St, and bounded by Main St S to the east and Queen St W to the north, which are zoned for commercial land use. The existing speed limit on John St is 50 km/hr.

Per the Township’s By-Law 6000-23, to regulate the parking or stopping of vehicles within the Township, parking is not permitted at any time on John St from Queen St W to 191 m south to Waterloo St on either side of the roadway, except for the east side between 79 m and 89 m south of Queen St W for mail pickup and delivery. Stopping is also not permitted within the same no-parking limits. Signage is posted on John St to indicate the parking and stopping prohibitions, consistent with the Township’s By-Law 6000-23; however, it is understood that traffic typically does not obey the posted signage and the southbound lane is typically used as an overflow stacking lane for the Tim Hortons drive through at 319 Main St S. The overflow drive through queuing on John St is understood to be problematic for local traffic using John St as it is difficult to navigate around the queued traffic and difficult for residents to access/exit their driveways where traffic is queued. Queuing traffic predominantly occurs in the southbound direction, but may also occur in the northbound direction, to the south of 319 Main St S.

A review of the approved Site Plan for Tim Hortons at 319 Main St S, dated June 1995, as referenced in the Site Plan Agreement for the property, indicates that parking along the north side of the building is to be parallel to the building; however, existing conditions have parking stalls perpendicular to the building along the north side

of the building, which narrows the width for through and parked traffic to navigate through the Tim Hortons site. It is understood that drive through traffic initially intended to queue within the Tim Hortons site has modified their habits to overflow and stack onto John St instead of internally, to mitigate conflicts with other traffic (parked and through traffic) within the Tim Hortons property. It should be noted that since the business opened, drive through traffic volume has increased as Tim Hortons expanded their service (i.e., hours, “tap” payment methods, etc.) and menu, which has been observed to have generated an increased volume of non-residential/local traffic on John St in the immediate area of the Tim Hortons access. It appears that the purpose of the John St access shown on the Site Plan is for delivery and garbage truck access, which are located at the rear/west side of the building. Further, there is an absence of “enter/exit” signage to the Tim Hortons property at the John St access, which supports that this access was not originally intended for public use and/or drive through stacking. Additionally, the neighbouring vacant property at 301 Main St S is also being used as an overflow parking area for oversized vehicles and/or when the Tim Hortons parking lot is at capacity.

The Township has met with Tim Hortons and the owner of 319 Main St S, following feedback on the project after the PIC, to discuss concerns regarding overflow drive through and parking traffic creating a public nuisance on John St and the neighbouring property. The Township has requested Tim Hortons to provide background information related to their drive through stacking design and to define the intent of the approved Site Plan, for consideration in finalization in the design for the reconstruction of John St project.

4.0 Spring 2024 Traffic Count Analysis

As part of their core services, the Township coordinates and maintains traffic count information at various locations throughout the municipality for the purpose of providing objective information to address inquiries, inform prioritization of maintenance and studies, etc. The Township coordinated a 24-hour automated traffic count at various locations throughout the Township in the Spring of 2024, including two locations on John St and two locations on Main St S, Mount Forest.

The locations on John St and Main St S were strategically set across the respective roadway, adjacent to 305 and 369 John St and at 301 and 323 Main St S to provide an understanding of traffic operations on John St and Main St S as it relates to traffic movement to/from 319 Main Street S (Tim Hortons) to/from the adjacent roads (i.e., John St and Main St S) and provide information for the evaluation of design alternatives for the Reconstruction of John St project. The John St and Main St S traffic monitoring locations are shown on Figure 1.

The traffic count began at midnight on Tuesday April 23, 2024, and ended at midnight on Wednesday April 24, 2024. The 24-hour period that was monitored is expected to be representative of typical operating conditions on an average day. Data collected by the automated counter included vehicle volume, type/classification and rate of travel, and each was tallied in 15-minute intervals over the 24-hour monitoring period. Each counting location collected data in the northbound and southbound direction of travel. The vehicular traffic movement counts collected over the 24-hour period are summarized in Table 1.

Consistent with Table 1, John Street saw 1,113 vehicles travelling in the southbound direction from Queen St W., and 378 vehicles travelling in the northbound direction from Waterloo St (counted at 369 John St). Approximately 88% of the southbound traffic counted at 305 John St did not continue southbound on John St to the traffic counting location at 369 John St. It is suspected that most of this traffic accessed the Tim Hortons establishment at 319 Main St S and some of the traffic entered the residential properties between the two traffic counting locations. The southbound and northbound traffic counted at the 369 John St monitoring location are similar, which is assumed to be representative of typical local traffic volumes. It is noted that an additional 222 vehicles were counted in the northbound direction at 305 John St than were at 369 John St, which is assumed that most were generated from vehicles that were exiting the Tim Hortons establishment. It is noted that the hourly total vehicles counted in the southbound direction at 305 John St is consistent for the period of 6:00 through 9:00, with a

maximum hourly total vehicle volume of 99 recorded between 7:00 and 8:00. It is assumed that this hourly total is controlled/limited by the Tim Hortons drive-through queue time and available vehicle stacking capacity in the Tim Horton's drive-through and on John St (between Queen St W and 319 Main St S), as this period represents the busiest hours of business, where the drive-thru serves approximately 100 vehicles per hour (per discussions with the Tim Hortons franchisee). The Tim Hortons is open to customers (drive-thru and in-store) between 5:00 and 23:00. Traffic volume on John St mimics these hours, with the periods between 0:00 and 5:00 and 23:00 to 24:00 being the quietest in terms of traffic volume. Additionally, per discussions with the Tim Hortons franchisee, most of the drive-thru traffic accesses the drive thru via John Street and leave via Main St S.

Table 1 – Summary of 24-hour Traffic Count on John St and Main St S

Time Period	John St				Main St S			
	Southbound		Northbound		Southbound		Northbound	
	From	To	From	To	From	To	From	To
	305 John St	369 John St	369 John St	305 John St	301 Main St S	323 Main St S	323 Main St S	301 Main St S
	021NS	020NS	020NS	021NS	022ANS	022BNS	022BNS	022ANS
0:00 to 1:00	1	0	0	1	16	10	19	17
1:00 to 2:00	0	0	0	0	7	2	18	15
2:00 to 3:00	1	0	0	0	6	4	8	9
3:00 to 4:00	1	0	0	1	6	8	7	3
4:00 to 5:00	5	1	1	1	31	38	20	7
5:00 to 6:00	52	1	7	12	114	106	59	70
6:00 to 7:00	94	5	5	17	194	177	122	163
7:00 to 8:00	99	8	8	22	231	188	180	226
8:00 to 9:00	91	10	8	23	249	171	245	307
9:00 to 10:00	82	4	8	20	275	174	236	316
10:00 to 11:00	87	10	11	29	340	161	184	329
11:00 to 12:00	78	10	13	42	315	148	212	366
12:00 to 13:00	76	14	6	20	342	152	212	358
13:00 to 14:00	61	9	11	25	277	140	195	318
14:00 to 15:00	62	10	8	27	325	162	247	400
15:00 to 16:00	66	16	10	35	387	175	251	381
16:00 to 17:00	59	9	7	23	326	147	240	386
17:00 to 18:00	58	12	23	31	290	144	267	351
18:00 to 19:00	49	6	9	18	191	104	202	288
19:00 to 20:00	33	5	8	13	155	64	119	185
20:00 to 21:00	30	5	4	4	108	41	72	108
21:00 to 22:00	20	2	6	9	69	27	48	72
22:00 to 23:00	7	0	2	4	40	26	42	49
23:00 to 24:00	1	1	1	1	31	21	34	32
Morning (0:00 to 12:00) Total	591	49	61	168	1,784	1,187	1,310	1,828
Afternoon (12:00 to 24:00) Total	600	99	95	210	2,541	1,203	1,929	2,928
24-Hour Total	1,113	138	156	378	4,325	2,390	3,239	4,756
Total Difference ("From" – "To")	975		-222		1,935		-1,517	
Percentage (%) of Traffic Gained or Lost Between Monitoring Locations (i.e., "From" to "To")	-87.6		58.7		-44.7		31.9	

Note: 1- traffic volume in **bold** text indicates the maximum hourly traffic volume observed for the respective direction of travel and monitoring location.

In accordance with the data collected on Main St S, the majority of traffic on Main St S within the section being monitored was travelling in the southbound direction, based on a comparison of the 24-hour total vehicles counted in the southbound direction at 301 Main St S and in the northbound direction at 323 Main St S. Approximately 45% of the total vehicle volume (or 1,935 vehicles) counted in the southbound direction at 301 Main St did not continue southbound on Main St S to the traffic counting location at 323 Main St S. It is suspected that most of this traffic left Main St S to access the Tim Hortons establishment at 319 Main St S or the Petro Canada gas bar at 310 Main St S. Similarly, it is noted that an additional 1,517 vehicles, or an additional 32% of vehicles were counted in the northbound direction at 301 Main St S than were counted at 323 Main St S, which is assumed to have been vehicle volume generated from vehicles exiting the Tim Hortons or Petro-Canada gas bar. The busiest period of hourly traffic on Main St S occurred fairly consistently between 6:00 and 19:00. Outside of this period, the hourly traffic volume on Main St S was considerably reduced and traffic volume recorded in the northbound/southbound direction at each monitoring location was similar (i.e., majority of the traffic appeared to continue straight through Main St S). It is noted that the Petro Canada Gas Bar is open 24-hours a day.

A summary of the 20 km/h pace speed of traffic recorded on April 23, 2024, is provided in Table 2. The pace speed is the 20 km/h speed range representing the speeds of the largest percentage of vehicles in the traffic stream during the monitoring period. In accordance with Table 2, southbound traffic recorded at 305 John St moved the slowest, with 93% of the traffic volume travelling within the 20 km/hr pace speed of 9.6 km/hr to 29.6 km/hr and mean speed of 21 km/hr. Traffic in the opposite (northbound) direction measured at 369 John St indicates that 79.5% of the traffic moved at a 20 km/hr pace speed of 22.8 km/hr to 42.8 km/hr and mean speed of 35 km/hr. Southbound traffic speed recorded at 369 John St is similar to the northbound traffic at the same location, with approximately 83% of traffic moving at a 20 km/hr pace speed of 23.8 km/hr to 43.8 km/hr and mean speed of 32 km/hr. Therefore, it is expected that the southbound traffic speed is impacted (slowed) by queuing vehicles into the Tim Hortons property. Northbound traffic at 305 John St moved at a similar pace to that observed in the southbound lane at 305 John St; however, it is noted that traffic is slowing in the northbound direction as it approaches the stop sign at the intersection with Queen St W. Traffic speed on Main St S is similar in both directions at both locations monitored, with mean travel speeds between 35 km/hr and 42 km/hr. The speed limit on Main St S and John St is 50 km/hr. At the locations monitored, traffic speed does not seem to be a concern as the mean travelling speeds are below the maximum posted speed limit.

The results of the analysis of the traffic data collected on April 23, 2024, support the concerns from the public that the majority of traffic on John St is a result of the Tim Hortons establishment, specifically southbound traffic between Queen St W and the Tim Horton's access on John St and that this traffic impacts the movement of vehicles, which can be supported by the 20 km/hr pace and mean speeds document for southbound vehicular traffic.

Table 2 – Summary of 20 km/h Pace Speed of Traffic on John St and Main St S

Time Period	John St				Main St S			
	Southbound		Northbound		Southbound		Northbound	
	From	To	From	To	From	To	From	To
	305 John St	369 John St	369 John St	305 John St	301 Main St S	323 Main St S	323 Main St S	301 Main St S
	021NS	020NS	020NS	021NS	022ANS	022BNS	022BNS	022ANS
0:00 to 1:00	1.6-21.6	--	--	5.3-25.3	25.5-45.5	16.9-36.9	32.9-52.9	30.2-50.2
1:00 to 2:00	--	--	--	--	27.0-47.0	16.9-36.9	36.5-56.5	35.1-55.1
2:00 to 3:00	0.4-20.4	--	--	--	38.0-58.0	38.0-58.0	26.9-46.9	33.7-53.7
3:00 to 4:00	0.1-20.1	--	--	0.1-20.1	34.5-54.5	34.9-54.9	40.2-60.2	42.0-62.0
4:00 to 5:00	9.2-29.2	13.5-33.5	0.9-20.9	8.4-28.4	37.7-57.7	40.3-60.3	32.6-52.6	30.4-50.4
5:00 to 6:00	12.6-32.6	5.2-25.2	29.4-49.4	13.5-33.5	40.2-60.2	41.4-61.4	32.5-52.5	32.3-52.3
6:00 to 7:00	6.3-26.3	13.6-33.6	14.5-34.5	8.3-28.3	31.3-51.3	29.9-49.9	32.1-52.1	34.7-54.7
7:00 to 8:00	9.3-29.3	22.6-42.6	33.2-53.2	2.1-22.1	29.5-49.5	35.6-55.6	30.3-50.3	33.9-53.9
8:00 to 9:00	8.3-28.3	23.3-43.3	14.3-34.3	3.8-23.8	22.9-42.9	30.3-50.3	25.3-45.3	29.0-49.0
9:00 to 10:00	5.6-25.6	8.4-28.4	18.1-38.1	9.6-29.6	27.3-47.3	28.7-48.7	25.7-45.7	26.5-46.5
10:00 to 11:00	10.4-30.4	18.6-38.6	25.2-45.2	12.1-32.1	23.2-43.2	28.1-48.1	28.5-48.5	24.3-44.3
11:00 to 12:00	9.7-29.7	22.4-42.4	19.4-39.4	6.6-26.6	22.8-42.8	31.3-51.3	22.1-42.1	23.9-43.9
12:00 to 13:00	9.9-29.9	17.7-37.7	7.7-27.7	18.6-38.6	17.5-37.5	30.6-50.6	24.6-44.6	25.7-45.7
13:00 to 14:00	9.3-29.3	10.4-30.4	22.2-42.2	5.6-25.6	20.1-40.1	29.5-49.5	28.9-48.9	24.6-44.6
14:00 to 15:00	8.5-28.5	23.1-43.1	17.3-37.3	4.9-24.9	18.9-38.9	28.5-48.5	26.8-46.8	23.3-43.3
15:00 to 16:00	8.1-28.1	27.5-47.5	19.9-39.9	15.4-35.4	12.7-32.7	28.1-48.1	20.9-40.9	23.3-43.3
16:00 to 17:00	14.4-34.4	13.7-33.7	24.8-44.8	9.6-29.6	21.9-41.9	36.2-56.2	20.8-40.8	23.6-43.6
17:00 to 18:00	15.6-35.6	20.5-40.5	19.6-39.6	17.1-37.1	27.8-47.8	35.2-55.2	19.1-39.1	30.1-50.1
18:00 to 19:00	4.3-24.3	25.9-45.9	15.1-35.1	10.3-30.3	29.2-49.2	35.8-55.8	33.3-53.3	29.2-49.2
19:00 to 20:00	10.7-30.7	16.6-36.6	24.4-44.4	9.0-29.0	33.5-53.5	37.2-57.2	29.4-49.4	30.5-50.5
20:00 to 21:00	10.3-30.3	13.5-33.5	18.9-38.9	19.3-39.3	30.8-50.8	32.9-52.9	32.0-52.0	31.9-51.9
21:00 to 22:00	5.7-25.7	13.6-33.6	12.3-32.3	6.2-26.2	32.8-52.8	25.7-45.7	36.4-56.4	32.0-52.0
22:00 to 23:00	1.1-21.1	--	15.1-35.1	8.5-28.5	32.5-52.5	30.4-50.4	31.2-51.2	32.3-52.3
23:00 to 24:00	14.8-34.8	14.0-34.0	15.8-35.8	9.2-29.2	37.0-57.0	35.2-55.2	36.4-56.4	35.7-55.7
20 km/h Pace Speed	9.6-29.6	23.8-43.8	22.8-42.8	12.4-32.4	25.7-45.7	33.4-53.4	26.1-46.1	26.2-46.2
Percent in Pace (%)	93	82.6	79.5	89.7	67.7	69	66.1	81.2
Mean Speed (km/h)	21	32	35	23	35	42	36	37

5.0 Design Considerations

The infrastructure on John St, Mount Forest within the Project limits is approaching the end of its service life. Therefore, the intent and rationale for the Project is to:

- Replace the existing ductile iron watermain with new DR18 PVC watermain.
- Replace the existing concrete sanitary sewer with new PVC sanitary sewer.
- Upgrade the road cross-section complete with curb, gutter and new sidewalk, consistent with or as reasonably practicable with current Township standards for a local urban road.
- Install new storm sewers to support the upgraded road cross-section and improve drainage.

In addition to satisfying the Project rationale, there are several design criteria that are considered in evaluating design alternatives and identifying the preliminary preferred design, as follows:

- Maintain or improve the existing level of service for traffic (vehicular and pedestrian).
- Maintain uniformity in the planning, design and application of Township services and assets, thereby providing a consistent level of service to its population.

- Provide localized operational improvements, where possible.
- Mitigate conflicts with utilities.
- Mitigate conflicts with trees.
- Mitigate impacts to adjacent properties.

Following consideration of feedback received at and following the PIC meetings regarding the initial preliminary proposed design for the reconstruction project, it was determined that implementation of a left turn lane on John St is not the preferred design for reconstruction. Based on the Spring 2024 traffic count data and stakeholder feedback, it is expected that the left turn lane would promote continued non-residential and/or non-local traffic on the residential road and would not address existing traffic concerns. Further, the widened road creates additional conflicts with existing mature trees than with a standard 8.5 m wide road and should Tim Hortons cease operation at this location, the left turn lane would remain and would not serve a purpose. Therefore, this alternative is not recommended for further consideration as a feasible alternative.

6.0 Analysis of Alternatives

All design alternatives will have some form of impact (impacts to trees, landscaping, driveways, etc.) to properties fronting John St, within the project limits, which is typical for any reconstruction project. Table 3 provides a summary of the design alternatives for the Project and evaluation of each with respect to the design criteria, from Section 2.0 of this memorandum, that are objectively quantifiable. Preliminary Plans showing each road cross-section design alternative within the area of concern between Queen St W and to Waterloo St are provided in Attachment B and are summarized as follows:

PIC Proposed Design – Preliminary Proposed Design presented at October 2023 PIC Meetings, with southbound left-turn lane between Queen St W and Tim Hortons

- Option 1A :
 - Municipal Standard for an urban local street, with two through lanes of travel, one in each direction and Tim Hortons John St access remains as is.
- Option 1B:
 - Municipal Standard for an urban local street, with two through lanes of travel, both in the same direction and Tim Hortons John St access remains as is.
- Option 2:
 - Municipal Standard for an urban local street, with two through lanes of travel, one in each direction and Tim Hortons John St access closed via barrier curb.
- Option 3:
 - Municipal Standard for an urban local street, with two through lanes of travel, one in each direction, with Tim Hortons John St access restricted/reduced to northbound exit only onto John St.
- Option 4:
 - Widened street width to accommodate a centre median between Queen St W and Tim Hortons to prevent left turn movement into Tim Hortons from John St. One lane of through traffic in either direction of travel.
- Option 5:
 - Dead-end on John St at Queen St W via 13 m turning circle at the north termination.

Sidewalk placement was reviewed for the east and west sides of John St for the design alternatives. Due to numerous hydro pole conflicts on the east side of the road and to maintain sidewalk connectivity, placement of the sidewalk on the west side of John St is recommended, consistent with existing conditions.

Table 3 – Summary of Design Alternatives

Design Alternative	Figure No.	Description	Edge of Pavement (EP) to EP width (m)	Road Alignment	Anticipated Total Tree Conflicts (Refer to Table 4)	Anticipated Total Hydro Pole Conflicts*
PIC Proposed Design	Attachment A	Left turn lane in southbound direction between Queen St W and entrance to 319 Main St S property (2 through lanes x 3.25 m + 3.0 m turn lane, transitioning to 2 lanes x 4.25 m)	8.5 to 9.5	CL of road offset 0.7m west of the CL of ROW	9	0
Option 1A	Attachment B, Figure SK-1	Municipal standard for an urban local street (2 lanes x 4.25 m). Two through lanes of travel, one in each direction.	8.5	CL road matches CL of ROW	2	3
Option 1B	Attachment B, Figure SK-2	Municipal standard for an urban local street (2 lanes x 4.25 m). Both lanes of travel in the same direction.	8.5	CL road matches CL of ROW	2	3
Option 2	Attachment B, Figure SK-3	Municipal standard for an urban local street, closing access to Properties 301 and 319 Main St S via continuous barrier curb (2 lanes x 4.25 m)	8.5	CL road matches CL of ROW	2	3
Option 3	Attachment B, Figure SK-4	Municipal standard for an urban local street with restricted turning movement to/from 319 Main St S	8.5	CL road matches CL of ROW	2	3
Option 4	Attachment B, Figure SK-5	Centre median in centre of roadway between Queen St W and 319 Main St S	8.5 to 10.0	CL road matches CL of ROW	5	5
Option 5	Attachment B, Figure SK-6	Dead-end road, with 13 m turning circle at the north termination	8.5 to 13.0	CL road matches CL of ROW	3	3

Note: Conflicts with Hydro Poles may be mitigated if the centreline of the road is shifted to the west of the centreline of the right-of-way; however, this may create additional conflicts with trees.

Table 4 presents a summary of the existing municipal trees within the ROW and anticipated impacts for each design alternative.

Table 4 – Summary of Tree Conflicts Resulting from Each Design Alternative

Impacted Trees	Location	0+022 Rt	0+033 Rt	0+058 Rt	0+099 Rt	0+106 Rt	0+132 Rt	0+140 Rt	0+163 Rt	0+171 Lt	0+182 Rt	Total Proposed Tree Removals
	Diameter (mm)	500	250	600	500	500	1100	300	200	50	1000	
Design Alternative	PIC Proposed Design	X	X	X	X	X	X		X	X	X	9
	Option 1A					X				X		2
	Option 1B					X				X		2
	Option 2					X				X		2
	Option 3					X				X		2
	Option 4	X	X	X		X				X		5
	Option 5		X			X				X		3
Note:												
	Removal due to conflict with sanitary service											
X	Removal due to conflict with water service											
X	Removal due to conflict with proposed sidewalk											
X	Removal due to conflict with proposed sidewalk and water service											

Road Design Options 1A, 1B, 2 and 3 sustain the existing intended operational conditions (i.e., 8.5 m asphalt surface with two through lanes of local traffic) on John St and maintain uniformity in the planning, design and application of Township services and assets, thereby contributing to providing a consistent level of service throughout the Township.

Option 1A would see two through lanes of traffic, one in each direction and maintenance of the existing John St access to the Tim Hortons. It is expected that existing traffic movement would continue with the implementation of Option 1A; however, with barrier curb on either side of the roadway, queuing traffic to turn left into Tim Hortons may feel uncomfortable waiting in the active lane of traffic. It will be difficult for southbound traffic to move around queued traffic in the presence of oncoming northbound traffic, since the barrier curb will prevent queued vehicles from pulling over onto the west boulevard. This option is expected to create an overflow of stacked vehicles onto Queen St W.

Option 1B would see two through lanes of traffic, both in the same direction (either northbound or southbound) and maintenance of the existing Tim Hortons John St access.. It is expected that having two through lanes in the same direction would prevent queuing traffic to Tim Hortons from blocking through traffic as it is anticipated that one lane would act as an overflow stacking lane for the Tim Hortons drive through and the other for through traffic. Implementation of either Options 1A and 1B are not expected to mitigate commercial traffic from queuing on the local residential street in terms of traffic volume. , If the direction of one-way travel is northbound, overflow Tim Hortons drive through stacking will affect properties on the east side of John St (currently, majority of queueing traffic impacts properties on the west side of John St).This Option would also affect access to properties on John St as residents would only be able to access and leave their property via one direction. Therefore, Option 1B, with two lanes of through traffic in the same direction, would require residential and commercial traffic to modify their habits and has the potential to shift existing queuing and access concerns from the west side of John St to the east side of the road, depending on the direction of one-way traffic.

Option 2 would see two through lanes of traffic, one in each direction, and closure of the Tim Hortons John St access via continuous barrier curb between Queen St W and the driveway to 320 John St (this alternative also impacts access from John St to 301 Main St S). Implementation of Option 2 is expected to result in significantly reduced (commercial) vehicular traffic volume and improved residential/local traffic movement on John St. This option would require commercial traffic to modify their habits such that 301 Main St is accessed from Queen St

and Main St S and Tim Hortons is accessed from Main St S. It is unknown how the closure of the Tim Hortons John St access would affect traffic volume and movement on Main St S and within the Tim Hortons property due to drive through traffic stacking.

Option 3 would see two through lanes of traffic, one in each direction, with access to Tim Hortons from John St restricted to right-turn exits only. This alternative is expected to impact the movement of vehicles to/from Tim Hortons in that traffic will only be able to exit Tim Hortons onto John St in the northbound direction. The intent of this design is to mitigate overflow Tim Hortons drive through traffic stacking onto John St, while maintaining the movement of traffic from (exiting) Tim Hortons onto John St. Limiting exiting traffic to the northbound direction on John St is expected to significantly minimize commercial traffic on John St and improve residential/local traffic movement on John St. Given that Options 2 and 3 are expected to mitigate Tim Hortons drive through queuing/overflow stacking traffic on John St, on-street parking could be permitted on one side of John St, as the volume of southbound traffic is expected to be reduced from existing conditions. This would be an improvement to existing conditions given that parking and stopping is not currently permitted on John St in this area. It is unknown how the restricted John St access to/from Tim Hortons would impact traffic volume and movement on Main St S and within the Tim Hortons property as a result of Tim Hortons drive through traffic stacking.

Option 4 would see a centre raised (barrier curb) median constructed on John St between Queen St W and the John St access to Tim Hortons, which requires a wider road cross-section and has the most tree conflicts in comparison to the other design alternatives considered. The central median would prevent left turn movements on John St to/from the properties of 305, 321 and 326 John St and 116 Queen St W as well as 301 and 319 Main St S. With this option, it is expected that traffic would modify their habits such that commercial traffic volume would be shifted to the northbound direction on John St and overflow Tim Hortons drive through traffic would stack on John St in the northbound lane. There is a possibility that vehicles travelling southbound on John St to access Tim Hortons may complete illegal u-turns at the south end of the median so that they can gain access to the northbound lane to the Tim Hortons entrance. Therefore, the existing problem of queuing traffic in the southbound lane on John St would be shifted to the northbound lane and could create a longer queuing line of traffic, without the ability to go around the queued vehicles due to the central raised median. This could potentially generate additional vehicle traffic on adjacent streets (James St, Waterloo St, John St S, North Water St and Miller St) and further inhibit local traffic movement on John St. Given that this alternative is not expected to mitigate traffic concerns, creates additional impacts to adjacent properties due to restricted turning and slip-by movements and has the most conflicts with trees and utilities (per Table 3), this alternative is not recommended for further consideration as a feasible alternative.

Option 5 would see a 13 m turning circle at the north end of John St, such that through traffic between Queen St W and John St is not possible (i.e., dead-end). The area between the turning circle and Queen St W would be reconstructed with a roadway base and finished in a grass surface; however, would remain unopened via a gate or similar access restriction. All properties with driveways on John St within the project limits would continue to have access on John St, except for 301 Main St S. Sidewalk on John St would connect to sidewalk on Queen St W, consistent with existing conditions, so pedestrian system connectivity would not be impacted by implementation of this design alternative. It is expected that traffic would modify their habits and customers that currently access Tim Hortons via John St would continue to do so, except from the northbound direction. Vehicles exiting Tim Hortons via John St would need to travel southbound on John St. Access to Tim Hortons via John Street is expected to generate additional vehicle traffic volumes on adjacent streets (James St, Waterloo St, John St S, North Water St and Miller St) as traffic would modify their habits on how John St is accessed for the purpose of visiting Tim Hortons from John St. Further, this alternative would impact residential/local traffic in that residential traffic movement is also restricted/controlled, especially those residents that normally use the Queen St W and

John St intersection. This design alternative also requires modification of Township operations (i.e., snow removal). Given that this alternative is not expected to mitigate traffic concerns (i.e., queuing traffic is shifted to the northbound lane), has the potential to increase traffic volumes on adjacent residential streets and imposes impacts to Township operations, this alternative is not recommended for further consideration as a feasible alternative.

Other design alternatives considered included adding a right turn lane into Tim Hortons from the northbound direction and shifting the alignment of the road further to the east for the left turn lane option (PIC proposed option; however, these designs were eliminated for further consideration since they did not address conflicts with existing trees and hydro poles and impacts to adjacent properties.

As presented in Table 3, Options 1A, 1B, 2 and 3 result in the same number of conflicts with trees and hydro poles, given that the proposed road cross-section is very similar between these options. Options 4 and 5 result in an increased number of conflicts with trees and hydro poles (Option 4 only) given the widened road cross-section. Options 4 and 5 also affect traffic movement, limit movement from adjacent properties, and both vary from the municipal standard for a local urban road, as shown in Attachment C.

Options 1A, 1B, 2 and 3 are reasonably consistent with current Township standards for a local urban road and provide similar levels of service to the local population that is consistently applied throughout the Township. It should be noted that if conflicts with existing hydro poles are to be avoided, the centreline of the road could be shifted to the west; however, this would increase conflicts with trees and result in similar removals as the design presented at the Public Information Centre (Attachment A) for each of these alternatives. Alternatively, the width of the roadway could be narrowed to 7.5 m to mitigate impacts to trees on the west side of the roadway; however, this would be a variation from the Township's standards for a local urban road. Given that parking is not permitted on either side of the roadway, a 7.5 m wide road could be feasible as two-way traffic would continue to be maintained. Optimization of any of the design alternatives is required during detailed design of the preferred design alternative.

If access from John St to the properties of 301 and 319 Main St S is to be maintained, then parking and stopping should continue to be prohibited on the east side of John St between Queen St W and Waterloo St and on the west side of John St between Queen St W and House 361 John St. If the John St access to 301 and 319 Main St S is to be closed or restricted, with an 8.5 m EP to EP (Options 2 and 3), then John St could be able to accommodate parking on one side of the street. A narrowed EP to EP (i.e., less than 8.5 m) would not be able to accommodate parking on the street. Given that Options 1A, 1B and 2 provide limited benefits to all stakeholders, they are not preferred. Option 3 (road width consistent with the municipal standard, with one lane of through traffic in each direction and northbound exit only from Tim Hortons on John St) is expected to mitigate concerns from the local population and adjacent property owners and continue to Tim Hortons' John St access for garbage and delivery traffic and patron movement from the property. In terms of compromise between all stakeholder and Township interests, Option 3 would be preferred; however, an additional traffic count should be completed while the Tim Hortons John St access is closed. Data collected from this traffic count could be used to understand impacts to traffic movement and volume on Main St S and potentially within the Tim Hortons property. The results can be used to further evaluate the shortlisted design alternatives (Options 1A, 1B, 2 and 3) to identify the recommended design alternative and continue with detailed design, tendering and construction of the project.

7.0 Recommendations

After careful review of the design options, the following is recommended:

- Implementing the Township's municipal standard for an urban local street (8.5 m width), combined with

Attachment A

PIC Drawings



LEGEND:

- 150mm GRAN."A",
150mm GRAN."B"
- 50mm HL3C, 150mm GRAN."A",
150mm GRAN."B"
- 70mm HL3C, 150mm GRAN."A",
150mm GRAN."B" (COMMERCIAL)
- CONCRETE SIDEWALK
- TACTILE PLATE AS PER OPSD 310.039
- DROP CURB
- CURB TRANSITION
- S-SANITARY SERVICE
- W-WATER SERVICE
- WV-WATER VALVE
- TREE REMOVAL

NOTES:

1. INSTALL NEW 19 MM DIAMETER WATER SERVICE FROM NEW 150 MM DIAMETER WATERMAIN TO PROPERTY LINE AND CONNECT TO EXISTING WATER SERVICE FOR 301 MAIN ST S AND HOUSE NO. 305, 310, 320, 321, 329, 337 AND 345
2. INSTALL NEW 25 MM DIAMETER WATER SERVICE FROM NEW 150 MM DIAMETER WATERMAIN TO PROPERTY LINE AND CONNECT TO EXISTING WATER SERVICE FOR TIM HORTONS (319 MAIN ST S)
3. INSTALL NEW 38 MM DIAMETER WATER SERVICE FROM NEW 150 MM DIAMETER WATERMAIN TO PROPERTY LINE AND CONNECT TO EXISTING WATER SERVICE FOR HOUSE NO. 353
4. INSTALL NEW 125 MM DIAMETER SANITARY SERVICE FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE AND CONNECT TO EXISTING SANITARY SERVICE FOR HOUSE NO. 310, 320, 321, 329, 337 AND 345
5. INSTALL NEW 125mm DIAMETER SANITARY SERVICE AND MARKER FROM NEW 200mm DIAMETER SANITARY SEWER TO PROPERTY LINE FOR HOUSE NO. 305 JOHN ST
6. INVESTIGATE EXISTING SANITARY SERVICES FOR TIM HORTONS (319 MAIN ST S) AT THE TIME OF CONSTRUCTION TO DETERMINE IF OPERATIONAL. IF MULTIPLE SERVICES ARE OPERATIONAL, INSTALL NEW 125 MM DIAMETER SANITARY SERVICES FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE AND CONNECT TO EXISTING SANITARY SERVICES. IF ONLY ONE SANITARY SERVICE IS OPERATIONAL, OR IF IT IS FEASIBLE TO RECONNECT THE EXISTING SANITARY SERVICES TO A NEW SINGULAR SERVICE, THEN INSTALL NEW 150 MM DIAMETER SANITARY SERVICE FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE AND CONNECT TO EXISTING SANITARY SERVICE(S).
7. INVESTIGATE EXISTING SANITARY SERVICES FOR HOUSE NO. 353 AT THE TIME OF CONSTRUCTION TO DETERMINE THE FEASIBILITY OF RECONNECTING THE EXISTING SERVICES TO A NEW SINGULAR 150 MM DIAMETER SANITARY SERVICE FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE. IF NOT FEASIBLE, THEN INSTALL NEW 150 MM DIAMETER SANITARY SERVICES FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE AND CONNECT TO EXISTING SANITARY SERVICES.
8. INSTALL NEW 100 MM DIAMETER STORM SERVICE AND MARKER FROM NEW 300 MM DIAMETER STORM SEWER TO PROPERTY LINE FOR BUILDING NO. 301 MAIN ST S, TIM HORTONS (319 MAIN S S), HOUSE NO 305, 310, 320, 321, 329, 337, 345 AND 353. LOCATIONS TO BE DETERMINED AT THE TIME OF CONSTRUCTION.
9. SANITARY SERVICES TO BE INSTALLED WITH A MINIMUM OF 2.4 M OF COVER AT PROPERTY LINE (WHERE MAINLINE SEWER ELEVATION ALLOWS), UNLESS NOTED OTHERWISE. CONTRACTOR TO USE VERTICAL SWEEPS AND FITTINGS, AS REQUIRED, TO CONNECT TO EXISTING SERVICES AT PROPERTY LINE.
10. SEPARATION DISTANCES BETWEEN SEWERS AND WATERMAINS AND SEWER SERVICES AND WATER SERVICES SHALL BE AS PER MECOP PROCEDURE F-6-1; IN GENERAL, 2.5 M HORIZONTAL SEPARATION BETWEEN PARALLEL INSTALLATIONS AND 0.5 M VERTICAL SEPARATION AT CROSSINGS WHERE THE WATERMAIN OR WATER SERVICE CROSSES UNDER THE SEWER. WHERE THIS SPATIAL SEPARATION CANNOT BE ACHIEVED, OTHER MEASURES ARE TO BE IMPLEMENTED, SUCH AS USE OF PRESSURE PIPE (350 KPA) FOR SEWERS, AS TO BE APPROVED BY THE CONTRACT ADMINISTRATOR.
11. FOR TYPICAL ROAD SECTIONS, REFER TO DWG. NO. 04.
12. REFER TO DWG NO. 05 FOR LINE PAINTING

DISCLAIMER:

THE INFORMATION PRESENTED ON THESE DRAWINGS IS PROVIDED FOR PUBLIC INFORMATION TO SOLICIT FEEDBACK ON THE MAJOR DESIGN ELEMENTS OF THE PROJECT CONCEPT AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION. TRITON ENGINEERING SERVICES LIMITED HAS MADE EVERY ATTEMPT TO ENSURE THE ACCURACY AND RELIABILITY OF THE INFORMATION PRESENTED; HOWEVER, DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS, LEGALITY OF THE INFORMATION AND DISCLAIMS ANY LIABILITY IN CONNECTION WITH THE USE OF THIS INFORMATION.

B.M. 20-5982-1 Elev. 424.208

NAIL & WASHERS IN HP, ON SOUTH EAST CORNER OF QUEEN STREET WEST AND JOHN STREET

B.M. 20-5982-2 Elev. 424.760

NAIL & WASHERS IN HP, ON THE EAST SIDE OF JOHN STREET IN BETWEEN 301 & 319 MAIN STREET SOUTH

B.M. 20-5982-3 Elev. 424.551

NAIL & WASHERS IN HP, ON THE EAST SIDE OF JOHN STREET IN FRONT OF HOUSE 320

DISCLAIMERS:

1. ALL EXISTING ELEVATIONS & DIMENSIONS TO BE CONFIRMED ON SITE. THE LOCATION OF UTILITIES IS APPROXIMATE ONLY AND SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL PROVE THE LOCATION OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION AGAINST DAMAGE.

No	DATE	REVISION	INITIAL
2	2023/10/23	ISSUED FOR PUBLIC INFORMATION	L.S.
1	2020/12/23	ISSUED FOR APPROVALS	L.S.

PRELIMINARY

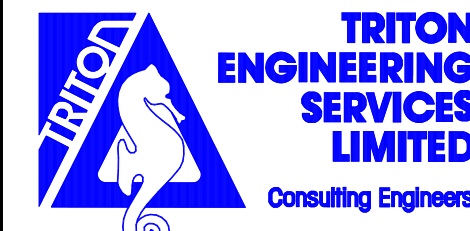
RECONSTRUCTION OF
JOHN STREET

TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2E0

PLAN AND PROFILE
FROM QUEEN ST W TO STA. 0+120

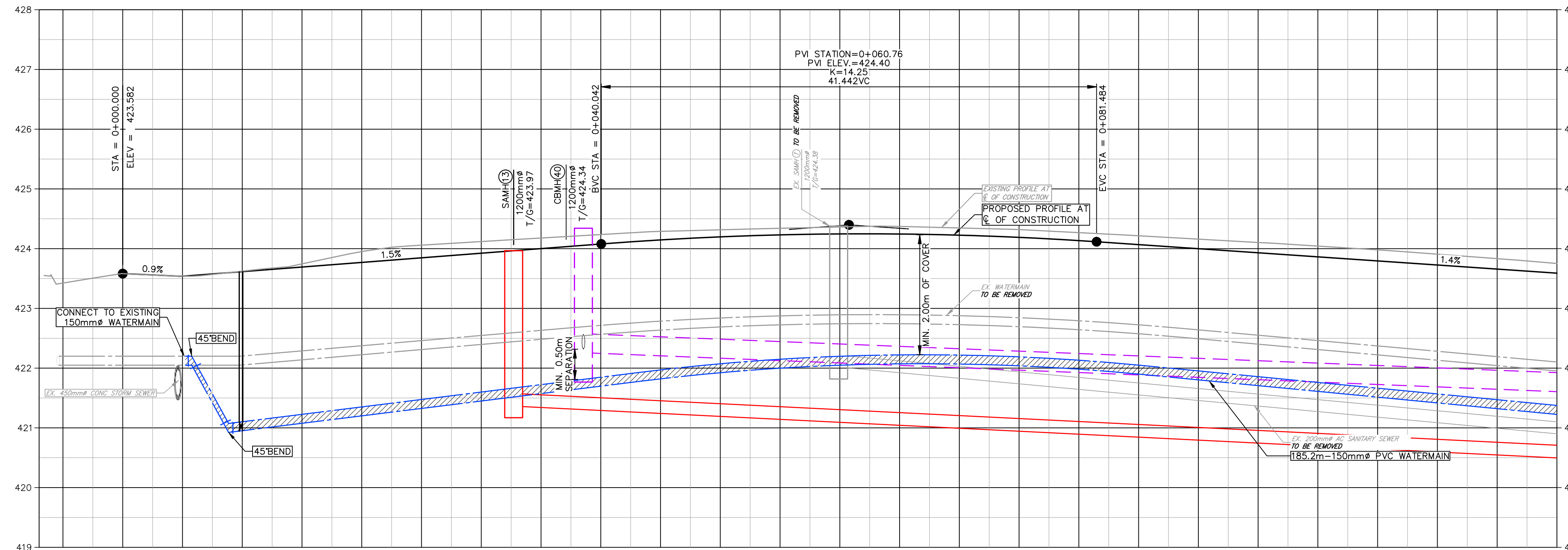
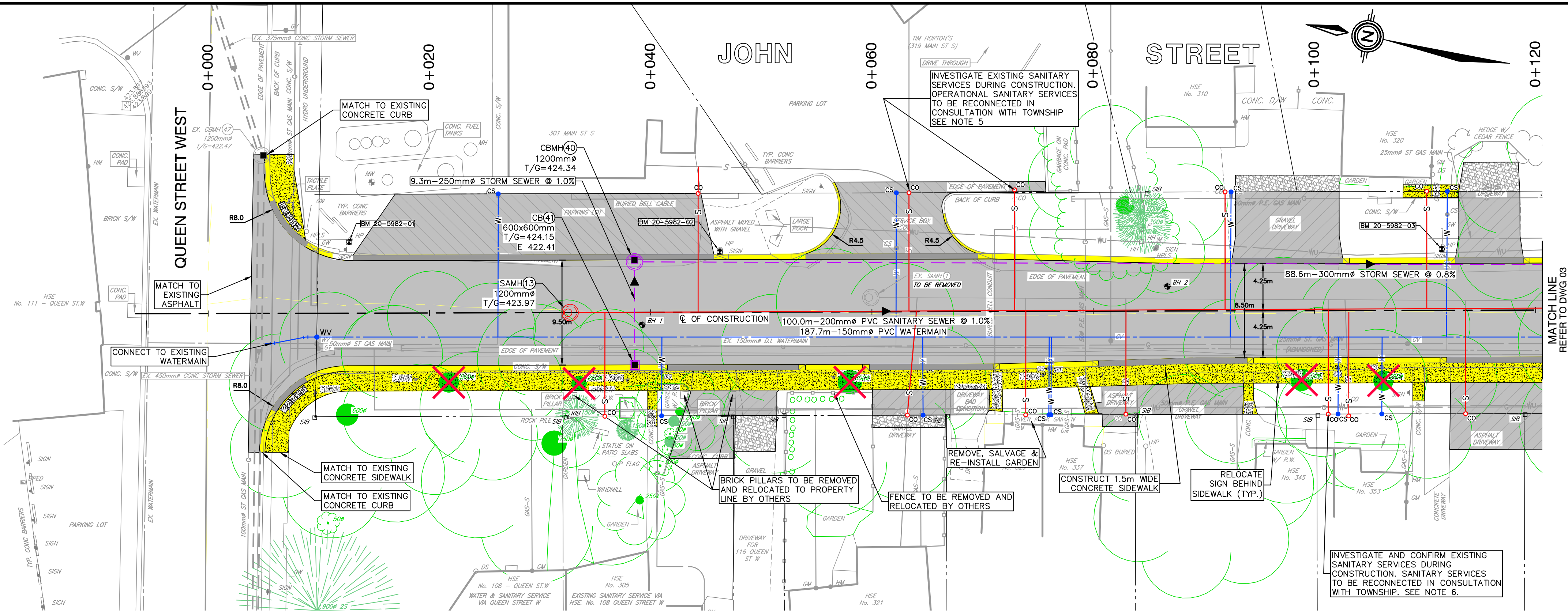
CONTRACT No.	5982-21
PROJECT No.	M5982
DESIGNED BY:	C.J.D.W.
CHECKED BY:	P.F.Z.
APPROVED BY:	L.S.
DATE:	OCTOBER 2020



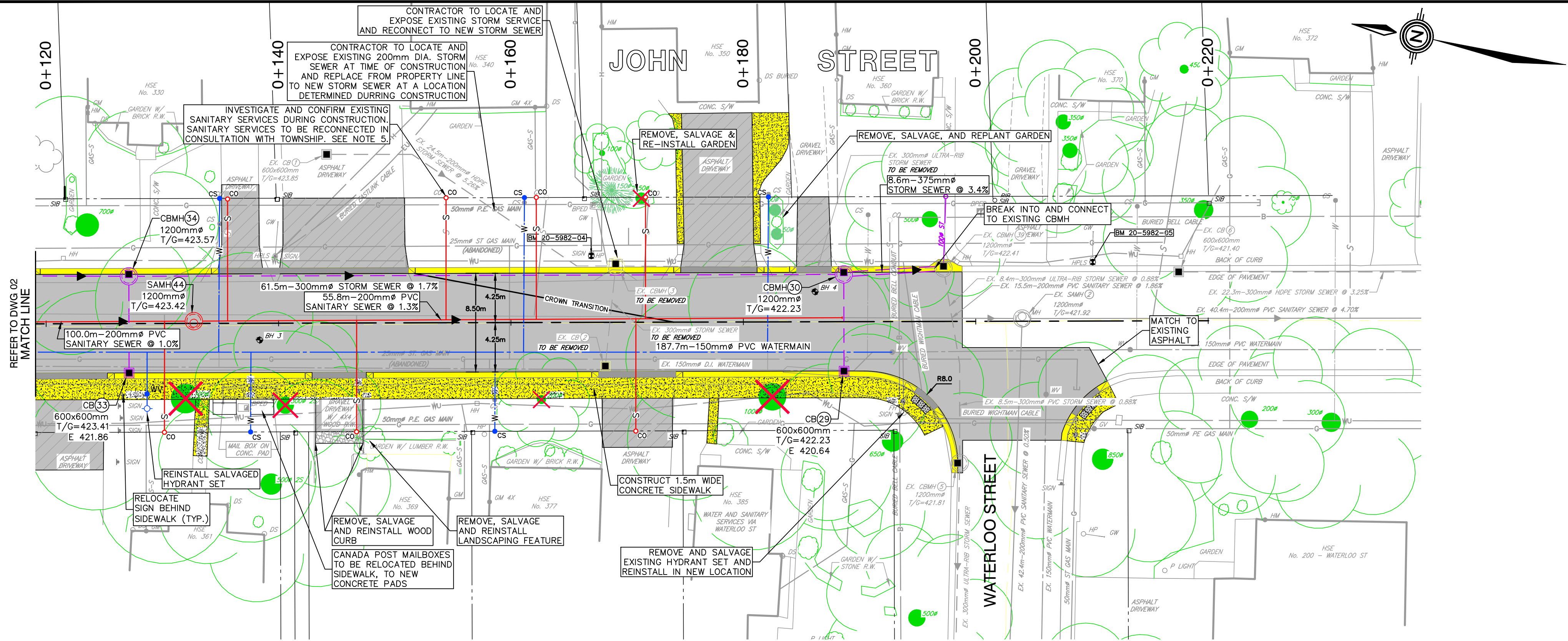
SCALE:
H:1:250
V:1:50
(06/24)
UNLESS OTHERWISE SHOWN

DRAWING
NUMBER

02



Storm	88.6m-300mmØ STORM SEWER @ 0.8%															
Sanitary	100.0m-200mmØ PVC SANITARY SEWER @ 1.0%															
Ø of Road Elevation	423.58	423.54	423.62	423.77	423.92	424.08	424.25	424.25	424.25	424.12	424.00	423.86	423.73	423.59	423.45	423.31
Station	0+000	0+004.95	0+010	0+020	0+030	0+040.04	0+050	0+060	0+062.03	0+070	0+080	0+081.48	0+090	0+100	0+110	0+120

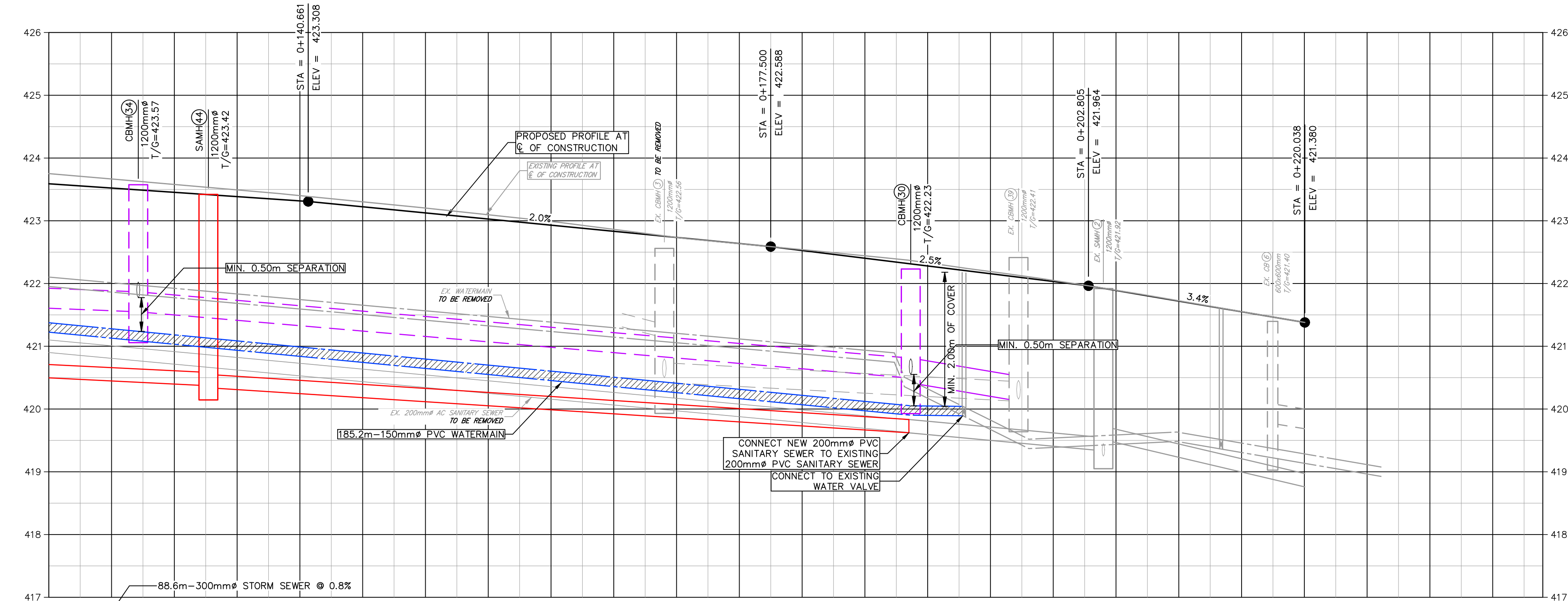


- LEGEND:**
- 150mm GRAN."A", 150mm GRAN."B"
 - 50mm HL3C, 150mm GRAN."A", 150mm GRAN."B"
 - CONCRETE SIDEWALK
 - TACTILE PLATE AS PER OPSD 310.039
 - DROP CURB
 - CURB TRANSITION
 - CS SANITARY SERVICE
 - WCS WATER SERVICE
 - WV WATER VALVE
 - TREE REMOVAL

- NOTES:**
- INSTALL NEW 19 MM DIAMETER WATER SERVICE FROM NEW 150 MM DIAMETER WATERMAIN TO PROPERTY LINE AND CONNECT TO EXISTING WATER SERVICE FOR HOUSE NO. 330, 350, AND 369.
 - INSTALL NEW 38 MM DIAMETER WATER SERVICE FROM NEW 150 MM DIAMETER WATERMAIN TO PROPERTY LINE AND CONNECT TO EXISTING WATER SERVICE FOR HOUSE NO. 340, 361 AND 377.
 - INSTALL NEW 125 MM DIAMETER SANITARY SERVICE FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE AND CONNECT TO EXISTING SANITARY SERVICE FOR HOUSE NO. 330, 350, AND 369.
 - INSTALL NEW 150 MM DIAMETER SANITARY SERVICE FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE AND CONNECT TO EXISTING SANITARY SERVICE FOR HOUSE NO. 361 AND 377.
 - INVESTIGATE EXISTING SANITARY SERVICES FOR HOUSE NO. 340 AT THE TIME OF CONSTRUCTION TO DETERMINE THE FEASIBILITY OF RECONNECTING THE EXISTING SERVICES TO A NEW SINGULAR 150 MM DIAMETER SANITARY SERVICE FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE. IF NOT FEASIBLE, THEN INSTALL NEW 125 MM DIAMETER SANITARY SERVICES FROM NEW 200 MM DIAMETER SANITARY SEWER TO PROPERTY LINE AND CONNECT TO EXISTING SANITARY SERVICES.
 - INSTALL NEW 100 MM DIAMETER STORM SERVICE AND MARKER FROM NEW 300 MM DIAMETER STORM SEWER TO PROPERTY LINE FOR HOUSE NO. 330, 350, 361, 369 AND 377. LOCATIONS TO BE DETERMINED AT THE TIME OF CONSTRUCTION.
 - INSTALL NEW INLINE DRAIN FROM NEW 300 MM DIAMETER STORM SEWER AND CONNECT TO EXISTING STORM SERVICE FOR HOUSE NO. 350. CONTRACTOR TO LOCATE AND EXPOSE EXISTING STORM SERVICE DURING CONSTRUCTION. LOCATION OF INLINE DRAIN TO BE DETERMINED AT THE TIME OF CONSTRUCTION.
 - INSTALL NEW 200 MM DIAMETER STORM SERVICE FROM NEW 300 MM DIAMETER STORM SEWER TO PROPERTY LINE AND CONNECT TO EXISTING STORM SERVICE FOR HOUSE NO. 340. CONTRACTOR TO LOCATE AND EXPOSE EXISTING STORM SERVICE DURING CONSTRUCTION.
 - SANITARY SERVICES TO BE INSTALLED WITH A MINIMUM OF 2.4 M OF COVER AT PROPERTY LINE (WHERE MAINLINE SEWER ELEVATION ALLOWS), UNLESS NOTED OTHERWISE. CONTRACTOR TO USE VERTICAL SWEEPS AND FITTINGS, AS REQUIRED, TO CONNECT TO EXISTING SERVICES AT PROPERTY LINE.
 - SEPARATION DISTANCES BETWEEN SEWERS AND WATERMAINS AND SEWER SERVICES AND WATER SERVICES SHALL BE AS PER MECOP PROCEDURE F-6-1; IN GENERAL, 2.5 M HORIZONTAL SEPARATION BETWEEN PARALLEL INSTALLATIONS AND 0.5 M VERTICAL SEPARATION AT CROSSINGS WHERE THE WATERMAIN OR WATER SERVICE CROSSES UNDER THE SEWER. WHERE THIS SPATIAL SEPARATION CANNOT BE ACHIEVED, OTHER MEASURES ARE TO BE IMPLEMENTED, SUCH AS USE OF PRESSURE PIPE (350 KPA) FOR SEWERS, AS TO BE APPROVED BY THE CONTRACT ADMINISTRATOR.
 - FOR TYPICAL ROAD SECTIONS, REFER TO DWG. NO. 04.

DISCLAIMER:

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Storm	100.0m-200mm \varnothing PVC SANITARY SEWER @ 1.0%	61.5m-300mm \varnothing STORM SEWER @ 1.7%	8.6m-375mm \varnothing STORM SEWER @ 3.4%	EX. 300mm HDPE STORM SEWER @ 3.25%							
Sanitary	55.8m-200mm \varnothing PVC SANITARY SEWER @ 1.3%	EX. 15.5m-200mm \varnothing PVC SANITARY SEWER @ 1.86%	EX. 200mm \varnothing PVC SANITARY SEWER @ 4.70%								
℄ of Road Elevation	423.58	423.40	423.20	422.99	422.74	422.54	422.33	422.05	421.73	421.36	421.36
Station	0+130	0+140	0+150	0+160	0+170	0+180	0+190	0+200	0+210	0+220	0+230

B.M. 20-5982-4	Elev. 423.256
NAIL & WASHERS IN HP, ON THE EAST SIDE OF JOHN STREET IN BETWEEN HOUSE 340 & HOUSE 350	
B.M. 20-5982-5	Elev. 422.275
NAIL & WASHERS IN HP, ON THE EAST SIDE OF JOHN STREET IN FRONT OF HOUSE 370	
B.M. 20-5982-6	Elev. 421.939
NAIL & WASHERS IN HP, ON SOUTH SIDE OF WATERLOO STREET IN FRONT OF HOUSE 220	

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No	DATE	REVISION	INITIAL
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1	2020/12/23	ISSUED FOR APPROVALS	L.S.

PRELIMINARY

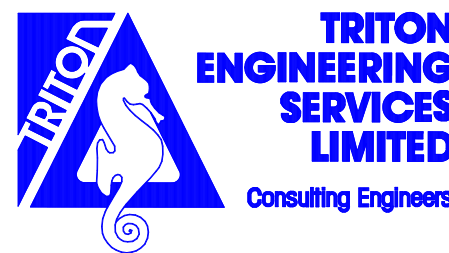
RECONSTRUCTION OF JOHN STREET

TOWNSHIP OF WELLINGTON NORTH (MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2E0

PLAN AND PROFILE
FROM STA. 0+120 TO WATERLOO ST

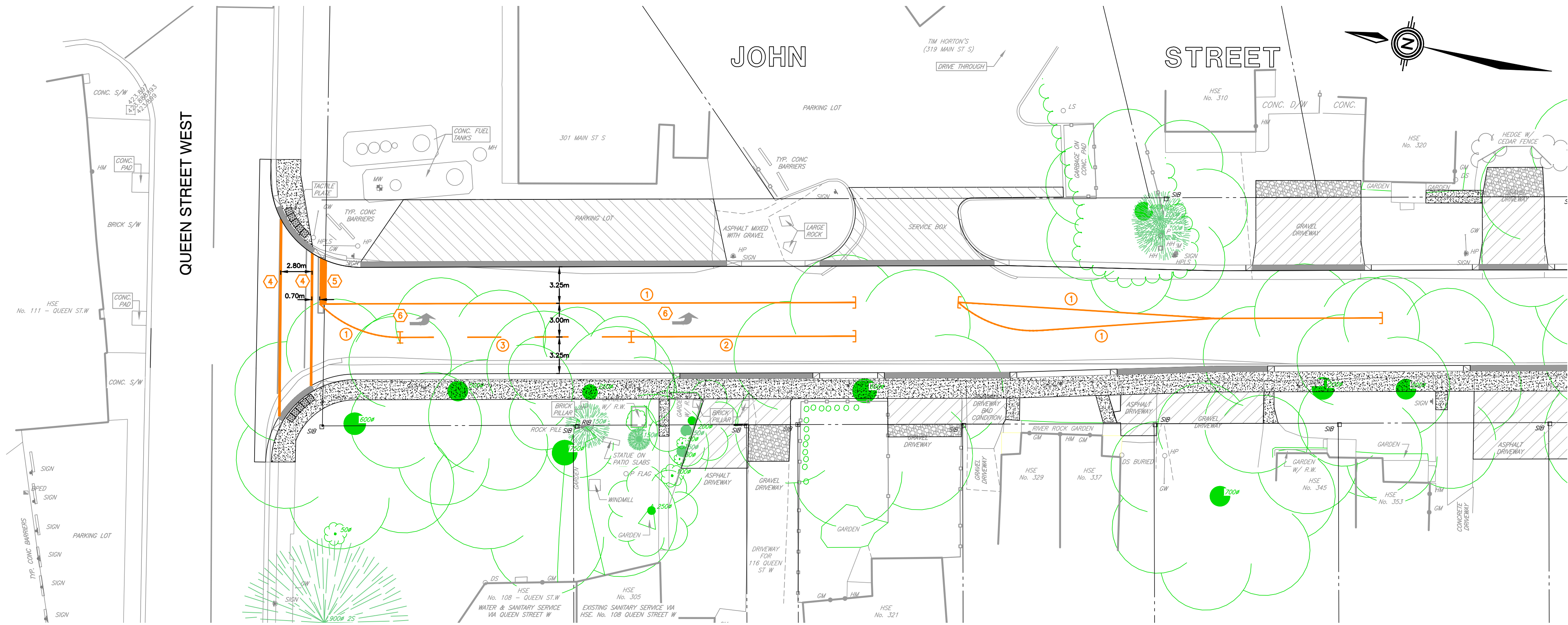
CONTRACT No.	5982-21
PROJECT No.	M5982
DESIGNED BY:	C.J.D.W.
CHECKED BY:	P.F.Z.
APPROVED BY:	L.S.
DATE:	OCTOBER 2020



SCALE:
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V:1:50 V:1:100
(08247) (17x117)
UNLESS OTHERWISE SHOWN

DRAWING
NUMBER

03



- LEGEND – PAVEMENT MARKINGS**
- | | |
|---------------------------|-----------------------|
| 1. SOLID YELLOW, 10cm | 4. SOLID WHITE, 20cm |
| 2. SOLID WHITE, 10cm | 5. SOLID WHITE, 60cm |
| 3. 333 DASHED WHITE, 10cm | 6. SYMBOLS |
| |]] LIMITS OF MARKINGS |

- NOTES:**
- – DENOTES PAVEMENT MARKING
 - – DENOTES PAVEMENT MARKING, DURABLE

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1	2023/12/23	ISSUED FOR PUBLIC INFORMATION	L.S.
No	DATE	REVISION	INITIAL

PRELIMINARY

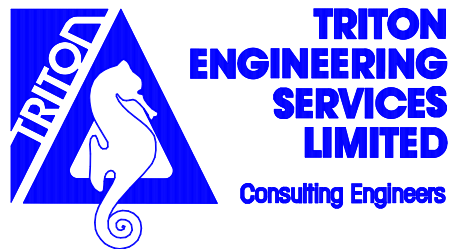
**RECONSTRUCTION OF
JOHN STREET**

TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON NOG 2E0

**LINE PAINTING
AND MARKINGS PLAN**

CONTRACT No.	5982-21
PROJECT No.	M5982
DESIGNED BY:	C.J.D.W.
CHECKED BY:	P.F.Z.
APPROVED BY:	L.S.
DATE:	JANUARY 2021

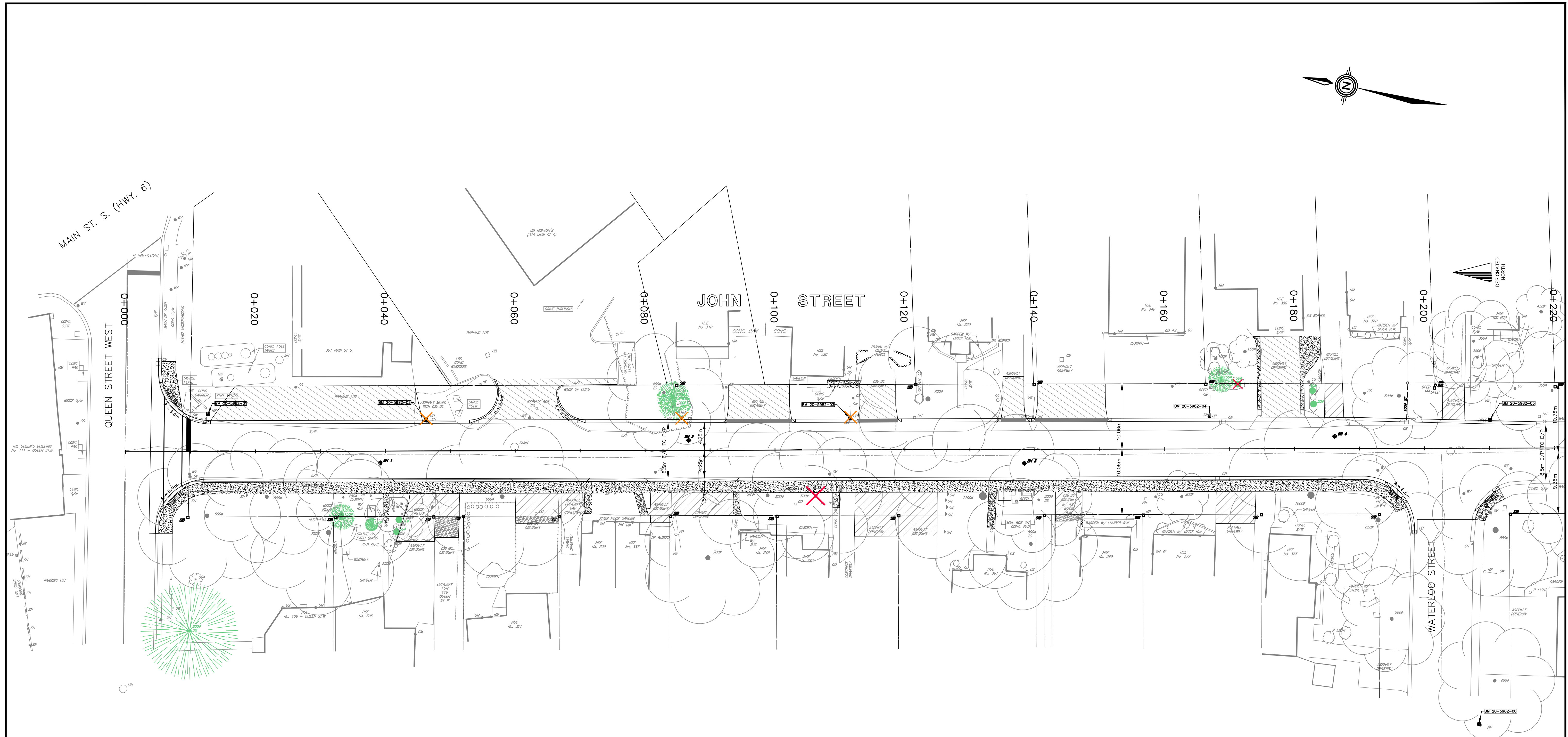


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DRAWING NUMBER	05

Attachment B

Preliminary Plans of Design Alternatives





c:\wellington north - trap s\tr5982 - trap s\tr5982 and survey\tr5982 options v2.dwg - 2024-07-10 - addendum

DISCLAIMERS:
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0	JUN. 2024	PRELIMINARY	PFZ
No	DATE	REVISION	INITIAL

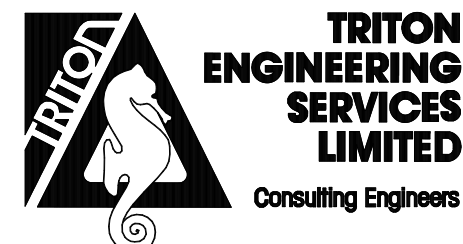
RECONSTRUCTION OF
JOHN STREET

TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2G0

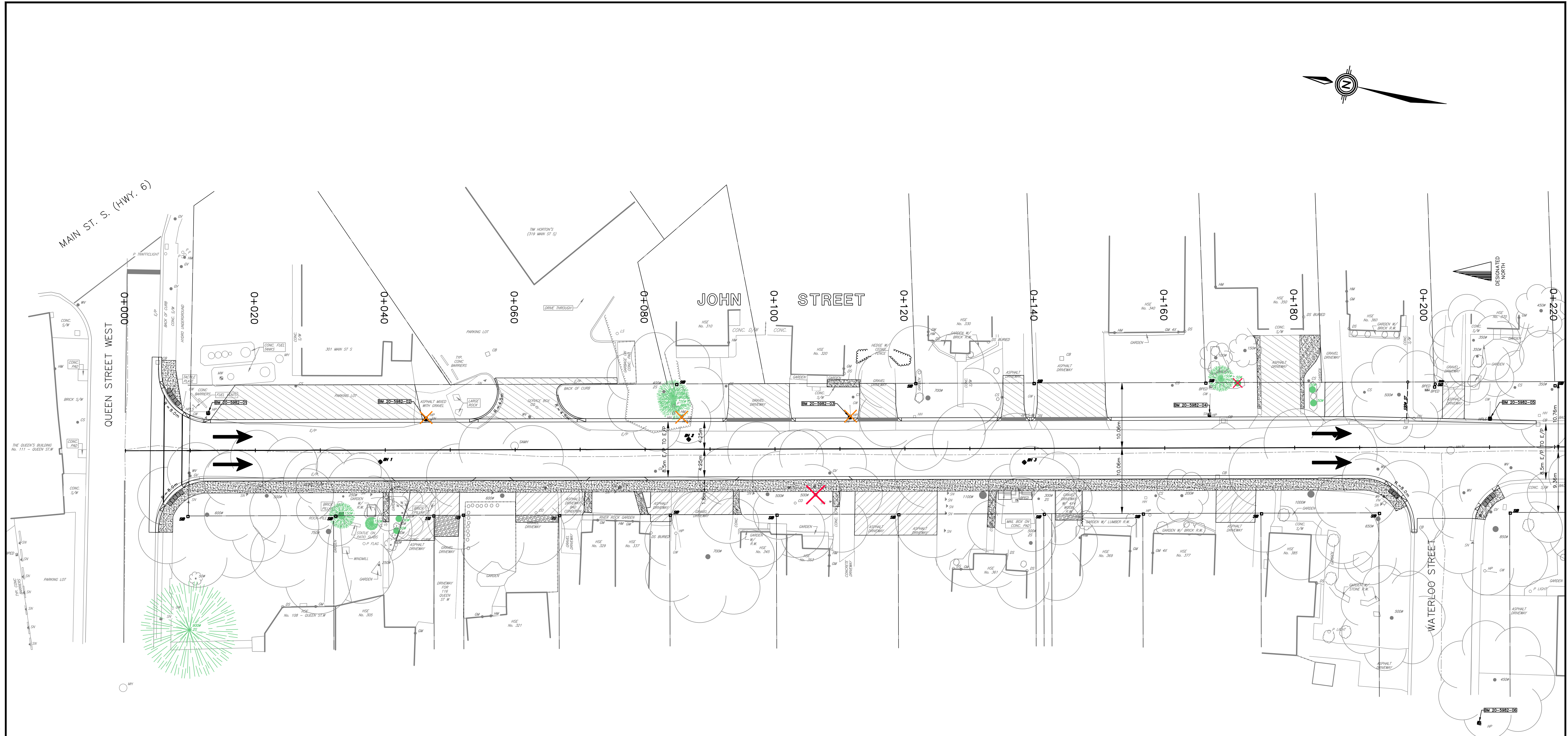
OPTION 1A
STANDARD LOCAL STREET

PROJECT No	M5982
DESIGNED BY:	ASB
CHECKED BY:	LS
APPROVED BY:	PFZ
DATE:	JUNE 2024



SCALE:
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UNLESS OTHERWISE SHOWN

DRAWING NUMBER **SK-1**



c:\wellington north - trap s\tr5582 - trap s\tr5582 and survey\tr5582 options v2.dwg - 2024-07-10 - addendum

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0	JUN. 2024	PRELIMINARY	PFZ
No	DATE	REVISION	INITIAL

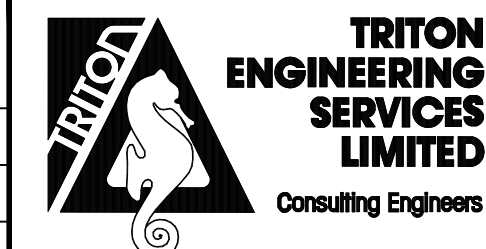
RECONSTRUCTION OF
JOHN STREET

TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2G0

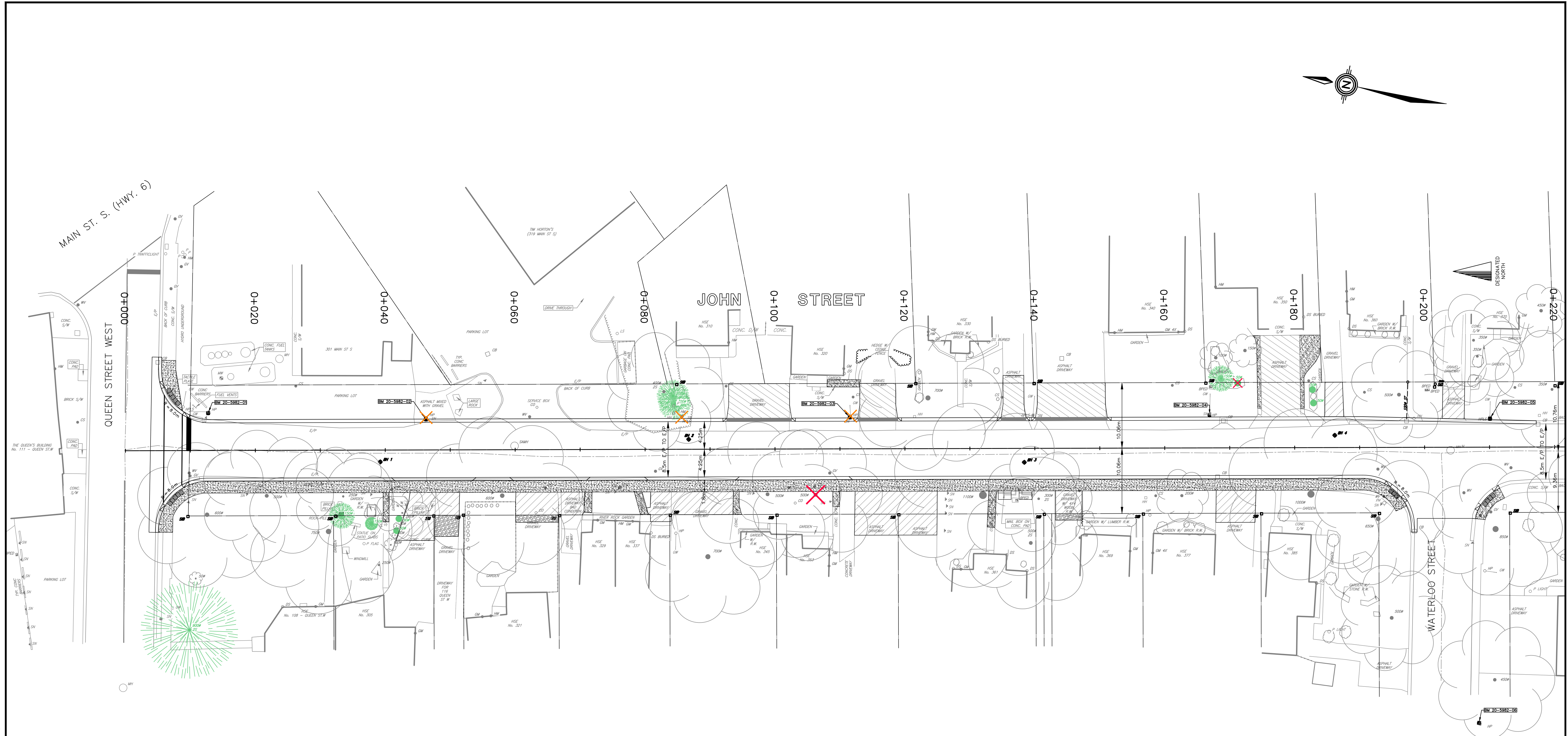
OPTION 1B
STANDARD LOCAL STREET - ONE WAY

PROJECT No	M5982
DESIGNED BY:	ASB
CHECKED BY:	LS
APPROVED BY:	PFZ
DATE:	JUNE 2024



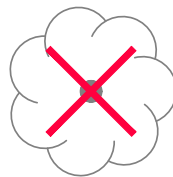
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DRAWING NUMBER **SK-2**



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LEGEND:



TREE REMOVAL



HYDRO POLE REQUIRES RELOCATION
DUE TO ENCROACHMENT ON CURB

DISCLAIMERS:
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0	JUN. 2024	PRELIMINARY	PFZ
No	DATE	REVISION	INITIAL

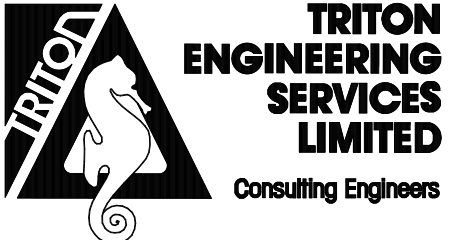
RECONSTRUCTION OF
JOHN STREET

TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2G0

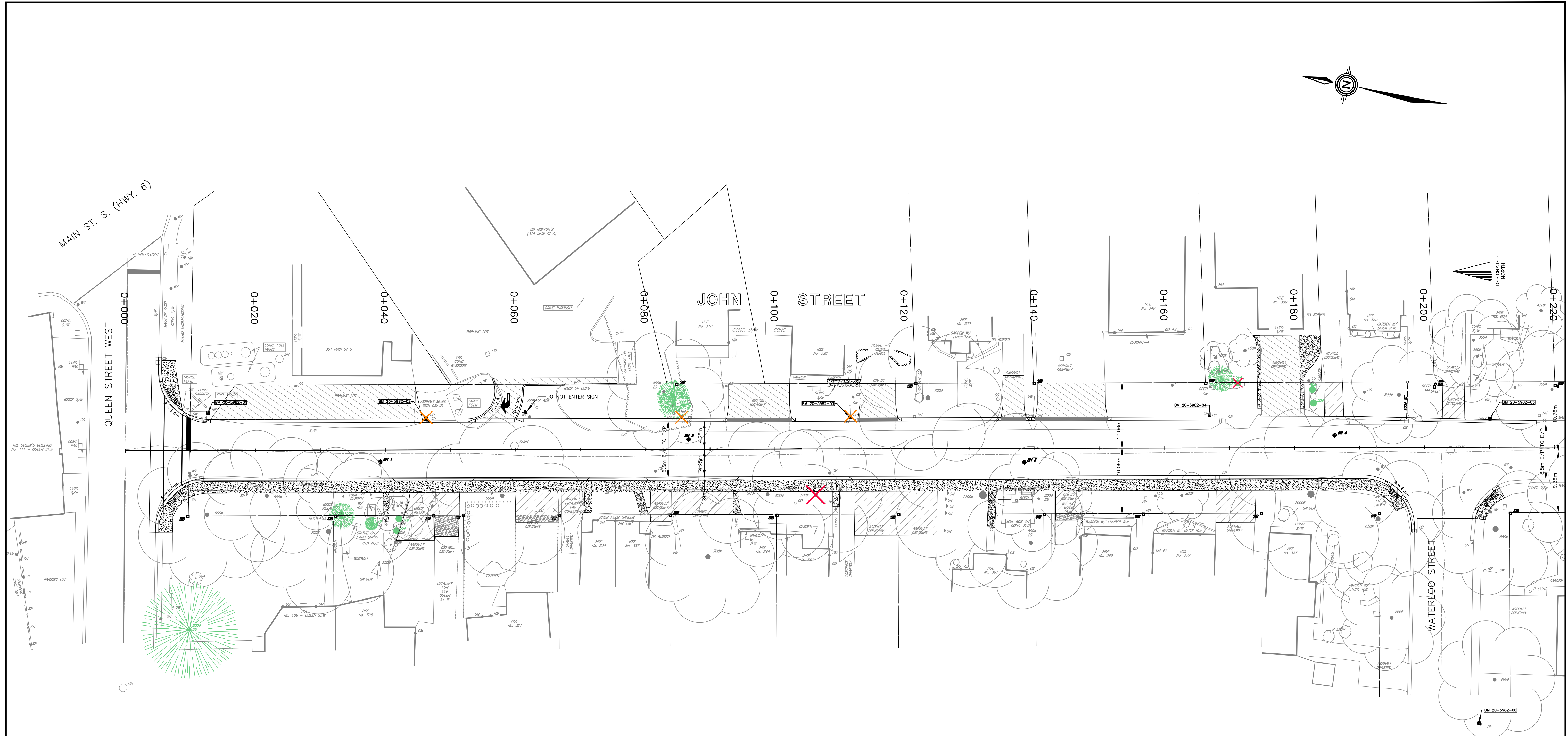
OPTION 2
LOCAL URBAN STREET CROSS SECTION

PROJECT No	M5982
DESIGNED BY:	ASB
CHECKED BY:	LS
APPROVED BY:	PFZ
DATE:	JUNE 2024

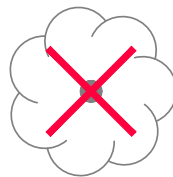


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V:1:10 V:1:10
UNLESS OTHERWISE SHOWN

DRAWING
NUMBER
SK-3



LEGEND:



TREE REMOVAL



HYDRO POLE REQUIRES RELOCATION
DUE TO ENCROACHMENT ON CURB

DISCLAIMERS:
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0	JUN. 2024	PRELIMINARY	PFZ
No	DATE	REVISION	INITIAL

RECONSTRUCTION OF
JOHN STREET

TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2G0

OPTION 3 - LOCAL URBAN STREET
CROSS SECTION, RIGHT TURN EXIT
ONLY FROM 319 MAIN ST. S.

PROJECT No
M5982

DESIGNED BY: ASB
CHECKED BY: LS
APPROVED BY: PFZ
DATE: JUNE 2024

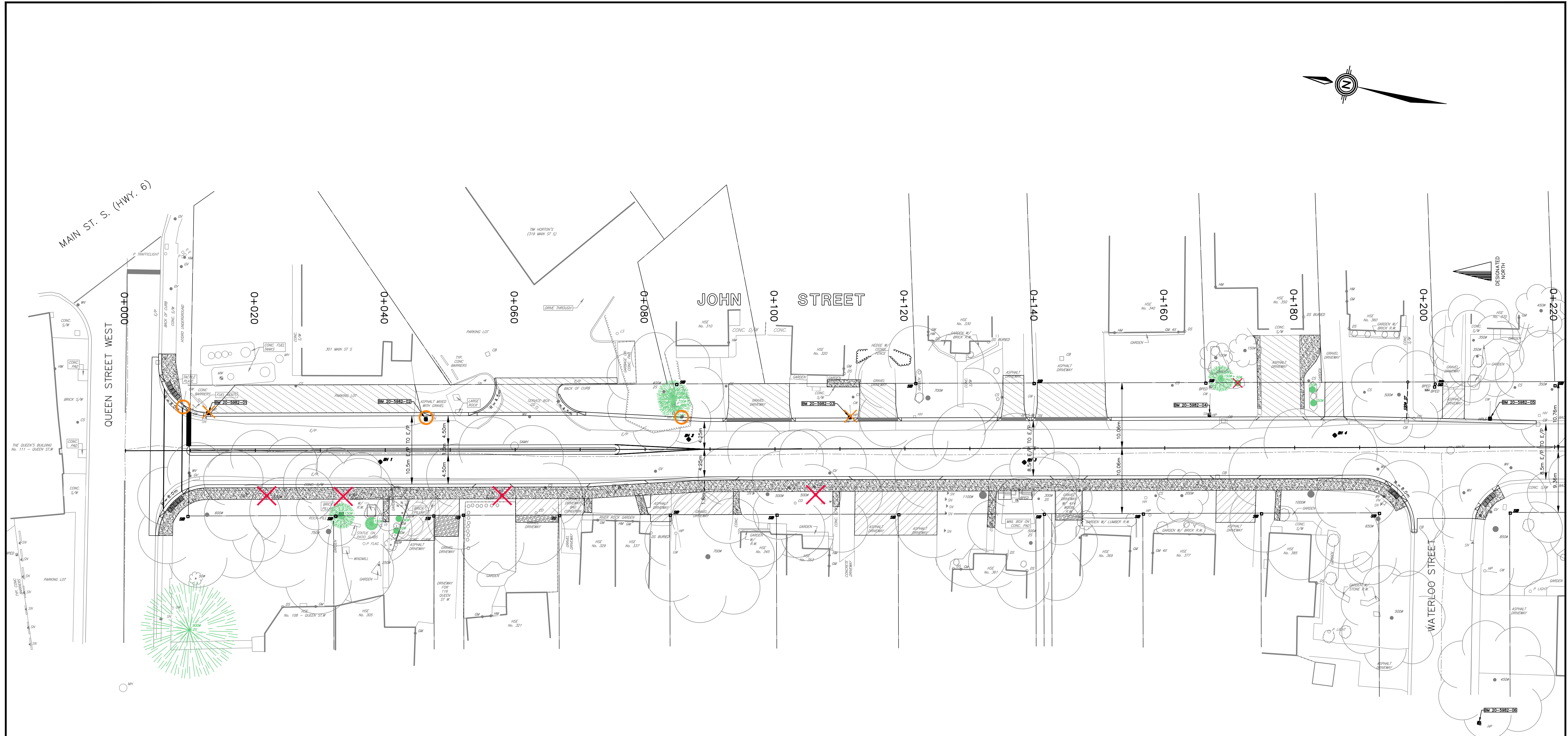


TRITON
ENGINEERING
SERVICES
LIMITED
Consulting Engineers

SCALE:
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UNLESS OTHERWISE SHOWN

DRAWING
NUMBER

SK-4



c:\wellington north - trap s\tr5582 - trap s\tr5582 and s\tr5582 options v2.dwg - 2024-07-10 - addendum

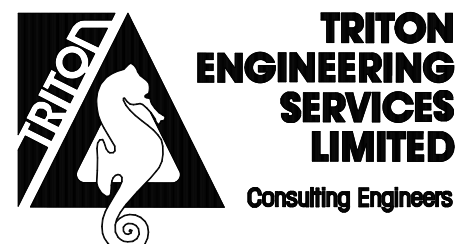
DISCLAIMERS:
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0	JUN. 2024	PRELIMINARY	PFZ
No	DATE	REVISION	INITIAL

RECONSTRUCTION OF
JOHN STREET
TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2G0
OPTION 4
CENTRE MEDIAN

PROJECT No
M5982
DESIGNED BY: ASB
CHECKED BY: LS
APPROVED BY: PFZ
DATE: JUNE 2024




SCALE:
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V:1:100 V:1:100
UNLESS OTHERWISE SHOWN
DRAWING NUMBER
SK-5

0	JUN. 2024	PRELIMINARY	PFZ
No	DATE	REVISION	INITIAL

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2G0

OPTION 5
JOHN ST. CLOSED AT QUEEN ST.



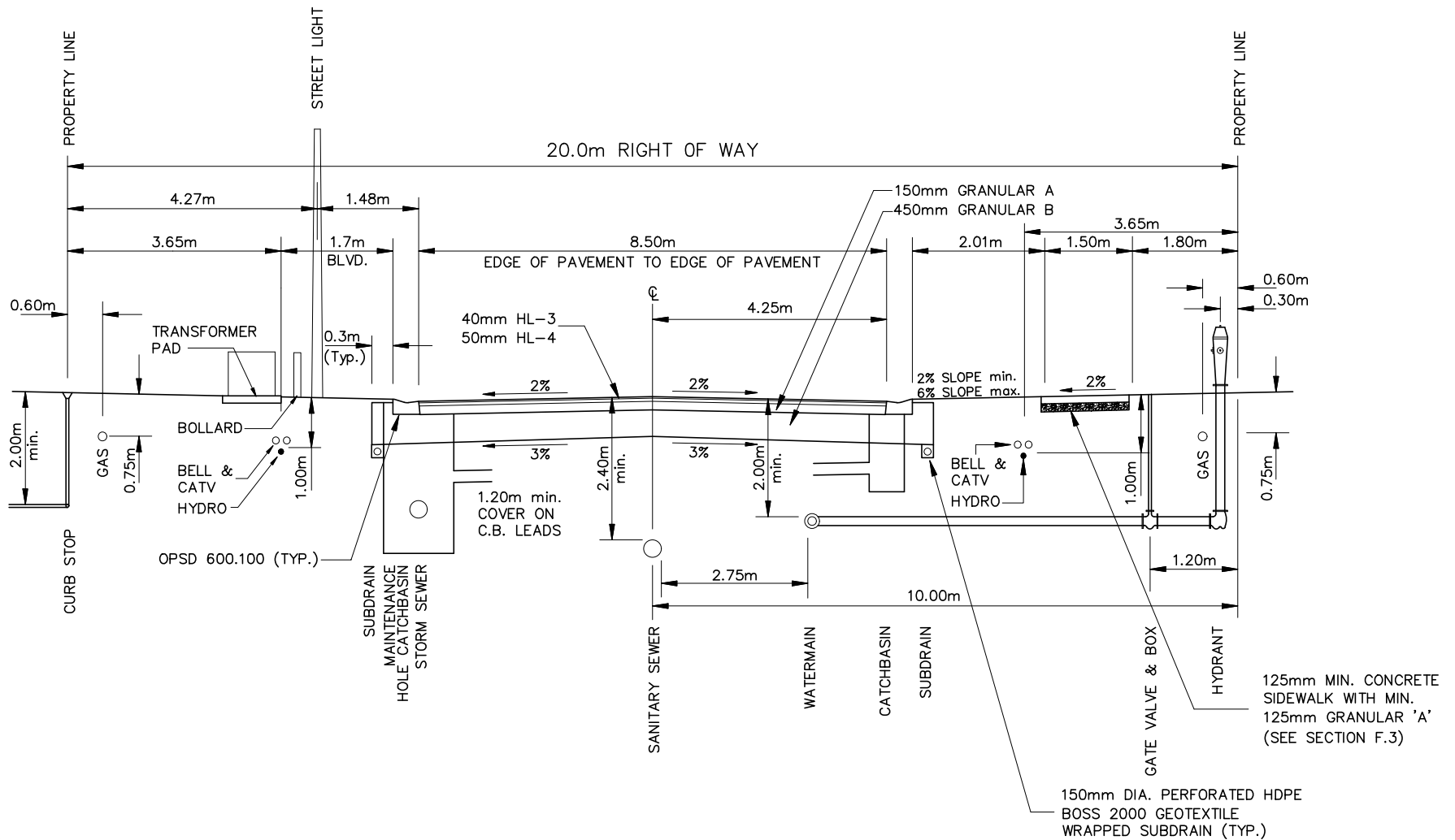
**TRITON
ENGINEERING
SERVICES
LIMITED**
Consulting Engineers

<p>SCALE:</p> <p>H: 1: 300 H: 1: 600</p> <p>V: — V: —</p> <p>(36°24') (17°11')</p> <p>UNLESS OTHERWISE SHOWN</p>	
<p>DRAWING NUMBER</p>	<p>SK-6</p>

Attachment C

Municipal Standard Cross-Section, Local Street – 20 m ROW





NOTES:

1. BOLLARDS ARE NOT TYPICALLY REQUIRED, RATHER THEY ARE ASSESSED ON A CASE-BY-CASE BASIS AND AT THE SOLE DISCRETION OF WELLINGTON NORTH POWER INC. AND THE TOWNSHIP.
2. CATCHBASIN LEADS TO HAVE A MINIMUM 1% SLOPE.

TOWNSHIP OF WELLINGTON NORTH	DATE APRIL, 2022	REV. 3
STANDARD CROSS-SECTION LOCAL STREET – 20.0m R.O.W.	STD. R1	

RECONSTRUCTION OF JOHN ST

Mount Forest, Ontario

TRAFFIC IMPACT BRIEF



**TRITON
ENGINEERING
SERVICES
LIMITED**

Consulting Engineers

September 9, 2024

Reconstruction of John St, Mount Forest
Traffic Impact Brief
Township of Wellington North

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Reconstruction of John St, Mount Forest
Traffic Impact Brief
Township of Wellington North

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Appendices

Appendix A – Municipal Standard for Local Street
Appendix B – Proposed Preliminary Design: Reconstruction of John St, Mount Forest
Appendix C – Level of Service Definitions
Appendix D – Level of Service Calculations

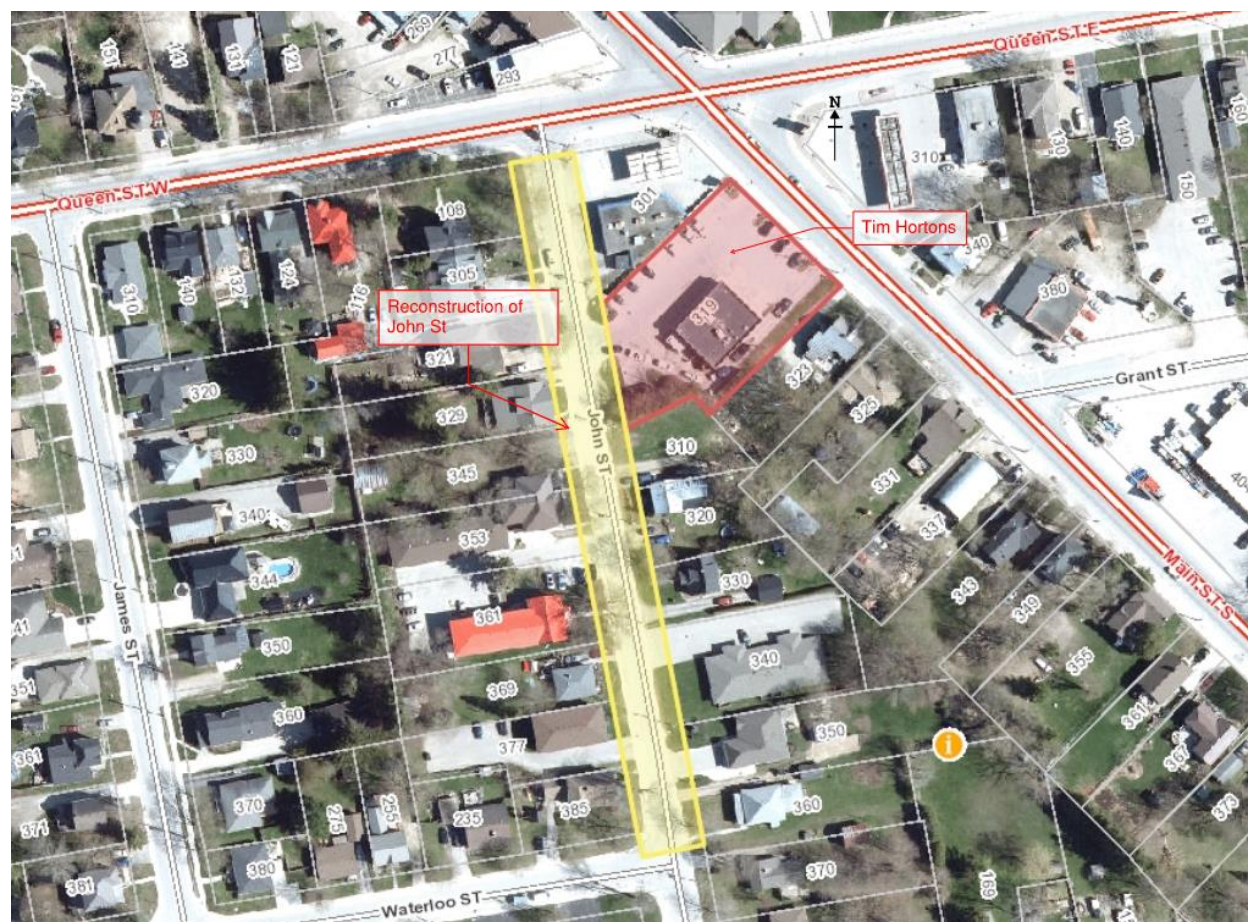
1.0 INTRODUCTION

The Township of Wellington North (Township) retained the services of Triton Engineering Services Limited (Triton) to undertake a traffic impact brief to support the design of the Reconstruction of John Street, Mount Forest between Queen St W (Hwy-89) and Waterloo St. It is our understanding that the purpose of the traffic impact brief is to address the impact of Tim Hortons (319 Main St S) customer traffic on the adjacent road system and to determine what improvements may be required at 319 Main St S and/or John St for consideration of incorporating into the design of the reconstruction project. The traffic impact brief will evaluate existing traffic conditions and traffic conditions when Tim Hortons' John Street entrance is restricted to determine if traffic will be negatively impacted with the John Street entrance restriction.

2.0 EXISTING CONDITIONS

2.1 Road Network

The Tim Hortons is located at 319 Main St S, Mount Forest. The property is bounded to the east by Main St S (Hwy-6), to the north by 301 Main St S (former gas station/convenience store location, currently vacant), to the west by John St and to the south by residential properties that front John St and Main St S. The location of the Tim Hortons is shown on the Key Plan, below.



Key Plan

John St is a local residential street under the jurisdiction of the Township. The existing John Street cross-section is semi-urbanized, with paved one through lane in each direction and sidewalk on the west side of the road. It has an assumed speed limit of 50 km/hr. Queen St W (Hwy-89) is a Connecting Link arterial road with a posted speed limit of 50 km/hr. Queen St W is under the jurisdiction of the Township; however, the Ontario Ministry of Transportation (MTO) must review and approve all traffic control devices on the roadway prior to installation. The typical cross-section of Queen St W is urbanized, with one through lane in each direction, curb and gutter, and sidewalk on both sides of the road. Main St S (Hwy-6) is a Connecting Link arterial road with a posted speed limit of 50 km/hr. The typical cross-section of Main St S is urbanized, with curb and gutter, sidewalk on both sides of the road, and has one through lane in either direction and a right-turn slip lane in the northeast bound direction at the intersection with Queen St E. The intersection of Main St S and Queen St is located approximately 25 m north of the Tim Hortons north access (in/out) and 55 m north of the Tim Hortons south access (exit only) on Main St S.

Per the Township's By-Law 6000-23, parking is not permitted at any time on John St from Queen St W to 191 m south to Waterloo St on either side of the roadway, except for the east side between 79 m and 89 m south of Queen St W for mail pickup and delivery. Stopping is also not permitted within the same no-parking limits. Signage is posted on John St to indicate the parking and stopping prohibitions, consistent with the Township's By-Law 6000-23; however, it is understood

that traffic has been observed not obeying the posted signage and the southbound lane is typically used as an overflow stacking lane for the Tim Hortons drive through at 319 Main St S. The overflow drive through queuing on John St is understood to be problematic for local traffic using John St as it is difficult to navigate around the queued traffic and difficult for residents to access/exit their driveways where traffic is queued. Queuing traffic on John St predominantly occurs in the southbound direction, but has also been observed in the northbound direction, to the south of 319 Main St S.

2.2 Adjacent Land Use

Land use adjacent to the east and west sides of John St is residential (medium and high-density), except for the properties of 301 and 319 Main St S, located on the east side of John St, and bounded by Main St S to the east and Queen St W to the north, which are zoned for commercial land use. 301 Main St S is currently a vacant property, formerly used as a gas station and convenience store outlet. The former gas station and building structures remain on the property. 319 Main St S is currently leased by Tim Hortons.

2.3 Tim Horton's Site

A review of the approved Site Plan for Tim Hortons at 319 Main St S, dated June 1995, as referenced in the Site Plan Agreement for the property, indicates that parking along the north side of the building is to be parallel to the building; however, existing conditions have parking stalls perpendicular to the building along the north side of the building, which narrows the width for through and parked traffic to navigate through the Tim Hortons site. It is understood that drive through traffic was initially intended to queue within the Tim Hortons parking lot, but site users have modified their habits to overflow and stack onto John St instead. It should be noted that the first no parking signs were installed on John Street (west side of John St, from Queen St W to 40 m south of Queen St) as part of traffic by-law (37-95) in November 1995. This by-law and parking restrictions were implemented to support the intent of the Tim Hortons John St access for service vehicles only, following the signing of the Site Plan Approval of Tim Hortons on September 1995.

It should be noted that since the business opened, drive through traffic volume has increased as Tim Hortons expanded their service (i.e., hours, "tap" payment methods, etc.) and menu, which has been observed to have generated an increased volume of non-residential/local traffic on John St in the immediate area of the Tim Hortons access. Due to this, the Township had expanded the no parking and no stopping zones on John Street (by-law 044-2003). It is understood, based on the Site Plan and history of the Township's parking by-law, that the purpose of the John St access shown on the Site Plan is for delivery and garbage truck access, which are located at the rear/west side of the building. Further, there is an absence of "enter/exit" signage to the Tim Hortons property at the John St access, which supports that this access was not originally intended for public use and/or drive through stacking. The neighbouring vacant property at 301 Main St S has also been observed being used as an overflow parking area for oversized vehicles and/or when the Tim Hortons parking lot is at capacity.

The Township has met with Tim Hortons and the owner of 319 Main St S, following feedback on the project after the PIC, to discuss concerns regarding overflow drive through and parking traffic creating a public nuisance on John St and the neighbouring property. The Township has

requested Tim Hortons to provide background information related to their drive through stacking design and to define the intent of the approved Site Plan, for consideration in finalization in the design for the reconstruction of John St project.

3.0 PROPOSED JOHN STREET ROAD IMPROVEMENTS

The recommended design for the reconstruction of John St is to implement the Township's municipal standard for an urban local street, with two through lanes of travel, one in each direction, curb and gutter, sidewalk on the west side of the road and restriction of the Tim Hortons John St access such that it is reduced to northbound exit only onto John St. A copy of the Township's standard drawing for a local urban street is provided in Appendix A. A sketch of the recommended proposed preliminary design for the reconstruction of John St is provided in Appendix B.

4.0 EXISTING TRAFFIC COUNTS

A 24-hour automated traffic count was completed on Wednesday April 24, 2024, at two locations on John St and two locations on Main St S, Mount Forest. Analysis of the count was completed and documented in the Memorandum, Re: Road Design Alternatives, Reconstruction of John St, Mount Forest, dated August 7, 2024, prepared by Triton. The analysis concluded that most of the traffic on John St is a result of the Tim Hortons establishment, specifically southbound traffic between Queen St W and the Tim Hortons' access on John St; however, the Tim Hortons also generates traffic on John St from exiting the property and travelling in the northbound direction. Further, this traffic impacts the movement of vehicles on John St, particularly those travelling in the southbound direction from Queen St W.

Based on the April 2024 24-hour traffic count analysis, it was recommended that an 8-hour traffic count should be completed during the busiest 8-hours of traffic, while the Tim Hortons John St access is closed, to understand impacts to traffic movement and volume on Main St S and potentially within the Tim Hortons property. Since the 24-hour traffic count did not collect traffic turning movement data, it was recommended that an 8-hour traffic count be collected while the Tim Hortons John St access was open, to document baseline conditions, for comparison to the 8-hour traffic count conducted while the John St access to/from Tim Hortons was closed. The busiest 8-hours of traffic, based on the 24-hour traffic data and consistent with Tim Hortons busiest hours of operation at this location as confirmed by the franchisee, are as follows:

- 7:00 am to 10:00 am
- 11:00 am to 2:00 pm
- 4:00 pm to 6:00 pm

Triton conducted the baseline 8-hour traffic count on Tuesday July 23, 2024, and the 8-hour count while Tim Hortons John St access was closed was conducted on Wednesday July 30, 2024. Peak hour traffic volumes are illustrated in Figure 1 and Figure 2 for each scenario. Data collected during the weekdays are assumed to be representative of an average day. It should be noted that on July 30, 2024, the Township closed John St to local traffic only between Queen St W and Waterloo St. Therefore, traffic movement was not collected on John St on July 30th as the data

would not be representative of expected typical traffic (while the Tim Hortons' John St entrance was closed).

Table 1 below illustrates the total volumes of traffic entering and exiting Tim Hortons during the AM and PM peak hours under existing conditions.

Table 1: Existing Conditions Tim Hortons Entrance Volumes – Tuesday April 24, 2024

Entrance	Volume Entering		Volume Exiting	
	AM	PM	AM	PM
Main Street – North Entrance	18	24	18	14
Main Street – South Entrance	N/A	N/A	92	58
John Street	103	58	22	15
Total	121	82	132	87

Table 2 below shows the peak hour volume of traffic on John Street with the entrance to Tim Hortons open. As shown, the manual counts confirm the conclusion from the automated counts that the majority of the traffic on John St is a result of the Tim Hortons establishment.

Table 2: Tim Hortons John Street Entrance Volumes (Manual Counts) – Tuesday July 23, 2024

Movement	Volume of Traffic	
	AM	PM
Southbound Thru	7	19
Northbound Thru	4	11
Entering Tim Hortons	103	58
Exiting Tim Hortons	22	15
Total	136	103

4.1 LEVEL OF SERVICE ANALYSIS – EXISTING CONDITIONS

The manual traffic counts were used to carry out a Level of Service analysis of the Main Street and Queen Street intersection and Tim Hortons entrance to create a baseline for comparison of the impact of restricting the John Street access to Tim Hortons. Levels of service were analyzed based on the *Highway Capacity Manual, 2000*, using Synchro 10 software version 10.1. The level of service definitions are included in Appendix C. The results of the analysis is shown in Table 3. The detailed capacity analyses are included in Appendix D.

Table 3: Existing Conditions Level of Service

Intersection	Movement	Level of Service (Delay, s)	
		Weekday AM	Weekday PM
Queen Street and Main Street (Signalized)	EB left-thru-right	C (26.3)	C (22.8)
	WB left-thru-right	C (26.6)	C (23.2)
	SB left-thru-right	A (5.0)	B (13.2)
	NB left-thru-right	A (5.6)	B (12.0)
Tim Hortons North Entrance and Main Street (Unsignalized)	SB thru-right	A (0.0)	A (0.0)
	NB left-thru	A (0.6)	A (0.4)
	EB left-right	B (10.8)	B (12.0)

The existing levels of service are acceptable to very good for all turning movements at the intersection and the north Tim Hortons entrance under existing conditions.

5.0 IMPACTS OF RESTRICTED ENTRANCE

Table 4 below illustrates the total volumes of traffic entering and exiting Tim Hortons during the AM and PM peak hours under restricted conditions.

Table 4: Restricted John Street Entrance Tim Hortons Traffic Volumes

Entrance	Volume Entering		Volume Exiting	
	AM	PM	AM	PM
Main Street – North Entrance	102	85	39	19
Main Street – South Entrance	N/A	N/A	103	80
John Street	N/A	N/A	N/A	N/A
Total	102	85	142	99

As shown in the table above, the volume entering during the AM peak hour with the John Street entrance restricted is slightly lower than the volume under existing conditions with the John Street entrance opened, but the remaining volumes are comparable or higher than the existing conditions. Overall, the volume of traffic entering and exiting during the AM peak hour was reduced by 9 vehicles and the volumes during the PM peak hour were increased by 15 vehicles with the John Street entrance restricted. Based on these observed volumes, restricting the John Street entrance has minimal impact for traffic on Main Street S, traffic at Main St and Queen St signalized intersection, and to the volume of vehicles entering and exiting Tim Hortons.

The drive through for Tim Hortons has an approximate turnover rate of one vehicle per 35 seconds. This means that during one hour, Tim Hortons can accommodate approximately 103 vehicles without queuing.

5.1 LEVEL OF SERVICE ANALYSIS – RESTRICTED JOHN STREET ENTRANCE

A level of service analysis was undertaken to determine the impact of a restricted John Street entrance on the signalized intersection and the Main Street entrance to Tim Hortons. Table 5 summarizes the levels of service in this scenario.

Table 5: Restricted John Street Entrance Level of Service

Intersection	Movement	Level of Service (Delay, s)	
		Weekday AM	Weekday PM
Queen Street and Main Street (Signalized)	EB left-thru-right	C (25.4)	C (24.9)
	WB left-thru-right	C (23.3)	C (26.3)
	SB left-thru-right	B (11.7)	B (12.5)
	NB left-thru-right	B (11.3)	A (9.5)
Tim Hortons North Entrance and Main Street (Unsignalized)	SB thru-right	A (0.0)	A (0.0)
	NB left-thru	A (0.9)	A (1.1)
	EB left-right	B (11.8)	B (14.5)

Restricting the John Street Tim Hortons entrance results in slightly higher delays at the signalized intersection of Queen Street and Main Street and the entrance to Tim Hortons on Main Street, however the intersection is still operating at an acceptable level.

5.2 DRIVE THROUGH STORAGE ANALYSIS

The south Tim Hortons access on Main Street is exit only and can be utilized by vehicles exiting the drive through lane and vehicles exiting from the parking lot. Table 6 below shows the volume of traffic exiting from this access during both manual traffic counts.

Table 6: Tim Hortons South Entrance Volumes (Manual Counts)

Date	Volume of Exiting Traffic - South Entrance	
	AM	PM
July 23, 2024	92	58
July 30, 2024	103	80

Assuming all exiting vehicles are coming from the drive through lane will provide a conservative number of vehicles that utilize the drive through during the peak hour. The peak observed volume of vehicles through the drive through lane was 103 during the AM peak hour on July 30, 2024. Based on this volume, a vehicle leaves the Tim Hortons drive through every 35 seconds.

The existing storage volume within the Tim Hortons site is approximately 84 metres, measuring from the drive through window to around the south side of the building and through the parking lot to the Main Street (north) entrance. With an assumed average vehicle length of 6 metres, this will allow for 14 vehicles to queue within the site.

It should be noted that the available storage length using John Street (from the Tim Hortons John St entrance to Queen Street) is also approximately 84 metres, although under the existing scenario, vehicles can also queue within the Tim Hortons parking lot. It has been observed that most vehicles enter the drive through via the John Street access.

Considering this, it is anticipated that the storage length within the Tim Hortons site is sufficient for most periods. Further queue analysis, including a count of queued vehicles, could be undertaken to review the number of queued vehicles during the peak periods and potential impacts to Main Street. Additionally, Tim Hortons should review their site to ensure it is sufficient to accommodate customer traffic.

6.0 CONCLUSIONS AND RECOMMENDATIONS

- A restricted John Street entrance will have minimal impact to the volumes of traffic entering and exiting Tim Hortons.
- The existing intersection of Queen Street and Main Street will continue to operate at acceptable levels of service with the John Street entrance to Tim Hortons restricted.
- The existing entrance to Tim Hortons on Main Street will continue to operate at acceptable levels of service with the John Street entrance to Tim Hortons restricted.
- Tim Hortons should review their site to ensure it is sufficient to accommodate customer traffic.

TRITON ENGINEERING SERVICES LIMITED

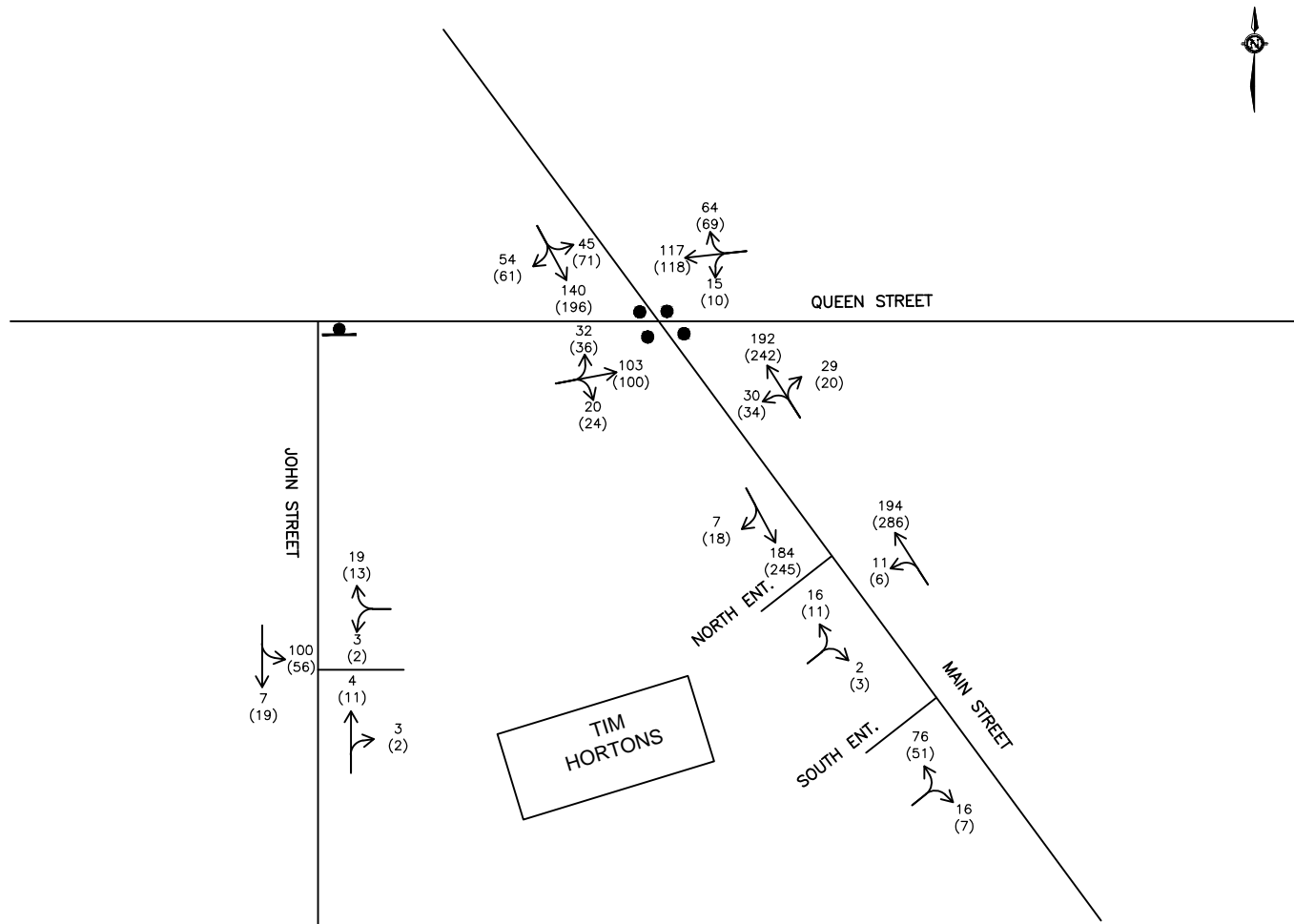


Lindsay Scott, P. Eng.



Taylor Kramp, P. Eng.

FIGURES



INTERSECTION	AM PEAK HOUR	PM PEAK HOUR	COUNT DATE
QUEEN/MAIN	9:00 TO 10:00	4:30 TO 5:30	07/23/2024
NORTH MAIN ST. ENT.	8:15 TO 9:15	4:15 TO 5:15	07/23/2024
SOUTH MAIN ST. ENT.	8:15 TO 9:15	4:15 TO 5:15	07/23/2024
JOHN ST. ENT.	8:45 TO 9:45	4:30 TO 5:30	07/23/2024

(NOT TO SCALE)

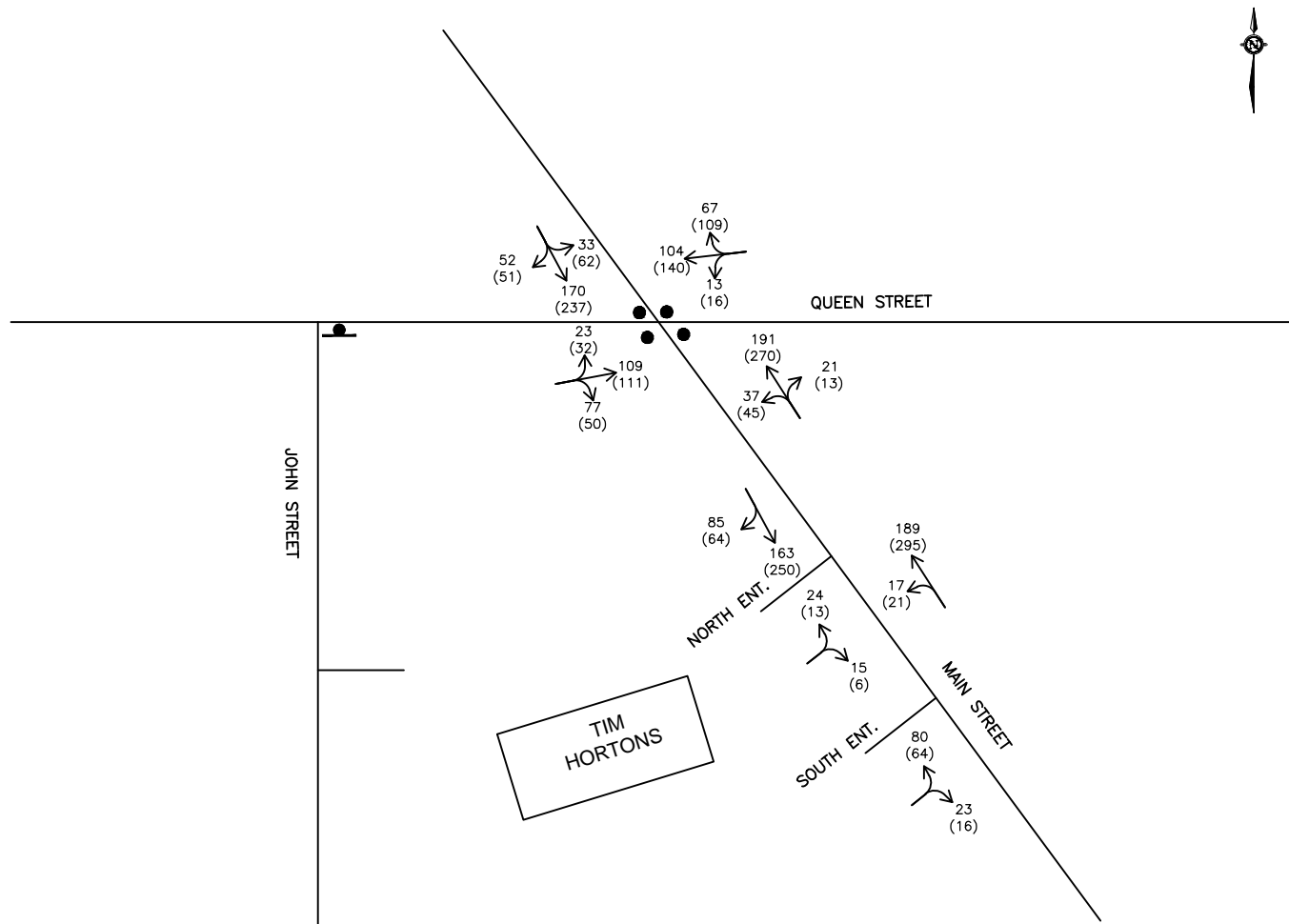
LEGEND:

	STOP CONTROL	25 (25)	AM PEAK HOUR PM PEAK HOUR	TRAFFIC VOLUMES		EXISTING ROAD
	TRAFFIC FLOW					PROPOSED ROAD



TRITON ENGINEERING
SERVICES LIMITED
Consulting Engineers

FIGURE 1:
2024 EXISTING PEAK HOUR TRAFFIC



INTERSECTION	AM PEAK HOUR	PM PEAK HOUR	COUNT DATE
QUEEN/MAIN	8:45 TO 9:45	4:45 TO 5:45	07/30/2024
NORTH MAIN ST. ENT.	9:00 TO 10:00	4:15 TO 5:15	07/30/2024
SOUTH MAIN ST. ENT.	9:00 TO 10:00	4:15 TO 5:15	07/30/2024

(NOT TO SCALE)

LEGEND:

	STOP CONTROL	25 (25)	AM PEAK HOUR PM PEAK HOUR	TRAFFIC VOLUMES		EXISTING ROAD
	TRAFFIC FLOW		TRAFFIC SIGNALS		PROPOSED ROAD	

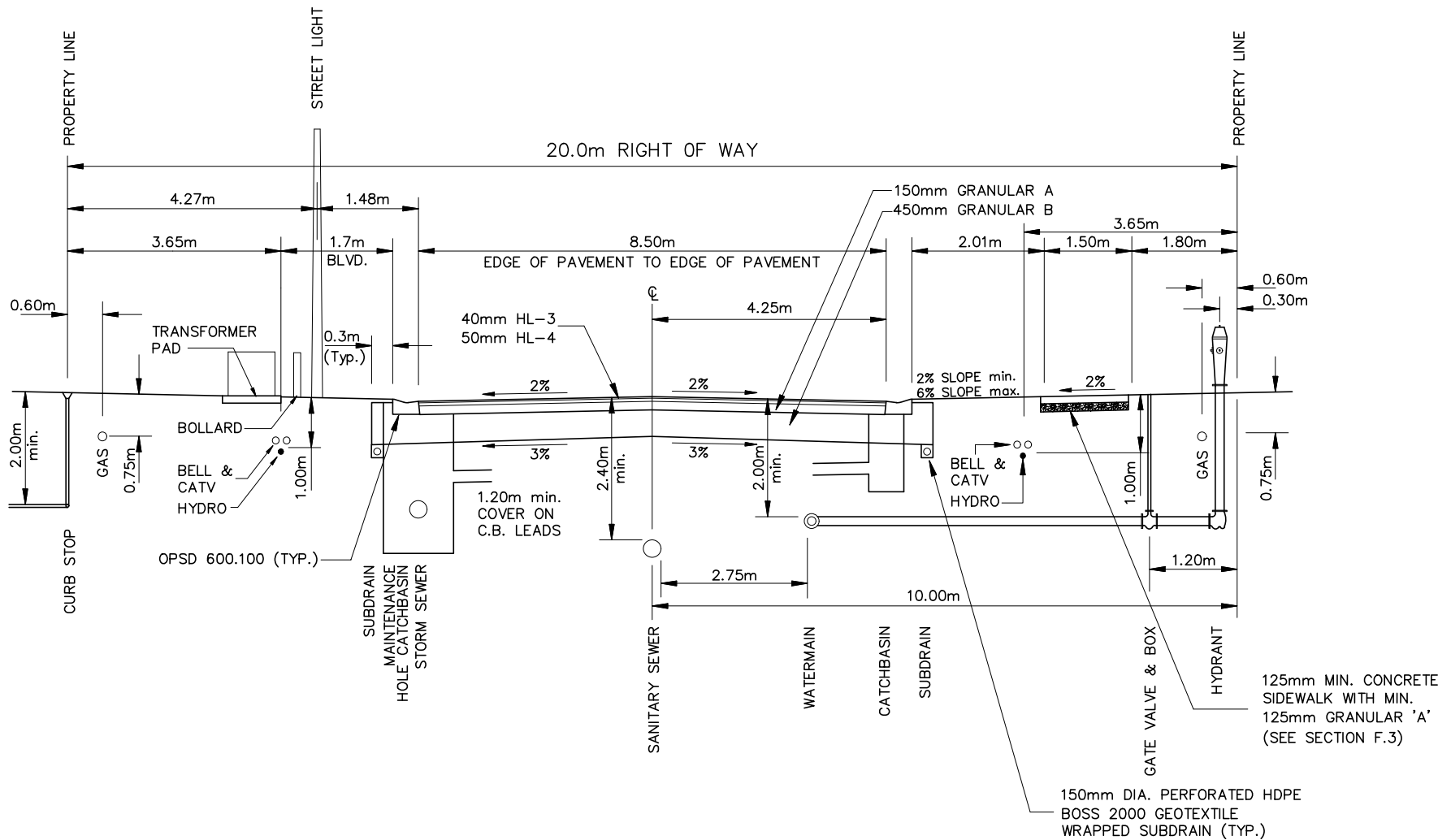


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SERVICES LIMITED
Consulting Engineers

FIGURE 2:
2024 EXISTING PEAK HOUR TRAFFIC
WITH RESTRICTED JOHN STREET ENTRANCE

APPENDIX A

MUNICIPAL STANDARD FOR LOCAL STREET



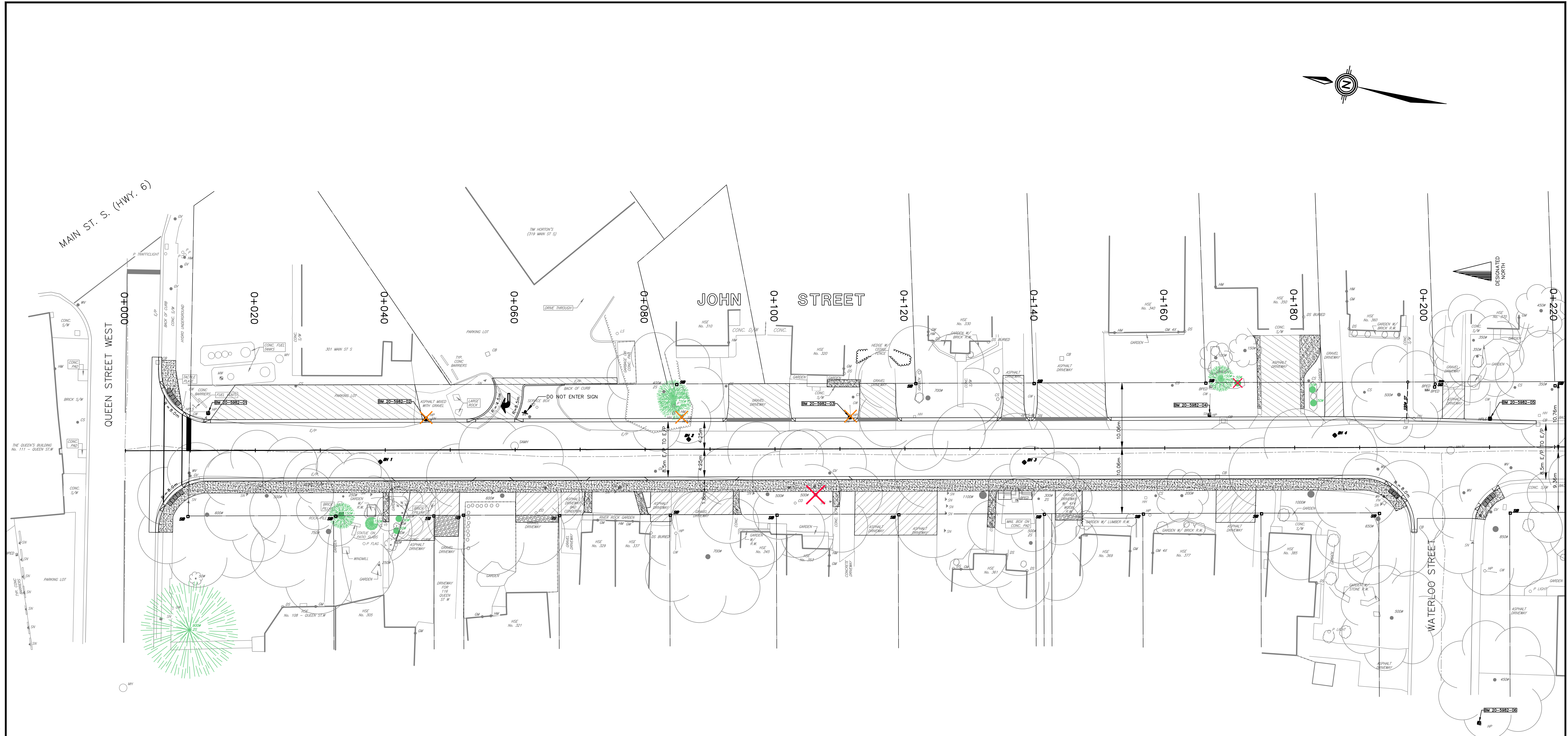
NOTES:

1. BOLLARDS ARE NOT TYPICALLY REQUIRED, RATHER THEY ARE ASSESSED ON A CASE-BY-CASE BASIS AND AT THE SOLE DISCRETION OF WELLINGTON NORTH POWER INC. AND THE TOWNSHIP.
2. CATCHBASIN LEADS TO HAVE A MINIMUM 1% SLOPE.

TOWNSHIP OF WELLINGTON NORTH	DATE APRIL, 2022	REV. 3
STANDARD CROSS-SECTION LOCAL STREET – 20.0m R.O.W.	STD. R1	

APPENDIX B

PROPOSED PRELIMINARY DESIGN: RECONSTRUCTION OF JOHN ST, MOUNT FOREST



c:\wellington-north - trap\c01\m5982 - trap\c01\m5982 - john st recon (drawn at w to Waterloo st). mtl, forest/hard and survey\m5982 options v2.dwg - 2024-07-10 - addendum

DISCLAIMERS:
1. ALL EXISTING ELEVATIONS & DIMENSIONS TO BE CONFIRMED ON SITE. THE LOCATION OF UTILITIES IS APPROXIMATE ONLY AND SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL PROVE THE LOCATION OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION AGAINST DAMAGE.

0	JUN. 2024	PRELIMINARY	PFZ
No	DATE	REVISION	INITIAL

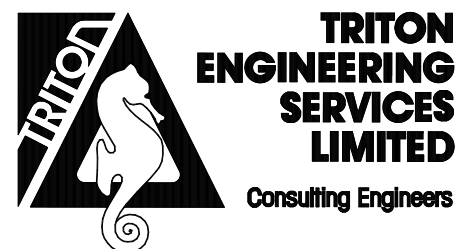
RECONSTRUCTION OF
JOHN STREET

TOWNSHIP OF WELLINGTON NORTH
(MOUNT FOREST)

TOWNSHIP OF WELLINGTON NORTH
7490 SIDEROAD 7 WEST
KENILWORTH, ON N0G 2G0

OPTION 3 - LOCAL URBAN STREET
CROSS SECTION, RIGHT TURN EXIT
ONLY FROM 319 MAIN ST. S.

PROJECT No
M5982
DESIGNED BY: ASB
CHECKED BY: LS
APPROVED BY: PFZ
DATE: JUNE 2024



SCALE:
H:1:300 H:1:600
V: - V: -
(06/247) (07/117)
UNLESS OTHERWISE SHOWN

DRAWING NUMBER **SK-4**

APPENDIX C

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE

Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)	Impact on Minor Street Traffic
A	≤ 10	Free Flow
B	$>10 - 20$	Stable Flow (slight delays)
C	$> 20 - 35$	Stable Flow (acceptable delays)
D	$> 35 - 55$	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	$> 55 - 80$	Unstable Flow (intolerable delay)
F	> 80	Forced Flow (jammed)

Source: Highway Capacity Manual, 2000.

Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)	Impact on Minor Street Traffic
A	≤ 10	Little or no delay
B	$>10-15$	Short traffic delays
C	$> 15-25$	Average traffic delays
D	$> 25-35$	Long traffic delays
E	$> 35-50$	Very long traffic delays
F	> 50	Unacceptable traffic delays

















Source: Transportation Research Board, 2000.

APPENDIX D
LEVEL OF SERVICE CALCULATIONS

HCM Signalized Intersection Capacity Analysis

3: Main Street East & Queen Street West/Queen Street East










09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	23	109	77	13	104	67	33	170	52	37	191	21
Future Volume (vph)	23	109	77	13	104	67	33	170	52	37	191	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			7.0			7.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.95			0.97			0.98	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		1675			1590			1757			1754	
Flt Permitted		0.90			0.95			0.89			0.87	
Satd. Flow (perm)		1519			1514			1582			1545	
Peak-hour factor, PHF	0.48	0.78	0.84	0.54	0.79	0.80	0.55	0.77	0.68	0.62	0.87	0.58
Adj. Flow (vph)	48	140	92	24	132	84	60	221	76	60	220	36
RTOR Reduction (vph)	0	25	0	0	27	0	0	13	0	0	6	0
Lane Group Flow (vph)	0	255	0	0	213	0	0	344	0	0	310	0
Heavy Vehicles (%)	4%	14%	3%	15%	18%	9%	6%	7%	0%	11%	6%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		20.2			20.2			38.8			38.8	
Effective Green, g (s)		20.2			20.2			38.8			38.8	
Actuated g/C Ratio		0.28			0.28			0.53			0.53	
Clearance Time (s)		7.0			7.0			7.0			7.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		420			418			840			821	
v/s Ratio Prot												
v/s Ratio Perm		c0.17			0.14			c0.22			0.20	
v/c Ratio		0.61			0.51			0.41			0.38	
Uniform Delay, d1		23.0			22.2			10.2			10.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.5			1.1			1.5			1.3	
Delay (s)		25.4			23.3			11.7			11.3	
Level of Service		C			C			B			B	
Approach Delay (s)		25.4			23.3			11.7			11.3	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			73.0			Sum of lost time (s)			14.0			
Intersection Capacity Utilization			60.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

8: Tim Hortons Ent. & Main Street East

















09/12/2024

						
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	163	85	17	189	24	15
Future Volume (Veh/h)	163	85	17	189	24	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.82	0.71	0.81	0.67	0.75
Hourly flow rate (vph)	192	104	24	233	36	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	39					
pX, platoon unblocked						
vC, conflicting volume			296	525		244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			296	525		244
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			98	93		97
cM capacity (veh/h)			1277	507		800
Direction, Lane #	SE 1	NW 1	NE 1			
Volume Total	296	257	56			
Volume Left	0	24	36			
Volume Right	104	0	20			
cSH	1700	1277	583			
Volume to Capacity	0.17	0.02	0.10			
Queue Length 95th (m)	0.0	0.4	2.4			
Control Delay (s)	0.0	0.9	11.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.9	11.8			
Approach LOS			B			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			34.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

3: Main Street East & Queen Street West/Queen Street East










09/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	32	111	50	16	140	109	62	237	51	45	13	32
Future Volume (vph)	32	111	50	16	140	109	62	237	51	45	13	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			7.0			7.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.94			0.98			0.95	
Flt Protected		0.99			1.00			0.99			0.97	
Satd. Flow (prot)		1707			1689			1794			1732	
Flt Permitted		0.83			0.95			0.92			0.69	
Satd. Flow (perm)		1434			1620			1670			1219	
Peak-hour factor, PHF	0.67	0.82	0.69	0.57	0.88	0.76	0.86	0.85	0.75	0.63	0.90	0.65
Adj. Flow (vph)	48	135	72	28	159	143	72	279	68	71	14	49
RTOR Reduction (vph)	0	19	0	0	38	0	0	9	0	0	23	0
Lane Group Flow (vph)	0	236	0	0	292	0	0	410	0	0	111	0
Heavy Vehicles (%)	3%	11%	3%	6%	10%	3%	3%	5%	0%	4%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		20.4			20.4			38.6			38.6	
Effective Green, g (s)		20.4			20.4			38.6			38.6	
Actuated g/C Ratio		0.28			0.28			0.53			0.53	
Clearance Time (s)		7.0			7.0			7.0			7.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		400			452			883			644	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.18			c0.25			0.09	
v/c Ratio		0.59			0.65			0.46			0.17	
Uniform Delay, d1		22.7			23.1			10.7			8.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.2			3.2			1.8			0.6	
Delay (s)		24.9			26.3			12.5			9.5	
Level of Service		C			C			B			A	
Approach Delay (s)		24.9			26.3			12.5			9.5	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay		18.9			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		73.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		63.3%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

8: Tim Hortons Ent. & Main Street East

















09/13/2024

						
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	250	64	21	295	13	6
Future Volume (Veh/h)	250	64	21	295	13	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.82	0.25	0.66	0.93	0.81	0.75
Hourly flow rate (vph)	305	256	32	317	16	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	39					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			561		814	433
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			437		723	292
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		95	99
cM capacity (veh/h)			1001		338	664
Direction, Lane #	SE 1	NW 1	NE 1			
Volume Total	561	349	24			
Volume Left	0	32	16			
Volume Right	256	0	8			
cSH	1700	1001	405			
Volume to Capacity	0.33	0.03	0.06			
Queue Length 95th (m)	0.0	0.8	1.4			
Control Delay (s)	0.0	1.1	14.5			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.1	14.5			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			42.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

3: Main Street East & Queen Street West/Queen Street East










09/12/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	7	23	5	2	29	16	10	41	9	9	48	10
Future Volume (vph)	7	23	5	2	29	16	10	41	9	9	48	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			7.0			7.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.95			0.97			0.97	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		1796			1614			1759			1679	
Flt Permitted		0.91			0.99			0.96			0.97	
Satd. Flow (perm)		1653			1593			1700			1646	
Peak-hour factor, PHF	0.62	0.86	0.83	0.75	0.75	0.76	0.66	0.85	0.59	0.83	0.83	0.60
Adj. Flow (vph)	11	27	6	3	39	21	15	48	15	11	58	17
RTOR Reduction (vph)	0	5	0	0	18	0	0	5	0	0	6	0
Lane Group Flow (vph)	0	39	0	0	45	0	0	73	0	0	80	0
Heavy Vehicles (%)	0%	6%	0%	13%	18%	5%	11%	4%	4%	10%	13%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		12.0			12.0			47.0			47.0	
Effective Green, g (s)		12.0			12.0			47.0			47.0	
Actuated g/C Ratio		0.16			0.16			0.64			0.64	
Clearance Time (s)		7.0			7.0			7.0			7.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		271			261			1094			1059	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.03			0.04			0.05	
v/c Ratio		0.14			0.17			0.07			0.08	
Uniform Delay, d1		26.1			26.2			4.8			4.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.3			0.1			0.1	
Delay (s)		26.3			26.6			5.0			5.0	
Level of Service		C			C			A			A	
Approach Delay (s)		26.3			26.6			5.0			5.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		13.5			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.10										
Actuated Cycle Length (s)		73.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		60.0%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

8: Tim Hortons Ent. & Main Street East

















09/12/2024

						
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	184	7	11	194	16	16
Future Volume (Veh/h)	184	7	11	194	16	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.88	0.69	0.92	0.67	0.80
Hourly flow rate (vph)	204	8	16	211	24	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	39					
pX, platoon unblocked						
vC, conflicting volume			212		451	208
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			212		451	208
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	98
cM capacity (veh/h)			1370		563	837
Direction, Lane #	SE 1	NW 1	NE 1			
Volume Total	212	227	44			
Volume Left	0	16	24			
Volume Right	8	0	20			
cSH	1700	1370	662			
Volume to Capacity	0.12	0.01	0.07			
Queue Length 95th (m)	0.0	0.3	1.6			
Control Delay (s)	0.0	0.6	10.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.6	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			29.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

3: Main Street East & Queen Street West/Queen Street East










09/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	36	100	24	10	118	69	71	196	61	34	242	20
Future Volume (vph)	36	100	24	10	118	69	71	196	61	34	242	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			7.0			7.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.94			0.97			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		1672			1681			1762			1821	
Flt Permitted		0.87			0.96			0.81			0.90	
Satd. Flow (perm)		1464			1626			1448			1657	
Peak-hour factor, PHF	0.82	0.81	0.75	0.50	0.87	0.64	0.71	0.89	0.80	0.65	0.80	0.56
Adj. Flow (vph)	44	123	32	20	136	108	100	220	76	52	302	36
RTOR Reduction (vph)	0	9	0	0	35	0	0	11	0	0	5	0
Lane Group Flow (vph)	0	190	0	0	229	0	0	385	0	0	386	0
Heavy Vehicles (%)	0%	16%	8%	10%	10%	4%	4%	7%	0%	3%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		20.2			20.2			38.8			38.8	
Effective Green, g (s)		20.2			20.2			38.8			38.8	
Actuated g/C Ratio		0.28			0.28			0.53			0.53	
Clearance Time (s)		7.0			7.0			7.0			7.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		405			449			769			880	
v/s Ratio Prot												
v/s Ratio Perm		0.13			0.14			0.27			0.23	
v/c Ratio		0.47			0.51			0.50			0.44	
Uniform Delay, d1		21.9			22.2			10.9			10.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			1.0			2.3			1.6	
Delay (s)		22.8			23.2			13.2			12.0	
Level of Service		C			C			B			B	
Approach Delay (s)		22.8			23.2			13.2			12.0	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay		16.5			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.50										
Actuated Cycle Length (s)		73.0			Sum of lost time (s)			14.0				
Intersection Capacity Utilization		64.3%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

8: Tim Hortons Ent. & Main Street East

09/13/2024

						
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	245	18	6	286	11	3
Future Volume (Veh/h)	245	18	6	286	11	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.75	0.50	0.89	0.92	0.38
Hourly flow rate (vph)	269	24	12	321	12	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	39					
pX, platoon unblocked						
vC, conflicting volume			293		626	281
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			293		626	281
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	99
cM capacity (veh/h)			1280		447	763
Direction, Lane #	SE 1	NW 1	NE 1			
Volume Total	293	333	20			
Volume Left	0	12	12			
Volume Right	24	0	8			
cSH	1700	1280	536			
Volume to Capacity	0.17	0.01	0.04			
Queue Length 95th (m)	0.0	0.2	0.9			
Control Delay (s)	0.0	0.4	12.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.4	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			29.9%	ICU Level of Service		A
Analysis Period (min)			15			