FUNCTIONAL SERVICING & STORMWATER MANAGEMENT REPORT

66 THOMAS STREET

CITY OF MISSISSAUGA
REGION OF PEEL

PREPARED FOR:

DE ZEN REALTY COMPANY LTD.

PREPARED BY:

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CROZIER
CONSULTING ENGINEERS

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1.0 Introduction

De Zen Realty Company Ltd. retained C.F. Crozier & Associates Inc. ("Crozier") to complete a Functional Servicing and Stormwater Management Report for the site located at the municipal address of 65-95 Joymar Drive and 66 Thomas Street in the City of Mississauga. This report supports the Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) applications for the proposed high-rise residential development.

The purpose of this report is to demonstrate that the new proposed site concept can be developed in general conformance with the City of Mississauga, Region of Peel, and the Credit Valley Conservation (CVC) guidelines from a functional servicing and stormwater management perspective.

1.1 Site Background

The subject site is approximately 2.78 ha in area and is located in an area of existing residential and commercial developments. The site is bound by Thomas Street to the south, Joymar Drive to the west, Tannery Street to the north, and the Mullet Creek to the east. The site currently features several low-rise commercial structures and an extensive paved parking area.

A portion of the site is currently within lands regulated by Credit Valley Conservation (CVC) and the floodplain of the Mullet Creek. This is identified as Subwatershed 4 (1,2,3,4 – Loyalist, Carolyn, Sawmill and Mullet Creek Subwatersheds, dated June 2009) of the Credit River Watershed. A separate Floodplain Analysis Memorandum has been prepared by Crozier (March 2024) which outlines the natural hazards associated with Mullet Creek and a cut/fill plan that establishes the proposed Regulatory Floodplain and developable area in the pre and post-developed condition.

The following reports and documents were referenced during the preparation of this report and associated civil design drawings:

- City of Mississauga Transportation and Works Development Requirements Manual, dated November 2020
- Architectural Package by SRM Architects, December 2024.
- Floodplain Analysis Memorandum by Crozier, March 2024.
- Geotechnical and Slope Stability Investigations Report by Sirati and Partners, Nov. 2018.
- Technical Memorandum "Grading Change Impact on Long Term Stable Top of Slope (LTSTS)" by Sirati & Partners, January 5, 2023.
- Grading Change Impact on the Long-Term Stable Top of Slope by Sirati and Partners, Jan 2023.
- Environmental Impact Study (Revised) by Beacon Environmental, December 2023.
- 1,2,3,4 – Loyalist, Carolyn, Sawmill and Mullet Creek Subwatersheds, June 2009.
- Region of Peel and City of Mississauga As-constructed drawings (see Appendix A).

This report has been prepared with consideration of the comments received by commenting agencies on previous submissions which presented a different development concept.

2.0 Proposed Development

Based on the site plan and architectural drawings by SRM Architects (April 2024), the proposed development consists of the following elements:

- Two (2) buildings, referred to as the North and South buildings;
  - North Building (high-rise):
    - Tower A - 18-storeys with 209 units
    - Tower B - 22-storeys with 252 units
    - Podium - 8-storey with 368 units
  - South Building (mid-rise):
    - 12-storeys with 214 units
- Four (4) total levels of underground parking
  - Note: due change in elevation across the site, the underground levels are staggered such that the majority of the underground is only 3-levels deep on average
- Two (2) site access/entrances, from Tannery to the north and Joymar to the west.
- Various outdoor amenity and landscaped areas within the private site bounds.
- A Right-of-Way (ROW) road widening along Thomas Street.
- A significant portion of re-naturalized area adjacent to Mullet Creek which will be dedicated to the City of Mississauga to act as the new floodplain and flood storage area.

The following Table 1 summaries the Pre and Post Development site areas based on the SRM Architectural plans, also refer to the Site Plan figures in Appendix A.

Table 1: Development Areas Summary

Predevelopment Site Area		Predevelopment Site Area	
Developed Site	2.78 ha	Development Site	1.48 ha
		Environmental	1.26 ha
		Road Widening	0.04 ha

2.1 Development Phasing

The development, due to its size, is intended to be phased. The following Table 2 summarizes the phasing strategy as outlined by SRM Architectural, also refer to the Phasing figure in Appendix A.

Table 2: Development Phasing Concept

Phase	Building	Component
1	North	Tower A
1	North	Podium A
2	North	Tower B
2	North	Podium B
2	South	Mid-Rise

2.2 Development Population

The Region of Peel criteria was used for establishing the unit rate of 2.7 persons per unit, as the development will result in a greater density than 475 persons per hectare. The unit counts per phase/building are provided by SRM Architects.

Table 3: Site Population

Phase	Units	Unit Rate	Population
1 – Towe A	209	2.7	564
1 – Podium A	180	2.7	486
2 – Tower B	252	2.7	680
2 – Podium B	188	2.7	508
Total North	**829**	**2.7**	**2238**
2 – Mid-Rise	214	2.7	578
Total South	**214**	**2.7**	**578**
TOTAL SITE	**1043**	**2.7**	**2816**

Based on the above, the total site population is calculated at 2816 persons, equivalent to 1903 persons per hectare based on the 1.48 ha post-development area.

3.0 Water Servicing

3.1 Existing Water Servicing

The Region of Peel is responsible for the operation and maintenance of water infrastructure within the City of Mississauga. As- constructed drawings obtained by the Region of Peel's EPAL database (see Appendix A) were reviewed and identifies the following existing watermain infrastructure:

- 300 mm diameter watermain on all three adjacent ROW's: Joymar Drive, Thomas Street and Tannery Street.
    - o The Tannery Street watermain splits into a 300 mm diameter and a 200 mm diameter, which run parallel to each other.
- Four (4) fire hydrants directly adjacent to the site, all of which are serviced by the 300 mm diameter watermain.

A subsurface Utility Engineering (SUE) Level-B locates investigation was conducted by Telecon (refer to Appendix) which identified the following water service connections to the existing site:

- One (1) (size unknown) water service on Thomas Street to the 2-storey building
- Three (3) 100-200mm dia. water services on Joymar Drive to the large single-storey building
- One (1) 20mm water service on Joymar Drive to the small 1-storey building at the corner of Joymar and Tannery

Through redevelopment of the site, all existing water service connections will be abandoned and decommissioned in accordance with Region of Peel requirements.

3.2 Water Design Demand

The water demand for the proposed site was calculated with reference to the Water Master Plan Design Criteria, Section 2.2 (Region of Peel, 2020) and based on the equivalent population estimate outlined in Table 3.

An average daily demand of 280 L/capita/day for residential developments was used to determine the average daily flow. Peaking factors were applied to the average daily water demand to obtain the total estimated maximum daily demand and peak hourly demand.

A summary of the results is presented in Table 4 , refer to Appendix B for detailed calculations.

Table 4: Estimated Domestic Water Demand

Method	Proposed Building	Average Day (L/s)	Maximum Daily Demand (L/s)	Peak Hourly Demand (L/s)
Region of Peel	North	7.25	14.51	21.76
	South	1.87	3.75	5.62
	Site Total	**9.13**	**18.25**	**27.38**

3.3 Fire Flow Demand

The Fire Underwriters Survey 2020 method was used to estimate the required fire flow demand for the proposed site and each building individually. The results are as follows:

North Building = 100 L/s (1,584 USGPM); duration of 1.75 hours

South Building = 50 L/s (792 USGPM); duration of 1.25 hours

As the North Building represents the significantly larger building in both area and height, its fire flow demand will govern as the site total. Refer to Appendix B for detailed calculations. The required fire flow for the site is to be confirmed during the detailed design stage in coordination with the Mechanical Engineer and Architect.

A hydrant flow test was completed in July 2023 by Hydrant Testing Ontario, refer to Appendix B for full details. The test results identified that the 300mm watermain network adjacent to the site can deliver a flow rate of 279-284 L/s at a residual pressure of 20 psi. The tests therefore confirm the existing adjacent watermains are sufficient to provide fire flows to the subject development.

3.4 Proposed Water Servicing

The site is proposed to be serviced by several domestic and fire connections which are based on the composition of the two-buildings. The following is a summary of the proposed water servicing strategy:

<u>North Building</u>

- 1 Domestic connection from Joymar Drive (100-150mm)
    - At detailed design it will be determined if only a single domestic connection will be provided and metered (then split within the building) or if multiple domestic connections will be required and each metered individually.

- 1 Fire connection from Jomar Drive (200mm)
    - This will be a combined service connection with the Domestic line above.
    - Note: a second fire connection may be provided from Joymar if the Tannery Fire connection cannot be supplied dependent on phasing of the project.

- 1 Fire connection from Tannery Street (200mm)
    - Due to the height of the building, Ontario Building Code requires two separate fire service connections from separate water mains for redundancy

<u>South Building</u>

- 1 Domestic connection from Thomas Street (100-150mm)

- 1 Fire connection from Thomas Street (200mm)
    - This will be a combined service connection with the Domestic line above.

All water services will include property line valves and immediately enter the building foundation structure into a mechanical room. Domestic lines will be internally metered with backflow preventors. Fire lines will contain Double Check Valve Assemblies all per Region of Peel Criteria. Refer to the proposed Servicing Plan drawing (C702) for preliminary water servicing design and connection locations.

4.0 Sanitary Servicing

4.1 Existing Sanitary Servicing

The Region of Peel is responsible for the operation and maintenance of sanitary infrastructure within the City of Mississauga. As- constructed drawings obtained by the Region of Peel's EPAL database (see Appendix A) were reviewed and identifies the following existing sanitary infrastructure:

- 600 mm diameter sanitary sewer on Joymar Drive
- 300 mm and 600 mm diameter sanitary sewers on Thomas Street
- 200 mm and 375 mm diameter sanitary sewers on Tannery Street
- 375 mm diameter sanitary trunk sewer within an easement adjacent to Mullet Creek within the eastern portion of the site. This sanitary trunk sewer is subject to an easement outlined on the legal plan (see Appendix A)

A subsurface Utility Engineering (SUE) Level-B locates investigation was conducted by Telecon (refer to Appendix) which identified the following sanitary service connections to the existing site:

- One (1) (size unknown) sanitary service on Thomas Street to the large single-storey building
- Two (2) (size unknown) sanitary services on Joymar Drive, likely servicing the small 1-storey building at the corner of Joymar and Tannery and the medium sized 1-storey building at the central rear of the site.
- It also appears there is a service connection from the 2-storey building on Thomas Street directly to the sanitary trunk sewer within the easement.

Through redevelopment of the site, existing sanitary service connections will be abandoned and decommissioned in accordance with Region of Peel requirements.

4.2 Sanitary Design Flows

The sanitary demand for the proposed site was calculated with reference to the of Peel 2020 Wastewater Master Plan and Standard Drawing 2-9-2 and based on the equivalent population estimate outlined in Table 3. An average daily demand of 280 L/capita/day for residential developments was used to determine the average daily flow. A summary of the results is presented in Table 5, refer to Appendix C for detailed calculations.

Table 5: Estimated Sanitary Design Flows

Method	Proposed Building	Average Daily Flow Including Peaking (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)
Region of Peel	North	26.65	0.27	26.92
	South	7.64	0.12	7.76
	Site Total	**32.76**	**0.39**	**33.14**

4.3 Proposed Sanitary Servicing

The site is proposed to be serviced by a minimum of two (2) sanitary service connections which, one supplied to each of the North and South Buildings. The following is a summary of the proposed servicing strategy:

North Building

- 1-250mm @1.2% sanitary connection to 600mm sewer in Joymar Drive
  - Max capacity = 68 L/s, peak rate =27 L/s, therefore 40% full
  - Note: it is proposed to re-use the existing 250mm @ 1.2% sanitary service from Existing MH5 to EX SAN MH.

South Building

- 1-200mm @2.0% sanitary connection to 600mm sewer in Thomas Street
  - Max capacity = 48 L/s, peak rate =8 L/s, therefore 17% full

All sanitary flows will be collected internally by mechanical plumbing and conveyed to the respective service connection location. Refer to the proposed Servicing Plan drawing (C702) for preliminary water servicing design and connection locations.

5.0 Stormwater Drainage Conditions

5.1 Existing Storm Infrastructure

The City of Mississauga responsible for the operation and maintenance of storm infrastructure within the City of Mississauga. As-constructed drawings and record information obtained from the City (see Appendix A) were reviewed and identifies the following existing storm infrastructure:

- 1325x2075 mm box storm sewer on Thomas Street, which drains eastward and outlets at the Mullet Creek.
- 600-675 mm diameter storm sewers on Joymar Drive, which drains southward and connects to the box sewer in Thomas Street.
- 1650 mm dia. storm sewer in Tannery Street, which drains eastward and outlets at the Mullet Creek.

A subsurface Utility Engineering (SUE) Level-B locates investigation was conducted by Telecon (refer to Appendix) which identified the following storm service connections to the existing site:

- Two (2) 300mm dia. storm services on Thomas Street, which connect to an existing curbside catchbasin which connects to the 1325x2075 mm box sewer
- A series of several on-site private catchbasins all of which convey flow in an undetermined direction(s), however it is likely there are other connections to Tannery and Joymar which were not identified.

5.2 Existing Drainage Conditions

Based on the topographic survey completed by David B. Searles Surveying Ltd. (August 2017), the site is split into two predevelopment catchment areas which is illustrated on the Pre-Development Drainage Plan (C704):

- Catchment 101 (A = 0.60 ha; C = 0.90; C*=0.50) comprises the eastern portion of the site including the top of slope and side bank of Mullet Creek, some asphalt and gravel areas. All flows are conveyed overland directly to the Mullet Creek.
- Catchment 102 (A = 2.18 ha; C = 0.90; C*=0.50) comprises the western portion of the site including drainage from the existing buildings, associated paved parking and storage areas. Minor system stormwater is collected through a series of catchbasins which conveys runoff to Joymar Drive and Thomas Street sewers. Major system stormwater is conveyed overland to the Thomas Street right-of-way and then to Mullet Creek.

The actual pre-development runoff coefficient (C) is 0.90 as the site is nearly entirely impervious. However, per the City of Mississauga Development Requirements, a maximum pre-development runoff coefficient (C*) of 0.50 is to be used for any development regardless of actual predevelopment conditions.

5.3 Proposed Drainage Conditions

The proposed development will effectively divide the site into two catchments, being i) the environmental land dedication for floodplain, and ii) the private developed site. The environmental area will consist entirely of pervious landscaped surface which will drain uncontrolled directly to the Mullet Creek. The private site area will comprise of building roofs and at-grade asphalt and landscaped surfaces which will all be directed to municipal storm sewers in the adjacent ROW's.

Refer to the Post-Development Drainage Plan (C705), a summary of the detailed site catchments is as follows:

- Catchment 201 (A = 0.98 ha; C = 0.20) is the environmental floodplain area which will be re-naturalized through a combination of best management practices and landscaping. All stormwater from this catchment is conveyed overland directly to Mullet Creek.

- Catchment 202 (A = ha; C = 0.70) is the North and South building roof area. Flows will be collected by the building mechanical plumbing and conveyed to the Site SWM facility prior to discharge to either Joymar or Thomas via storm service connection.

- Catchment 203 (A = ha; C = 0.80) is the Site at-grade driveway areas. Flows will be collected by the building mechanical plumbing and conveyed to the Site SWM facility prior to discharge to either Joymar or Thomas via storm service connection.

- Catchment 204 (A = ha; C = 0.30) is the Site at-grade landscaped area between 201 and 203. Flows will be collected by the building mechanical plumbing and conveyed to the Site SWM facility prior to discharge to either Joymar or Thomas via storm service connection.

- Catchment 205 (A = ha; C = 0.50) is the frontage along Joymar and Thomas which is not able to be captured and will drain uncontrolled to the adjacent ROW's.

The development only portion of the site (202-205) results in an overall runoff coefficient C = 0.64, based on total catchment area of 1.75 ha. The total site area, including the floodplain area (201-205) results in an overall runoff coefficient C = 0.48, based on the total area of 2.78 ha. Refer to detailed calculations in Appendix B.

Also refer to the Site Servicing and Site Grading Plans (C702 and C703,) that illustrate the proposed storm servicing & SWM facility locations and preliminary grading design.

5.4 Proposed Storm Servicing

The site is proposed to be serviced with two (2) storm connections, one for each the North and South buildings. This takes into consideration the construction phasing of the development as well as future ownership. The proposed storm services are as follows:

<u>North Building</u>

- 450mm storm service @ 2.0%, connecting to the existing 600mm storm in Joymar Drive

<u>South Building</u>

- 300mm storm service @ 1.5%, connecting to the existing 1325x2075mm box storm sewer in Thomas Street

See Site Servicing drawing C702 for preliminary design details. Refer to Section 6.0 for stormwater management details including orifice sizing, quantity controls, and tank volumes.

5.5 Pre and Post Flow Comparison

Based on the catchments defined above in both the pre and post-developed condition, the following Tables outline the peak stormwater flows by outlet and by Site total. It should be noted that the predevelopment flows calculated below are based on the C* runoff coefficient of 0.50, not the actual predevelopment C of 0.90.

Table 6: Peak Flows to Mullet Creek

Storm Event	Predev Area (ha)	Predev Flow (m^3/s)	Postdev Area (ha)	Postdev Flow (m^3/s)	Difference (m^3/s)
2	0.60	0.050	1.03	0.035	-0.016
10		0.083		0.057	-0.026
100		0.148		0.101	-0.046

Note: for additional storm event (5, 25, 50 year) calculations refer to Appendix D.

Based on the results Table 6 , the site will result in an overall decrease of overland uncontrolled flow directly to the Mullet Creek.

Table 7: Peak Flows to Municipal Storm Sewers (Joymar & Thomas)

Storm Event	Predev Area (ha)	Predev Flow (m^3/s)	Postdev Area (ha)	Postdev Flow (m^3/s)	Difference (m^3/s)
2	2.18	0.183	1.75	0.071	0.004
10		0.303		0.117	0.006
100		0.537		0.207	0.011

Note: for additional storm event (5, 25, 50 year) calculations refer to Appendix D.

Based on the results in Table 7 and Table 8, the site will result in a slight increase in flows to the Joymar and Thomas storm sewers. Therefore, quantity controls will be implemented to reduce the post-development rates to the predevelopment levels at every storm event. Refer to Section 6.0 for discussion on site stormwater management.

Table 8: Total Site Peak Storm Flows

Storm Event	Predev Area (ha)	Predev Flow (m^3/s)	Postdev Area (ha)	Postdev Flow (m^3/s)	Difference (m^3/s)
2	2.78	0.233	2.78	0.221	-0.012
10		0.386		0.366	-0.020
100		0.684		0.649	-0.035

Note: for additional storm event (5, 25, 50 year) calculations refer to Appendix D.

Based on the results in Table 8, through development of the site an overall reduction in total stormwater peak flows will be achieved. This is due to the overall decrease in C value from 0.50 to 0.48 from pre- to post-development.

6.0 Stormwater Management

Stormwater management design criteria were established using the City of Mississauga standards, Credit Valley Conservation guidelines and considering comments from all Agencies. The site-specific stormwater management criteria include:

<u>Water Quantity Control</u>

Provide control for the private storm system to control the post-development peak flow to pre-development peak flow for storm events up to and including the regional storm event (per First Submission Comments dated December 23, 2019). The maximum pre-development runoff coefficient to be used for the redeveloped site cannot exceed 0.50. The City of Mississauga stormwater design requirements dictate that storm sewers must be sized to convey at least the 10-year storm event.

<u>Water Quality Control</u>

Private stormwater discharging from the site must achieve Ontario Ministry of the Environment, Conservation and Parks (MECP) Enhanced Level of protection (80% total suspended solids (TSS) removal) for water quality control prior to discharging to the City's storm sewer network.

<u>Water Balance</u>

Retention of the first 5 mm of rainfall for private development areas is required by the City of Mississauga Development Requirements Manual (November 2020) by way of infiltration, reuse, or evapotranspiration to achieve the water balance criteria. Filtration may be considered if options are not feasible.

6.1 Stormwater Quantity Control

The site is required to provide post-development quantity control to the pre-development peak flows for all design storms (2-year to 100-year) up to an including the Regional storm event discharging to the existing Joymar Drive and Thomas Street storm sewers. As identified in Section 5.5, no stormwater quantity control is required for the environmental floodplain area (catchment 201), therefore, quantity controls will only be implemented within the private site (catchments 202-205) to restrict discharge to predevelopment rates.

The North building subcatchment represents approximately 82% of the total developable site area, whereas the South building subcatchment is the remaining 18%. The stormwater management is designed in such a way that quantity controls will only be implemented on the North building, and thus no quantity controls will be implemented on the South building. The total peak flow from both of these Building connections (North controlled and South uncontrolled) will meet the predevelopment allowable rate at every storm event. The quantity controls for the North building will also be sufficiently restricted to account for the uncontrolled frontage portion of the site (catchment 205) adjacent to Joymar and Thomas.

The North building storm flows will be restricted using a 375mm orifice tube and providing a SWM tank with a volume of approximately 20m^3. Based on a max head of 0.9m, this will reduce the total peak flows at the 100-year storm to 401 L/s (=0.401 m^3/s).

The results of implementing this restriction and storage volume on the North building peak flows are summarized in Table 9 and the uncontrolled South building flows are summarized in Table 10.

Table 9: North Building Storm Control - Discharge to Joymar Drive

Storm Event	Subcatchment Area (ha)	Target Flow Rate (m^3/s)	Uncontrolled Flow Rate (m^3/s)	Controlled Flow Rate (m^3/s)	Storage Vol. Required (m^3)
2	1.435	0.150	0.153	0.150	3.3
10		0.248	0.254	0.248	5.5
100		0.440	0.440	0.440	9.4

Table 10: South Building Storm Control - Discharge to Thomas Street

Storm Event	Subcatchment Area (ha)	Target Flow Rate (m^3/s)	Uncontrolled Flow Rate (m^3/s)	Controlled Flow Rate (m^3/s)	Storage Vol. Required (m^3)
2	0.315	0.033	0.033	-	0.0
10		0.054	0.054	-	0.0
100		0.097	0.097	-	0.0

The sum of both stormwater outlets meets the predevelopment allowable rate (based on C*=0.50) for discharge to the municipal sewers. The results are summarized in Table 10.

Table 11: Total Development Site Discharge to Municipal Sewers

Storm Event	Site Area (ha)	Pre-dev Allowable Flow Rate (m^3/s)	Uncontrolled Flow Rate (m^3/s)	Controlled Flow Rate (m^3/s)	Storage Vol. Required (m^3)
2	1.75	0.183	0.186	0.183	3.3
10		0.303	0.308	0.303	5.5
100		0.537	0.537	0.537	9.4

Refer to Appendix D for detailed calculations and to Servicing Plan C702 for preliminary storm servicing and stormwater management details. At the detailed design stage (ie: Site Plan application) additional stormwater management details will be provided.

Regional Design Storm Event (Hurricane Hazel)

The Regional storm event (Hurricane Hazel) was modelled for this site using Visual OTTHYMO. A minimum time of concentration of 15 min was used and runoff coefficient adjustments per City of Mississauga standards were applied.

Results show a peak flow of 0.321 m^3/s under pre-development conditions for Catchment 102 and 0.255 m^3/s under post-development conditions for Catchments 202-205 combined. Refer to Table 12 for the Visual OTTHYMO results and Appendix D for Visual Otthymo model output.

Table 12: Regional Event Peak Storm Flows to Municipal ROWs

	Pre-Development (102)	Post-Development (202-205)	Difference
Area (ha)	2.18	1.75	-0.43
Runoff C	0.90	0.78	-0.12
% Impervious	99%	83%	-16%
Peak Flow (m^3/s)	0.321	0.255	-0.066

Based on the results, the post-development conditions will reduce the overall runoff from the site directed to the Joymar and Thomas Street right-of-way by approximately 66 L/s at the Regional storm event, therefore no further quantity controls or restrictions are required.

Emergency flows throughout the developed site area will be safely conveyed to Joymar Drive, Thomas Street and to the Mullet Creek.

6.2 Stormwater Quality Controls

Water quality objectives are proposed for the development area only (Catchment 202-205) which can be met with a treatment train approach. As both rooftop and landscaped areas inherently meet the TSS removal criteria for water quality, only stormwater from at-grade asphalt/driveway areas are required to be treated prior to discharge from the site.

Runoff collected from all at-grade asphalt sources will be received by area drains and conveyed to the respective North or South building SWM facility by mechanical plumbing. It is proposed that each SWM facility contains a media filtration unit (such as a Jellyfish) within the underground foundation structure. Flows will enter this quality treatment unit prior to discharging to a quantity control tank or discharging from the site via service connection. Detailed design information on the specific media filtration units will be provided at detailed design.

After being treated, all collected stormwater runoff is directed to a cistern/storage tank for water balance and/or quantity control. Within each tank, a depth of 0.15m is reserved to promote settling, further improving water quality. The CVC/TRCA guidelines on Low Impact Development Stormwater Management Planning & Design Guide (Version 1.0, 2010) states that underground cisterns are known to significantly reduce pollutant load by capturing the runoff volume from small to medium rainfall events. The preliminary underground SWM facilities are shown on the Site Servicing Plan (Figure C702).

There is also a landscaped portion (catchment 204) that is conveyed by an at-grade drainage swale along the east limit of the development. This runoff is effectively clean as it is from at-grade landscape area only. The length of swale however does promote further TSS removal from an already 80% area.

The above system represents a treatment train approach to achieve the water quality control requirement of 80% total suspended (TSS) removal (Stormwater Management Planning and Design Manual, MOE 2003). Further details and supporting material will be provided detailed design/Site Plan Application stage.

6.3 Water Balance

The water balance objective for the site is to retain the first 5 mm of rainfall over the site by way of infiltration, evapotranspiration, or re-use. As the environmental floodplain area (catchment 201) is entire naturalized, it will inherently achieve the water balance requirement. Therefore, the 5mm criteria is applied to the developed portion of the site only (catchments 202-205).

The following Table 13 summarizes the water balance calculations and deficit depth and volume to be captured.

Table 13: Water Balance Requirements

Catchment	C	5mm Target Volume (m^3)	Initial Abstraction (mm)	Water Balance Deficit (mm)	Water Balance Deficit (m^3)
201	0.20	51.5	5.0	0.0	0
202-205	0.64	87.5	2.5	2.5	44.0
Total	**0.48**	**139.0**	**3.4**	**1.6**	**44.0**

Per the results above, a total of $44m^3$ will be captured and harvested for re-use through the site. The primary means of re-use will be through irrigation of on-site landscaping. Further options will be explored and details will be provided at the Site Plan application stage.

The $44m^3$ volume will be split between the North and South building SWM facilities based on the 82/18% area designation. Therefore the North building volume equates to $36m^3$ and the South building volume equates to $8m^3$. This water balance volume will be provided via dead storage in the underground tanks for each building. Only runoff from building rooftops is intended to be harvested for re-use.

6.4 Sustainable Stormwater Management

Low Impact Development (LID) techniques will be incorporated into the grading and drainage design of the site in the form of an underground storage tank, grassed swales, and pervious stable surfaces. These techniques have been specified with reference to the CVC/TRCA guidelines on *Low Impact Development Stormwater Management Planning & Design Guide* (Version 1.0, 2010) as described below.

Building SWM Facilities

Below-grade stormwater tanks are proposed to satisfy water quantity and water balance criteria, while also providing particle settling for additional quality control. The stormwater tank is designed to treat and capture the runoff volume from 2-year to 100-year rainfall events where treated stormwater is intended for re-use through irrigation.

Table 14: Stormwater Control Criteria Summary

Control Objective	Water Quantity	Water Quality	Water Balance
Requirement	Post- to pre-development flow control for 2 to 100-year design storms	80% total suspended solids (TSS) removal	5 mm on-site retention
Requirement	10 m^3	Jellyfish Pretreatment + Tank Settling	44 m^3

The process of intercepting rainfall and storing it for future use is largely aligned with the practice of rainwater harvesting per CVC/TRCA LID guidelines where a runoff reduction estimate of 40% can be anticipated. In terms of water quality improvements, TSS and nutrient removal will be proportional to the runoff volume that is captured by the tank as captured runoff will not be conveyed to downstream receivers.

Dry Swale and Re-Naturalization

A dry swale (without underdrain) is proposed along the top of bank in Catchment 204 that will convey runoff over grassed surfaces towards a proposed catchbasin on the south side of the site. This will provide some natural infiltration over Catchment 204 and water quality and erosion control benefits.

Areas proposed to be re-naturalized with shallow slopes can be used to slow down runoff and filter out sediment and other pollutants. This area will be landscaped with a variety of trees, shrubs, and native vegetation to add aesthetic value, water quality, and water balance benefits.

Implementation of the above-described LID techniques are sustainable means for providing stormwater quality treatment and water balance objectives. Further details will be provided at the detailed design stage.

6.5 External Storm Sewer Capacity Analysis

An external storm sewer capacity analysis was complete to determine the capacity of the 1325mm x 2075mm storm sewer on Thomas Street under pre-development and post-development conditions. The external storm sewer capacity analysis was completed by referencing the *80 Thomas Street Residential Development External Storm Sewer Analysis* prepared by Crozier (May 29, 2019) which was approved by the City and the development is currently under construction.

<u>Methodology</u>

There is an existing 675 mm storm sewer flowing south along Joymar Drive west of the Site. The storm sewer on Joymar Drive discharges to the 1325mm x 2075mm storm sewer along Thomas Street, which flows east. The Thomas Street storm sewer discharges into Mullet Creek, approximately 90 m from the Joymar Drive intersection. Flows from the site are directed to the 1325mm x 2075mm Thomas Street storm sewer in both pre-development and post-development conditions. The existing storm sewer network surrounding the Site is illustrated on the 66 Thomas Street External Storm Sewer Capacity Analysis Sketch which can be referenced in Appendix D.

Drainage areas were delineated based on existing topographic information, as constructed drawings of the surrounding road networks and development areas as well as from field reconnaissance. Runoff coefficients were derived from the City of Mississauga Transportation and Works Department, Development Requirements Manual, dated November 2020. The drainage areas are illustrated on the attached sketch. A list and brief description of the drainage areas is included in Table 15.

Table 15: External Drainage Area Summary

Drainage ID	Ex. Drainage Area (ha)	Pr. Drainage Area (ha)	Runoff Coefficient		Discharge Location	Notes and Assumptions
			Existing	Proposed		
A1 80 Thomas Street	2.51	2.51	0.65	0.65	MH3	The runoff coefficient for 80 Thomas Street is 0.65. The existing conditions runoff coefficient is based on measured imperviousness.
A2 86 Joymar Drive	1.97	1.97	0.65	0.65	MH6	Although a small portion of the property drains south, as a conservative approach, the capacity analysis assumes the entire property drains to the Joymar Drive storm sewer network.
A3* 66 Thomas Street	2.60	1.60	0.90	0.90	MH2	Existing conditions show the entire site draining to the storm sewer on Thomas Drive. Under proposed conditions 1.0ha of the site will drain east directly to Mullet Creek.
A4	0.66	0.66	0.55	0.55	T2	

A5	0.31	0.31	0.55	0.55	MH2	The capacity analysis assumes that the entirety of all lots fronting Thomas Street discharge directly to catchbasins along the right of way (ROW). In reality, it is likely that some of the backyards of these lots drain south. The areas of the lots were obtained from the City of Mississauga Mapping Site.
A6	0.28	0.28	0.90	0.90	T2	Areas draining from the ROW are defined by an average ROW width of 21 m and as constructed drawings.
A7	0.19	0.19	0.90	0.90	MH2	
A8	0.17	0.17	0.90	0.90	MH3	
A9	0.16	0.16	0.90	0.90	MH4	
A10	0.16	0.16	0.90	0.90	MH5	
A11	0.02	0.02	0.90	0.90	MH6	
A12	92.37	92.37	0.31	0.31	MH1	Flows upstream of MH1 were taken from the storm sewer design sheet prepared for Gafeny and Thomas Singles by Trafalgar Engineering, dated 2004.

*Catchment A3 (66 Thomas Street) is the only catchment that has been updated since the *80 Thomas Street Residential Development External Storm Sewer Analysis (May 2019)* was submitted for City review and approval.

Storm sewer design sheets were created to determine the capacity of the external storm sewers downstream of the 66 Thomas Street development in existing and proposed conditions. The design sheets were created based on the drainage areas and pipe information illustrated on the attached sketch and Table 8 above, for the 10-Year Design Storm IDF Parameters. The design storm parameters were obtained from the City of Mississauga Transportation and Works Department, Development Requirements Manual, dated November 2020. Per the City guidelines, an initial Time of Concentration of 15 minutes was used. The internal storm sewers within the 86 Joymar Drive property were also included in the design sheets to ensure an accurate Time of Concentration was used for the system.

A storm sewer design sheet for Gafney and Thomas Singles was completed by Trafalgar Engineering, dated 2004 for the entire area draining to the Thomas Street storm sewer, upstream of Manhole T2. Through discussions with City Staff (for the 80 Thomas Street Development), the storm sewer design sheet completed by Trafalgar Engineering could be referenced with this analysis. As such, only the storm sewers downstream of Manhole T2 on Thomas Street, and the storm sewers along Joymar Drive discharging to the Thomas Street storm sewer were included within the storm sewer design sheets of this analysis.

Results and Conclusion

The stormwater quantity controls implemented on-site ensure that peak flows in post-development match those in predevelopment. However, the capacity of the existing sewers in Joymar to receive the North Building flow and Thomas to receive the South building flow are analyzed at the 10-year. The results are summarized in Table 16.

Table 16: Summary of External Storm Design Analysis Results

Street	**Building**	**10-year Flow** (L/s)	**Pipe Size** (mm)	**Pre-dev Available Capacity** (L/s)	**Pre-dev Percent Full** (%)	**Post-dev Percent Full** (%)
Joymar	North	226	600 mm	331	48.5	82.3
Thomas	South	72	1325 x 2075 mm box	279	95.8	96.7

As demonstrated, the capacity of this storm sewer under proposed conditions is sufficient to receive the post-development flow from the subject development at the two proposed service connection discharge points. Refer to Appendix D for the existing and proposed storm sewer design sheets and the external drainage catchment plan associated with this analysis.

7.0 Floodproofing

The proposed site is located within the floodplain of Mullet Creek as discussed in the Floodplain Analysis Memo (Crozier, March 2024) submitted under separate cover. The memo summarizes current floodplain and natural hazard conditions, on-going historic correspondence with Credit Valley Conservation, and potential opportunities to regularize and re-naturalize the natural hazard area. The natural hazard assessment defines an ultimate constraints limit which outlines the development limit for the site. The existing and proposed Regulatory Floodplains and associated HEC-RAS sections are shown in Figure 1 and Figure 2, respectively. These originate from the Floodplain Analysis Memo prepared by Crozier and have been included with this report for reference.

The memo proposes a cut and fill solution that demonstrates no adverse flooding impacts to any properties upstream or downstream of the site. The proposed approach alters the pre-development conditions to balance flood storage within the floodplain to provide post-to-pre-development levels of flood storage in the Regulatory storm event. This method also moves the proposed development out of the floodplain, consistent with Credit Valley Conservation's policies and vision for the site.

8.0 Groundwater Discharge

As observed through the Geotechnical and Slope Stability Investigations Report (Sirati and Partners, November 23, 2018), groundwater levels throughout the site are within the elevation of the proposed underground foundation and parking structure. As such, it is anticipated that groundwater discharge will be required both during construction and on a long-term permanent basis. All groundwater is proposed to be discharged to the storm sewer in Joymar and/or Thomas Street, both which ultimately outlets to Mullet Creek.

9.0 Erosion and Sediment Controls During Construction

Erosion and sediment controls will be installed prior to the beginning of any construction activities. They will be maintained until the site is stabilized or as directed by the Site Engineer and/or City of Mississauga. Controls will be inspected after each significant rainfall event and maintained in proper working condition. Refer to the Removals Plan Erosion & Sediment Control Plan (Figure C701) for details.

The following erosion and sediment controls will be included during construction on the site:

<u>Robust Silt Fencing</u>

Silt fencing will be installed on the perimeter of the site to intercept sheet flow primarily adjacent to Mullet Creek. Additional silt fence may be added based on field decisions by the Site Engineer and Owner, prior to, during and following construction.

<u>Rock Mud Mat</u>

A rock mud mat will be installed at the entrance to the construction zone to prevent mud tracking from the site onto surrounding lands and the perimeter roadway network. All construction traffic will be restricted to this access only.

<u>Silt Sacks in Catch Basins</u>

Silt sacks will be installed into catch basins on the adjacent streets (Thomas Street, Joymar Drive, and Tannery Street) during construction to prevent obstruction of storm sewers.

<u>Interceptor Swales with Sediment Traps and Check Dams</u>

Interceptor swales will be required during site construction to direct and treat runoff prior to discharging to Mullet Creek. Check dams and sediment traps will be proposed throughout the interceptor swales to reduce runoff velocities and settle out sediment.

Further details will be provided at the detailed design stage through coordination with the City and Credit Valley Conservation to protect Mullet Creek during construction.

10.0 Conclusions and Recommendations

Based on the information contained within this report, we offer the following conclusions:

- The North building, at a population of approximately 2,238 persons in the proposed 829 units, the peak hourly water demand is equal to 21.76L/s. A fire flow of 100 L/s for 1.75 hours is required. Water demand for the proposed north building will be met using a 200 mm diameter water service connection to the existing 300 mm municipal watermain within Joymar Drive Road.

- The South building, at a population of approximately 548 persons in the proposed 203 units, the peak hourly water demand is equal to 5.62L/s. A fire flow of 50 L/s for 1.25 hours is required. Water demand for the proposed site will be met using 200 mm diameter water service connections to the existing 300 mm municipal watermain along Thomas Street.

- The North building sanitary design flow rate of 26.92 L/s was calculated for the site based on a population of approximately 2,238 persons in the proposed 829 units. Sanitary flow for the proposed site will be met using the proposed 250 mm diameter PVC sanitary sewer service connecting to the existing 600 mm diameter sanitary sewer along Joymar Drive.

- The South sanitary design flow rate of 7.76 L/s was calculated for the site based on a population of approximately 578 persons in the proposed 214 units. Sanitary flow for the proposed site will be met using the proposed 250 mm diameter PVC sanitary sewer service connecting to the existing 600 mm diameter sanitary sewer along Thomas Street.

- Stormwater runoff from the re-naturalized area (Catchment 201) is proposed to drain to Mullet Creek uncontrolled. Stormwater up to the 100-year event from the proposed development (Catchment 202) will be collected by area drains and conveyed through the internal storm network, where it will be treated for quality and stored in a stormwater tank for re-use and/or discharge from the site.

- The stormwater drainage outlet for the developed portion of the site will be through two service connections, one to Joymar Srive and one to Thomas Street, for the North and South buildings respectively. SWM facilities will be provided within the underground structure upstream of each outlet.

- The North building requires 10 m^3 in quantity control volume, which will be provided in an underground stormwater tank to control the post development flows to pre-development flows. Flows will be restricted by a 375mm orifice tube.

- Enhanced Protection of water quality is achieved using a treatment train approach through a proposed media filter and underground stormwater storage.

- The required water balance storage for the site is 44m^3 and will be achieved by re-use through irrigation after runoff is harvested by the SWM facilities. Stored water will be pumped for irrigation during the summer months.

- Per the Floodplain Analysis Memo (Crozier, March 2024), the proposed floodplain limits have been modified from existing conditions to balance earthworks and storage volumes within the floodplain and regularize the flood constraints on the site. The analysis provides post- to pre-development levels of flood storage in the Regulatory event, while allowing for a regularized development limit. The proposed development is located outside of the proposed Regulatory Floodplain associated with Mullet Creek.

Based on the above conclusions, we recommend the approval of the Zoning By-law Amendment and Official Plan Amendment from the perspective of functional servicing and stormwater management.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.

Robert Babic, P.Eng.
Project Manager

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APPENDIX A

Background Information

Water & Wastewater Modelling Demand Table

Notes & References

Site Plan 24025 prepared by SRM Architects Inc

POPULATION

Proposed Residential	Units	Persons
Total Proposed Residential	1043	2816
Proposed Institutional Population		0
Proposed Employment Population		0
Total	1043	2816

Proposed GFA (commercial/retail) (sqm)	0

WATER CONNECTION

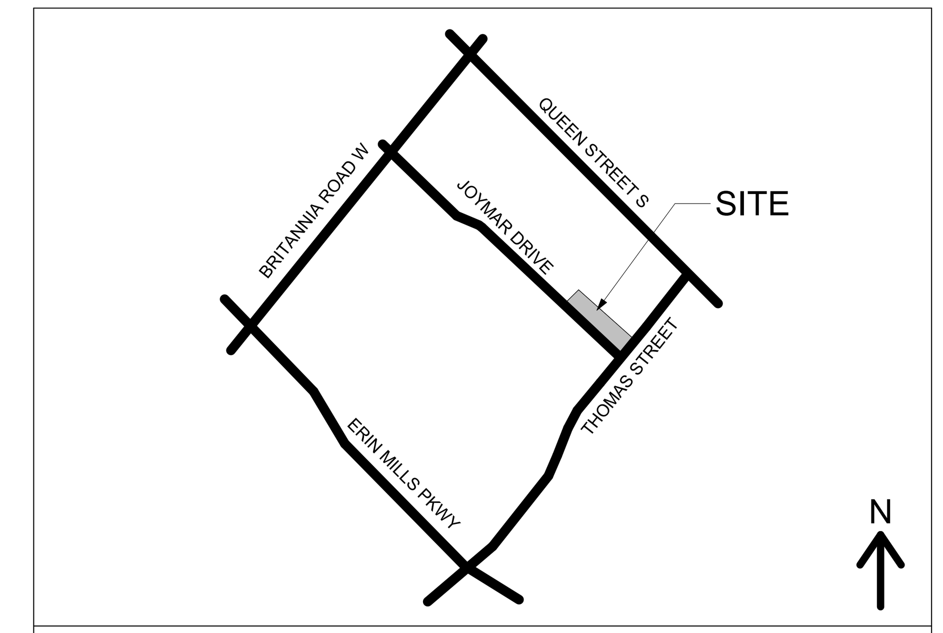
Hydrant Flow Test	Locations
Test 1	Private Hyd - Joymar Dr
Test 2	Opp 92 Joymar Drive

Test		Pressure (psi)	Flow (l/s)
1	Minimum Water Pressure	70	712
	Maximum Water Pressure	70	805
	Predicted Water Pressure	20	279
2	Minimum Water Pressure	65	856
	Maximum Water Pressure	70	1113
	Predicted Water Pressure	20	284

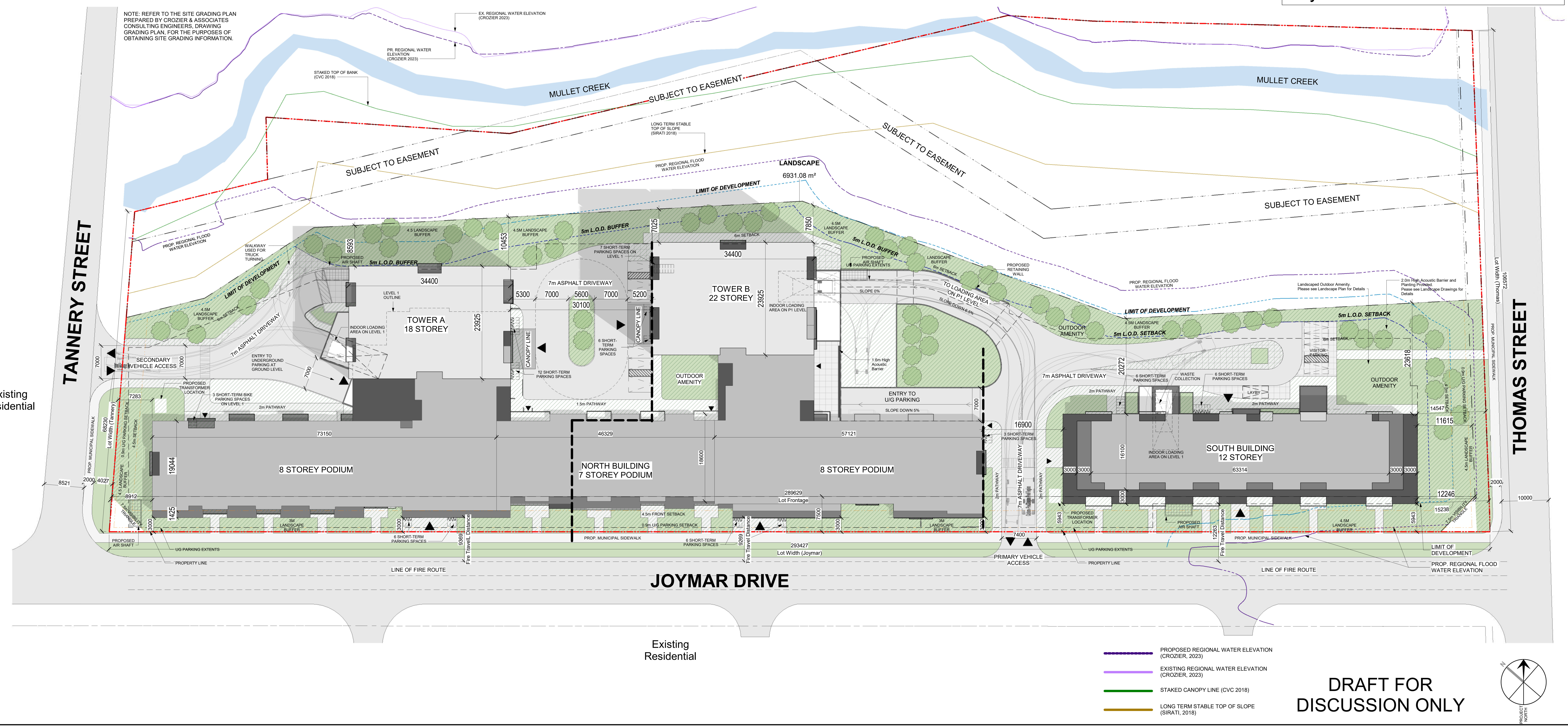
NO.	Water Demands			
	Demand Type	Demand (l/s)		
		North Bldg	South Bldg	Site Total
1	Average Day Demand	7.25	1.87	9.13
2	Maximum Day Demand	14.51	3.75	18.25
3	Peak Hour Demand	21.76	5.62	27.38
4	Fire Flow	100.00	50.00	
Analysis				
5	Maximum Day Plus Fire Flow	114.51	53.75	

WASTEWATER CONNECTION

		North Bldg	South Bldg	Site Total
6	Discharge Location	Joymar Dr.	Thomas St.	
7	Total Peak Flow (l/s)	26.92	7.76	33.14



Key Plan



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SITE PLAN

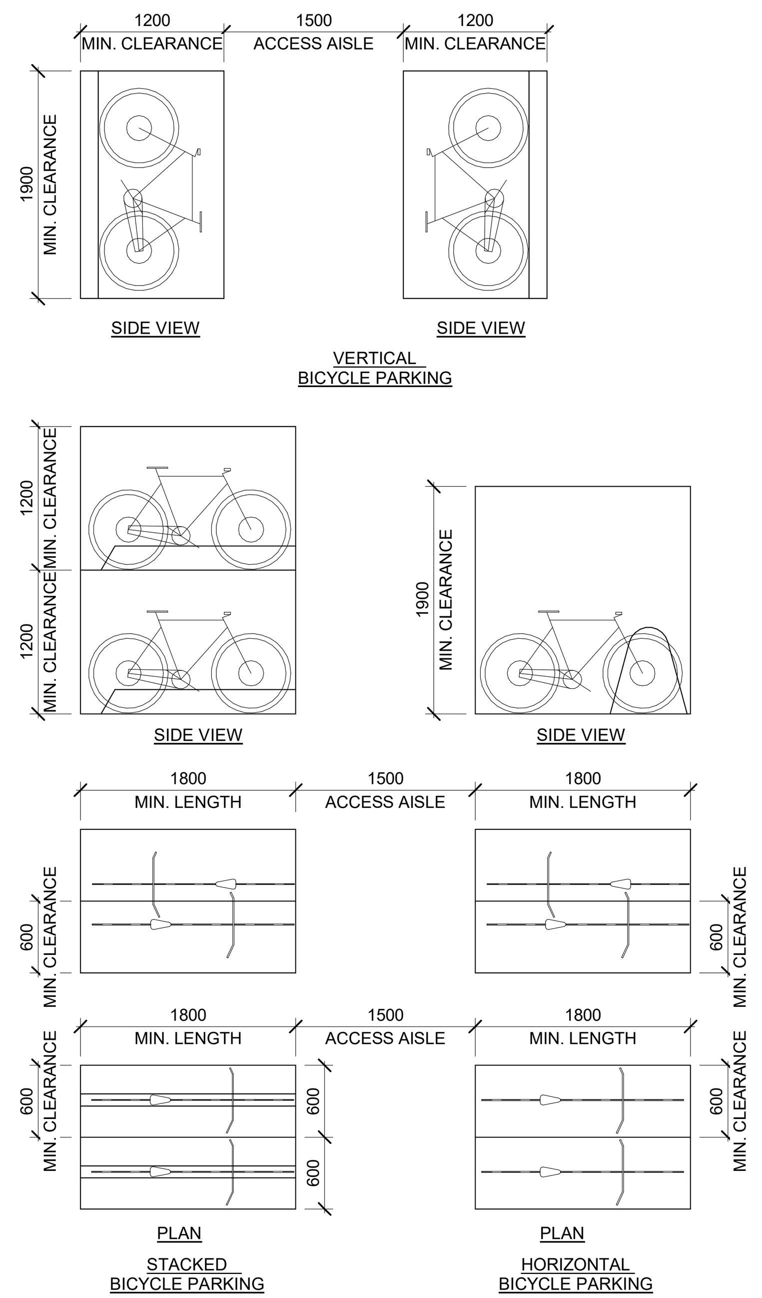
D1.1

JOYMAR DRIVE & TANNERY ST, MISSISSAUGA

0 4 8 20

Scale 1 : 400 FULL SIZE
Scale 1 : 800 HALF SIZE

2024-12-18

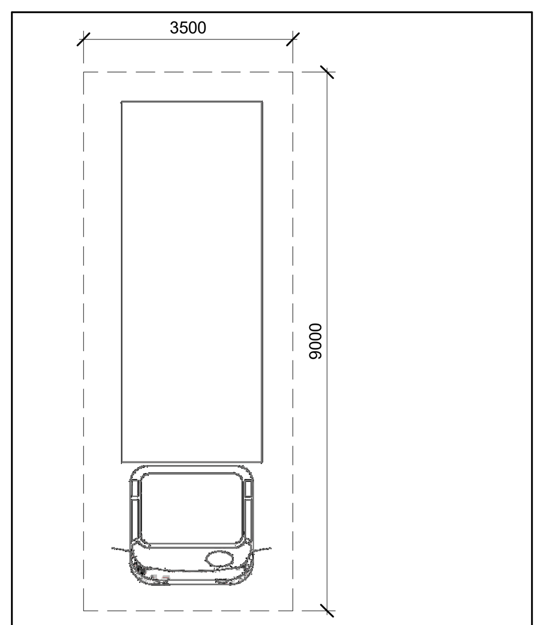


SECTION 3.1.6.3 BICYCLE PARKING SPACE DIMENSIONS

MIN LENGTH - 1.8m
MIN WIDTH - 0.6m
MIN VERTICAL CLEARANCE - 1.9m

VERTICAL POSITION DIMENSIONS
MIN HORIZONTAL CLEARANCE FROM THE WALL - 1.2m
MIN WIDTH - 0.6m
MIN LENGTH / VERTICAL CLEARANCE - 1.9m

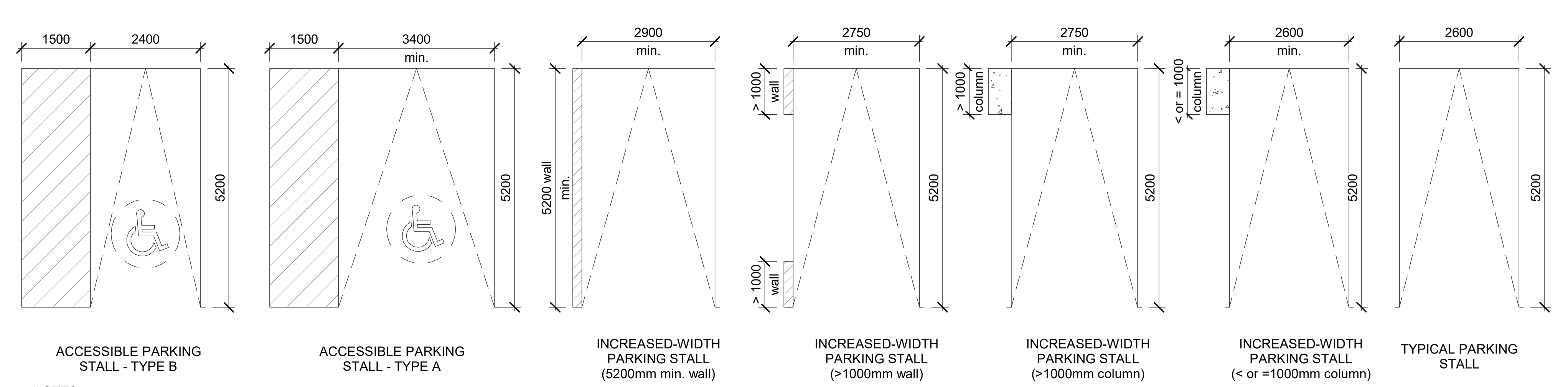
3 **BICYCLE PARKING SPACE DIMENSIONS**
1 : 50



SECTION 3.1.4.4 LOADING SPACE DIMENSIONS

EACH LOADING SPACE SHALL HAVE AN UNOBSTRUCTED RECTANGULAR AREA WITH A MINIMUM WIDTH OF 3.5m
LENGTH OF 9.0m

1 **LOADING DOCK DIMENSIONS**
1 : 100



NOTES:
SECTION 3.1.1.4 PARKING SPACE DIMENSIONS

2 **PARKING STALL DIMENSIONS**
1 : 100

LANDSCAPING DATA	REQUIRED	PROPOSED	PROPOSED (%)
TOTAL LANDSCAPED AREA (m2)	40% OF LOT AREA = 11,110.26 m²	6,931.08 m²	25%
TOTAL PAVED AREA (m2)		3,011.96 m²	
LANDSCAPE BUFFERS (m)	4.5m	3-4.5m	

LOADING REQUIREMENTS	REQUIRED	PROPOSED	PROPOSED (%)
RESIDENTIAL	1	3	300%

AUTOMOBILE INFRASTRUCTURE	MINIMUM RATE	REQUIRED		PROPOSED		PROPOSED (%)
NUMBER OF RESIDENTIAL PARKING SPACES	0.80 X UNIT	835 (FOR 1043 UNITS)		835		100%
NUMBER OF BARRIER FREE PARKING SPACES (INCLUDES TOTAL PARKING SPACES)	2.0 SPACES + 2% OF THE TOTAL = 19	TYPE A	TYPE B	TYPE A	TYPE B	
		10	9	XX	XX	XX%
NUMBER OF VISITOR PARKING SPACES	0.15 X UNIT	157		131		83.4%
TOTAL PARKING SPACES		992		966		97.4%

CYCLING INFRASTRUCTURE	MINIMUM RATE	REQUIRED	PROPOSED	
NUMBER OF CLASS A - LONG-TERM BICYCLE PARKING SPACES (RESIDENTIAL)	CLASS A:0.6 SPACES PER UNIT	626	626	100%
NUMBER OF CLASS B - SHORT-TERM BICYCLE PARKING SPACES	CLASS B: THE GEATER OF 0.05 SPACES PER UNIT OR 6 SPACES	53	55	103.8%
TOTAL BICYCLE PARKING SPACES	XX	679	681	100.3 %

SHORT-TERM BICYCLE PARKING	MINIMUM RATE	REQUIRED	PROPOSED	
PHASE 1 (TOWER A)	CLASS B: THE GEATER OF 0.05 SPACES PER UNIT OR 6 SPACES	11	12	109%
PHASE 2A (NORTH BUILDING PODIUM)		9	9	100%
PHASE 2B (NORTH BUILDING PODIUM)		9	9	100%
PHASE 3 (SOUTH BUILDING)		11	12	109%
PHASE 4 (TOWER B)		13	13	100%
TOTAL COUNT		**53**	**55**	**103.8%**

UNITS DATA - ENTIRE DEVELOPMENT					
TYPE	# OF UNITS	AREA		AVERAGE UNIT SIZE(sf)	PERCENTAGE
		sqm.	sqft.		
STUDIO	30	982.93	10580.17	353	3%
1 BED	565	26002.27	279886.1	493	54%
1 BED + D	116	6262.25	67406.30	581	11%
2 BED	214	14662.83	157829.39	738	21%
2 BED + D	66	5309.99	57156.26	866	6%
3 BED	52	4029.79	43376.30	834	5%
	1043	**57250.06**	**616234.52**		

AMENITY AREA REQUIREMENTS	REQUIRED	PROPOSED	PROPOSED (m2/Units)
INDOOR AMENITY AREA (m²)		1116 m²	1.07
OUTDOOR AMENITY AREA (m²)		4082.67 m²	3.91
TOTAL AMENITY AREA (5.6 m² / UNIT) (m²)	5.6*1043 = 5840.8 m²	5198.67 m²	4.98

INDOOR AMENITY AREA (m²)	PROPOSED
LEVEL P1 (Phase 3)	77 m²
LEVEL 1	915 m²
LEVEL 8	124 m²
TOTAL INDOOR AMENITY	1116 m²

OUTDOOR AMENITY AREA (m²)	PROPOSED
LEVEL P1 (Phase 3 at Grade)	610.89 m²
LEVEL 1 (at Grade)	2665.78 m²
LEVEL 8 (ROOFTOP)	806 m²
TOTAL OUTDOOR AMENITY	4082.67 m²

GENERAL SITE DESCRIPTION	
NAME OF PROJECT	JOYMAR DRIVE & TANNERY ST, MISSISSAUGA
MUNICIPAL ADDRESS	95 JOYMAR DR
ZONING BY LAW	RA5
ZONING DESIGNATION	D
OBC BUILDING CLASSIFICATION	C (3.2.2.42)

BUILDING DATA	REQUIRED	PROPOSED	PROPOSED (%)
BUILDING COVERAGE AREA	---	7,230 m² (1.78 a)	---
LOT AREA A (Environmental)	---	10,768m² (1.07ha)	---
LOT AREA B (Development)	---	16,590m² (1.66 ha)	---
LOT AREA C (Road widening, etc)	---	400m² (0.04 ha)	---
TOTAL LOT AREA (A+B+C)	---	27,758 m² (2.78 ha)	---
LOT WIDTH AT JOYMAR DR.	---	293.42 m	---
LOT WIDTH AT TANNERY ST.	---	68.23 m	---
LOT WIDTH AT THOMAS ST.	---	106.57 m	---
DEVELOPABLE LOT FRONTAGE	---	289.63 m	---
DEVELOPABLE LOT DEPTH	---	70.25m (max) | 45.32m (min)	---
DENSITY	---	1043 UNITS	---
FLOOR AREA(EXCLUDING UG PARKING) (m²)	---	72,588.01 m²	---
UNDERGROUND PARKING AREA (m²)	---	42,173.06 m²	---
GROSS FLOOR AREA (DEFINED AS PER ZONING) (m²)	---	65,749.38 m²	---
DENSITY (FSI) GFA/LOT AREA B-DEVELOPMENT	---	3.96	---

Gross Floor Area (GFA) means the sum of the areas of each storey of a building, structure or part thereof, above or below established grade, excluding storage below established grade and a parking structure above or below established grade, measured from the exterior of outside walls, or from the midpoint of common walls.

Lot Area means the total horizontal area within the lot lines of a lot. Where this By-law requires a minimum lot area for a use, such area shall be located within the same zone as the use.

Floor Space Index (FSI) means the ratio of the gross floor area of all buildings and structures to the lot area.

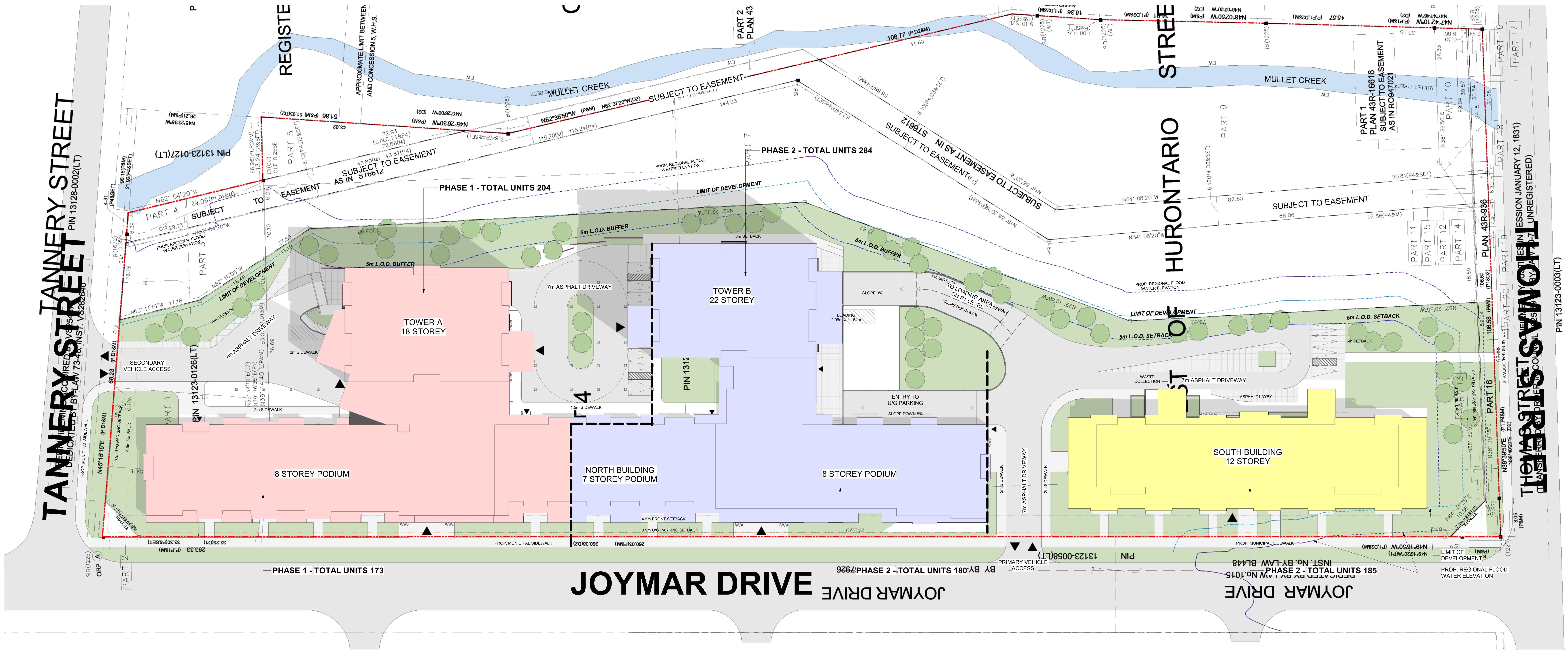
SETBACKS	REQUIRED	PROPOSED	PROPOSED (%)
FRONT YARD (m)	30	4.5	---
INTERIOR SIDE YARD (m)	9	4.5	---
EXTERIOR SIDE YARD (m)	9	4.5	---
REAR YARD (m)	15	6	---

UNITS COUNT AS PER PHASING	REQUIRED	PROPOSED	PROPOSED (%)
PHASE 1 (TOWER A)	---	209	---
PHASE 2A (NORTH BUILDING PODIUM)	---	180	---
PHASE 2B (NORTH BUILDING PODIUM)	---	188	---
PHASE 3 (SOUTH BUILDING)	---	214	---
PHASE 4 (TOWER B)	---	252	---
TOTAL UNITS COUNT	---	**1043**	---

PHASE 1 (TOWER A)	REQUIRED	PROPOSED	PROPOSED (%)
NUMBER OF STOREYS	---	18 STOREYS	---
BUILDING HEIGHT (RESIDENTIAL STOREYS) (m)	---	59.40 m	---
RESIDENTIAL AREA (m2)	---	11,566.78 m²	---
AMENITY AREA (INDOOR) (m2)	---	88.01 m²	---
PHASE 1 (NORTH BUILDING PODIUM)	**REQUIRED**	**PROPOSED**	**PROPOSED (%)**
NUMBER OF STOREYS	---	8 STOREYS	---
BUILDING HEIGHT (RESIDENTIAL STOREYS) (m)	---	27.40 m	---
RESIDENTIAL AREA (m2)	---	9,813.80 m²	---
AMENITY AREA (INDOOR) (m2)	---	266.84 m²	---
PHASE 2 (NORTH BUILDING PODIUM)	**REQUIRED**	**PROPOSED**	**PROPOSED (%)**
NUMBER OF STOREYS	---	8 STOREYS	---
BUILDING HEIGHT (RESIDENTIAL STOREYS) (m)	---	27.40 m	---
RESIDENTIAL AREA (m2)	---	10,694.61 m²	---
AMENITY AREA (INDOOR) (m2)	---	491.97 m²	---
SOUTH BUILDING	**REQUIRED**	**PROPOSED**	**PROPOSED (%)**
NUMBER OF STOREYS	---	12 STOREYS	---
BUILDING HEIGHT (RESIDENTIAL STOREYS) (m)	---	46.70 m	---
RESIDENTIAL AREA (m2)	---	11,350.35 m²	---
AMENITY AREA (INDOOR) (m2)	---	77.37 m²	---
PHASE 2 (TOWER B)	**REQUIRED**	**PROPOSED**	**PROPOSED (%)**
NUMBER OF STOREYS	---	22 STOREYS	---
BUILDING HEIGHT (RESIDENTIAL STOREYS) (m)	---	72.20 m	---
RESIDENTIAL AREA (m2)	---	13,824.53 m²	---
AMENITY AREA (INDOOR) (m2)	---	190.82 m²	---

SITE AND ZONING STATISTICS
1 : 2

DRAFT FOR
DISCUSSION ONLY



PHASE 1

PHASE 2

SOUTH BUILDING

OUTDOOR AMENITY

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BUILDING PHASING

D1.3

JOYMAR DRIVE & TANNERY ST, MISSISSAUGA

0 4 8 20

Scale 1 : 400 FULL SIZE
Scale 1 : 800 HALF SIZE

2024-12-18

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PROJECT NORTH

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PARKING LEVEL P2

D2.3

JOYMAR DRIVE & TANNERY ST, MISSISSAUGA

0 3.5 7 17.5

Scale 1 : 350 FULL SIZE
Scale 1 : 700 HALF SIZE

2024-12-18

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PROJECT NORTH

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PARKING LEVEL P1

D2.4

JOYMAR DRIVE & TANNERY ST, MISSISSAUGA

0 3.5 7 17.5

Scale 1 : 350 FULL SIZE
Scale 1 : 700 HALF SIZE

2024-12-18

NORTH BUILDING - LEVEL 1

SOUTH BUILDING - LEVEL 2

- PHASE 1
- PHASE 2
- SOUTH BUILDING
- OUTDOOR AMENITY

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NORTH BUILDING - LEVEL 1 SOUTH BUILDING - LEVEL 2

D2.5

JOYMAR DRIVE & TANNERY ST, MISSISSAUGA

0 3.5 7 17.5

Scale 1 : 350 FULL SIZE
Scale 1 : 700 HALF SIZE

2024-12-18

PHASE 1

PHASE 2

SOUTH BUILDING

OUTDOOR AMENITY

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DISCUSSION ONLY

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BUILDING SECTIONS

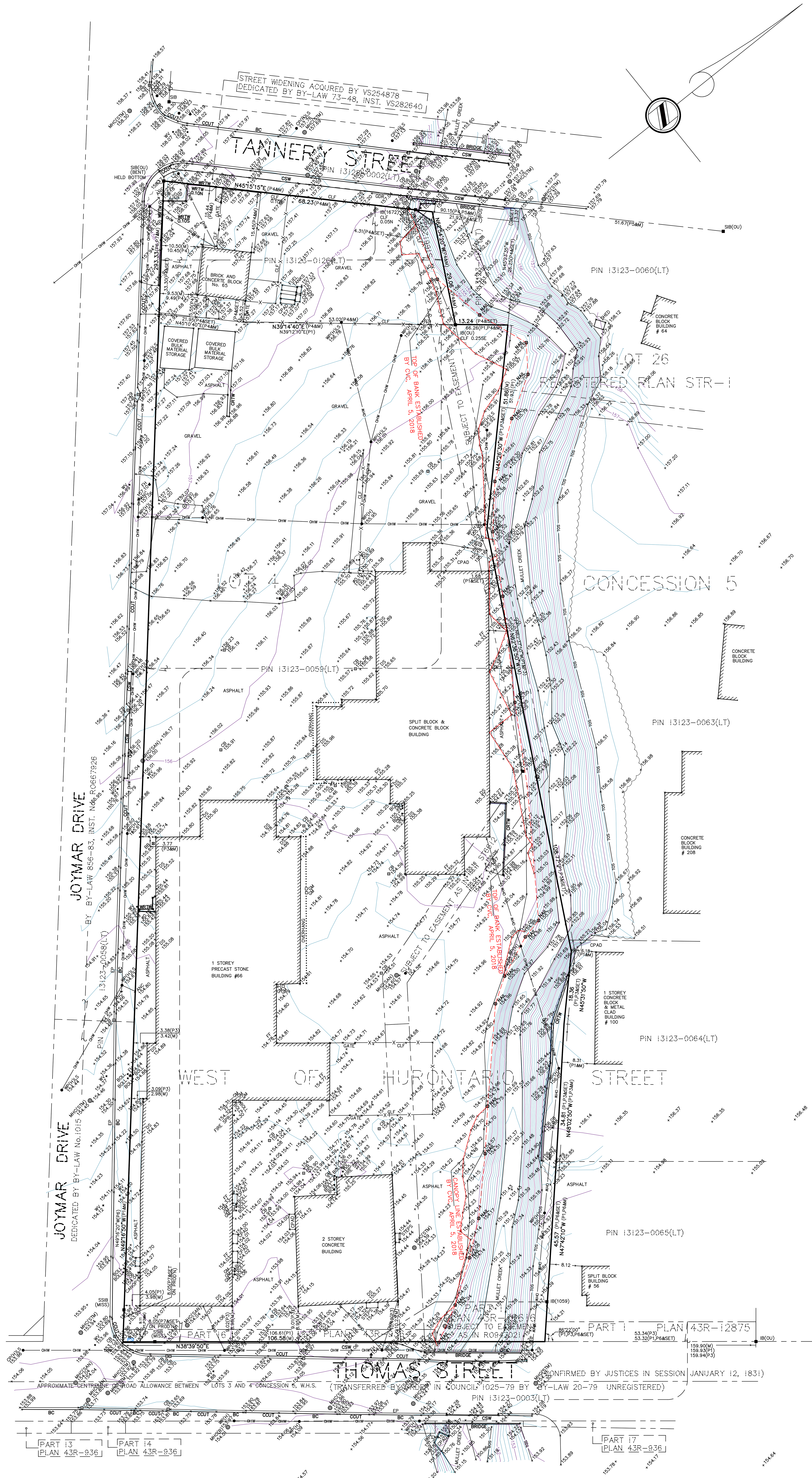
D3.1

JOYMAR DRIVE & TANNERY ST, MISSISSAUGA

0 3.5 7 17.5

Scale 1 : 350 FULL SIZE
Scale 1 : 700 HALF SIZE

2024-12-18



SKETCH ILLUSTRATING
TOP OF BANK AND CANOPY LINE AS DEFINED BY SITE WALK WITH CVC STAFF

APRIL 5, 2018

CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

SCALE 1: 500

0 5 10 15 20 30 40 50 m

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING NOTE

BEARINGS ARE GRID BEARINGS DERIVED FROM GPS OBSERVATIONS USING THE SMARTNET NETWORK AND ARE REFERRED TO THE CENTRAL MERIDIAN OF UTM ZONE 17 (81°00' WEST), NAD83 (CSRS 2010).

BEARINGS ON PLAN OF SURVEY BY B.J. STASSEN, O.L.S., DATED JUNE 8, 1990 (P1) AND PLAN 43R-16616 (P6) HAVE BEEN ROTATED 01°01'10" COUNTERCLOCKWISE TO MAKE COMPARISONS.

BEARINGS ON PLAN BY C. PEAT O.L.S., DATED OCTOBER 4, 1967 (P3) HAVE BEEN ROTATED 00°53'20" COUNTERCLOCKWISE TO MAKE COMPARISONS.

BEARINGS ON TOPOGRAPHIC SURVEY BY TONY STAUSKAS, O.L.S., DATED JUNE 9, 2009 (P4) HAVE BEEN ROTATED 00°52'20" COUNTERCLOCKWISE TO MAKE COMPARISONS.

DISTANCE NOTE

DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999714.

NOTE

PROPERTY LIMITS ARE NOT FENCED UNLESS OTHERWISE NOTED ON THE FACE OF THE PLAN.

LEGEND

■	DENOTES	MONUMENT FOUND
□	DENOTES	MONUMENT SET
IB	DENOTES	IRON BAR
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
OU	DENOTES	ORIGIN UNKNOWN
1672	DENOTES	TONY STAUSKAS, O.L.S.
1059	DENOTES	WILLIAM M. FENTON O.L.S.
M	DENOTES	MEASURED
P1	DENOTES	PLAN OF SURVEY BY B.J. STASSEN, O.L.S., DATED JUNE 8, 1990
P3	DENOTES	PLAN BY C. PEAT O.L.S., DATED OCTOBER 4, 1967
P4	DENOTES	TOPO SURVEY BY TONY STAUSKAS, O.L.S. DATED JUNE 9, 2009
P6	DENOTES	PLAN 43R-16616
P7	DENOTES	UNSIGNED PLAN BY THE CITY OF MISSISSAUGA
ANC	DENOTES	ANCHOR
BB	DENOTES	BELL BOX
BC	DENOTES	BACK OF CURB
BOLL	DENOTES	BOLLARD
BPED	DENOTES	BELL PEDESTAL
CB	DENOTES	CATCH BASIN
CCUT	DENOTES	CURB CUT
CLF	DENOTES	CHAIN LINK FENCE
CP(H)LS	DENOTES	CONCRETE POLE (HYDRO) WITH LIGHT STANDARD
CPAD	DENOTES	CONCRETE PAD
CPP	DENOTES	CULVERT (PLASTIC PIPE)
CRTW	DENOTES	CONCRETE RETAINING WALL
CSP	DENOTES	CULVERT (STEEL PIPE)
CSW	DENOTES	CONCRETE SIDE WALK
CUL	DENOTES	CULVERT
MW	DENOTES	MONITORING WELL
DS	DENOTES	DOOR SILL
EP	DENOTES	EDGE OF PAVEMENT
FF	DENOTES	FINISHED FLOOR
FH	DENOTES	FIRE HYDRANT
GDR	DENOTES	GUARDRAIL
GM	DENOTES	GAS METER
HM	DENOTES	HYDRO METER
LS	DENOTES	LIGHT STANDARD
MHC(B)	DENOTES	MAINTENANCE HOLE COVER (BELL)
MHC(SAN)	DENOTES	MAINTENANCE HOLE COVER (SANITARY)
MHC(STM)	DENOTES	MAINTENANCE HOLE COVER (STORM)
MHC(W)	DENOTES	MAINTENANCE HOLE COVER (WATER)
SP	DENOTES	SIGN POST
SPR	DENOTES	SPRINKLER
TLCB	DENOTES	TRAFFIC LIGHT CONTROL BOX
SRTW	DENOTES	STONE RETAINING WALL
WP(H)	DENOTES	WOODEN POLE (HYDRO)
WP(H)LS	DENOTES	WOODEN POLE (HYDRO) WITH LIGHT STANDARD
WRTW	DENOTES	WOODEN RETAINING WALL
WV	DENOTES	WATER VALVE
ø	DENOTES	DIAMETER
—— BOS ——	DENOTES	BOTTOM OF SLOPE
—— OHW ——	DENOTES	OVERHEAD WIRES
—— TOS ——	DENOTES	TOP OF SLOPE
	DENOTES	CONIFEROUS TREE
	DENOTES	DECIDUOUS TREE
	DENOTES	TREE LINE

BENCHMARK NOTE

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK No. 257 LOCATED ON THE SOUTH FACE, 0.61 METRE WEST OF THE EAST CORNER OF THE RED BRICK BUILDING AT THE NORTHWEST CORNER OF THOMAS STREET AND QUEEN STREET, HAVING AN ELEVATION OF 162.08m.

CANADIAN GEODETIC VERTICAL DATUM 1928: PRE 1978 SOUTHERN ONTAIRO READJUSTMENT.

N45°28'40"W
10.06(P1)

MOST EASTERLY ANGLE
LOT 4
CONCESSION 5
W.H.S.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE *SURVEYS ACT*, THE *SURVEYORS ACT*, AND THE AND THE REGULATIONS MADE UNDER THEM.

2. THE SURVEY WAS COMPLETED ON THE DAY OF

PRELIMINARY

DATE

ALISTER SANKEY
ONTARIO LAND SURVEYOR

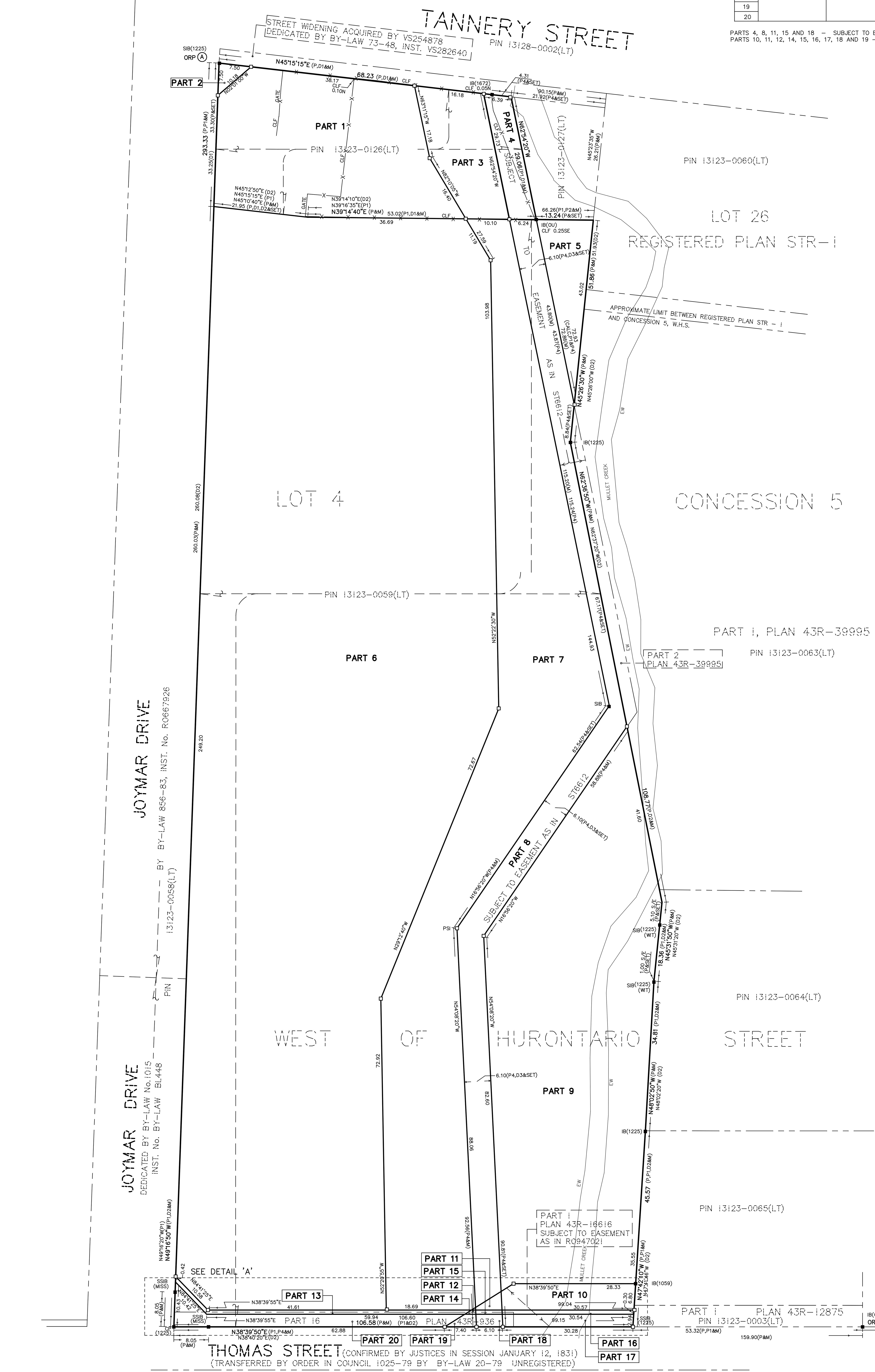
David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS
4255 Sherwoodtowne Blvd., Suite 206, Mississauga, Ontario L4Z 1Y5
Tel: (905) 273-6840 Fax: (905) 896-4410
Email: info@dbsearles.ca

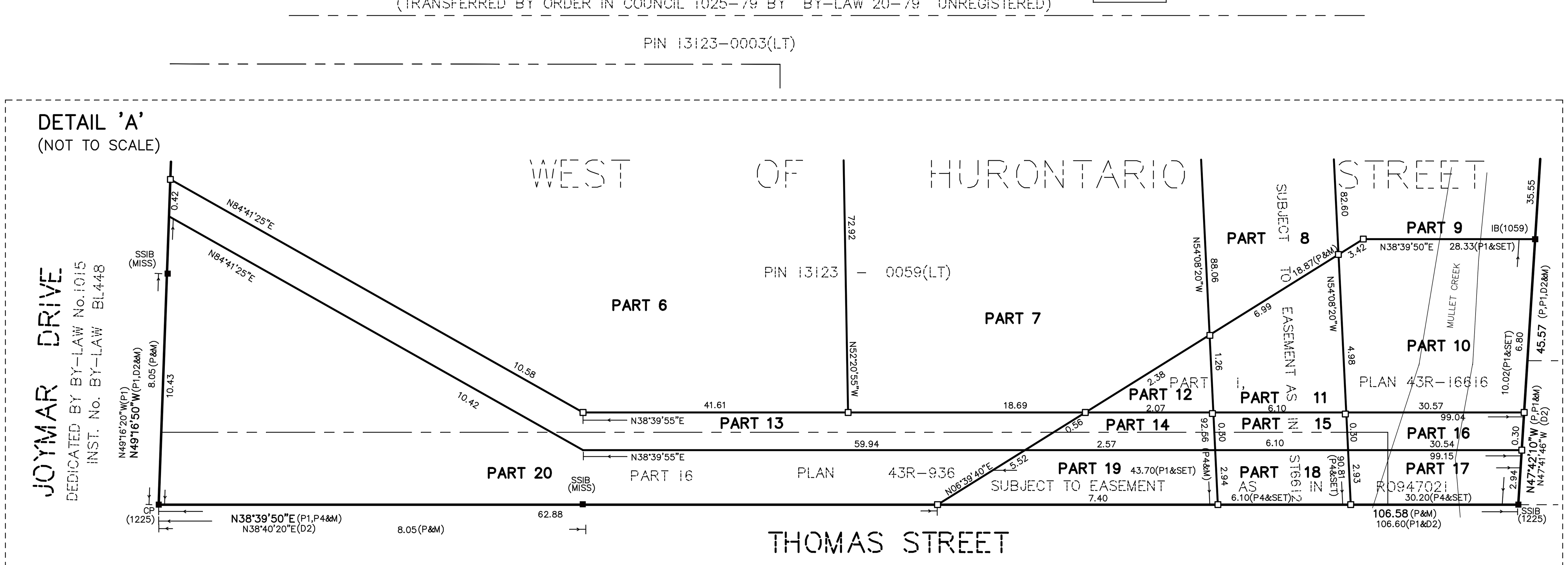
Calculator	Draftsperson
BJ	IV
Editor	Plan Index No.
BJ	D 16

Calculation File	Drawing File	File No.
116-16CALC.DWG	116-2-16.DWG	116-2-16

SCHEDULE				
PART	PART OF LOT	CONCESSION	PIN	AREA
1	4	5 WEST OF HURONTARIO STREET	ALL OF 13123–0126(LT)	1611 Sq.m
2				28 Sq.m
3				430 Sq.m
4				179 Sq.m
5			ALL OF 13123–0059(LT)	282 Sq.m
6				14949 Sq.m
7				4344 Sq.m
8				1412 Sq.m
9				3925 Sq.m
10				207 Sq.m
11				19 Sq.m
12				1 Sq.m
13				22 Sq.m
14				1 Sq.m
15				2 Sq.m
16				9 Sq.m
17				89 Sq.m
18				18 Sq.m
19				15 Sq.m
20				219 Sq.m

PARTS 4, 8, 11, 15 AND 18 – SUBJECT TO EASEMENT AS IN ST6612
PARTS 10, 11, 12, 14, 15, 16, 17, 18 AND 19 – SUBJECT TO EASEMENT AS IN RO947021





PLAN OF SURVEY OF
PART OF LOT 4
CONCESSION 5
WEST OF HURONTARIO STREET

(GEOGRAPHIC TOWNSHIP OF TORONTO, COUNTY OF PEEL)

CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

SCALE 1: 500

10 5 0 5 10 15 20 30 40 50 metres

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS

THE INTENDED PLOT SIZE OF THIS PLAN IS 610mm IN WIDTH BY 914mm IN HEIGHT WHEN PLOTTED AT SCALE OF 1:500

METRIC

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

INTEGRATION DATA

OBSERVED REFERENCE POINTS (ORPs): UTM ZONE 17, NAD83 (ORIGINAL). COORDINATES ARE TO AN URBAN ACCURACY AS PER O. REG. 216/10, s. 14 (2).		
OBSERVED REFERENCE POINT ID	NORTHING	EASTING
ORP A	4825934.843	603517.174
ORP B	4825868.372	603839.335
COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.		

BEARING NOTE

BEARINGS ON PLAN 43R–16616 (P1), PLAN 43R–936 (P3) AND PLAN OF SURVEY BY B.J. STASSEN, O.L.S.(P4) HAVE BEEN ROTATED 01°01'10" COUNTERCLOCKWISE TO MAKE COMPARISONS.

BEARINGS ON PLAN VS275328 (D2) HAVE BEEN ROTATED 00°52'50" COUNTERCLOCKWISE TO MAKE COMPARISONS.

BEARINGS ON PLAN VS320279 (D1) HAVE BEEN ROTATED 00°52'25" COUN.TERCLOCKWISE TO MAKE COMPARISONS.

LEGEND

■	DENOTES	MONUMENT FOUND
□	DENOTES	MONUMENT SET
IB	DENOTES	IRON BAR
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
OU	DENOTES	ORIGIN UNKNOWN
CP	DENOTES	CONCRETE PIN
EW	DENOTES	EDGE OF WORK
PSI	DENOTES	POINT SET BY INTERSECTION
923	TARASICK	McMILLAN KUBICKI LIMITED.
1225	DENOTES	DAVID B. SEARLES SURVEYING LTD.
1672	DENOTES	TONY STAUSKAS, O.L.S.
1059	DENOTES	WILLIAM M. FENTON O.L.S.
M	DENOTES	MEASURED
P	DENOTES	PLAN OF SURVEY BY DAVID B. SEARLES SURVEYING LTD. DATED JUNE 04, 2019. (FILE No.:116–4–16)
P1	DENOTES	REGISTERED PLAN 43R–16616
P2	DENOTES	REGISTERED PLAN 43R–39995
P3	DENOTES	REGISTERED PLAN 43R–936
P4	DENOTES	PLAN OF SURVEY BY B.J. STASSEN, O.L.S., DATED JUNE 8, 1990.
S/E	DENOTES	SOUTH EAST
D1	DENOTES	INSTRUMENT VS320279
D2	DENOTES	INSTRUMENT VS275328
D3	DENOTES	INSTRUMENT ST6612

DISTANCE NOTE

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NOTE

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SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE *SURVEYS ACT*, THE *SURVEYORS ACT*, AND THE *LAND TITLES ACT* AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE DAY OF

PRELIMINARY

DATE

ALISTER SANKEY
ONTARIO LAND SURVEYOR

THIS PLAN OF SURVEY RELATES TO AOLS PLAN SUBMISSION FORM NUMBER (INSERT NUMBER)

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS
4255 Sherwoodtowne Blvd., Suite 206, Mississauga, Ontario L4Z 1Y5
Tel: (905) 273–6840 Fax: (905) 896–4410
Email: info@dbsearles.ca

Calculator	Draftsperson	Editor	Plan Index No.
AV	KP/RM	BJ	B 17

Calculation File	Drawing File	File No.
116–16CALC.DWG	116–3–16.DWG	116–3–16

ANSI E (44.00 x 34.00 Inches)

LEGEND

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□	DENOTES	MONUMENT SET
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FF	DENOTES	FINISHED FLOOR
FH	DENOTES	FIRE HYDRANT
GDR	DENOTES	GUARDRAIL
GM	DENOTES	GAS METER
HM	DENOTES	HYDRO METER
LS	DENOTES	LIGHT STANDARD
MHC(B)	DENOTES	MAINTENANCE HOLE COVER (BELL)
MHC(SAN)	DENOTES	MAINTENANCE HOLE COVER (SANITARY)
MHC(STM)	DENOTES	MAINTENANCE HOLE COVER (STORM)
MHC(W)	DENOTES	MAINTENANCE HOLE COVER (WATER)
SP	DENOTES	SIGN POST
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TLCB	DENOTES	TRAFFIC LIGHT CONTROL BOX
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WP(H)	DENOTES	WOODEN POLE (HYDRO)
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WRTW	DENOTES	WOODEN RETAINING WALL
WV	DENOTES	WATER VALVE
ø	DENOTES	DIAMETER
	DENOTES	BOTTOM OF SLOPE
	DENOTES	OVERHEAD WIRES
	DENOTES	TOP OF SLOPE
	DENOTES	CONIFEROUS TREE
	DENOTES	DECIDUOUS TREE
	DENOTES	TREE LINE

TDI SEWER INVERT TABLE – 137145 _ 66 THOMAS ST, MISSISSAUGA, ONTARIO

MH/CB #	Type of sewer	Grade Elevation (m)	Direction	Materials	Depth Inv (m)	Depth Obv (m)	Size (mm)	Flows to	Elevation Invert (m)	Elevation Obvert (m)	Remarks
MH1	Sanitary	154.04	N	Clay	2.32	2.12	200	S	151.72	151.92	
		154.04	S	Clay	2.35	2.15	200		151.69	151.89	
		154.04	NW	Clay	1.94	1.74	200		152.10	152.30	
		154.04	W	Clay	2.07	1.82	250		151.97	152.22	
CB2	Storm	153.64	N	Concrete	1.03	0.83	200	SE	152.61	152.81	
		153.64	SE	Concrete	1.17	0.87	300		152.47	152.77	
CB3	Storm	153.97	NE	Clay	1.34	1.19	150	SW	152.63	152.78	
		153.97	SW	Concrete	1.60	1.30	300		152.37	152.67	
CB4	Storm	154.46	W	Plastic	0.84	0.59	250	W	153.62	153.87	
MH5	Sanitary	156.00	W	Plastic	3.90	3.65	250	W	152.10	152.35	
		156.00	E	Plastic	3.89	3.64	250		152.11	152.36	
CB6	Storm	156.24	W	Plastic	1.25	1.00	250	W	154.99	155.24	
CB7	Storm	157.21	W	Plastic	1.23	0.98	250	W	155.98	156.23	
MH8	Sanitary	157.83	W	Plastic	4.58	4.33	250	W	153.25	153.50	
		157.83	E	Plastic	4.54	4.29	250		153.29	153.54	
MH9	Storm	157.49	W	Concrete	N/A	N/A	N/A	E	N/A	N/A	Bottom of chamber = 3.34m, CSE required
		157.49	E	Concrete	N/A	N/A	N/A		N/A	N/A	
CB10	Storm	156.85	N	Concrete	1.50	1.25	250	S	155.35	155.60	
		156.85	S	Concrete	1.65	1.40	250		155.20	155.45	
CB11	Storm	153.86	S	Concrete	N/A	N/A	N/A	S	N/A	N/A	Pipe size as per measurement = 375mmø
		153.86	E	Metal	1.38	1.23	150		152.48	152.63	Weeping tile pipe
		153.86	NW	Concrete	N/A	N/A	N/A		N/A	N/A	
		153.86	NE	Concrete	N/A	N/A	N/A		N/A	N/A	Bottom of chamber = 2.07m, CSE required
CB12	Strom	153.69	S	Concrete	1.42	1.12	300	S	152.27	152.57	
CB13	Storm	153.73	SW	Plastic	1.07	0.77	300	SW	152.66	152.96	

Notes & Legend:

* Where one or more leads are recessed, measurements for invert and obvert are approximate. Confined Space Entry required in order to obtain accurate measurements.

** MH/CB or pipe opening contains debris. May require flushing or cleaning prior to obtaining measurements.

TDI SURVEY LEGEND

MH	SANI/STORM MANHOLE
WV	WATER VALVE

LEGEND:

GM	GAS MAIN	B	COMMUNICATION BELL	SAN	SANITARY SEWER
GS	GAS SERVICE	R	COMMUNICATION ROGERS	STM	STORM SEWER
FL	FUEL PIPE	COG	COMMUNICATION COGECO	COMB	COMBINED SEWER
H	HYDRO	ZAYO	COMMUNICATION ALLSTREAM	UNKNOWN	UNKNOWN UTILITY
HS	HYDRO SERVICE	TELUS	COMMUNICATION TELUS		END CAP (APPROXIMATE LOCATION)
EL	ELECTRICAL	GT	COMMUNICATION GT		FLOW DIRECTION
SL	STREET LIGHT	FO	FIBER OPTIC CABLE		DROP LEAD
WM	WATERMAIN	TS	TRAFFIC SIGNAL		TEST PIT LOCATION
WS	WATER SERVICE	OH	OVERHEAD WIRES		CHANGE OF SUE QUALITY LEVEL
CHEM	CHEMICAL	TFO	COMMUNICATION TELUS FO	"D=0.00m"	APPROXIMATE DEPTH MEASUREMENT FROM LOCATE EQUIPMENT

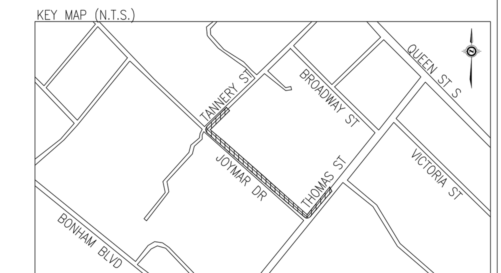
SURVEY NOTE

THE GEODETIC ELEVATION LAYER IS TURNED OFF FOR PRESENTATION PURPOSES ONLY. ALL RELATIVE UTILITY ELEVATIONS ARE SHOWN IN THE AUTOCAD DIGITAL FILE (.DWG).

DISCLAIMER

- THIS DOCUMENT HAS BEEN PREPARED FOR THE NOTED TELECON CLIENT(S) REFERENCE AND USE, AND WHEN REQUIRED BY LAW, APPROPRIATE GOVERNMENT REVIEWING AGENCIES. THE DRAWING HAS BEEN PREPARED FOR THE USE OF TELECON'S CLIENT AND MAY NOT BE USED, REPRODUCED OR RELIED UPON BY THIRD PARTIES, UNLESS WRITTEN CONSENT HAS BEEN GRANTED.
- NOT TO BE USED FOR EXCAVATION PURPOSES
- CONTACT ONTARIO ONE CALL 1-800-400-2255 AND THE APPROPRIATE UTILITIES FOR EXCAVATION LOCATES.

KEY MAP (N.T.S.)



GENERAL NOTES:

- THE SUE FIELD INVESTIGATION WAS COMPLETED IN NOVEMBER 2022 BY TELECON DESIGN INC. (TDI).
- THE FIELD VERIFICATION OF UTILITIES WAS COMPLETED USING A COMBINATION OF ELECTROMAGNETIC PIPE AND CABLE LOCATE EQUIPMENT.
- TELECON USED AVAILABLE MEANS IN AN ATTEMPT TO DETERMINE THE LOCATION OF UNDOCUMENTED UTILITIES. TELECON IS NOT RESPONSIBLE FOR INDICATING ALL UNDOCUMENTED UTILITIES UNLESS PROVIDED, SHOWN AND/OR AVAILABLE AND RECEIVED DIGITALLY OR BY HARDCOPY.
- THE TOPOGRAPHIC BASE PLAN PROVIDED BY OTHERS, AND IS NOT A PART OF THIS SUE INVESTIGATION COMPLETED BY TDI.
- UTILITY, MATERIAL, SIZE AND FLOW DIRECTION SHOWN ON THIS DRAWING ARE BASED ON RECORDS, PROFESSIONAL JUDGEMENT AND FIELD INVESTIGATIONS.

SUBSURFACE UTILITY ENGINEERING QUALITY LEVELS

☒ LEVEL D

INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS.

Line Style (Level D)

☒ LEVEL C

INFORMATION ACQUIRED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE QUALITY Level "D".

Line Style (Level C)

☒ LEVEL B

INFORMATION ACQUIRED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL UTILITY LOCATING METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE SUBSURFACE UTILITIES WHICH IS THEN GEODETICALLY SURVEYED.

Line Style (Level B)

☐ LEVEL A

PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT AND/OR SURVEY OF SUBSURFACE UTILITIES.

Line Style (Level A)

REVISIONS

REV	DATE	DRAWN BY	APPROVED BY

LICENSED PROFESSIONAL ENGINEER
W. P. SHAMON
100034593
Dec. 09, 2022
PROVINCE OF ONTARIO

P.ENG STAMP HERE

telecon
design • build • connect
SUBSURFACE UTILITY ENGINEERING
7777 WESTON ROAD, 5TH FLOOR
VAUGHAN, ONTARIO L4L 0G9

THE ENGINEERS SEAL HEREON IS TO CERTIFY THAT THE UTILITIES SHOWN HAVE BEEN INVESTIGATED IN ACCORDANCE WITH STANDARD SUE INDUSTRY PRACTICES. ALL OTHER INFORMATION HEREON HAS BEEN PROVIDED BY OTHERS AND IS NOT A PART OF THIS CERTIFICATION.

TELECON CLIENT

DE ZEN REALTY COMPANY LIMITED

SUE PROJECT

66 THOMAS STREET, MISSISSAUGA, ONTARIO

PROJECT/ WO#: 137145

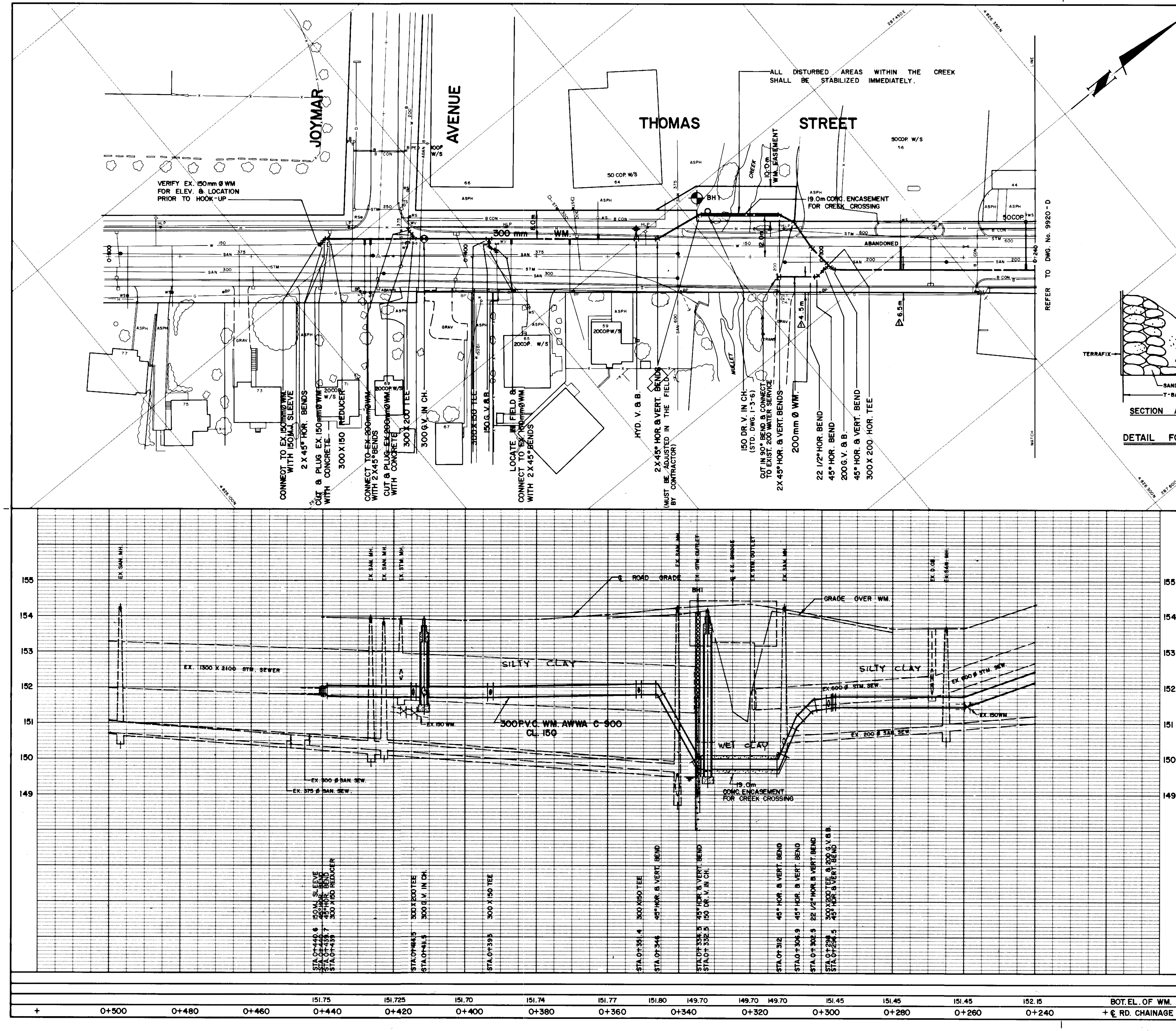
SURVEYED BY: I.ANSARI	DATE:NOV.07.2022
DRAWN BY: R.KAKADIYA	DATE:NOV.14.2022
CHECKED BY: S.YASREBI	DATE:NOV.24.2022
APPROVED BY: W.SHAMON	DATE:DEC.09.2022
DRAWING SCALE:	DRAWING NUMBER:
1:400	UG-1

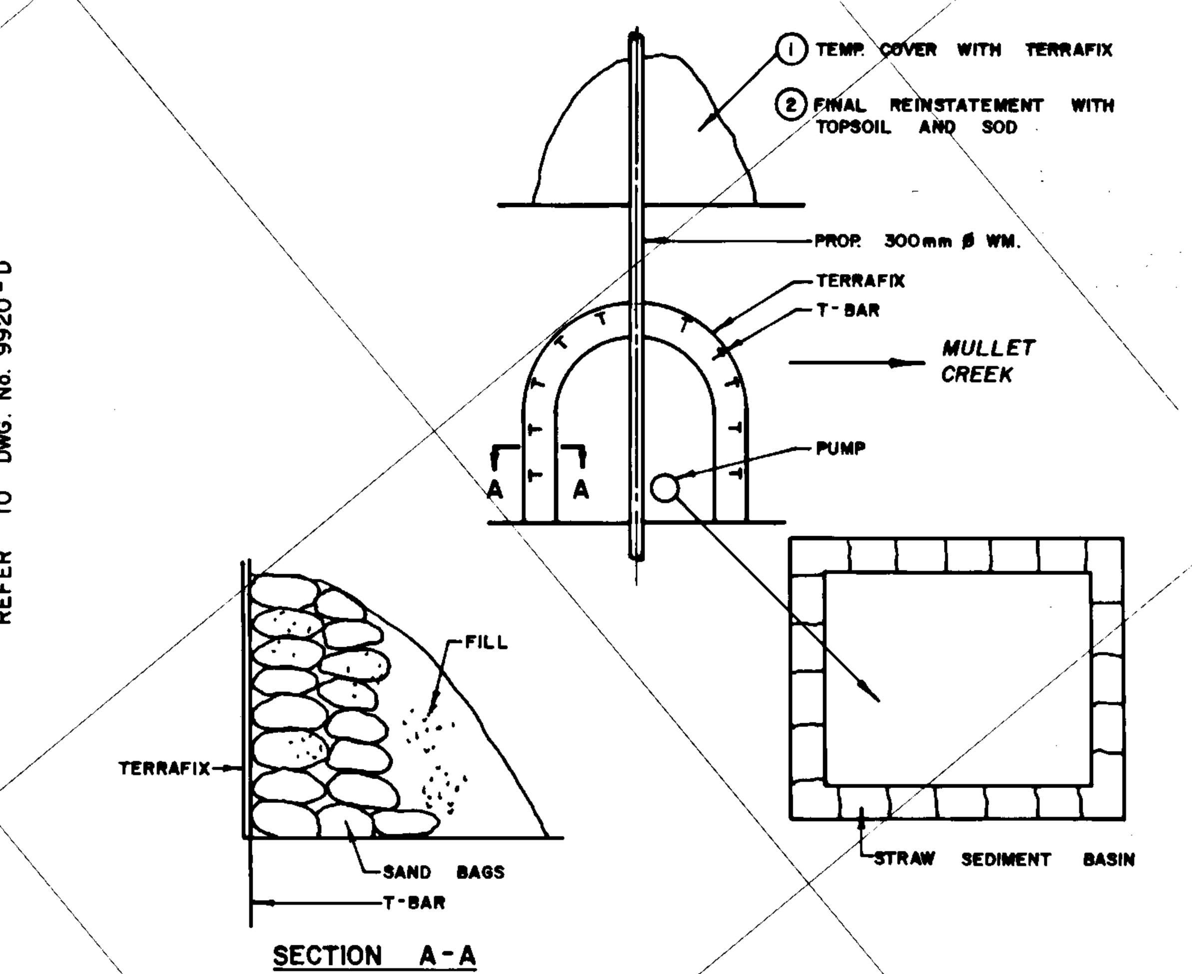
SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS			GAS MAINS	AUG.20,1988	Y.C.
STORM SEWERS			BELL U/G CABLE	AUG.20,1988	Y.C.
WATERMAINS			HYDRO U/G CABLE	AUG.20,1988	Y.C.

REVISIONS

DATE	DETAILS	INIT.
JULY 03, 1990	⚠1 WM. OFFSET REVISED FROM STA.0+169 TO STA. 0+301.5	Y.C.
FEB.14, 1991	AS CONSTRUCTED	Y.C.





DETAIL FOR CROSSING CREEK WITH 300mm Ø WM.

N.T.S.

General Notes

- - All Driveways Gravel Unless Otherwise Noted.
- - All Service Locations Are Approximate And Must Be Located Accurately In Field.

● Denotes Building – Not Located

▭ Denotes Building Located

Type 'B' Bedding Unless Otherwise Noted (SAN)

B.M. N° Elev.

The Contractor Is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction Location of Existing Utilities Approximate Only, To Be Verified In Field By Contractor.

K. P. CATER 90.04.30 — Designed by ____ chkd. ____

M. D. Zamojc 90.04.30 — Approved by M. Zamojc

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
MINISTRY OF ENVIRONMENT
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
HYDRO ELECTRIC COMM. PORT CREDIT
HYDRO ELECTRIC COMM. STREETSVILLE
CABLE TELEVISION

Region of Peel

Department of Public Works

THOMAS STREET

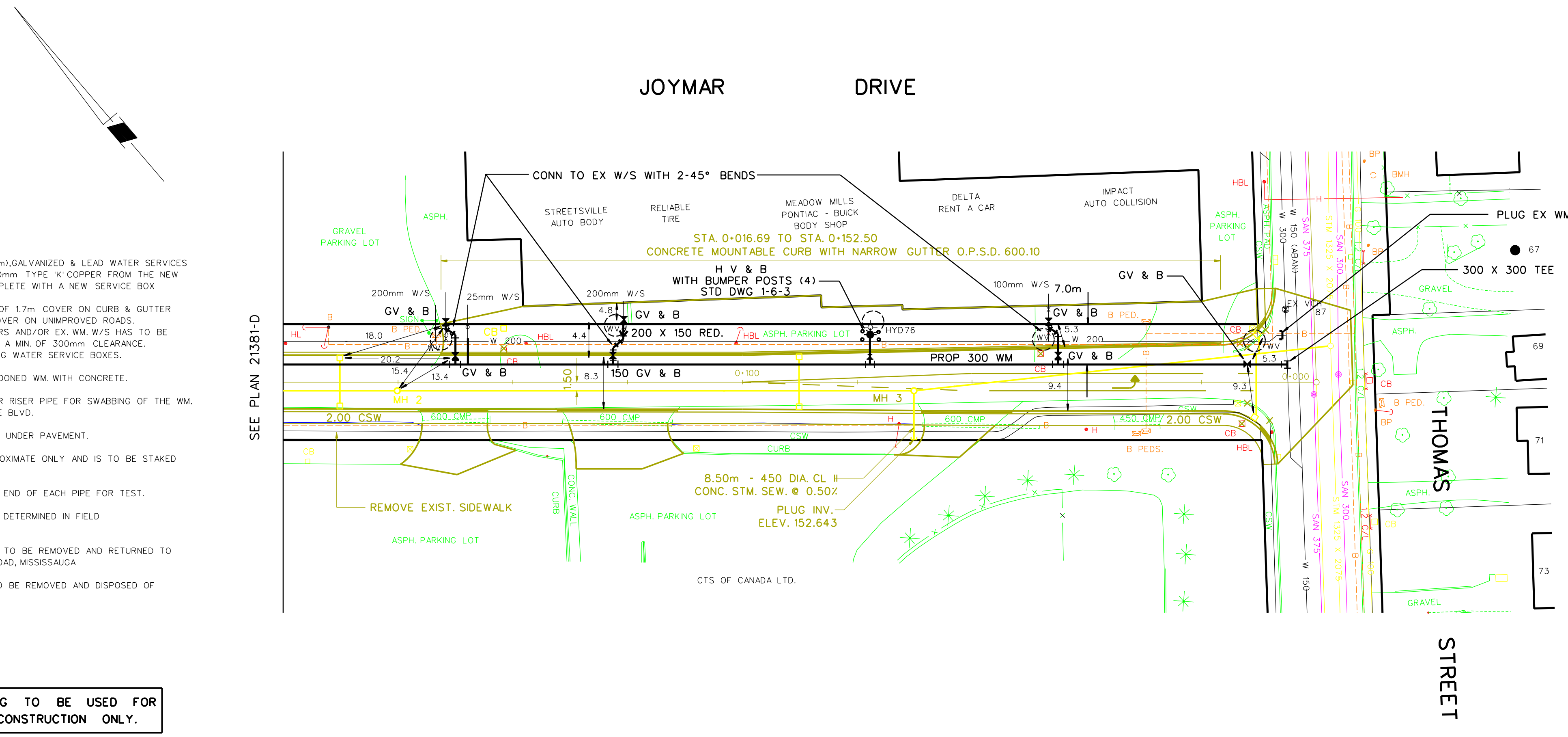
300mm WATERMAIN

Sta.0+240 To Sta. 0+445

Lots	Area Z-39	Project No. 89-1360
Scale Hor. 1:800 Ver. 1:80	Drawn by Y. C.	Checked by
Date SEPT. 07, 1988	Sheet 2 of 2	Plan No. 9921-D

9921-D

JOYMAR DRIVE



THIS DRAWING TO BE USED FOR WATERMAIN CONSTRUCTION ONLY.

GENERAL NOTES:

1. ALL COPPER (LESS THEN 20mm),GALVANIZED & LEAD WATER SERVICES ARE TO BE REPLACED WITH 20mm TYPE 'K' COPPER FROM THE NEW WM. TO THE STREET LINE COMPLETE WITH A NEW SERVICE BOX AT STREET LINE.
   ALL W/S'S MUST HAVE A MIN. OF 1.7m COVER ON CURB & GUTTER ROADS AND A MIN. OF 2.1m COVER ON UNIMPROVED ROADS.
   IF W/S CONFLICTS WITH SEWERS AND/OR EX. WM. W/S HAS TO BE INSTALLED UNDER SEWER WITH A MIN. OF 300mm CLEARANCE.
   REMOVE & DISPOSE OF EXISTING WATER SERVICE BOXES.
2. PLUG THE ENDS OF THE ABANDONED WM. WITH CONCRETE.
3. 50mm TEMP.BLOW-OFF AND/OR RISER PIPE FOR SWABBING OF THE WM. IS/ARE TO BE LOCATED IN THE BLVD.
4. INSTALL LONG W/S BY BORING UNDER PAVEMENT.
5. LOCATION OF EX. W/S IS APPROXIMATE ONLY AND IS TO BE STAKED OUT IN THE FIELD.
6. INSTALL TEMP. PLUG & B.O. AT END OF EACH PIPE FOR TEST.
7. NEW HYDRANT OFFSET TO BE DETERMINED IN FIELD
8. EXISTING HYDRANT AND VALVE TO BE REMOVED AND RETURNED TO REGION YARD AT WOLFDALE ROAD, MISSISSAUGA
9. ALL EXISTING VALVE BOXES TO BE REMOVED AND DISPOSED OF OFF SITE.

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS	1994 11 16	TJ	GAS MAINS	1994 11 24	TJ
STM. SEWERS	1994 11 16	TJ	BELL U/G CABLE	1994 11 16	TJ
WATERMAINS	1994 11 16	TJ	HYDRO U/G CABLE	1994 11 18	TJ
O.C.W.A.	1994 11 16	TJ			

REVISIONS

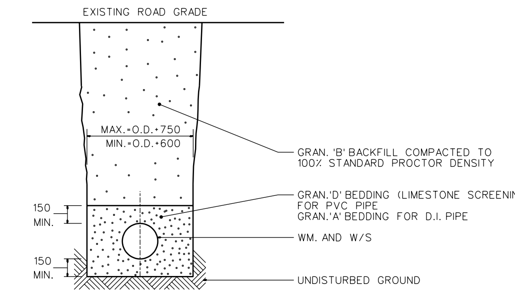
DATE	DETAILS	INIT.
JULY 96	AS CONSTRUCTED	EWK

LEGEND

EX. 20mmØ & LARGER COPPER W/S TO BE CUT OR EXTENDED & TRANSFERED TO THE NEW WM.

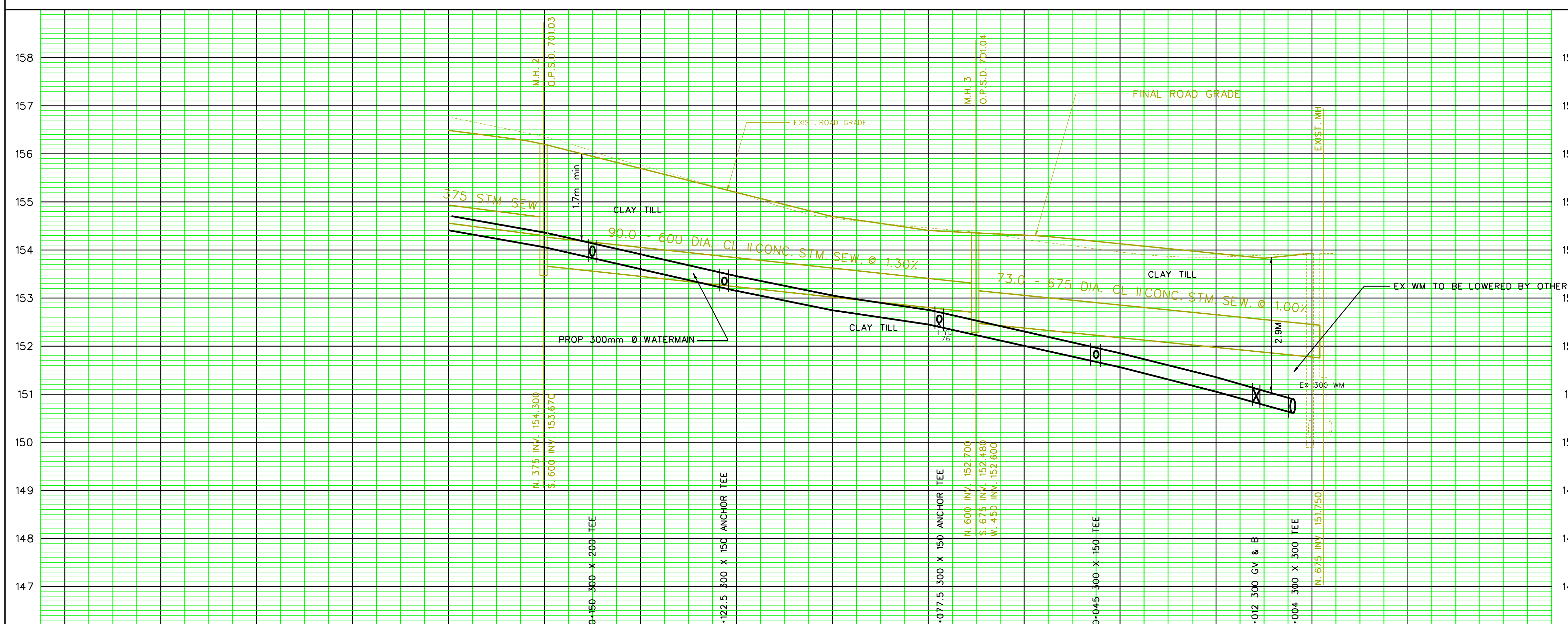
RECONSTRUCT/EXTEND 20mmØ W/S

EX. HYD. V. & B. TO BE REMOVED AND HYD. TO BE RETURNED TO REGION YARD IN BRAMPTON. VALVES TO BE DISPOSED OFF SITE.



WATERMAIN AND WATERSERVICE BEDDING AND BACKFILL

N.T.S.



BOTT. EL OF WM	154.40	154.05	153.60	153.15	152.75	152.45	152.20	152.00	151.05	150.60
FINAL RD. GR.	156.49	156.20	155.70	155.20	154.70	154.41	154.31	154.13	153.93	153.93
EXIST. RD. GR.	156.77	156.36	155.77	155.19	154.66	154.46	154.22	153.96	153.85	153.93
CHAINAGE	0+180	0+160	0+140	0+120	0+100	0+080	0+060	0+040	0+020	0+000

General Notes

ALL DRIVEWAYS ASPHALT UNLESS OTHERWISE NOTED.
ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD
DENOTES BUILDING - NOT LOCATED
DENOTES BUILDING LOCATED

B.M. NO. ELEV.

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION LOCATION OF EXISTING UTILITIES APPROXIMATE ONLY. TO BE VERIFIED IN FIELD BY CONTRACTOR.

DESIGNED BY ____ ____ ____ __CHKD.____

APPROVED BY ____ ____ ____ ____ ____

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
HYDRO ELECTRIC COMM. TOWN OF CALEDON
CABLE TELEVISION

Region of Peel
Public Works

JOYMAR DRIVE

PROP 300mm WATERMAIN

Sta. 0+000 To Sta. 0+180

LOTS 4	AREA Z-39	PROJECT NO. 96-1420
RATIO HOR. 1:500 VER. 1:50	DRAWN BY E.W.K.	CHECKED BY
DATE FEB 95	SHEET 1 OF 2	PLAN NO. 21380-D

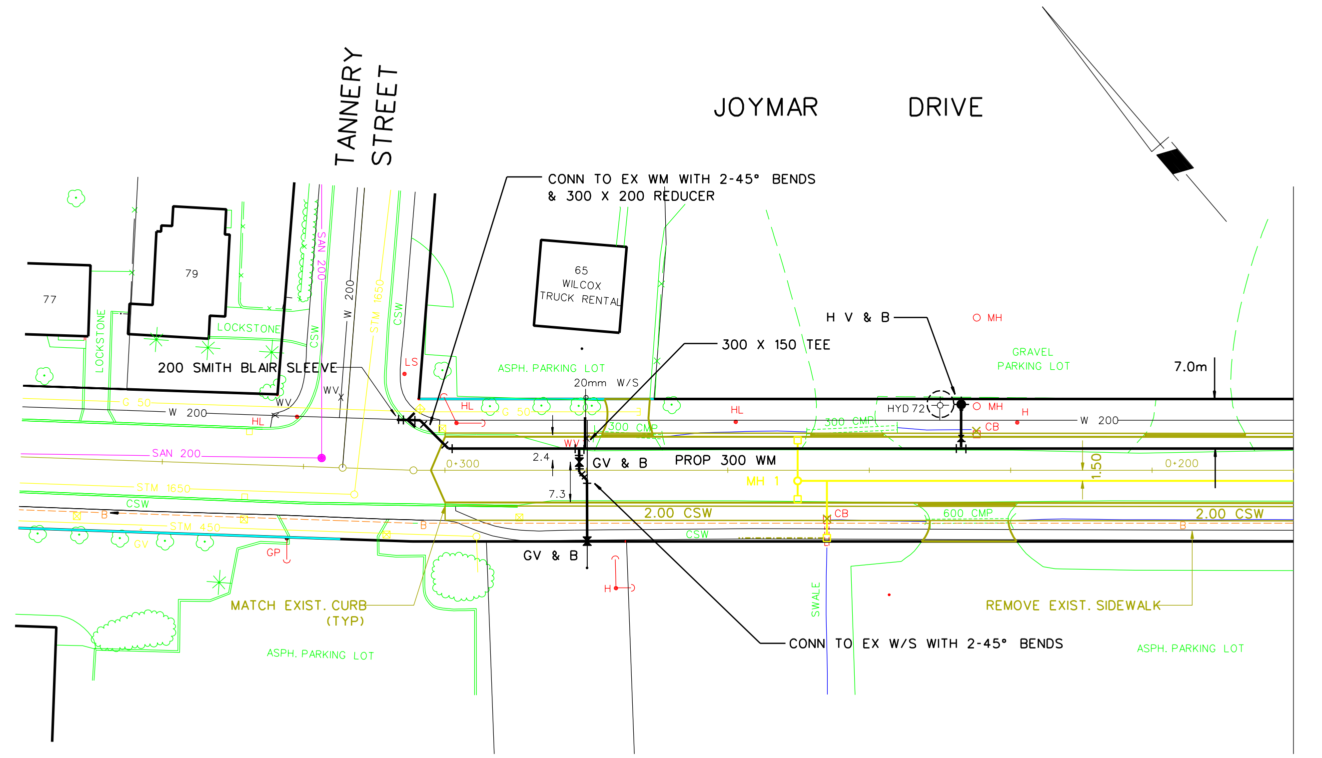
21380-D

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS	1994 11 16	TJ	GAS MAINS	1994 11 24	TJ
STM. SEWERS	1994 11 16	TJ	BELL U/G CABLE	1994 11 16	TJ
WATERMAINS	1994 11 16	TJ	HYDRO U/G CABLE	1994 11 18	TJ
O.C.W.A.	1994 11 16	TJ			

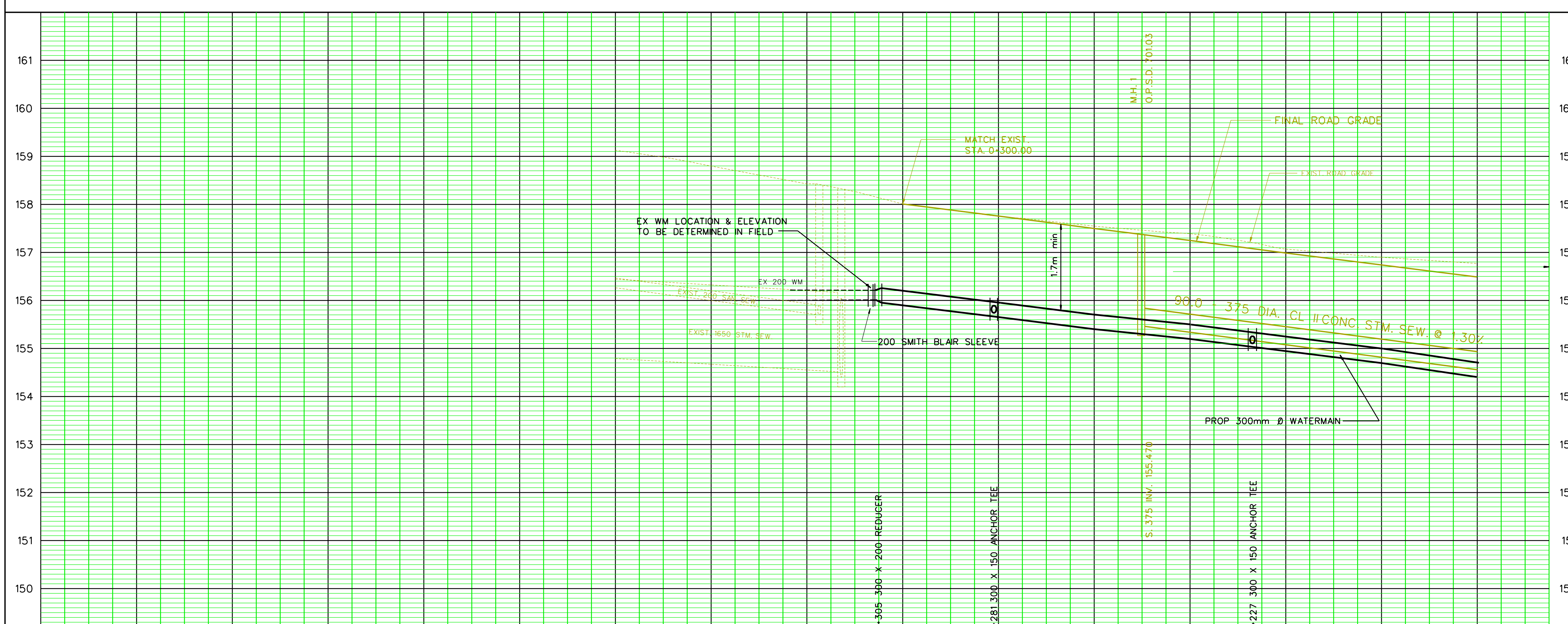
REVISIONS

DATE	DETAILS	INIT.
JULY 96	AS CONSTRUCTED	EWK



THIS DRAWING TO BE USED FOR WATERMAIN CONSTRUCTION ONLY.

FOR NOTES, DETAILS & LEGEND SEE PLAN# 21380-D



				155.90	155.65	155.40	155.20	154.95	154.70	154.40	BOTT. EL OF WM
				158.01	157.76	157.50	157.25	156.99	156.74	156.49	FIN. RD. GR.
	159.13	158.80	158.43	158.01	157.75	157.55	157.39	157.07	156.90	156.77	EX. RD. GR.
	0+360	0+340	0+320	0+300	0+280	0+260	0+240	0+220	0+200	0+180	CHAINAGE

General Notes

- ALL DRIVEWAYS ASPHALT UNLESS OTHERWISE NOTED.
- ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD
- DENOTES BUILDING - NOT LOCATED
- DENOTES BUILDING LOCATED

B.M. NO. ELEV.

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION LOCATION OF EXISTING UTILITIES APPROXIMATE ONLY. TO BE VERIFIED IN FIELD BY CONTRACTOR.

DESIGNED BY ____ ____ ____ __CHKD.____

APPROVED BY ____ ____ ____ ____ ____

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
HYDRO ELECTRIC COMM. TOWN OF CALEDON
CABLE TELEVISION

Region of Peel
Public Works

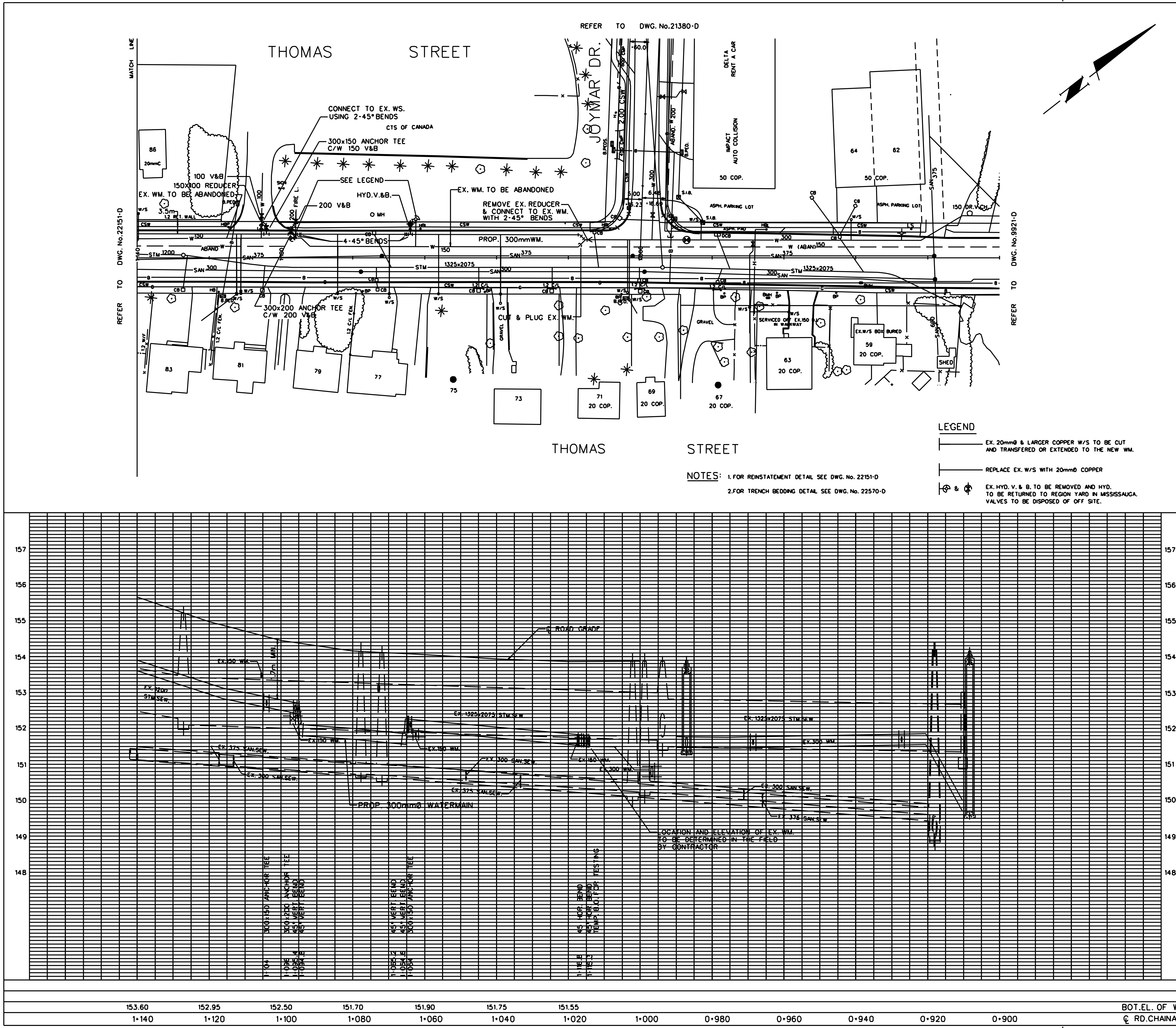
JOYMAR DRIVE

PROP 300mm WATERMAIN

WM Sta. 0+180 To Sta. 0+305

LOTS 4	AREA Z-39	PROJECT NO. 96-1420
RATIO HOR. 1:500 VER. 1:50	DRAWN BY E.W.K.	CHECKED BY
DATE FEB 95	SHEET 2 OF 2	PLAN NO. 21381-D

21381-D

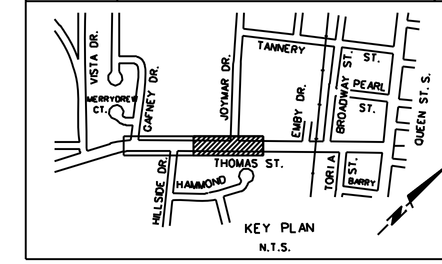


SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS		
STORM SEWERS			BELLU/G CABLE		
WATERMAINS			HYDROU/G CABLE		
TRANSIT			ONT. HYDRO		
PARK & REC.			CTV		
ONT.CLEAN WATER					

REVISIONS

DATE	DETAILS	INIT.
OCT. 1997	AS CONSTRUCTED	J.P.



KEY PLAN

N.T.S.

GENERAL NOTES:

1. ALL COPPER (LESS THEN 20mm),GALVANIZED & LEAD WATER SERVICES ARE TO BE REPLACED WITH 20mm TYPE 'K' COPPER FROM THE NEW WATERMAIN TO THE STREET LINE COMPLETE WITH A NEW SERVICE BOX AT STREET LINE.
   ALL W/S'S MUST HAVE A MIN. OF 1.7m COVER ON CURB & GUTTER ROADS AND A MIN. OF 2.1m COVER ON UNIMPROVED ROADS.
   IF W/S CONFLICTS WITH SEWERS AND/OR EXISTING WATERMAIN W/S HAS TO BE INSTALLED UNDER SEWER AND/OR WATERMAIN WITH A MIN. OF 300mm CLEARANCE.
   REMOVE & DISPOSE OF EXISTING WATER SERVICE BOXES.
2. PLUG THE ENDS OF THE ABANDONED WATERMAIN WITH CONCRETE.
3. 50mm TEMP. BLOW-OFF AND/OR RISER PIPE FOR SWABBING OF THE WATERMAIN IS/ARE TO BE LOCATED IN THE BOULEVARD.
4. INSTALL W/S BY BORING UNDER PAVEMENT, TREES AND SHRUBS.
5. LOCATION OF EXISTING W/S IS APPROXIMATE ONLY AND IS TO BE STAKED OUT IN THE FIELD.
6. INSTALL TEMP. PLUG & B.O. AT END OF EACH PIPE FOR TEST.
7. NEW HYDRANT OFFSET TO BE 3.5m FROM STREET LINE UNLESS OTHERWISE SHOWN.
8. EXISTING HYDRANT AND VALVE TO BE REMOVED AND RETURNED TO REGION YARD AT 3515 WOLFDALE ROAD, MISSISSAUGA.
9. ALL EXISTING VALVE BOXES TO BE REMOVED AND DISPOSED OF OFF SITE.

General Notes

- – – ALL DRIVEWAYS ASPHALT UNLESS OTHERWISE NOTED.
- – – ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD
- ◉ DENOTES BUILDING · NOT LOCATED
- ▭ DENOTES BUILDING LOCATED

B.M. NO. ELEV.

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION LOCATION OF EXISTING UTILITIES APPROXIMATE ONLY. TO BE VERIFIED IN FIELD BY CONTRACTOR.

DESIGNED BY ___ ___ ___ CHKD.___ APPROVED BY ___ ___ ___ ___ ___

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
HYDRO ELECTRIC COMM. TOWN OF CALEDON
CABLE TELEVISION

10m 0 10m 20m 30m HORIZONTAL SCALE

1m 0 1m 2m 3m VERTICAL SCALE

Region of Peel
Public Works

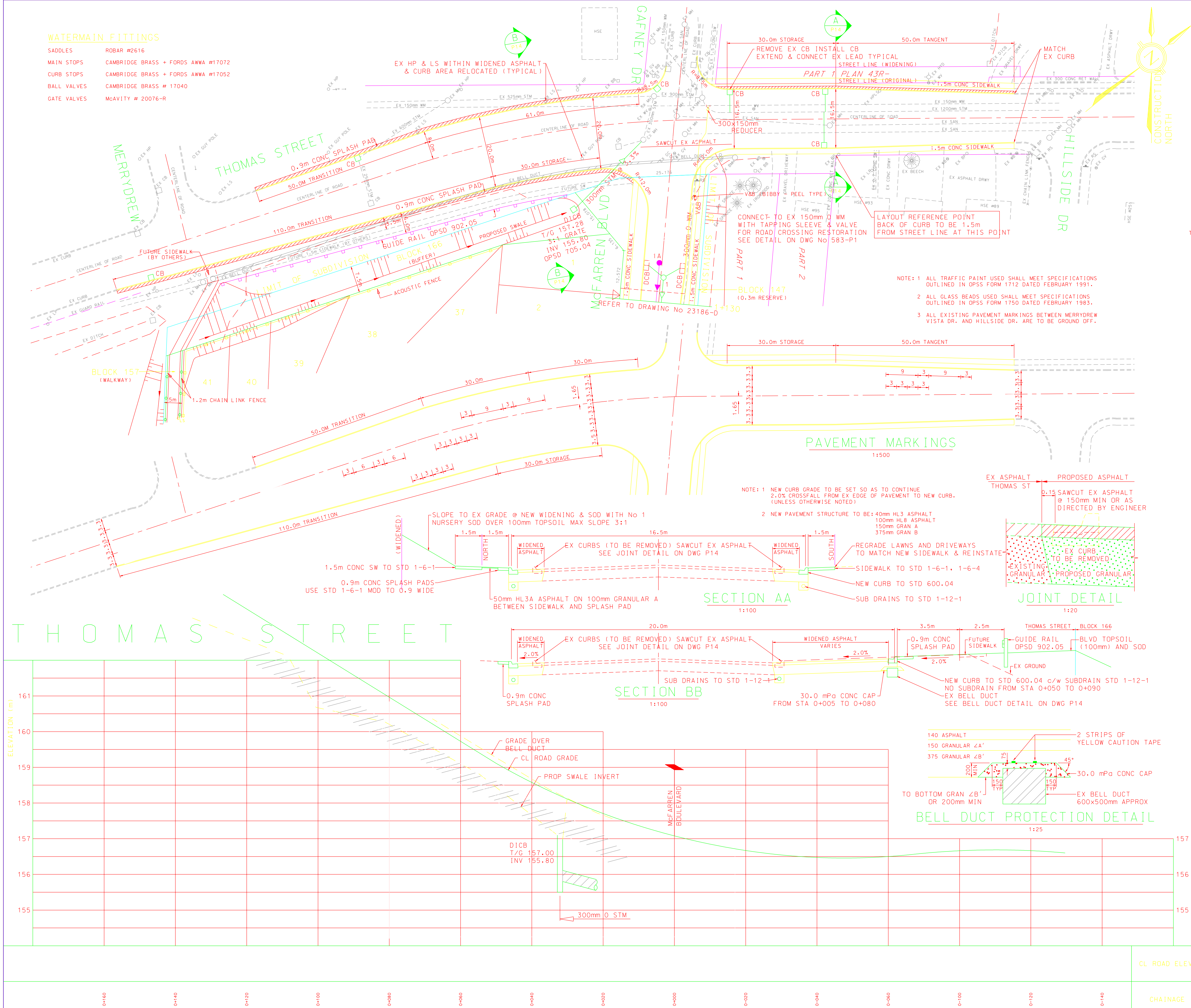
THOMAS STREET

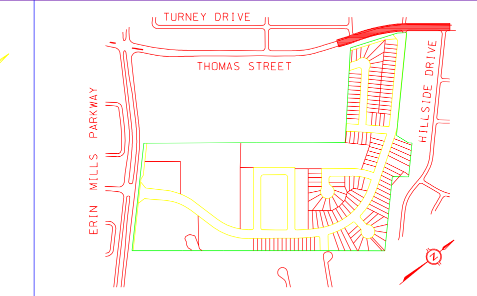
(FROM JOYMAR DR. TO GAFNEY DR.)

PROP.300mmØ WATERMAIN

Sta. 1+000 **To Sta.** 1+140

LOTS	AREA Z-39 N	PROJECT NO. 96-1440
CHECKED BY	DRAWN BY YC/JP	PLAN NO.
DATE AUG. 03, 1995	SHEET 1 OF 2	22150-D





KEY PLAN

LEGEND

- CATCHBASIN
- HYDRANT
- SANITARY SEWER AND MANHOLE
- STORM SEWER AND MANHOLE

T/G 157.28 AS-CONSTRUCTED

NOTES

1 THE LOCATION OF EXISTING UTILITIES ARE APPROXIMATE ONLY AND THE EXACT LOCATION SHALL BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION FROM DAMAGE.

2 ANY UTILITY RELOCATINGS REQUIRED DUE TO THE DEVELOPMENT OF THE SUBJECT LANDS TO BE UNDERTAKEN BY THE UTILITY COMPANY AT THE EXPENSE OF THE DEVELOPER.

3 48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING CITY OF MISSISSAUGA TRANSPORTATION AND WORKS DEPARTMENT HYDRO ELECTRIC COMMISSION CITY OF MISSISSAUGA.

4 SIDEWALK GRADES TO BE CONFIRMED IN FIELD BY ENGINEER PRIOR TO CONCRETE POUR.

5 THE CONTRACTOR SHALL NOTIFY HOMEOWNERS 48 HOURS PRIOR TO ANY CONSTRUCTION THAT INTERFERES WITH MOVEMENT IN OUR OUT OF DRIVEWAYS.

6 UNDERDRAINS TO BE INSTALLED UNDER NEW CURBS PER STD. 1-12-1.

NO.	DATE	BY	REVISIONS
7	AUG./98	JY	AS-CONST. UPDATE REV. II PER REGION COMME
6	MAY/98	JY	AS-CONST. UPDATE PER REGION COMMENTS
5	JAN/98	JY	AS-CONSTRUCTED
4	AUG/94	SP	WIDENING SHIFTED TO AVOID BELL
3	FEB/94	SP	REVISION FOR PRESERVICING SUBMISSION
2	DEC/93	SP	REVISION FOR INTERIM SUBMISSION
1	AUG/93	SP	REVISION FOR SECOND SUBMISSION

CAD FILE: 583P14B | PLOT SCALE: 1:0.5 | PLOT DATE: AUG./05/98

BENCHMARK

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE REFERRED TO MISSISSAUGA BENCHMARK No 394, ON THE SOUTH FACE OF THE NORTHWEST CONCRETE END POST OF BRIDGE ON THOMAS STREET, 61 METRES EAST OF JOYMAR DRIVE, HAVING AN ELEVATION OF 154.665

21T-92007

RECORD NOTE:
THIS IS A COMPUTER GENERATED COPY OF AN ORIGINAL DRAWING BEARING THE PROFESSIONAL SEAL AND SIGNATURE OF S. L. POTTER P.ENG. DATED 14/04/94, AMENDED TO REFLECT 'CONSTRUCTION RECORD' INFORMATION.

DESIGNED BY | APPROVED BY

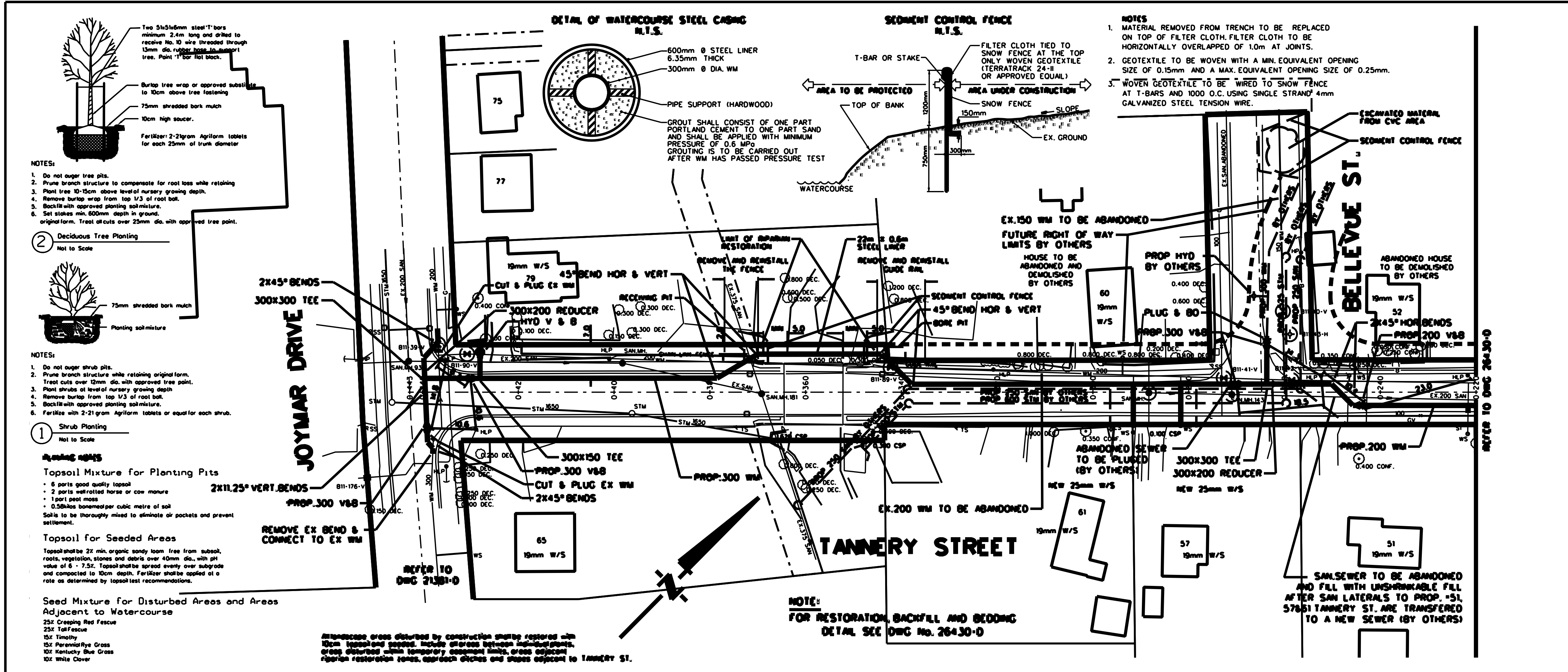
TRAFALGAR ENGINEERING LTD.
481 MORDEN ROAD OAKVILLE, ONTARIO L6K 3W6
TEL: (905) 338-3366 FAX: (905) 338-7734

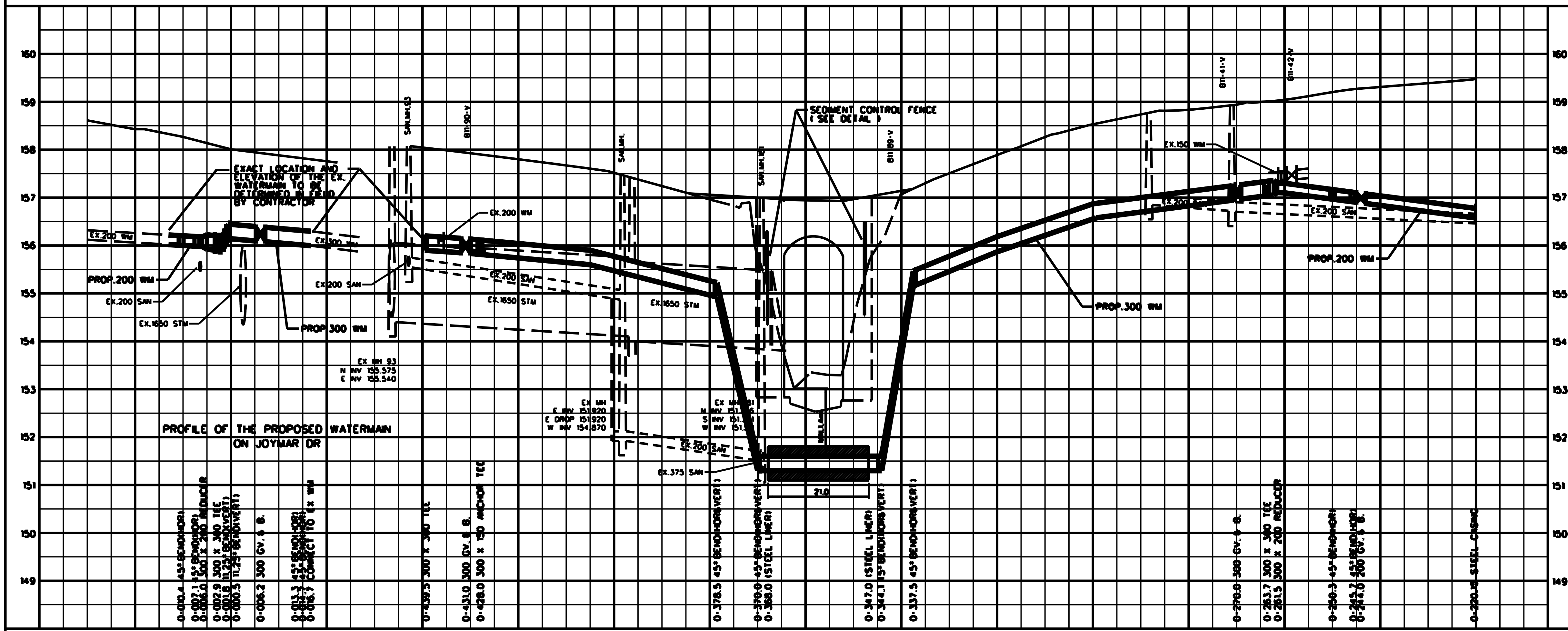
JANNOCK PROPERTIES
McFARREN SITE

CITY OF MISSISSAUGA
TRANSPORTATION AND WORKS DEPARTMENT

THOMAS STREET

SCALE	H 1:500 V 1:50	AREA	Z-39	PROJECT No.	583
DRAWN BY	DGK	CHECKED BY	SP	PLAN No.	P14
DATE	AUG/05/93	SHEET	1 OF 1		23194-D





BOT.EL. OF WM.		155.74	155.47	154.96	151.30		154.90	156.55	156.83	157.10	156.84	156.60
ROAD CHAINAGE	0+020	0+440	0+420	0+400	0+380	0+360	0+340	0+320	0+300	0+280	0+260	0+240	0+220

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS		
STORM SEWERS			BELL U/G CABLE		
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			ONT. HYDRO		
PARKS & REC.			CTV		
ONT. CLEAN WATER					

REVISIONS

DATE	DETAILS	INIT.
JULY 2002	AS CONSTRUCTED	OG

KEY PLAN N.T.S.

NOTES FOR THE CVC BORE PIT & RECEIVING PIT:

1. THE BORING AND RECEIVING PITS HAVE TO BE CONSTRUCTED USING CLOSED SHEATHING.
2. CONTRACTOR IS NOT ALLOWED TO WORK IN THE PITS IF HE DOES NOT HAVE SUFFICIENT DEWATERING EQUIPMENT ON SITE TO MAINTAIN THE PITS IN A DRY WORKING CONDITION.
3. THE END OF THE STEEL LINER WILL BE 0.5m MIN. FROM THE FACE OF THE BRIDGE (TUNNEL) FOOTING.
4. WATER PUMPED FROM BORING AND RECEIVING PITS TO BE DISCHARGED INTO A FILTER BAG, TO REMOVE SUSPENDED PARTICULATE, AND PUMPED INTO A GRASSY SWALE PRIOR TO THE WATER RE-ENTERING THE MULLET CREEK, TO THE SATISFACTION OF CVC.
5. THE GRASSY SWALE AND/OR SETTLING POND SHALL BE LOCATED FAR ENOUGH AWAY FROM THE MULLET CREEK TO FILTER SEDIMENT.
6. ALL DISTURBED BOULEVARD AREAS NEAR MULLET CREEK ARE TO BE REINSTATED WITH 100mm NURSERY GRADE TOPSOIL AND SEEDED/SODDED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
7. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT SILT ON THE ROADWAY DOES NOT ENTER MULLET CREEK. TO ACHIVE THIS, THE CONTRACTOR HAVE TO ERECT SILT FENCE AND/OR PUT IN HAY BALES AS PER CVC REQUIREMENT.

General Notes

- ALL DRIVEWAYS ASPHALT UNLESS OTHERWISE NOTED.
- ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD
- DENOTES BUILDING - NOT LOCATED
- DENOTES BUILDING LOCATED
- TYPE 'B' BEDDING UNLESS OTHERWISE NOTED (SAN)

B.M. NO. ELEV.

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION LOCATION OF EXISTING UTILITIES APPROXIMATE ONLY. TO BE VERIFIED IN FIELD BY CONTRACTOR.

DESIGNED BY CHKD. APPROVED BY

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
CABLE TELEVISION

HORIZONTAL SCALE 10m 0 10 20 30m
VERTICAL SCALE 1m 0 1 2 3m

Region of Peel
Public Works

TANNERY STREET

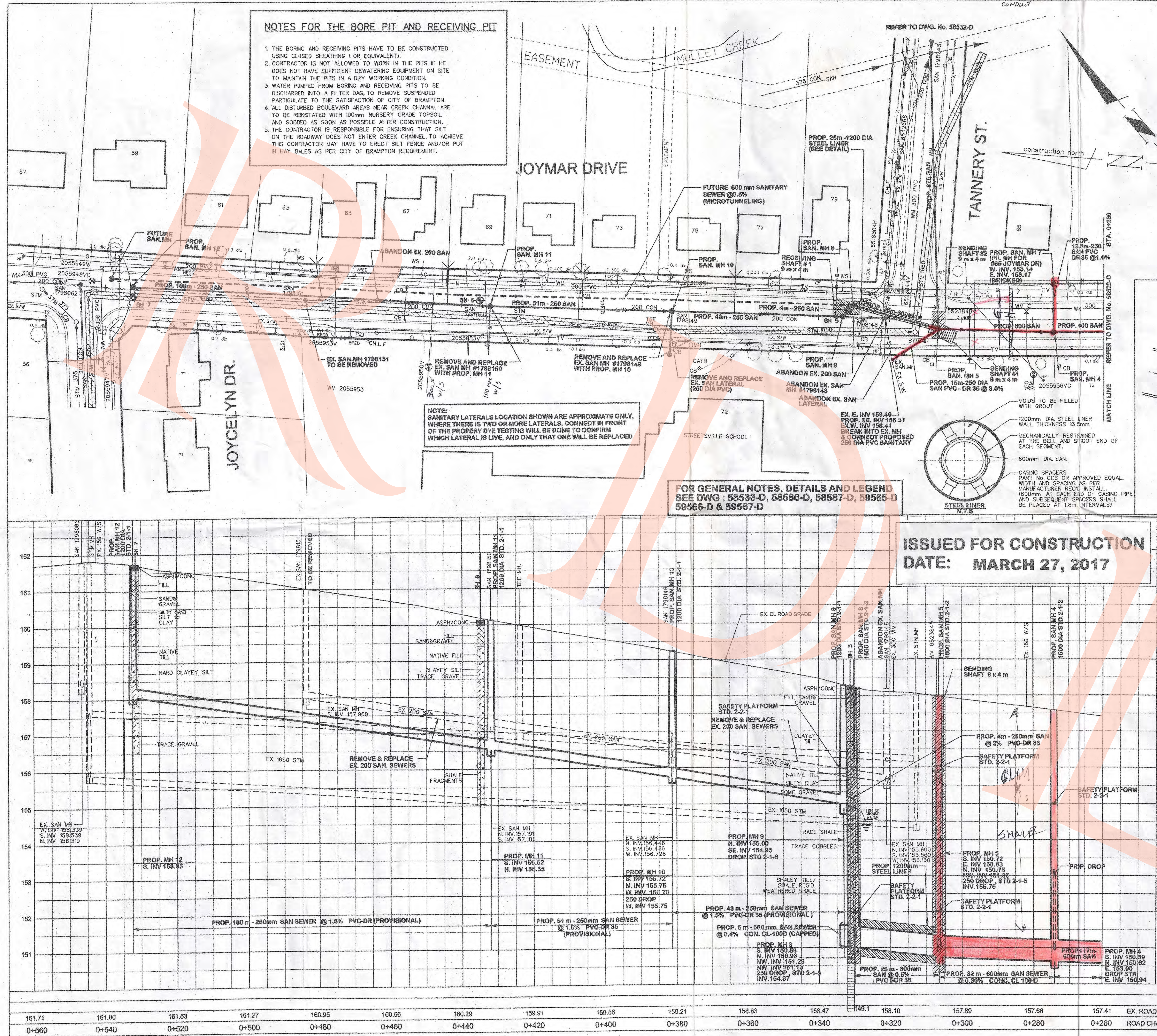
(FROM QUEEN ST. S. TO JOYMAR DR.)

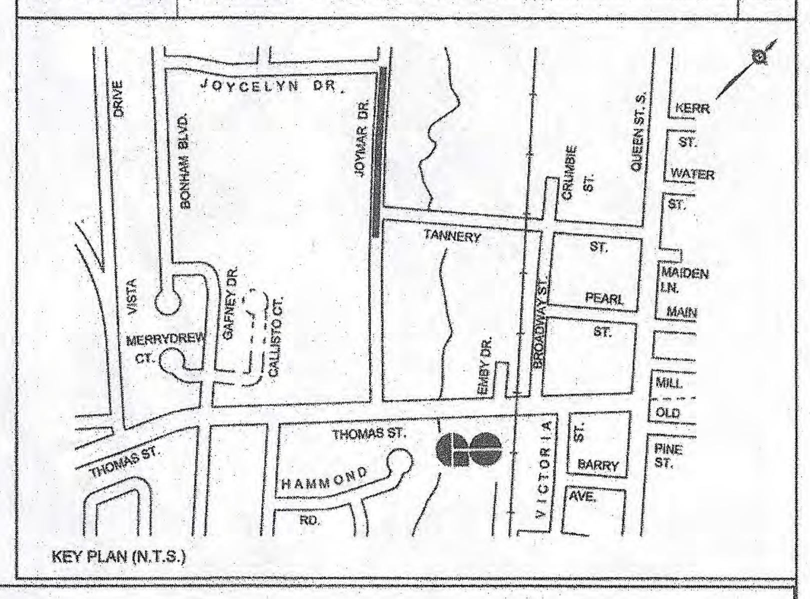
PROP. 300mm WATERMAIN
PROP. 250mm SAN. SEWER

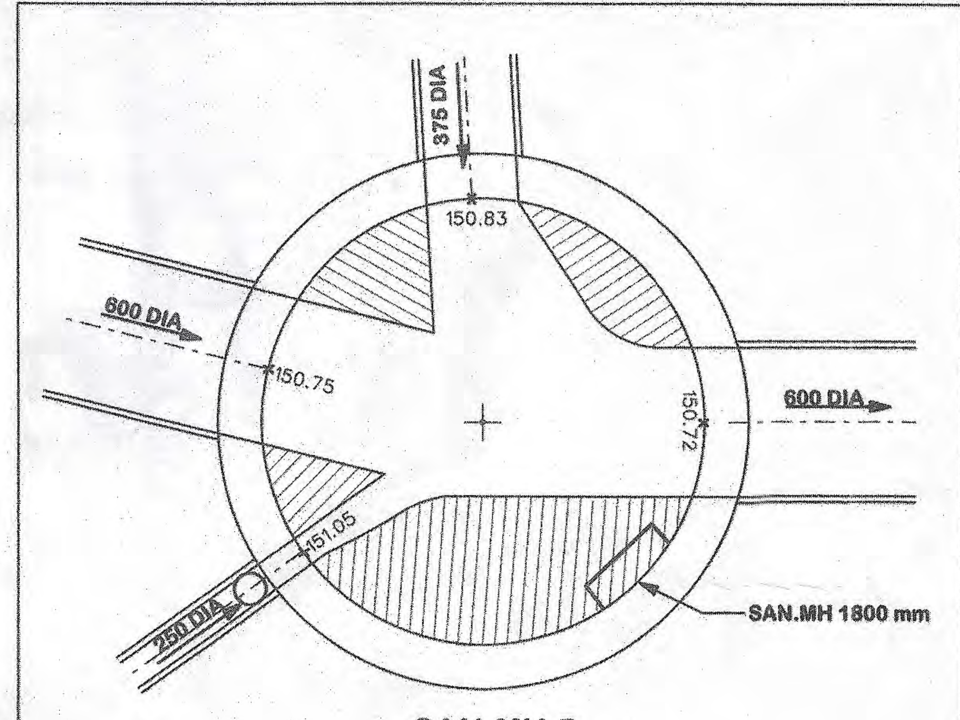
Sta. 0+220 To Sta. 0+439.5

LOTS	AREA Z-39	PROJECT NO. 00-1380 00-2270
CHECKED BY	DRAWN BY O.G.	PLAN NO. 26431-D
DATE FEBRUARY 2001	SHEET 2 OF 2	

26431_d.dgn 23/08/06 5:01:06 PM







SAN.MH 5

SCALE 1:25

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS	FEB.11, 2016	JP
STORM SEWERS			BELL U/G CABLE	APR. 1, 2015	JP
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			HYDRO ONE	APR. 27, 2016	JP
PARKS & REC.			CTV		
ONT. CLEAN WATER	FEB.11, 2016	JP	COMMUNIC. CABLES	OCT. 2, 2015	JP

REVISIONS

DATE	DETAILS	INIT.
NOV 17, 2016	ISSUED FOR PUCC	V.P.
FEB. 17, 2017	ISSUED FOR TENDER	V.P.
MAR. 27, 2017	**ISSUED FOR CONSTRUCTION**	**V.P.**

General Notes

All Driveways Are ASPHALT Unless Otherwise Noted

All Water And Sanitary Service Locations Are Approximate And Must Be Located Accurately In The Field

All Horizontal And Vertical Bends Are In Degrees

All Pipes Size In mm

20C Existing Water Service, Size In mm

WS20 Proposed Water Service, Size In mm

B.M. No. Elev.
Description
Location

The Contractor Is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction. Location Of Existing Utilities Approximate Only, To Be Verified In Field By Contractor.

LICENSED PROFESSIONAL ENGINEER D. GORZYNSKI 100059815 Feb 14/2017 PROVINCE OF ONTARIO

Designed by

Chkd.

AS BUILT BY PALMINO NOV 2017 T-GRADUAZ

Approved by

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL CANADA
ENBRIDGE INCORPORATED-GAS DISTRIBUTION
ONTARIO MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ONE NETWORKS
ENERSOURCE, HYDRO MISSISSAUGA
HYDRO ONE BRAMPTON

CABLE TELEVISION/FIBREOPTIC PROVIDERS:
BELL CANADA
ENERSOURCE TELECOM
HYDRO ONE TELECOM
ROGERS CABLE
ALLSTREAM
PSN (PUBLIC SECTOR NETWORK)
FUTUREWAY (FCI BROADBAND)

10m 0 10 20 30m HORIZONTAL SCALE

1m 0 1 2 3m VERTICAL SCALE

Region of Peel
Working for you

JOYMAR DRIVE

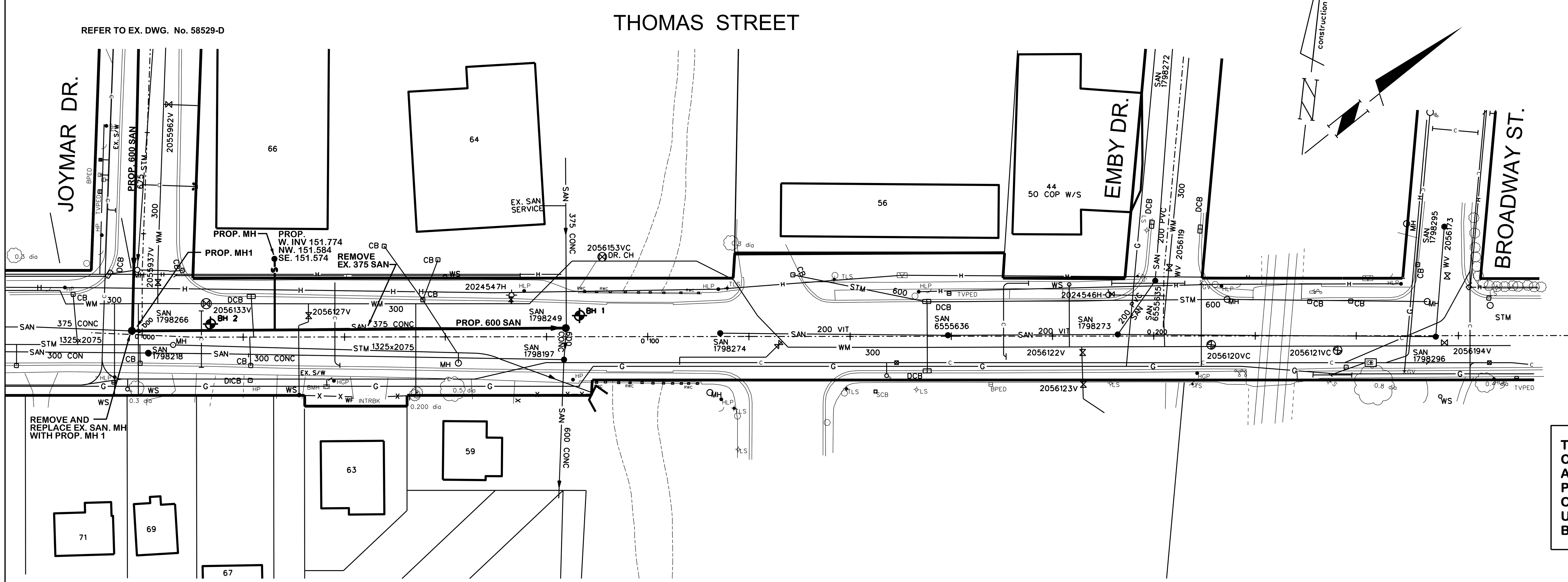
(FROM THOMAS ST. TO JOYCELYN DR.)

PROP. 525 mm SANITARY SEWER

STA. 0+260 TO STA. 0+560

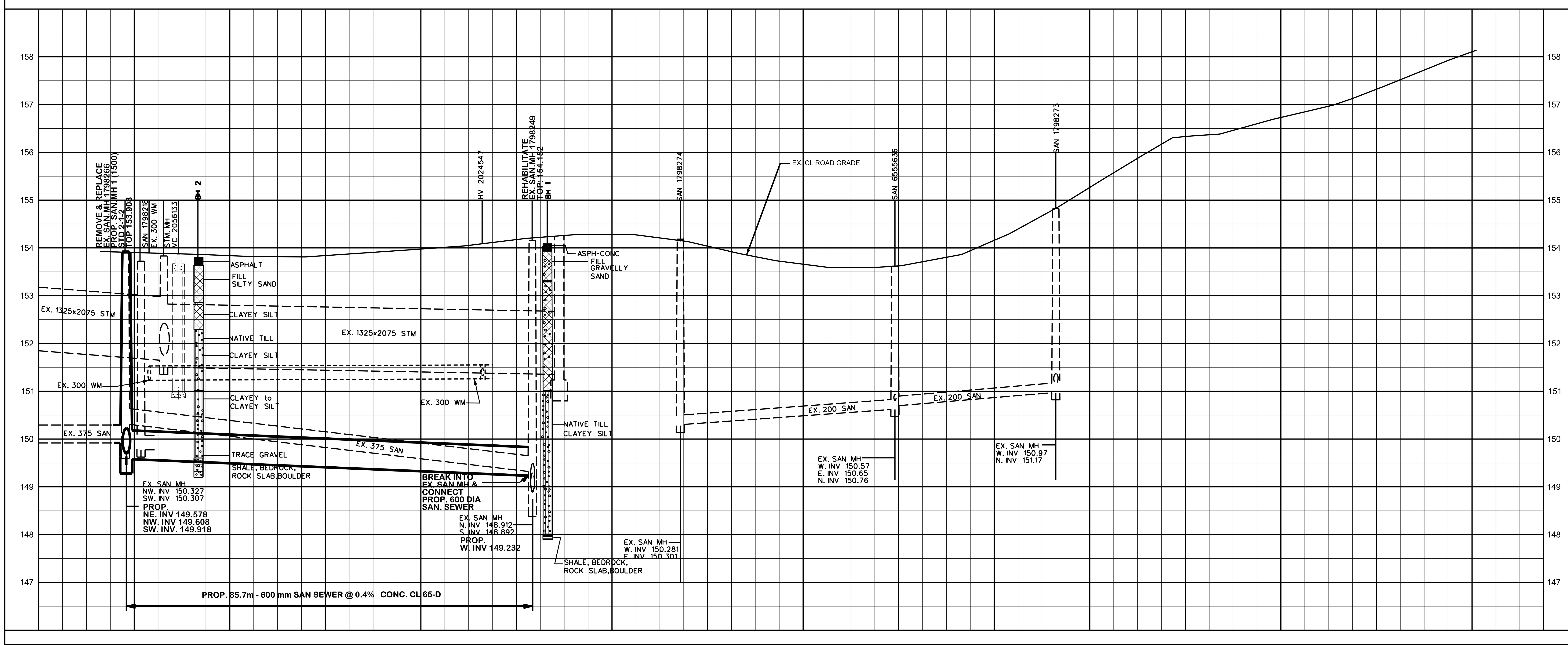
CAD Area		Area	Z-39E	Project No.	16-2300 A
Checked by		Drawn by	V.P		
Date	APRIL, 2016	Sheet	2 of 2	Plan No.	58530-D

REFER TO EX. DWG. No. 58529-D



THE VENDOR SHALL INSTALL FILTER CLOTH IN ALL CATCH BASINS. THE FILTER CLOTH SHALL BE MAINTAINED AND IN GOOD REPAIR THROUGHOUT THE CONSTRUCTION PERIOD BY DAILY CLEANING AND REPLACEMENT AS REQUIRED OR DIRECTED BY THE ENGINEER. REMOVE AND DISPOSE UPON COMPLETION. NO EXCAVATED MATERIAL SHALL BE STORED ON THOMAS STREET.

FOR GENERAL NOTES, DETAILS AND LEGEND SEE DWG : 58533-D, 58586-D, 58587-D, 59565-D 59566-D & 59567-D



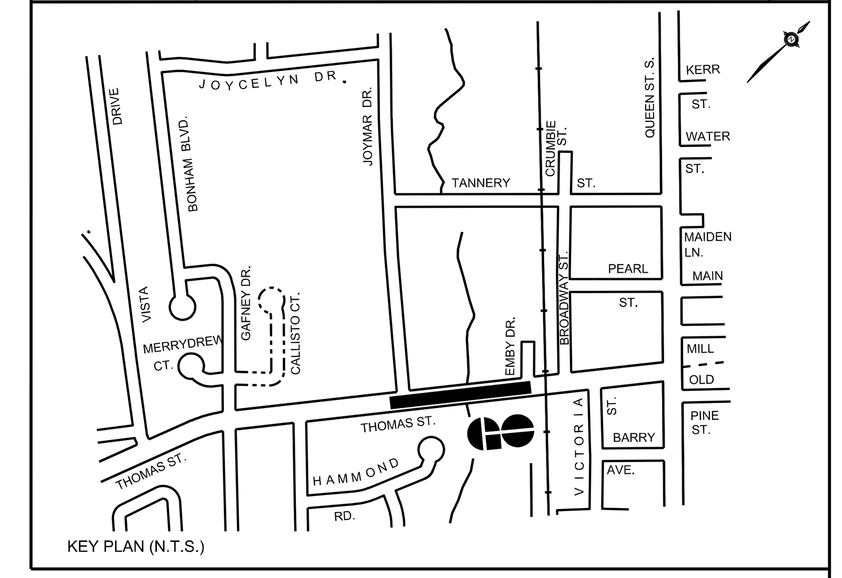
153.91	153.84	153.85	153.98	154.18	154.29	154.04	153.66	153.63	154.17	155.27	156.34	156.74	157.33	EX. ROAD ELEV.
0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180	0+200	0+220	0+240	0+260	ROAD CHAINAGE

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS	FEB.11, 2016	JP
STORM SEWERS			BELL U/G CABLE	APR. 1, 2015	JP
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			HYDRO ONE	APR. 27, 2016	JP
PARKS & REC.			CTV		
ONT. CLEAN WATER	FEB.11, 2016	JP	COMMUNIC. CABLES	OCT. 2, 2015	JP

REVISIONS

DATE	DETAILS	INIT.
NOV.17, 2016	ISSUED FOR PUCC	V.P.
FEB.17, 2017	ISSUED FOR TENDER	V.P.
MARCH.27, 2017	ISSUED FOR CONSTRUCTION	V.P.
MAY, 2017	AS RECORDED	A.M.



KEY PLAN (N.T.S.)

General Notes

All Driveways Are ASPHALT Unless Otherwise Noted

All Water And Sanitary Service Locations Are Approximate And Must Be Located Accurately In The Field

All Horizontal And Vertical Bends Are In Degrees

All Pipes Size In mm

20C Existing Water Service, Size In mm

WS20 Proposed Water Service, Size In mm

B.M. No. Elev.
Description
Location

The Contractor Is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction. Location Of Existing Utilities Approximate Only, To Be Verified In Field By Contractor.

Designed by ______ Chkd. ______ Approved by ______

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL CANADA
ENBRIDGE INCORPORATED-GAS DISTRIBUTION
ONTARIO MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ONE NETWORKS
ENERSOURCE, HYDRO MISSISSAUGA
HYDRO ONE BRAMPTON

CABLE TELEVISION/FIBREOPTIC PROVIDERS:
BELL CANADA
ENERSOURCE TELECOM
HYDRO ONE TELECOM
ROGERS CABLE
ALLSTREAM
PSN (PUBLIC SECTOR NETWORK)
FUTUREWAY (FCI BROADBAND)

1Om 0 10 20 30m HORIZONTAL SCALE

1m 0 1 2 3m VERTICAL SCALE

Region of Peel
Working for you

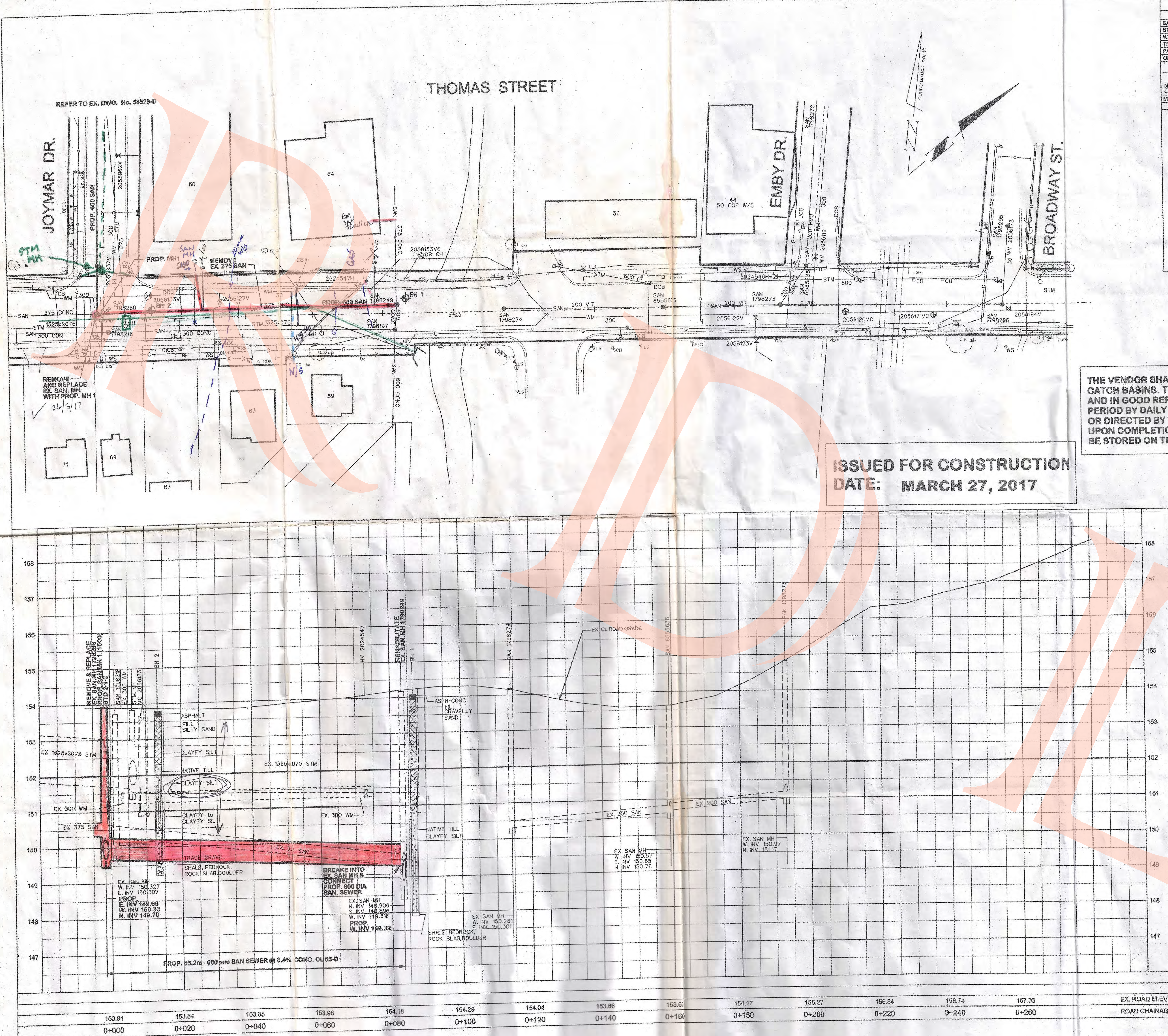
THOMAS STREET

(JOYMAR DR. TO EMBY DR.)

PROP. 600 mm SANITARY SEWER

STA. 0+000 TO STA. 0+200

CAD Area		Area	Z-39E	Project No.	16-2300 A
Checked by		Drawn by	JP		
Date	MAY, 2016	Sheet	1 of 1	Plan No.	58531-D

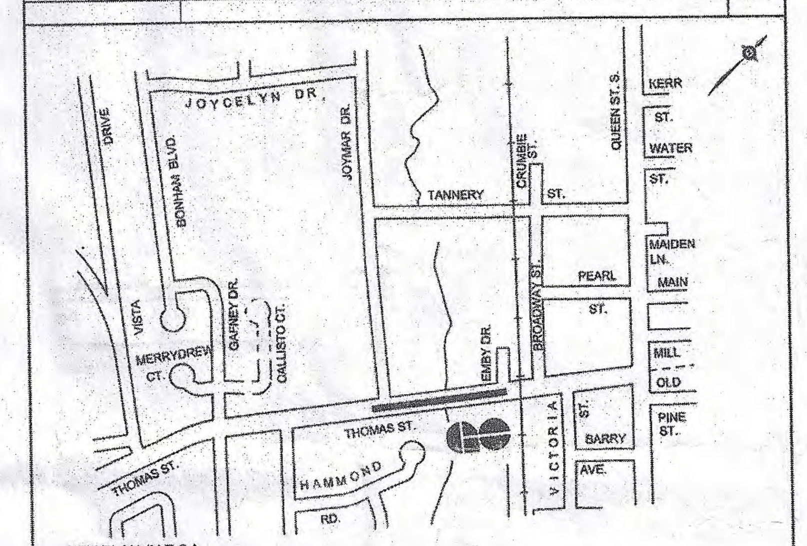


SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS	FEB.11, 2016	JP
STORM SEWERS			BELL U/G CABLE	APR. 1, 2015	JP
WATERMAINS			HYDRO U/G CABLE		
TRANSIT			HYDRO ONE	APR. 27, 2016	JP
PARKS & REC.			CTV		
ONT. CLEAN WATER	FEB.11, 2016	JP	COMMUNIC. CABLES	OCT. 2, 2015	JP

REVISIONS

DATE	DETAILS	INIT.
NOV.17, 2016	ISSUED FOR PUCC	V.P.
FEB.17, 2017	ISSUED FOR TENDER	V.P.
MAR. 27, 2017	ISSUED FOR CONSTRUCTION	V.P.



KEY PLAN (N.T.S.)

FOR GENERAL NOTES, DETAILS AND LEGEND SEE DWG : 58533-D, 58586-D, 58587-D, 59565-D 59566-D & 59567-D

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20C Existing Water Service, Size In mm

WS20 Proposed Water Service, Size In mm

B.M. No. Elev.
Description
Location

The Contractor Is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction. Location Of Existing Utilities Approximate Only, To Be Verified In Field By Contractor.

LICENSED ... D. GORZYNSKI 100059815 Feb. 14/2017 PROVINCE OF ONTARIO

Designed by Chkd.

AS BUILT BY PACHINO, MAY 2017 T. GRADVAC

Approved by

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL CANADA
ENBRIDGE INCORPORATED-GAS DISTRIBUTION
ONTARIO MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ONE NETWORKS
ENERSOURCE, HYDRO MISSISSAUGA
HYDRO ONE BRAMPTON

CABLE TELEVISION/FIBREOPTIC PROVIDERS:
BELL CANADA
ENERSOURCE TELECOM
HYDRO ONE TELECOM
ROGERS CABLE
ALLSTREAM
PSN (PUBLIC SECTOR NETWORK)
FUTUREWAY (FCI BROADBAND)

10m 0 10 20 30m HORIZONTAL SCALE

1m 0 1 2 3m VERTICAL SCALE

Region of Peel
Working for you

THOMAS STREET

(JOYMAR DR. TO EMBY DR.)

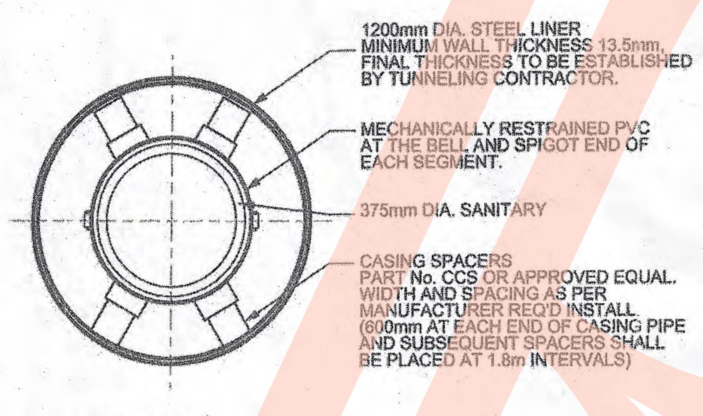
PROP. 600 mm SANITARY SEWER

STA. 0+000 TO STA. 0+200

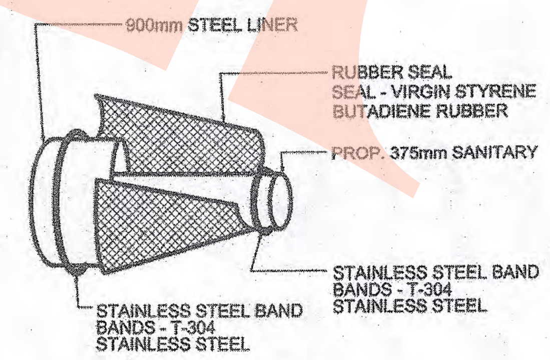
CAD Area	Area Z-39E	Project No.	16-2300 A
Checked by	Drawn by JP		
Date MAY, 2016	Sheet 1 of 1	Plan No.	58531-D

NOTES FOR THE BORE PIT AND RECEIVING PIT

1. THE BORING AND RECEIVING PITS HAVE TO BE CONSTRUCTED USING CLOSED SHEATHING (OR EQUIVALENT).
2. CONTRACTOR IS NOT ALLOWED TO WORK IN THE PITS IF HE DOES NOT HAVE SUFFICIENT DEWATERING EQUIPMENT ON SITE TO MAINTAIN THE PITS IN A DRY WORKING CONDITION.
3. WATER PUMPED FROM BORING AND RECEIVING PITS TO BE DISCHARGED INTO A FILTER BAG, TO REMOVE SUSPENDED PARTICULATE TO THE SATISFACTION OF CITY OF BRAMPTON.
4. ALL DISTURBED BOULEVARD AREAS NEAR CREEK CHANNAL ARE TO BE REINSTATED WITH 100mm NURSERY GRADE TOPSOIL AND SODDED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT SILT ON THE ROADWAY DOES NOT ENTER CREEK CHANNEL. TO ACHIEVE THIS CONTRACTOR MAY HAVE TO ERECT SILT FENCE AND/OR PUT IN HAY BALES AS PER CITY OF BRAMPTON REQUIREMENT.

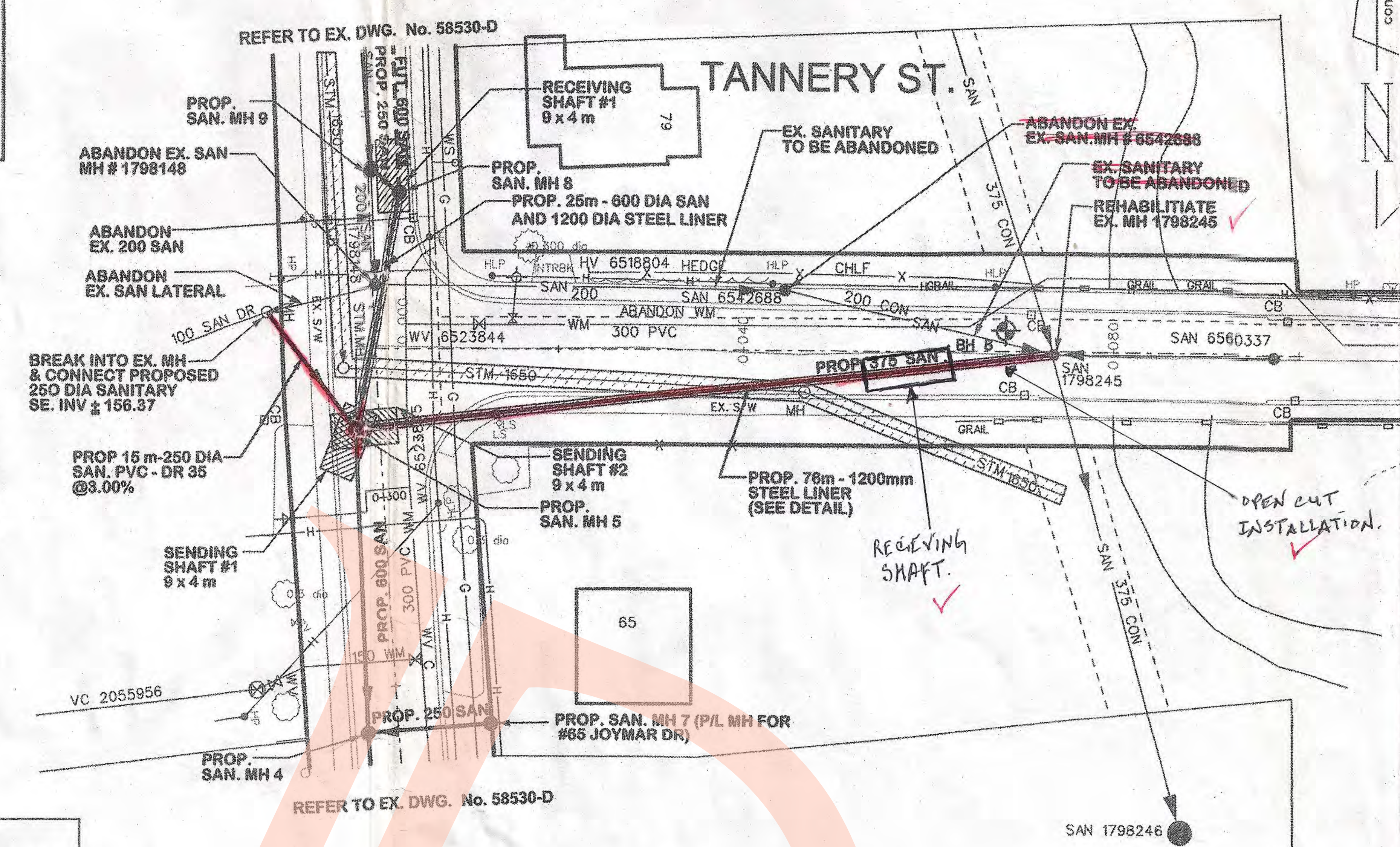


STEEL LINER
N.T.S.



CASING END SEAL
N.T.S.

ISSUED FOR CONSTRUCTION
DATE: MARCH 27, 2017



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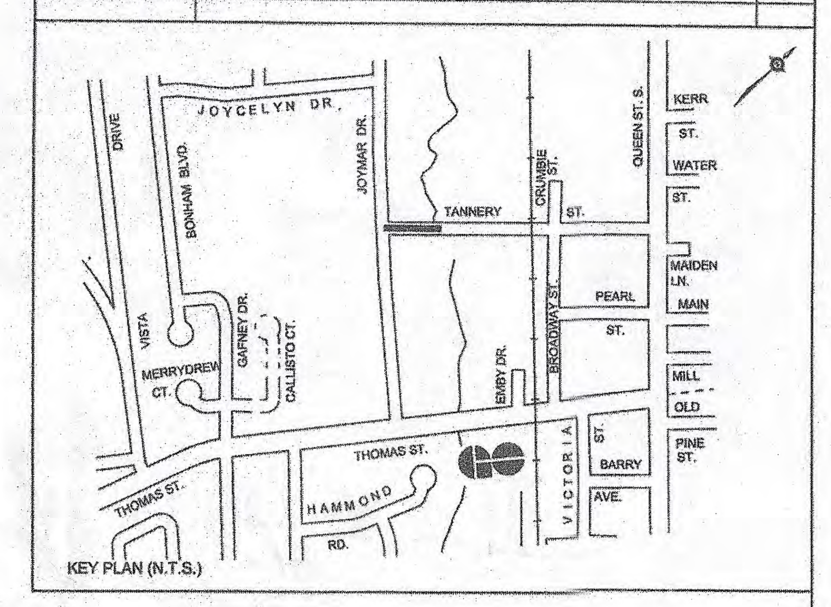
SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS			GAS MAINS	FEB.11, 2016	JP
STORM SEWERS			BELL U/G CABLE	APR. 1, 2015	JP
WATERMAINS			HYDRO U/G CABLE	APR. 27, 2016	JP
TRANSIT			HYDRO ONE	APR. 27, 2016	JP
PARKS & REC.			CTV		
ONT. CLEAN WATER	FEB.11, 2016	JP	COMMUNIC. CABLES	OCT. 2, 2015	JP

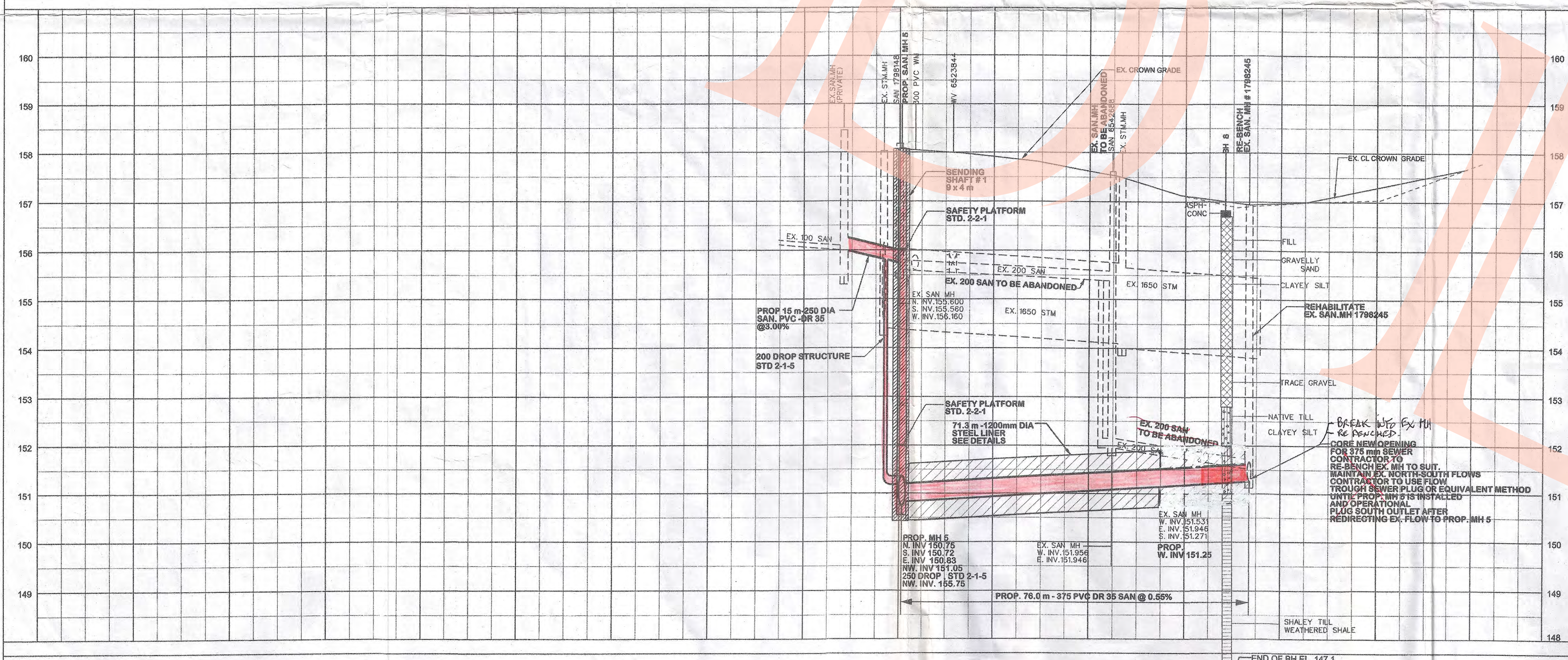
REVISIONS

DATE	DETAILS	INIT.
NOV 17, 2016	ISSUED FOR PUCC	J.P
FEB 17, 2017	ISSUED FOR TENDER	J.P
MAR. 27, 2017	ISSUED FOR CONSTRUCTION	J.P.



KEY PLAN (N.T.S.)

FOR GENERAL NOTES, DETAILS AND LEGEND SEE DWG : 58533-D, 58586-D, 58587-D, 59565-D 59566-D & 59567-D



000.00	000.00	000.00	000.00	000.00	000.00	000.00	158.07	157.91	157.62	157.12	156.97	EX. ROAD ELEV.
0+000	0+000	0+000	0+000	0+000	0+000	0+000	0+000	0+020	0+040	0+060	0+080	ROAD CHAINAGE

General Notes

All Driveways Are ASPHALT Unless Otherwise Noted
All Water And Sanitary Service Locations Are Approximate And Must Be Located Accurately In The Field
All Horizontal And Vertical Bends Are In Degrees
All Pipes Size In mm
20C Existing Water Service, Size In mm
WS25 Proposed Water Service, Size In mm
B.M. No. Elev.
Description
Location
The Contractor Is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction. Location Of Existing Utilities Approximate Only, To Be Verified In Field By Contractor.

LICENSED PROFESSIONAL ENGINEER D. GORZYNSKI 100059815 Feb. 14/2017 PROVINCE OF ONTARIO

Designed by ______ Chkd. ______

AS Built By PACHINO NOV 2017 T. GRADVAC

Approved by ______

NOTICE TO CONTRACTOR
48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
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HYDRO ONE NETWORKS
ENERSOURCE, HYDRO MISSISSAUGA
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ROGERS CABLE
ALLSTREAM
PSN (PUBLIC SECTOR NETWORK)
FUTUREWAY (FCI BROADBAND)

10m 0 10 20 30m HORIZONTAL SCALE
1m 0 1 2 3m VERTICAL SCALE

Region of Peel
Working for you

TANNERY ST.
(FROM EAST OF JOYMAR DR. TO EASEMENT)
PROP. 300mm SANITARY
STA. 0+000 TO STA. 0+100

CAD Area		Area	Z-39E	Project No.	16-2300 A
Checked by		Drawn by	J.P		
Date	MAY, 2016	Sheet	1 of 1	Plan No.	58532-D

APPENDIX B

Water Servicing Calculations

Domestic Water Demand - North Building

Notes & References

Total Site Area:	2.78	ha	R 1.0 Region of Peel Linear Wastewater Standards (March 2023)
Total Development Area:	1.48	ha	
Number of Units:	829		
Population Density:	2.7	persons/unit	Site Plan 24025 prepared by SRM Architects Inc
Population:	2238	persons	

Design Parameters

Average Demand (L/capita/d)
280

Region of Peel Public Works Watermain Design Criteria (June 2010)

Water Demand:

Average Daily Demand = 626,724 L/day
7.25 **L/s**

Peaking Factors
Max Day = 2.0
Peak Hour = 3.0

Region of Peel Public Works Watermain Design Criteria (June 2010)

Average Day = 7.25 L/s
Max Day = **14.51** L/s
Peak Hour = **21.76** L/s

Max Day = Average Day Demand * Max Day
Peak Hour = Average Day Demand * Peak Hour

Municipality	Average Daily Water Demand (L/s)	Max Day Demand (L/s)	Peak Hourly Demand (L/s)
Region of Peel	7.25	14.51	21.76

CROZIER CONSULTING ENGINEERS

Project: 66 Thomas Street
Project No.: 1419-4679
Created By: CM/LE
Checked By: RB
Date: 2/19/2024
Updated: 3/12/2024

Domestic Water Demand - South Building

Notes & References

Total Site Area:	2.78	ha	R 1.0 Region of Peel Linear Wastewater Standards (March 2023)
Total Development Area:	1.48	ha	
Number of Units:	214		
Population Density:	2.7	persons/unit	Site Plan 24025 prepared by SRM Architects Inc
Population:	578	persons	

Design Parameters

Average Demand (L/capita/d)
280

Region of Peel Public Works Watermain Design Criteria (June 2010)

Water Demand:

Average Daily Demand = 161,784 L/day
1.87 **L/s**

Peaking Factors
Max Day = 2.0
Peak Hour = 3.0

Region of Peel Public Works Watermain Design Criteria (June 2010)

Average Day = 1.87 L/s
Max Day = **3.75** L/s
Peak Hour = **5.62** L/s

Max Day = Average Day Demand * Max Day
Peak Hour = Average Day Demand * Peak Hour

Municipality	Average Daily Water Demand (L/s)	Max Day Demand (L/s)	Peak Hourly Demand (L/s)
Region of Peel	1.87	3.75	5.62

Domestic Water Demand - Site Total

Notes & References

Total Site Area:	2.78	ha
Total Development Area:	1.48	ha
Total Number of Units:	1043	
Population Density:	2.7	persons/unit
Population:	2816	persons

R 1.0 Region of Peel Linear Wastewater Standards (March 2023)

Site Plan 24025 prepared by SRM Architects Inc

Design Parameters

Average Demand (L/capita/d)
280

Region of Peel Public Works Watermain Design Criteria (June 2010)

Water Demand:

Average Daily Demand = 788,508 L/day
9.13 **L/s**

Peaking Factors
Max Day = 2.0
Peak Hour = 3.0

Region of Peel Public Works Watermain Design Criteria (June 2010)

Average Day =	9.13	L/s
Max Day =	**18.25**	L/s
Peak Hour =	**27.38**	L/s

Max Day = Average Day Demand * Max Day
Peak Hour = Average Day Demand * Peak Hour

Municipality	Average Daily Water Demand (L/s)	Max Day Demand (L/s)	Peak Hourly Demand (L/s)
Region of Peel	9.13	18.25	27.38

Fire Flow per Fire Underwriter Survey 2020 - North Building

1. An estimate of fire flow required for a given area may be determined by the formula:

RFF = 220 * C * √A

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

Area, A =	8,565	sq.m	Area and type of construction are provided by architect.
100% 3rd Floor =	5,710	sq.m	
25% 4th Floor =	5,710	sq.m	
25% 5th Floor =	5,710	sq.m	

C= 0.6
Therefore RFF = 12,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended Occupancy/Contents Charges by Major Occupancy Examples.
Limited Combustible	-15%	Rapid Burning	25%	
Combustible	0%			

Reduction %: -15%

- 1,800 L/min reduction

Therefore RFF = 10,200

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 50%

Total Reduced Flow = 5,100 L/min reduction

Note: Do not round to the nearest 1,000 LPM.

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	15%	20.1 to 30 m	4%
3.1 to 10 m	11%	>30 m	0%
10.1 to 20 m	8%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	Distance (m)	Charge	Surcharge (L/min)
North	>30	0%	0
East	>30	0%	0
South	16.9m	8%	816
West	27	4%	408
Total Surcharge			**1,224**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	10,200			
Sprinkler Reduction	5,100	reduction		
Exposure Charge	1,224	surcharge		
RFF = Required Fire Flow:	**6,324**	**L/min**		
Rounded to nearest 1000 L/min:	**6,000**	**L/min**	or	**100 L/s**
				1,584 USGPM
Required Duration:	**1.75**	**Hr**		

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)

Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	1.25
4,000	1.50
5,000	1.75
6,000	**2.00**
8,000	2.00
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

Fire Flow per Fire Underwriter Survey 2020 - South Building

1. An estimate of fire flow required for a given area may be determined by the formula:

RFF = 220 * C * √A

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

Area, A = 2,279 sq.m — Area and type of construction are provided by architect.
100% 2nd Floor = 1,542 sq.m
25% 3rd Floor = 1,474 sq.m
25% 4th Floor = 1,474 sq.m

C= 0.6
Therefore RFF = 6,000 L/min **(rounded to nearest 1000 L/min)**

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

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*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended Occupancy/Contents Charges by Major Occupancy Examples.
Limited Combustible	-15%	Rapid Burning	25%	
Combustible	0%			

Reduction %: -15%

- 900 L/min reduction

Therefore RFF = 5,100

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 50%

Total Reduced Flow = 2,550 L/min reduction

Note: Do not round to the nearest 1,000 LPM.

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	15%	20.1 to 30 m	4%
3.1 to 10 m	11%	>30 m	0%
10.1 to 20 m	8%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	Distance (m)	Charge	Surcharge (L/min)
North	16.9m	8%	408
East	>30	0%	0
South	>30	0%	0
West	>30	0%	0
Total Surcharge			**408**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	5,100	
Sprinkler Reduction	2,550	reduction
Exposure Charge	408	surcharge
RFF = Required Fire Flow:	**2,958**	**L/min**
Rounded to nearest 1000 L/min:	**3,000**	**L/min** or **50 L/s** / **792 USGPM**
Required Duration:	**1.25**	**Hr**

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)	
Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	**1.25**
4,000	1.50
5,000	1.75
6,000	2.00
8,000	2.00
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

APPENDIX C

Sanitary Servicing Calculations

Domestic Sanitary Design Flow - North Building

			Notes & References
Total Site Area:	2.78	ha	R 1.0 Region of Peel Linear Wastewater Standards (March 2023)
Total Development Area:	1.48	ha	
Unit Population Density:	2.7	persons/unit	
Number of Units:	829		Site Plan 24025 prepared by SRM Architects Inc
Population:	2238	persons	

Design Parameters

Average Flow (L/capita/d)
290

R 1.0 Region of Peel Linear Wastewater Standards (March 2023)

Average Daily Flow =	**7.51**	L/s	
Peaking Factor, PF =	**3.55**		PF = 1 + 14 / (4 + (p/1000)^.5)
Peak Flow =	**26.65**	L/s	Peak Flow = Average Daily Flow * M
Infiltration =	0.26	L/s/ha	
Total Infiltration =	**0.27**	L/s	TI = Infiltration * (0.7 * Total Development Area)
Total Peak Flow =	**26.92**	L/s	Total Peak Flow = Peak Flow + Total Infiltration

Summary Table

Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)
7.51	3.55	26.65	0.27	26.92

Domestic Sanitary Design Flow - South Building

			Notes & References
Total Site Area:	2.78	ha	R 1.0 Region of Peel Linear Wastewater Standards (March 2023)
Total Development Area:	1.48	ha	
Unit Population Density:	2.7	persons/unit	
Number of Units:	214		Site Plan 24025 prepared by SRM Architects Inc
Population:	578	persons	

Design Parameters

Average Flow (L/capita/d)
290

R 1.0 Region of Peel Linear Wastewater Standards (March 2023)

Average Daily Flow =	**1.94**	L/s	
Peaking Factor, PF =	**3.94**		PF = 1 + 14 / (4 + (p/1000)^.5)
Peak Flow =	**7.64**	L/s	Peak Flow = Average Daily Flow * M
Infiltration =	0.26	L/s/ha	
Total Infiltration =	**0.12**	L/s	TI = Infiltration * (0.3 * Total Development Area)
Total Peak Flow =	**7.76**	L/s	Total Peak Flow = Peak Flow + Total Infiltration

Summary Table

Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)
1.94	3.94	7.64	0.12	7.76

Domestic Sanitary Design Flow - Site Total

			Notes & References
Total Site Area:	2.78	ha	R 1.0 Region of Peel Linear Wastewater Standards (March 2023)
Total Development Area:	1.48	ha	
Unit Population Density:	2.7	persons/unit	
Number of Units:	1043		Site Plan 24025 prepared by SRM Architects Inc
Population:	2816	persons	

Design Parameters

Average Flow (L/capita/d)
290

R 1.0 Region of Peel Linear Wastewater Standards (March 2023)

Average Daily Flow =	**9.45**	L/s	
Peaking Factor, PF =	**3.47**		PF = 1 + 14 / (4 + (p/1000)^.5)
Peak Flow =	**32.76**	L/s	Peak Flow = Average Daily Flow * M
Infiltration =	0.26	L/s/ha	
Total Infiltration =	**0.39**	L/s	
Total Peak Flow =	**33.14**	L/s	Total Peak Flow = Peak Flow + Total Infiltration

Summary Table

Average Daily Flow (L/s)	Peaking Factor	Peak Flow (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)
9.45	3.47	32.76	0.39	33.14

APPENDIX D

Stormwater Management Calculations

Storm Sewer Use By-law Acknowledgement

City of Mississauga
Transportation & Works
Environmental Services
300 City Centre Drive, 8th Floor
Mississauga, Ontario L5B 3C1
Env.Inquiries@mississauga.ca

MISSISSAUGA

Note that the purpose of this form is an acknowledgement that the owner or owner's representative is aware of the City of Mississauga and the Region of Peel's requirements for temporary construction dewatering during development. The submission of this form through the ePlans portal is required to form a complete development application for Official Plan Amendment, Zoning By-law Amendment, Plan of Subdivision, Removal of Holding Symbol and Site Plan Approval (only with land dedications to the City of Mississauga).

Address

64 & 66 Thomas St, 95 Joymar and 65 Tannery St

Legal Description of Property (optional)

Property Owner/Company

De Zen Realty Company Limited

Development Application File Number

DARC 24-170 W11

As an authorized representative of the owner of the subject property as referenced above,

I, Mark Palmieri (insert Full Name) of, De Zen Realty Company Limited (insert Legal Corporate Name of Company)

am aware of the City of Mississauga ("City") Storm Sewer Use By-law No. 0046-2022 and do commit to apply for and obtain a Temporary Storm Sewer Discharge Approval from the Transportation and Works Department, prior to any construction-related discharge from the subject property to the City's storm sewer system, if applicable.

Otherwise, if any construction-related discharge will be directed towards the Region of Peel's sanitary sewer system, then an application for such discharge will be made to the Region of Peel.

I acknowledge that the City requires the Storm Sewer Temporary Discharge Approval Form to be fully completed, including all required supporting documentation attached, to ensure that any discharge of groundwater and surface water to the storm sewer system will comply with the City's Storm Sewer Use By-law No. 0046-2022 at all times.

When details regarding discharge become available, then I, or my designate, will complete the Storm Sewer Temporary Discharge Approval Form, and work with the Transportation and Works Department to acquire the necessary approval prior to discharge. I understand that the discharge approval requires the collection and laboratory analysis of water quality samples, and that it could take approximately one to two weeks to coordinate the approval. As such, I will contact the Transportation and Works Department with sufficient lead time prior to any discharge.

I further acknowledge that I will need to provide a plan approved by the Transportation and Works Department prior to approval of a Shoring Permit or prior to construction dewatering activities where water will be discharged to the City's storm sewer system.

I certify that I have authority to sign on behalf of the above-referenced company.

Signature Mark Palmieri

Title Sr. Manager

Date

November 25th 2024

Rational Method Calculations
Site Catchment & Input Parameters

Storm Data: City of Mississauga

Time of Concentration: T_c = **15** **min**

As per Transportation and Works Section 8, page 1, dated November 2020

Return Period	A	B	C	I (mm/hr)
2 yr	610	4.6	0.78	59.89
5 yr	820	4.6	0.78	80.51
10 yr	1010	4.6	0.78	99.17
25 yr	1160	4.6	0.78	113.89
50 yr	1300	4.7	0.78	127.13
100 yr	1450	4.9	0.78	140.69

Pre - Development Conditions					
Catchment ID	**Description**	**Area** (ha)	**Area** (m^2)	**C**[1]	**Weighted Average C**[1]
101	to Mullet Creek	0.60	6,000	0.50	0.11
102	to Storm Sewers	2.18	21,800	0.50	0.39
Total Site		**2.78**	**27,800**		**0.50**

1. Pre-Development Runoff Coefficient of 0.5 used for pre-developed areas as per Transportation and Works Section 8.3.3, page 18, dated November 2020

Post - Development Conditions						
Catchment Area	**Description**	**Area** (ha)	**Area** (m^2)	**C**	**Weighted Average C**	
201	Watercourse	1.03	10,300	0.20	0.07	
202	Buildings	0.72	7,200	0.70	0.18	Captured and Controlled
203	At-Grade	0.53	5,300	0.80	0.15	Captured and Controlled
204	Landscape	0.29	2,900	0.30	0.03	- Captured
205	Uncontrolled	0.21	2,100	0.50	0.04	
Total Site		**2.78**	**27,800**		**0.48**	

Post Development Run-off Coefficients as per Transportation and Works Section 8, page 2, dated November 2020

Pre- Development Adjusted Runoff Coefficients			
Return Period	**Adjustment Factor**	**101**	**102**
2 yr	1.00	0.50	0.50
5 yr	1.00	0.50	0.50
10 yr	1.00	0.50	0.50
25 yr	1.10	0.55	0.55
50 yr	1.20	0.60	0.60
100 yr	1.25	0.63	0.63

Pre-Development Runoff Coefficient of 0.5 used for pre-developed areas as per Transportation and Works Section 8.3.3, page 18, dated November 2020

Post-Development Adjusted Runoff Coefficients						
Return Period	**Adjustment Factor**	**201**	**202**	**203**	**204**	**205**
2 yr	1.00	0.20	0.70	0.80	0.30	0.50
5 yr	1.00	0.20	0.70	0.80	0.30	0.50
10 yr	1.00	0.20	0.70	0.80	0.30	0.50
25 yr	1.10	0.22	0.77	0.88	0.33	0.55
50 yr	1.20	0.24	0.84	0.96	0.36	0.60
100 yr	1.25	0.25	0.88	1.00	0.38	0.63

Equations:

Peak Flow

$$Q_{post} = 0.0028 \cdot C_{post} \cdot i(T_d) \cdot A$$

Intensity

$$i(T_d) = A / (T + B)^C$$

Rational Method Calculations - Uncontrolled Peak Flows Summary

(using Pre-Development Runoff Coefficient = 0.50)

Peak Flows to Mullet Creek

Return Period	Pre-Development Catchment 101			Post-Development Catchment 201				
	Area (ha)	Adjusted RC	Peak Flows (m^3/s)	Area (ha)	Adjusted RC	Peak Flows (m^3/s)	Difference (m3/s)	Difference (+/-)[1]
2 yr	0.60	0.50	0.050	1.03	0.20	0.035	-0.016	-31%
5 yr		0.50	0.068		0.20	0.046	-0.021	-31%
10 yr		0.50	0.083		0.20	0.057	-0.026	-31%
25 yr		0.55	0.105		0.22	0.072	-0.033	-31%
50 yr		0.60	0.128		0.24	0.088	-0.040	-31%
100 yr		0.63	0.148		0.25	0.101	-0.046	-31%

Note: [1] Percent difference between pre-development Catchment 101 and post-development Catchment 201.

Peak Flows to Municipal Storm Sewer Network (Joymar & Thomas)

Return Period	Pre-Development Catchment 102			Post-Development Catchment 202-205					TOTAL		
	Area (ha)	Adjusted RC	Peak Flows (m^3/s)	Total Area (ha)	202	203	204	205	Peak Flows (m^3/s)	Difference (m3/s)	Difference (+/-)[2]
2 yr	2.18	0.50	0.183	1.75	0.084	0.071	0.014	0.017	0.186	0.004	2.0%
5 yr		0.50	0.246		0.113	0.095	0.019	0.024	0.251	0.005	2.0%
10 yr		0.50	0.303		0.139	0.117	0.024	0.029	0.309	0.006	2.0%
25 yr		0.55	0.382		0.176	0.148	0.030	0.037	0.390	0.008	2.0%
50 yr		0.60	0.466		0.214	0.180	0.037	0.045	0.475	0.009	2.0%
100 yr		0.63	0.537		0.246	0.207	0.043	0.051	0.548	0.011	2.0%

Note: [2] Percent difference between pre-development Catchment 102 and post-development Catchment 202.

Total Peak Flows from the Site

Return Period	Peak Flows (m^3/s)		
	Pre-Development (101-102)	Post-Development (201-205)	Difference (+/-)
2 yr	0.233	0.221	-5.5%
5 yr	0.313	0.297	-5.5%
10 yr	0.386	0.366	-5.5%
25 yr	0.488	0.462	-5.5%
50 yr	0.594	0.563	-5.5%
100 yr	0.684	0.649	-5.5%

Equations:

Peak Flow
$$Q_{post} = 0.0028 \bullet C_{post} \bullet i(T_d) \bullet A$$

Intensity
$$i(T_d) = A / (T + B)^C$$

Rational Method Calculations - Controlled Peak Flow Summary

2-Year Post-Dev Controlled to 2-Year Pre-Dev Rate

Peak Flows to JOYMAR (North Building)

Catchment Area	Description	Area (ha)	C	% Area	Target Flow Rate (2-yr)	Uncontrolled Flow Rate (2-yr)	Controlled Flow Rate (2-yr)
202	Buildings	0.585	0.70			0.140	0.137
203	At-Grade	0.450	0.80				
204	Landscape	0.240	0.30				
205	Uncontrolled	0.160	0.50			0.013	0.013
Total		**1.435**	**0.64**	**82%**	**0.150**	**0.153**	**0.150**
						Equivalent C =	0.27

Peak Flows to THOMAS (South Building)

Catchment Area	Description	Area (ha)	C	% Area	Target Flow Rate (2-yr)	Uncontrolled Flow Rate (2-yr)	Controlled Flow Rate (2-yr)
202	Buildings	0.135	0.70			0.026	0.026
203	At-Grade	0.080	0.80				
204	Landscape	0.050	0.30			0.002	0.002
205	Uncontrolled	0.050	0.50			0.004	0.004
Total		**0.315**	**0.63**	**18%**	**0.033**	**0.033**	**0.033**
						Equivalent C =	0.27

	TOTAL	**1.750**	**0.64**	**100.0%**	**0.183**	**0.186**	**0.183**
						Equivalent C =	0.27

Return Period	Allowable Flow (m3/s)	Total Flow to Sewers (202-205) (m3/s)	% Difference
2 yr	0.183	0.183	0.0%

CROZIER CONSULTING ENGINEERS

Project: 66 Thomas Street **Date:** 2019-04-05
Project No.: 1419-4679 **Updated:** 2024-03-15

Rational Method Calculations - Controlled Peak Flow Summary

10-Year Post-Dev Controlled to 10-Year Pre-Dev Rate

Peak Flows to JOYMAR (North Building)

Catchment Area	Description	Area (ha)	C	% Area	Target Flow Rate (10-yr)	Uncontrolled Flow Rate (10-yr)	Controlled Flow Rate (10-yr)
202	Buildings	0.585	0.70			0.232	0.226
203	At-Grade	0.450	0.80				
204	Landscape	0.240	0.30				
205	Uncontrolled	0.160	0.50			0.022	0.022
Total		**1.435**	**0.64**	**82%**	**0.248**	**0.254**	**0.248**
						Equivalent C =	0.44

Peak Flows to THOMAS (South Building)

Catchment Area	Description	Area (ha)	C	% Area	Target Flow Rate (10-yr)	Uncontrolled Flow Rate (10-yr)	Controlled Flow Rate (10-yr)
202	Buildings	0.135	0.70			0.043	0.043
203	At-Grade	0.080	0.80				
204	Landscape	0.050	0.30			0.004	0.004
205	Uncontrolled	0.050	0.50			0.007	0.007
Total		**0.315**	**0.63**	**18%**	**0.054**	**0.054**	**0.054**
						Equivalent C =	0.44

	TOTAL	**1.750**	**0.64**	**100.0%**	**0.303**	**0.308**	**0.303**
						Equivalent C =	0.44

Return Period	Allowable Flow (m3/s)	Total Flow to Sewers (202-205) (m3/s)	% Difference
10 yr	0.303	0.303	0.0%

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CROZIER CONSULTING ENGINEERS

Project: 66 Thomas Street
Project No.: 1419-4679

Date: 2019-04-05
Updated: 2024-03-15

Rational Method Calculations - Controlled Peak Flow Summary

100-Year Post-Dev Controlled to 100-Year Pre-Dev Rate

Peak Flows to JOYMAR (North Building)

Catchment Area	Description	Area (ha)	C	% Area	Target Flow Rate (100-yr)	Uncontrolled Flow Rate (100-yr)	Controlled Flow Rate (100-yr)
202	Buildings	0.585	0.70			0.411	0.401
203	At-Grade	0.450	0.80				
204	Landscape	0.240	0.30				
205	Uncontrolled	0.160	0.50			0.039	0.039
Total		**1.435**	**0.64**	**82%**	**0.440**	**0.451**	**0.440**
						Equivalent C =	0.78

Peak Flows to THOMAS (South Building)

Catchment Area	Description	Area (ha)	C	% Area	Target Flow Rate (100-yr)	Uncontrolled Flow Rate (100-yr)	Controlled Flow Rate (100-yr)
202	Buildings	0.135	0.70			0.077	0.077
203	At-Grade	0.080	0.80				
204	Landscape	0.050	0.30			0.007	0.007
205	Uncontrolled	0.050	0.50			0.012	0.012
Total		**0.315**	**0.63**	**18%**	**0.097**	**0.097**	**0.097**
						Equivalent C =	0.78
	TOTAL	**1.750**	**0.64**	**100.0%**	**0.537**	**0.548**	**0.537**
						Equivalent C =	0.78

Return Period	Allowable Flow (m3/s)	Total Flow to Sewers (202-205) (m3/s)	% Difference
100 yr	0.537	0.537	0.0%

Project:	66 Thomas Street
Project No:	1419-4679
Created By:	JL
Checked By:	RB
Date:	2021-03-15
Updated:	2024-03-15

ORIFICE SIZING

NORTH BUILDING

Orifice Parameters

Diameter Ø (m) =	0.375
Area (A) (m^2) =	0.1104
Coefficient (C) =	0.82
Discharge, Q =	CA x sqrt(2gh)
Max Head, m =	0.9
Max Flow Rate (10yr) =	226
Max Flow Rate (100yr) =	401
Orifice Discharge Rate, L/s =	370

Head	Discharge	Vol. Req.	Stm Event
1.0	401.2		
0.9	380.6	9.4	-100yr
0.8	358.8		
0.7	335.6		
0.6	310.7		
0.5	283.7		
0.4	253.7		
0.3	219.7	5.5	-10 yr
0.2	179.4		
0.1	126.9	3.3	-2yr
0.0	0.0		

SOUTH BUILDING

Orifice Parameters

Diameter Ø (m) =	-
Area (A) (m^2) =	-
Coefficient (C) =	-
Discharge, Q =	CA x sqrt(2gh)
Max Head, m =	-
Max Flow Rate (10yr) =	43
Max Flow Rate (100yr) =	77
Max Discharge Rate, L/s =	-

NOTE: NO ORIFICE OR QUANTITY CONTROLS REQUIRED FOR SOUTH BUILDING.

Project: 66 Thomas Street
Project No: 1419-4679
Created By: BP
Updated: 2024-03-15
Date: 9-21-2021

MODIFIED RATIONAL CALCULATIONS

POST-DEVELOPMENT

2 yr: Control Post-Development peak flow to 2 yr Pre-Development

2 yr Uncontrolled Post-Development Flow:

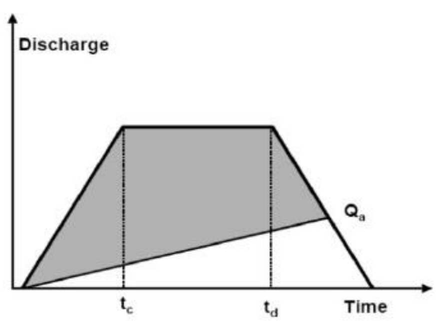
Q_{post} = 0.140 m^3/s

Target Flow (2-year Pre-development Flow):

Q_{target} = 0.137 m^3/s

A= 1.275
C= 0.66
C*= 0.66 (=C*1.0)

Storage Volume Determination (Detailed)				
T_d min	i mm/hr	T_d sec	Q_{post} m^3/s	S_d m^3
10	75.36	600	0.176	3.3
15	59.89	900	0.140	3.2
20	50.16	1200	0.117	-2.6
25	43.42	1500	0.102	-11.5
26	42.31	1560	0.099	-13.6
27	41.26	1620	0.097	-15.7
28	40.27	1680	0.094	-17.9
29	39.34	1740	0.092	-20.2
30	38.45	1800	0.090	-22.5
35	34.60	2100	0.081	-34.9
40	31.54	2400	0.074	-48.3
45	29.03	2700	0.068	-62.5
50	26.94	3000	0.063	-77.3
55	25.16	3300	0.059	-92.6
60	23.62	3600	0.055	-108.3



REQUIRED STORAGE VOLUME: 3.3 m^3

Equations:

Peak Flow
$Q_{post} = 0.0028 \cdot C_{post} \cdot i_{(Td)} \cdot A$

Storage
$S_d = Q_{post} \cdot T_d - Q_{pre} (T_d + T_c) / 2$

Project: 66 Thomas Street
Project No: 1419-4679
Created By: BP
Updated: 2024-03-15
Date: 9-21-2021

CROZIER CONSULTING ENGINEERS

MODIFIED RATIONAL CALCULATIONS

POST-DEVELOPMENT

10 yr: Control Post-Development peak flow to 10 yr Pre-Development

10 yr Uncontrolled Post-Development Flow:

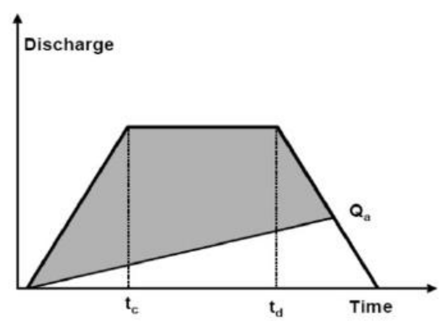
Q_{post} = 0.232 m^3/s

Target Flow (10-year Pre-development Flow):

Q_{target} = 0.226 m^3/s

A= 1.275
C= 0.66
C*= 0.66 (=C*1.0)

Storage Volume Determination (Detailed)				
T_d min	i mm/hr	T_d sec	Q_{post} m^3/s	S_d m^3
10	124.77	600	0.292	5.5
15	99.17	900	0.232	5.3
20	83.06	1200	0.194	-4.3
25	71.90	1500	0.168	-19.1
26	70.06	1560	0.164	-22.5
27	68.32	1620	0.160	-26.0
28	66.68	1680	0.156	-29.6
29	65.13	1740	0.152	-33.4
30	63.66	1800	0.149	-37.2
35	57.30	2100	0.134	-57.7
40	52.22	2400	0.122	-79.9
45	48.07	2700	0.112	-103.4
50	44.60	3000	0.104	-127.9
55	41.65	3300	0.097	-153.3
60	39.11	3600	0.092	-179.4



REQUIRED STORAGE VOLUME: 5.5 m^3

Equations:

Peak Flow
$Q_{post} = 0.0028 \cdot C_{post} \cdot i_{(Td)} \cdot A$

Storage
$S_d = Q_{post} \cdot T_d - Q_{pre} (T_d + T_c) / 2$

Project: 66 Thomas Street
Project No: 1419-4679
Created By: BP
Updated: 2024-03-15
Date: 9-21-2021

MODIFIED RATIONAL CALCULATIONS

POST-DEVELOPMENT

100 yr: Control Post-Development peak flow to 100 yr Pre-Development

100 yr Uncontrolled Post-Development Flow:

Q_{post} = 0.411 m^3/s

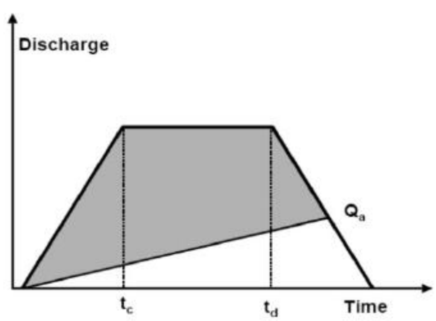
Target Flow (100-year Pre-development Flow):

Q_{target} = 0.401 m^3/s

A= 1.275
C= 0.66
C*= 0.83 (=C*1.25)

Storage Volume Determination (Detailed)

T_d min	i mm/hr	T_d sec	Q_{post} m^3/s	S_d m^3
10	176.31	600	0.516	8.6
15	140.69	900	0.411	9.4
16	135.41	960	0.396	7.2
17	130.56	1020	0.382	4.5
18	126.09	1080	0.369	1.2
19	121.96	1140	0.357	-2.5
20	118.12	1200	0.345	-6.6
25	102.41	1500	0.299	-32.0
30	90.77	1800	0.265	-63.6
35	81.77	2100	0.239	-99.4
40	74.58	2400	0.218	-138.3
45	68.68	2700	0.201	-179.5
50	63.75	3000	0.186	-222.7
55	59.56	3300	0.174	-267.3
60	55.95	3600	0.164	-313.3



REQUIRED STORAGE VOLUME: 9.4 m^3

Equations:

Peak Flow
$Q_{post} = 0.0028 \cdot C_{post} \cdot i_{(Td)} \cdot A$

Storage
$S_d = Q_{post} \cdot T_d - Q_{pre} (T_d + T_c) / 2$

Storm Outlet Pipe Sizing to Thomas Street (100-yr)

Building	**NORTH**	**SOUTH**	
100-yr Post-Dev Rate	**401**	**84**	L/s
Pipe Diameter	**450**	**300**	mm
Slope	2.00	1.50	%
Mannings "n"	0.013	0.013	
Cross-Sectional Area (A)	0.16	0.07	m2
Hydraulic Radius (R)	0.11	0.08	m
Full Flow Velocity (V)	2.54	1.68	m/s
Pipe Capacity (Q)	**403**	**118**	m3/s
Pipe Capacity Used	**99%**	**71%**	

Water Balance Calculations

Water Balance Target = 5mm **Site VolumeTarget =** **139 m3**

Post - Development Conditions								
Catchment Area	**Description**	**Area** (ha)	**C**	**%Imp**	**IA (mm)**	**Water Balance Deficit (mm)**	**IA (m3)**	**Water Balance Deficit (m3)**
201	Watercourse	1.03	0.2	0%	5.0	0.0	51.5	0.0
202	Buildings	0.72	0.7	71%	2.1	2.9	15.4	20.6
203	At-Grade	0.53	0.8	86%	1.6	3.4	8.3	18.2
204	Landscape	0.29	0.3	14%	4.4	0.6	12.8	1.7
205	Uncontrolled	0.21	0.5	43%	3.3	1.7	6.9	3.6
Total Site		**2.78**	**0.48**	**40%**	**3.4**	**1.6**	**95.0**	**44.0**

Initial Abstraction (IA):

Pervious Area = 5mm

Impervious Area = 1mm

IA + WB Deficit = 139.0

66 THOMAS ST EXTERNAL STORM SEWER CAPACITY ANALYSIS SKETCH

LEGEND:

- Storm sewer Manhole
- Catchbasin
- Stormsewer
- Headwall
- Ex. Drainage Boundary
- Pr. Drainage Boundary

DRAINAGE AREAS:

	AREA (ha)	RC
A1:	2.51	0.72/0.65*
A2:	1.97	0.65
A3:	2.60	0.90
A4:	0.66	0.55
A5:	0.31	0.55
A6:	0.28	0.90
A7:	0.19	0.90
A8:	0.17	0.90
A9:	0.16	0.90
A10:	0.16	0.90
A11:	0.02	0.90
A12:	92.37	0.31

NOTES:

-Runoff coefficients for A1 (80 Thomas St) is 0.72 in existing conditions and 0.65 in post-development conditions

-80 Thomas Street existing conditions runoff coefficient is based on measured imperviousness

-Runoff coefficients for A1-A11 is from the City of Mississauga Transportation and Works Department, Development Requirements Manual, Section 2, dated September 2016

-Runoff coefficient for A12 is from Gafeny and Thomas Singles by Trafalgar Engineering, dated 2004

- Pipe dimensions, slope and length from T2 to MH2 and MH2 to HW is from Turney Drive, dated 1979

- Pipe dimensions, slope and length from MH6 to MH2 is from Region of Peel, drawing 58529-D, dated 2016

- Drainage area for A2 is from Joymar Rental Townhomes, by Trafalgar Engineering LTD., dated 2004

- Drainage area for A4 and A5 is from the City of Mississauga Mapping Site. A4 and A5 is the entire lot area of properties fronting Thomas St

- Drainage areas for sections of the road is based on as constructed drawings

CROZIER & ASSOCIATES
Consulting Engineers

66 THOMAS ST EXISTING CONDITIONS
DOWNSTREAM CAPACITY ANALYSIS STORM SEWER DESIGN SHEET

10 YEAR DESIGN STORM - CITY OF MISSISSAUGA

A	1010	B	4.6	C	0.78

PROJECT: 66 Thomas St
PROJECT No.: 1419-4679
FILE: Ext. Storm Sewer Design
DATE: 2021.12.23
Design: BP
Check: JRK/AP

INITIAL TIME OF CONCENTRATION (m 15.00   MANNINGS "n" 0.013

Drainage Area ID	FR MH NO	TO MH NO	AREA (A) Ha	RUN-OFF COEFF	A x C	Cummul. A x C	TIME OF CONC. min	I mm/hr	Q l/sec	PIPE SLOPE %	PIPE DIA. mm	Area m2	VEL. m/sec	Q/A m/s	Hv m	LENGTH m	TIME OF FLOW min	CAPACITY l/sec	% capacity
A1 STORAGE																			
A12	MH1	T2	92.37	0.31	28.72	28.72	28.43	66.00	5383.28	1.66	1200	1.13	4.44	4.76	1.15	139.0	0.52	5023.16	107.2
A6+A4	T2	MH2	0.94	0.65	0.61	29.33	28.95	65.20	5316.29	0.22	1325 x 2075	2.75	1.97	1.93	0.19	134.0	1.13	5423.99	98.0
A2	86 Joymar Drive	MH6	1.97	0.50	0.99	0.99	15.00	99.17	271.55	0.50	525	0.22	1.40	1.25	0.08	242.0	2.87	304.10	89.3
A11	MH6	MH5	0.02	0.90	0.02	1.00	17.87	89.14	248.54	0.90	600	0.28	2.06	0.88	0.04	59.5	0.48	582.50	42.7
A10	MH5	MH4	0.16	0.90	0.14	1.15	18.35	87.67	279.56	0.90	600	0.28	2.06	0.99	0.05	30.0	0.24	582.50	48.0
A9	MH4	MH3	0.16	0.90	0.14	1.29	18.60	86.96	312.09	1.10	600	0.28	2.28	1.10	0.06	93.0	0.68	643.98	48.5
A8+A1 (80 Thomas Street)	MH3	MH2	2.68	0.67	1.80	3.09	19.28	85.02	729.53	0.97	675	0.36	2.31	2.04	0.21	75.5	0.54	827.88	88.1
A7+A5+ A3 (66 Thomas Street)	MH2	HW	3.10	0.87	2.70	35.11	28.95	65.20	6364.57	0.33	1325 x 2075	2.75	2.42	2.31	0.27	87.0	0.60	6643.00	95.8

Notes:
- Calculations for MH1 to T2 is from Gafney and Thomas Singles, by Trafalgar Engineering, dated 2004
- For the section "86 Joymar Drive" to MH6, the length of pipe is given by the longest chain of stormsewer and the slope is per the average slope for all the sections of stormsewer in the longest chain of stormsewer. Details can be found in Gafney and Thomas Singles, by Trafalgar Engineering, dated 2004
- Pipe dimensions, slope and length from T2 to MH2 and MH2 to HW is from Turney Drive, dated 1979
- Pipe dimensions, slope and length from MH6 to MH2 is from Region of Peel, drawing 58529-D, dated 2016
- Drainage area for A2 is from Joymar Rental Townhomes, by Trafalgar Engineering LTD., dated 2004
- Drainage area for A4 and A5 is from the City of Mississauga Mapping Site. A4 and A5 is the entire lot area of properties fronting Thomas St
- Drainage areas for sections of the road is based on as constructed drawings with an average road width of 21 m
- Runoff coefficients for A1-A11 is from the City of Mississauga Transportation and Works Department, Development Requirements Manual, Section 2, dated September 2016
- Runoff coefficient for A12 is from Gafeny and Thomas Singles by Trafalgar Engineering, dated 2004

CROZIER & ASSOCIATES
Consulting Engineers

66 THOMAS ST EXISTING CONDITIONS
DOWNSTREAM CAPACITY ANALYSIS STORM SEWER
DESIGN SHEET

10 YEAR DESIGN STORM - CITY OF MISSISSAUGA					
A	1010	B	4.6	C	0.78

PROJECT: 66 Thomas St
PROJECT No.: 1419-4679
FILE: Ext. Storm Sewer Design
DATE: 2021.12.23
Design: BP
Check: JRK/AP

INITIAL TIME OF CONCENTRATION (m 15.00 MANNINGS "n" 0.013

Drainage Area ID	FR MH NO	TO MH NO	AREA (A) Ha	RUN-OFF COEFF	A x C	Cummul. A x C	TIME OF CONC. min	I mm/hr	Q l/sec	PIPE SLOPE %	PIPE DIA. mm	Area m2	VEL. m/sec	Q/A m/s	Hv m	LENGTH m	TIME OF FLOW min	CAPACITY l/sec	% capacity
									A1 STORAGE										
A12	MH1	T2	92.37	0.31	28.72	28.72	28.43	66.00	5383.3	1.66	1200	1.13	4.44	4.76	1.15	139.0	0.52	5023.2	107.2
A6+A4	T2	MH2	1.25	0.65	0.81	29.53	28.95	65.20	5352.8	0.22	1325 x 2075	2.75	1.97	1.95	0.19	134.0	1.13	5424.0	98.7
A2	86 Joymar Drive	MH6	1.97	0.50	0.99	0.99	15.00	99.17	271.5	0.50	525	0.22	1.40	1.25	0.08	242.0	2.87	304.1	89.3
A11	MH6	MH5	0.02	0.80	0.02	1.00	17.87	89.14	248.0	0.90	600	0.28	2.06	0.88	0.04	59.5	0.48	582.5	42.6
A10	MH5	MH4	0.16	0.80	0.13	1.13	18.35	87.67	275.2	0.90	600	0.28	2.06	0.97	0.05	30.0	0.24	582.5	47.2
A3 (66 Thomas - NORTH BLDG)	MH3	MH2				NORTH BLDG Controlled Rate ->			226.0	1.10	600	0.28	2.28	0.80	0.03	93.0	0.68	644.0	35.1
A9	MH4	MH3	0.16	0.80	0.13	1.26	18.60	86.96	529.9	1.10	600	0.28	2.28	1.87	0.18	93.0	0.68	644.0	82.3
A8+A1 (80 Thomas St)	MH3	MH2	2.37	0.50	1.19	2.44	19.28	85.02	803.2	0.97	675	0.36	2.31	2.24	0.26	75.5	0.54	827.9	97.0
A3 (66 Thomas - SOUTH BLDG)	MH2	HW				SOUTH BLDG Controlled Rate ->			72.0	0.33	1325 x 2075	2.75	2.42	0.03	0.00	87.0	0.60	6643.0	1.1
A7+A5+A3	MH2	HW	2.10	0.87	1.83	33.80	28.95	65.20	6424.6	0.33	1325 x 2075	2.75	2.42	2.34	0.28	87.0	0.60	6643.0	96.7

Notes:
- Calculations for MH1 to T2 is from Gafney and Thomas Singles, by Trafalgar Engineering, dated 2004
- For the section "86 Joymar Drive" to MH6, the length of pipe is given by the longest chain of stormsewer and the slope is per the average slope for all the sections of stormsewer in the longest chain of stormsewer. Details can be found in Gafney and Thomas Singles, by Trafalgar Engineering, dated 2004
- Pipe dimensions, slope and length from T2 to MH2 and MH2 to HW is from Turney Drive, dated 1979
- Pipe dimensions, slope and length from MH6 to MH2 is from Region of Peel, drawing 58529-D, dated 2016
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- Drainage areas for sections of the road is based on as constructed drawings with an average road width of 21 m
- Runoff coefficients for A1-A11 is from the City of Mississauga Transportation and Works Department, Development Requirements Manual, Section 2, dated September 2016
- Runoff coefficient for A12 is from Gafeny and Thomas Singles by Trafalgar Engineering, dated 2004

REGIONAL STORM EVENT (HAZEL) VO MODEL RESULTS

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  D E T A I L E D   O U T P U T *****


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  Output  filename: C:\Users\rbabic\AppData\Local\Civica\VH5\5a6e919e-ae29-4dc4-a33e-
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  Summary filename: C:\Users\rbabic\AppData\Local\Civica\VH5\5a6e919e-ae29-4dc4-a33e-
9ac27a082ae2\debf1f0c-7378-49ee-992b-0a3b292590c9\scena


DATE: 03-15-2024                           TIME: 03:30:42


-------------------------------------------------------------------------------------------------
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  ************************************************
  ** SIMULATION : Run 05                        **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\rbabic\AppD
|                  |              ata\Local\Temp\
|                  |              ad1f5cac-24b1-4ac2-b927-11ee8ce214c9\37fa28f2
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.00    6.00 |  3.00   13.00 |  6.00   23.00 |  9.00   53.00
                 1.00    4.00 |  4.00   17.00 |  7.00   13.00 | 10.00   38.00
                 2.00    6.00 |  5.00   13.00 |  8.00   13.00 | 11.00   13.00

-------------------------------------------------------------------------------


--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   2.18
|ID= 1 DT=15.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.16         0.02
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     120.55        40.00
     Mannings n           =      0.013        0.250
```

```
        NOTE:  RAINFALL WAS TRANSFORMED TO  15.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
               2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
               2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
               2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
               2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
               3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

    Max.Eff.Inten.(mm/hr)=      53.00        50.27
               over (min)       15.00        15.00
    Storage Coeff.  (min)=       3.68 (ii)   12.98 (ii)
    Unit Hyd. Tpeak (min)=      15.00        15.00
    Unit Hyd. peak  (cms)=       0.11         0.08
                                                          *TOTALS*
    PEAK FLOW       (cms)=       0.32         0.00          0.321 (iii)
    TIME TO PEAK    (hrs)=      10.00        10.00          10.00
    RUNOFF VOLUME    (mm)=     211.00       173.55         210.62
    TOTAL RAINFALL   (mm)=     212.00       212.00         212.00
    RUNOFF COEFFICIENT   =       1.00         0.82           0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  85.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

-------------------------------------------------------------------------------
--------------------
| CALIB             |
| STANDHYD (  0002)|   Area    (ha)=   1.75
|ID= 1 DT=15.0 min |   Total Imp(%)=  83.00   Dir. Conn.(%)=  80.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       1.45         0.30
    Dep. Storage     (mm)=       1.00         1.50
    Average Slope     (%)=       1.00         2.00
    Length            (m)=     108.01        40.00
    Mannings n          =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO  15.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
```

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                2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
                2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
                2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
                2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
                3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00        59.87
                over (min)       15.00        15.00
     Storage Coeff.  (min)=       3.45 (ii)   12.11 (ii)
     Unit Hyd. Tpeak (min)=      15.00        15.00
     Unit Hyd. peak  (cms)=       0.11         0.08
                                                            *TOTALS*
     PEAK FLOW       (cms)=       0.21         0.05          0.255 (iii)
     TIME TO PEAK    (hrs)=      10.00        10.00         10.00
     RUNOFF VOLUME    (mm)=     211.00       178.46        204.49
     TOTAL RAINFALL   (mm)=     212.00       212.00        212.00
     RUNOFF COEFFICIENT   =       1.00         0.84          0.96

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  85.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 FINISH
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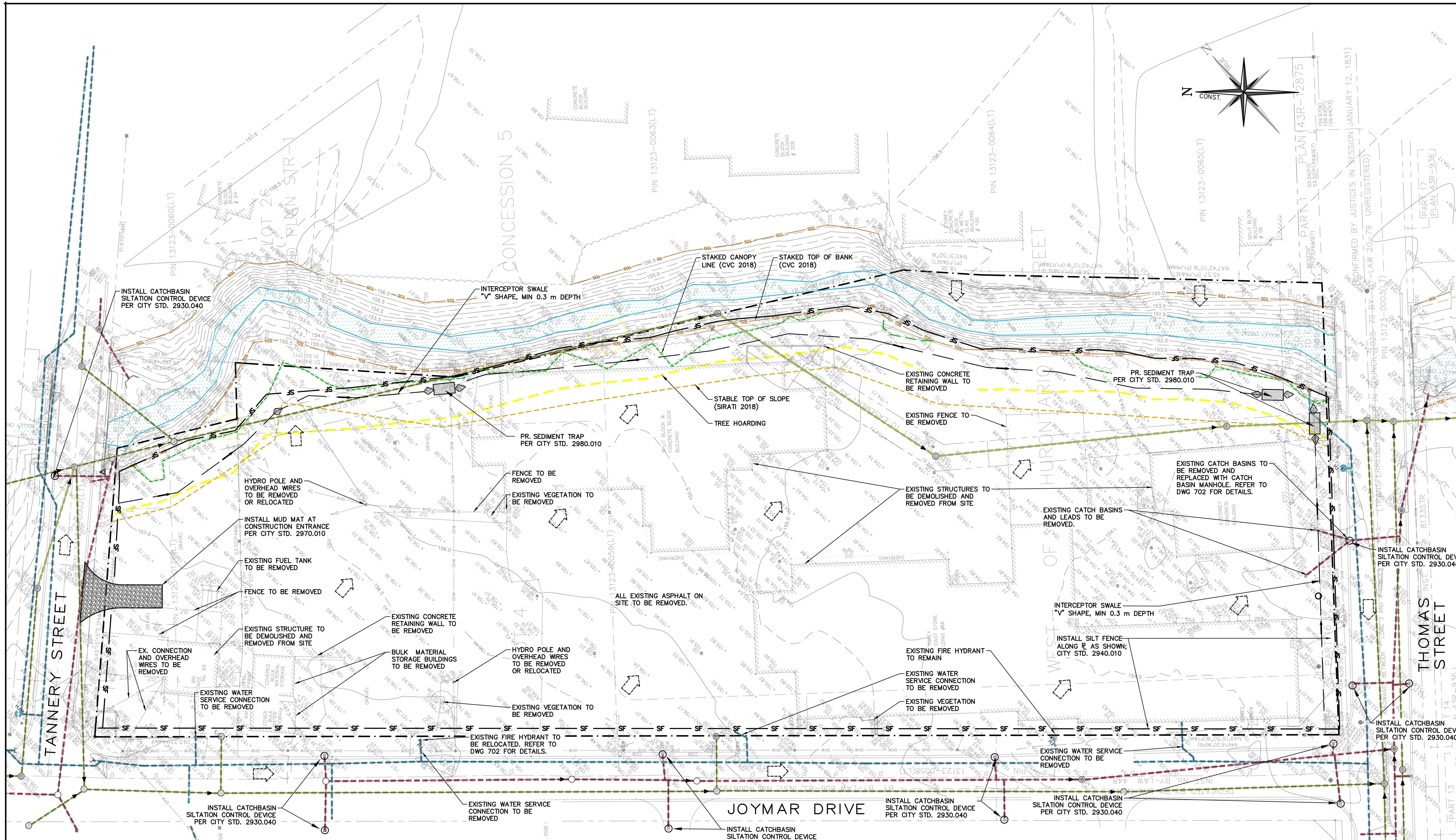
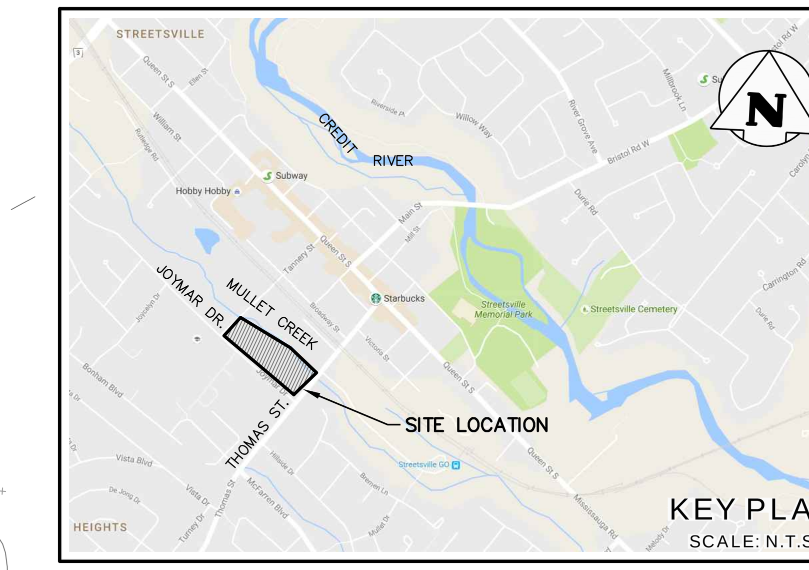
DRAWINGS & FIGURES





LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.50m)
- EXISTING CONTOUR (1.0m)
- EXISTING FENCE
- EXISTING GRADE
- EXISTING WATERMAIN & GATE VALVE
- EXISTING STORM SEWER
- EXISTING STORM CATCHBASIN MANHOLE
- EXISTING SANITARY SEWER
- EXISTING SANITARY MANHOLE
- SILT FENCE; CITY STD. 2940.010
- ROCK CHECK DAM; PER CITY STD. 2980.010
- EXISTING MAJOR OVERLAND FLOW DIRECTION
- STABLE TOP OF SLOPE
- CANOPY LINE (CVC, APRIL 5, 2018)
- STAKED TOP OF BANK (CVC 2018)
- TREE HOARDING (STRYBOS)

ELEVATION NOTE:

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK No. 257 LOCATED ON THE SOUTH FACE, 0.61 METRE WEST OF THE EAST CORNER OF THE RED BRICK BUILDING AT THE NORTHWEST CORNER OF THOMAS STREET AND QUEEN STREET, HAVING AN ELEVATION OF 162.08m.
CANADIAN GEODETIC VERTICAL DATUM 1928: PRE 1978 ADJUSTMENT.

SURVEY NOTES:

SURVEY COMPLETED BY DAVID B. SEARLES SURVEYING LTD. (2017/AUG/11) REFERENCE No.: 116-0-16. TOP OF BANK AND CANOPY LINE AS DEFINED BY SITE WALK WITH CVC STAFF (2018/APR/4). SURVEY BY DAVID B. SEARLES (2018/APR/5)

BEARINGS ARE GRID BEARINGS DERIVED FROM GPS OBSERVATIONS USING THE SMARTNET NETWORK AND ARE REFERRED TO THE CENTRAL MERIDIAN OF UTM ZONE 17 (81°00' WEST), NAD83 (CSRS 2010)
BEARINGS ON PLAN SURVEY BY B.J. STASSEN, O.L.S., DATED JUNE 8, 1990 (PI) AND PLAN 43R-16616 (P6) HAVE BEEN ROTATED 01°01'10" COUNTERCLOCKWISE TO MAKE COMPARISONS.
BEARINGS ON PLAN BY C. PEAT O.L.S., DATED OCTOBER 4, 1967 (P3) HAVE BEEN ROTATED 00°53'20" COUNTERCLOCKWISE TO MAKE COMPARISONS
BEARINGS ON TOPO SURVEY BY TONY STAUSKAS, O.L.S., DATED JUNE 9, 2009 (P4) HAVE BEEN ROTATED 00°52'20" COUNTERCLOCKWISE TO MAKE COMPARISONS.

DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999714.

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY 4 ARCHITECTURE INC.
DRAWING NAME: TOWNNHOUSE RESIDENTIAL SUBDIVISION – 218072 – SITE PLAN, REV.03 (MAR2023)
FILE No.: 218072DSP01

DRAWING NOTES:

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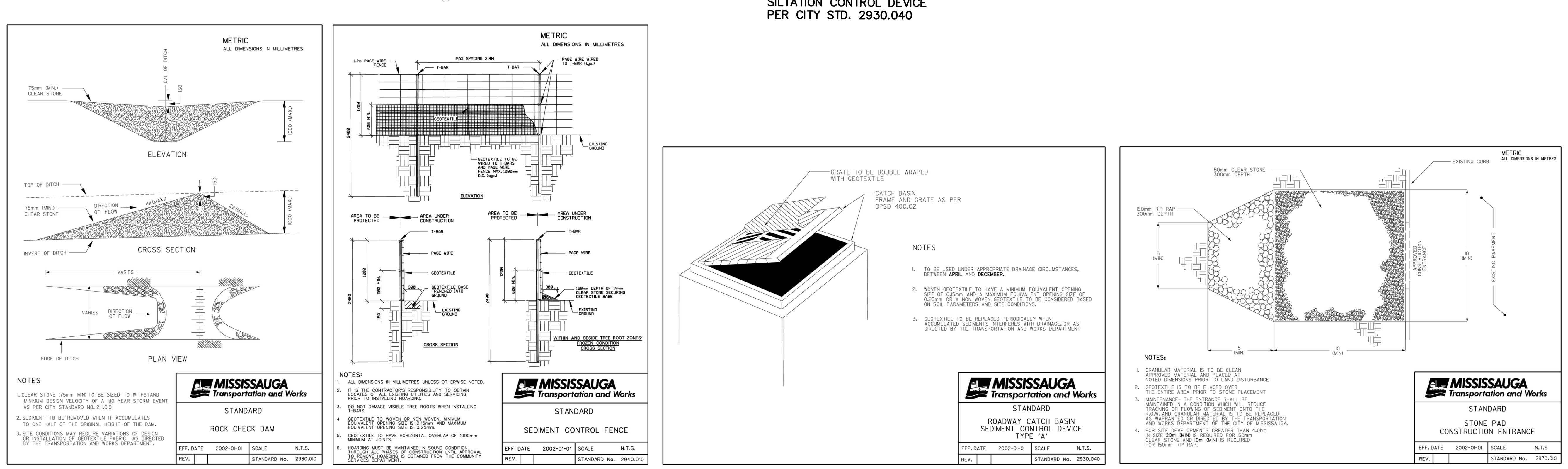


10 0m 10 20 30 40
SCALE: 1:500

NOTES:
1) ALL EXISTING STORM INFRASTRUCTURE TO BE REMOVED AND DISPOSED OFF SITE
2) ALL EXISTING ASPHALT ON SITE TO BE REMOVE AND DIPOSED OFF SITE

LICENSED PROFESSIONAL ENGINEER
R. D. BABIC
100523818
2024.04.22
1419-4679
PROVINCE OF ONTARIO

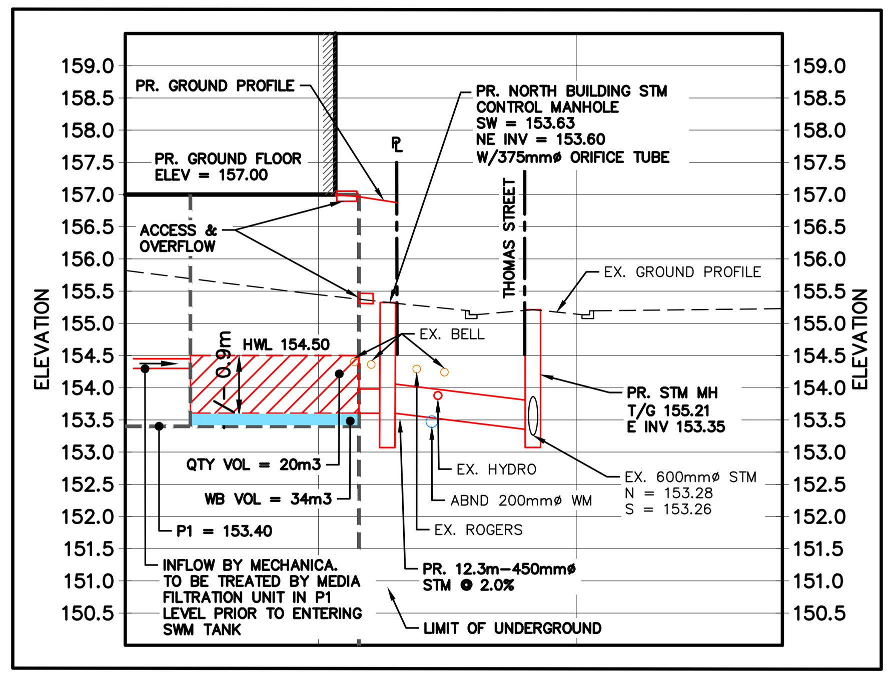
Project
66 THOMAS STREET
CITY OF MISSISSAUGA

Drawing
REMOVALS PLAN
EROSION & SEDIMENT CONTROL PLAN

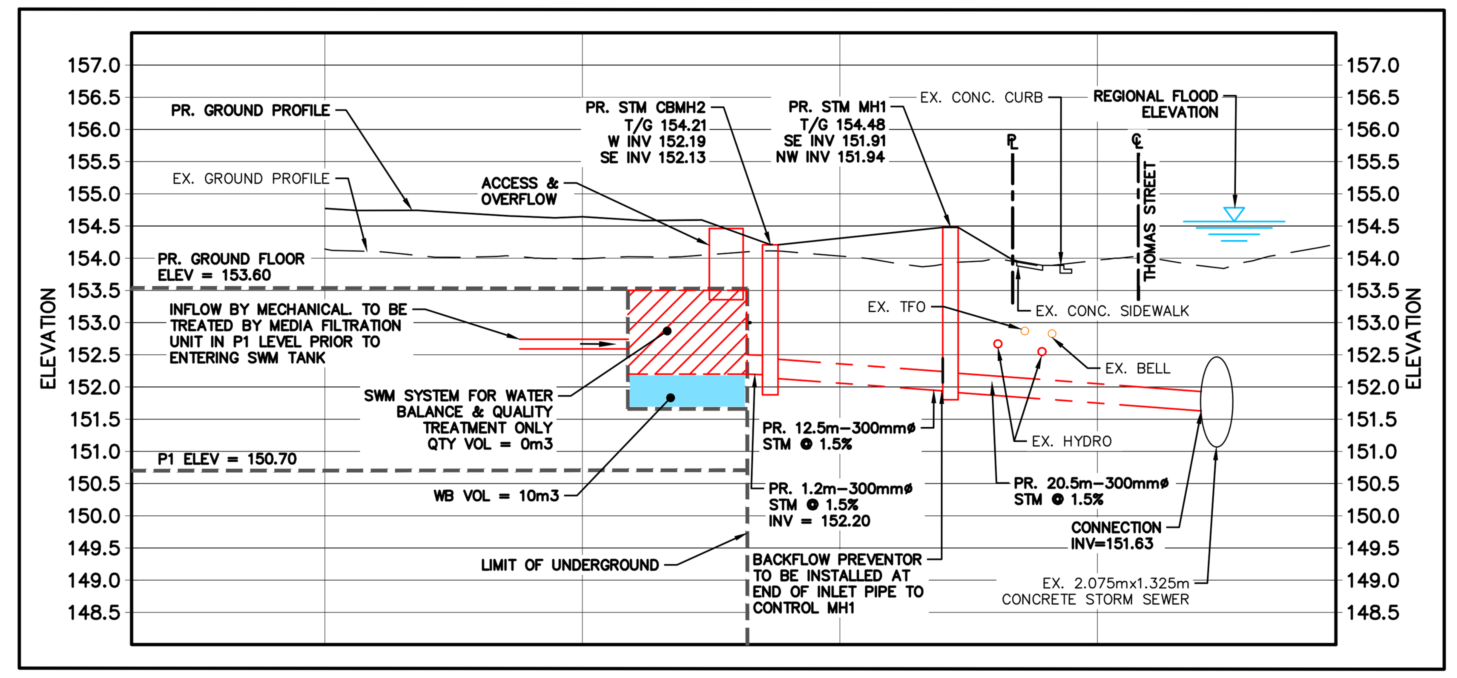
CROZIER & ASSOCIATES
Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	S.C.	Design	A.R./A.O.	Project No.	1419-4679
Check	R.B.	Check	R.B./J.R.K.	Scale 1:500	Dwg. C 701

JOYMAR DRIVE SECTION - NORTH BUILDING STORM SERVICE AND SWM TANK

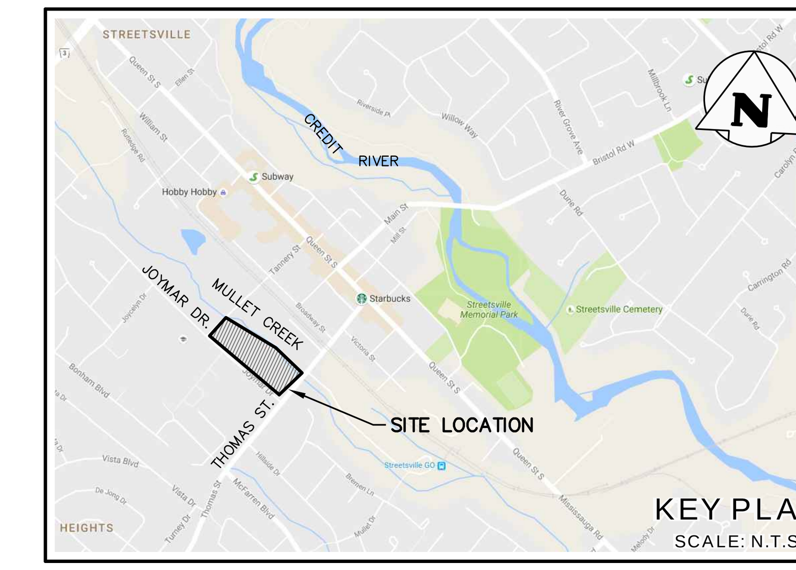


THOMAS STREET SECTION - SOUTH BUILDING STORM SERVICE AND SWM TANK



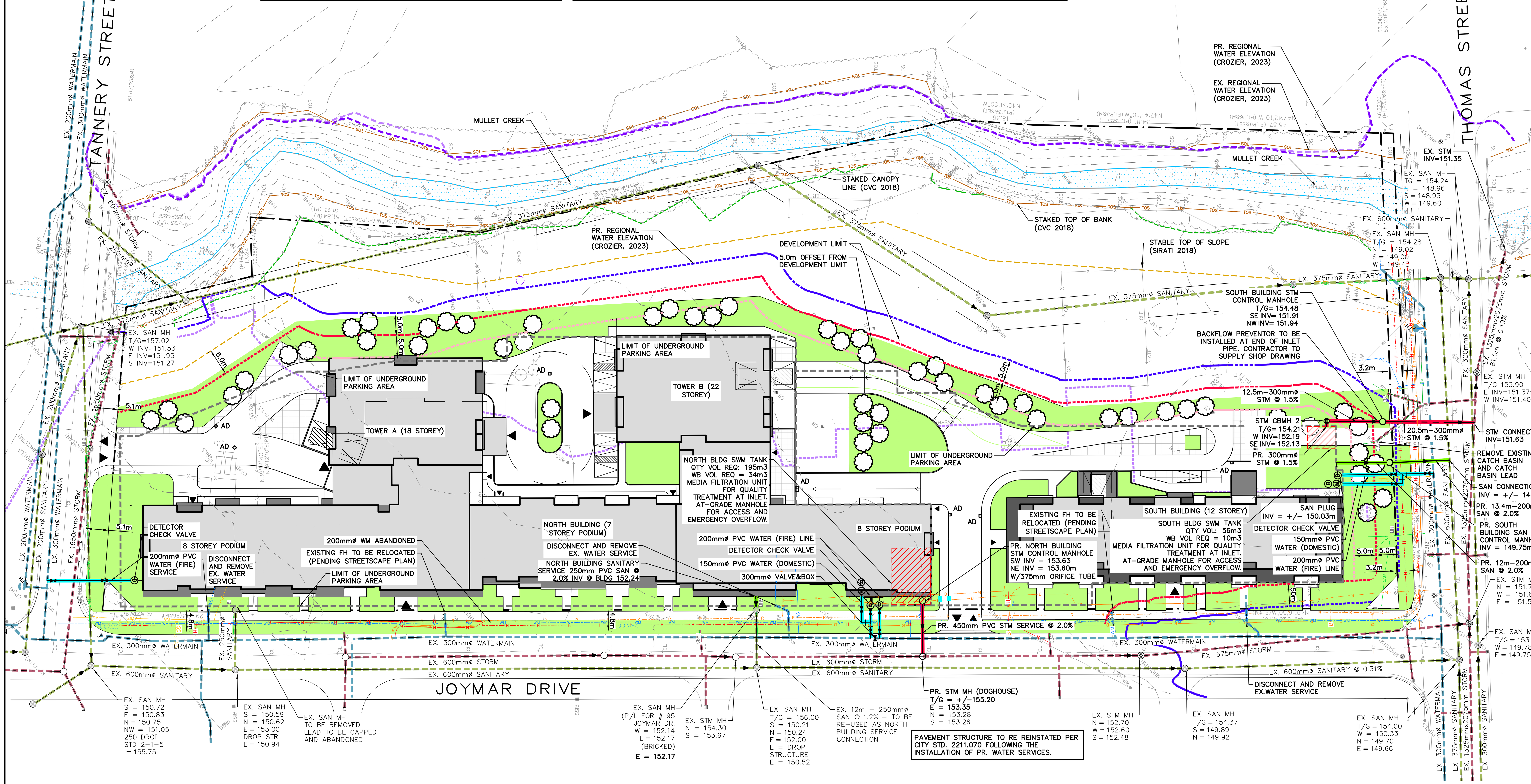
LEGEND (SETBACKS AND REGULATORY LINES)

- LIMIT OF DEVELOPMENT (LOD)
- ADDITIONAL 5m SETBACK FROM LOD
- PROPOSED PROPERTY LINE
- EXISTING REGIONAL FLOOD LIMIT
- PROPOSED REGIONAL WATER ELEVATION (CROZIER, 2022)
- STAKED CANOPY LINE (CVC 2018)
- LONGTERM STABLE TOP OF SLOPE (SIRATI 2018)
- STAKED TOP OF BANK (CVC 2018)



KEY PLAN

SCALE: N.T.S.



LEGEND

- PROPERTY LINE
- PROPOSED LIMIT OF UNDERGROUND PARKING
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM CATCHBASIN MANHOLE
- EXISTING SANITARY SEWER
- EXISTING SANITARY MANHOLE
- PROPOSED WATERMAIN
- PROPOSED FIRE HYDRANT & GATE VALVE
- PROPOSED STORM SEWER
- PROPOSED STORM CATCHBASIN MANHOLE
- AD: PROPOSED AREA DRAIN PER MECHANICAL DESIGN AND SPECIFICATIONS
- PROPOSED SANITARY SEWER
- M: PROPOSED WATER METER PER MECHANICAL DESIGN AND SPECIFICATIONS
- B: PROPOSED BACKFLOW PREVENTER PER MECHANICAL DESIGN AND SPECIFICATION
- D: PROPOSED DETECTOR CHECK VALVE PER REGION OF PEEL STD. 1-3-1
- EXISTING COMMUNICATION TELUS FO
- EXISTING COMMUNICATION ROGERS
- EXISTING COMMUNICATION BELL
- EXISTING HYDRO

ELEVATION NOTE:

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK No. 257 LOCATED ON THE SOUTH FACE, 0.61 METRE WEST OF THE EAST CORNER OF THE RED BRICK BUILDING AT THE NORTHWEST CORNER OF THOMAS STREET AND QUEEN STREET, HAVING AN ELEVATION OF 162.08m.
CANADIAN GEODETIC VERTICAL DATUM 1928: PRE 1978 ADJUSTMENT.

SURVEY NOTES:

SURVEY COMPLETED BY DAVID B. SEARLES SURVEYING LTD. (2017/AUG/11) REFERENCE No.: 116-0-16. TOP OF BANK AND CANOPY LINE AS DEFINED BY SITE WALK WITH CVC STAFF (2018/APR/4). SURVEY BY DAVID B. SEARLES (2018/APR/5)

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DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999714.

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY 4 ARCHITECTURE INC.
DRAWING NAME: TOWNNHOUSE RESIDENTIAL SUBDIVISION - 218072 - SITE PLAN, REV.03 (MAR2023)
FILE No.: 218072DSP01

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Project: 66 THOMAS STREET
CITY OF MISSISSAUGA

Drawing: SITE SERVICING PLAN

CROZIER & ASSOCIATES Consulting Engineers
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
www.cfcrozier.ca

Drawn	S.C.	Design	A.R./A.O.	Project No.	1419-4679
Check	R.B.	Check	R.B./J.R.K.	Scale 1:500	Dwg. C 702

LICENSED PROFESSIONAL ENGINEER
R.D. BABIC
100523818
2024.04.22
1419-4679
PROVINCE OF ONTARIO

NOTE:
ALL EXISTING UTILITY LOCATES AND DEPTHS ARE TO SUE QUALITY LEVEL-B. ALL SUBSURFACE UTILITY ENGINEERING AND LOCATES CONDUCTED BY TELECON. ALL EXISTING UTILITY DEPTHS TO BE CONFIRMED.

NOTE:
ALL SITE AREA DRAINS TO BE BY MECHANICAL. MECHANICAL BUILDING PLUMBING TO CONVEY STORMWATER FLOWS TO ASSOCIATED SWM TANKS THROUGH UNDERGROUND PARKING LEVELS. MECHANICAL DRAINAGE (AREA DRAINS AND PLUMBING) TO BE SIZED FOR THE 100 YEAR STORM EVENT AND FLOWS

ACCESS HATCH/RELIEF AT GRADE AND EMERGENCY OVERFLOW FOR STORMWATER TANK PER MECHANICAL AND STRUCTURAL DETAILS AND SPECIFICATIONS. INSTALL COVER PER O.P.S.D. 401.010

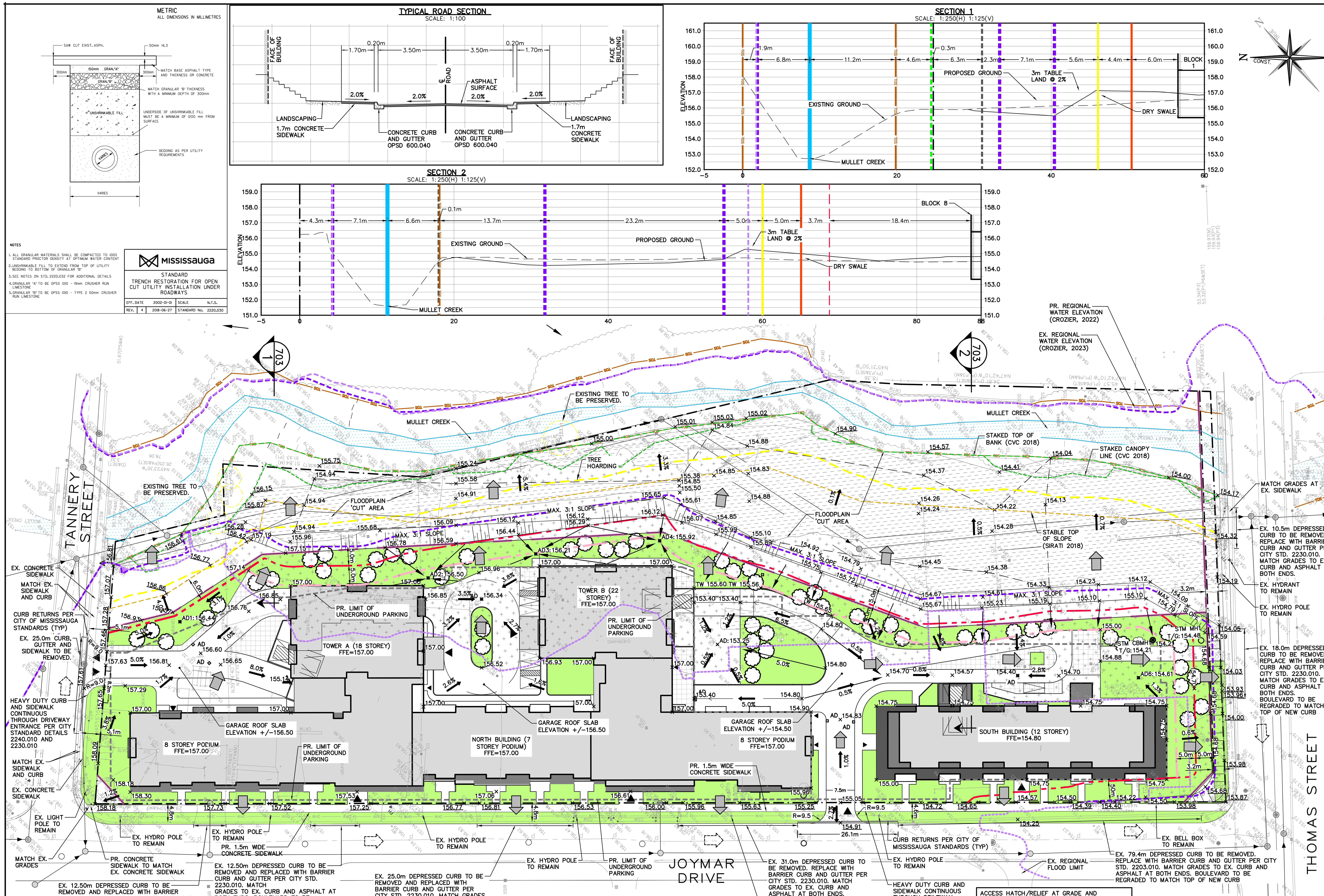
PAVEMENT STRUCTURE TO RE REINSTATED PER CITY STD. 2211.070.

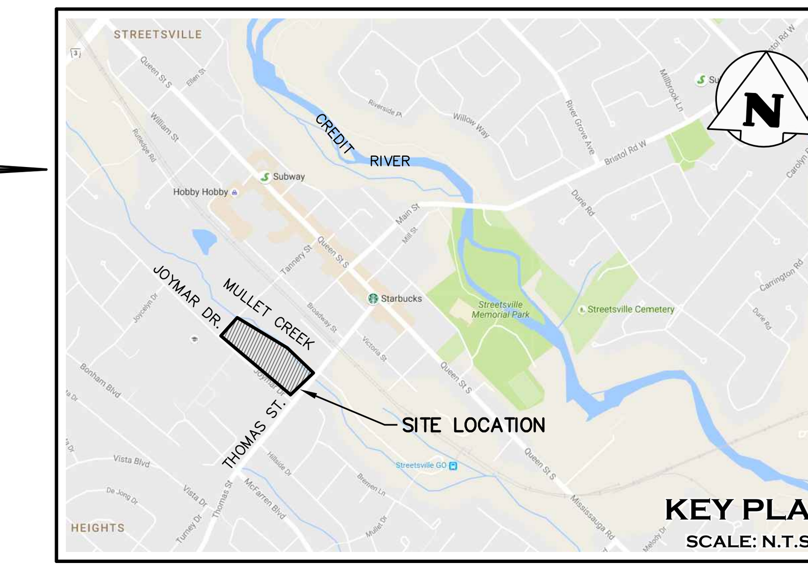
PAVEMENT STRUCTURE TO RE REINSTATED PER CITY STD. 2211.070 FOLLOWING THE INSTALLATION OF PR. WATER SERVICES.

NOTES:

1. ALL ACCESSIBILITY RAMPS TO BE CONSTRUCTED PER CITY OF MISSISSAUGA STANDARD 2240.036.
2. ENTRANCES TO SITE TO BE CONSTRUCTED PER OPSD 600.040.
3. ALL SITE SERVICE RESTORATION WORK TO BE CONSTRUCTED PER THE CITY OF MISSISSAUGA STD No. 2220.030

SCALE: 1:500





LEGEND

PROPERTY LINE	
EXISTING CONTOUR (0.5m)	
153.00	EXISTING GRADE
153.00	PROPOSED GRADE
153.00	PROPOSED GRADE (TO MATCH EXISTING)
1.0%	PROPOSED MINOR FLOW DIRECTION
	EXISTING MAJOR OVERLAND FLOW DIRECTION
	PROPOSED MAJOR OVERLAND FLOW DIRECTION
	PROPOSED SWALE
	PROPOSED 3:1 MAX. SLOPE
	PROPOSED FLOODPLAIN CUT/FILL (−/+) LIMITS
	PROPOSED LIMIT OF UNDERGROUND PARKING
	LIMIT OF DEVELOPMENT (LOD)
	ADDITIONAL 5m SETBACK FROM LOD
	PROPOSED PROPERTY LINE
	PROPOSED REGIONAL WATER ELEVATION (CROZIER, 2023)
	EXISTING REGIONAL WATER ELEVATION (CROZIER 2023)
	STAKED CANOPY LINE (CVC 2018)
	LONG TERM STABLE TOP OF SLOPE (SIRATI 2018)
TOS — TOS	STAKED TOP OF BANK (CVC 2018)

ELEVATION NOTE:

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CANADIAN GEODETIC VERTICAL DATUM 1928: PRE 1978 ADJUSTMENT.

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SITE PLAN NOTES:

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DRAWING NAME: TOWNNHOUSE RESIDENTIAL SUBDIVISION – 218072 – SITE PLAN, REV.03 (MAR2023)
FILE No.: 218072DSP01

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1	ISSUED FOR ZBA SUBMISSION	2024/DEC/18
0	ISSUED FOR ZBA SUBMISSION	2024/APR/22

NOTES:

1. ALL ACCESSIBILITY RAMPS TO BE CONSTRUCTED PER CITY OF MISSISSAUGA STANDARD 2240.036.
2. ENTRANCES TO SITE TO BE CONSTRUCTED PER OPSD 600.040.
3. ALL HYDRO POLES/LIGHT STANDARDS ALONG THOMAS STREET, JOYMAR DRIVE AND TANNERY STREET ARE TO REMAIN. ADJUSTMENT OF GUY WIRES AND REMOVAL OF EXISTING SERVICES TO SITE, AS REQUIRED, BY OTHERS.
4. ALL SITE SERVICE RESTORATION WORK TO BE CONSTRUCTED PER THE CITY OF MISSISSAUGA STD No. 2220.030

ACCESS HATCH/RELIEF AT GRADE AND EMERGENCY OVERLFLOW FOR STORMWATER TANK PER MECHANICAL AND STRUCTURAL DETAILS AND SPECIFICATIONS. INSTALL COVER PER O.P.S.D. 401.010

BUILDING FLOOR ELEVATION NOTES:

1. BUILDING GROUND FLOOR ELEVATIONS (GFE) SHOWN ON PLAN FOR EACH BUILDING UNIT AND THE ENTRANCES TO THESE UNITS ARE TO MATCH.
2. BUILDING BASEMENT FLOOR ELEVATIONS (BFE) SHOWN ON PLAN FOR EACH BUILDING UNIT AND THE ENTRANCES TO THESE UNITS ARE TO MATCH.

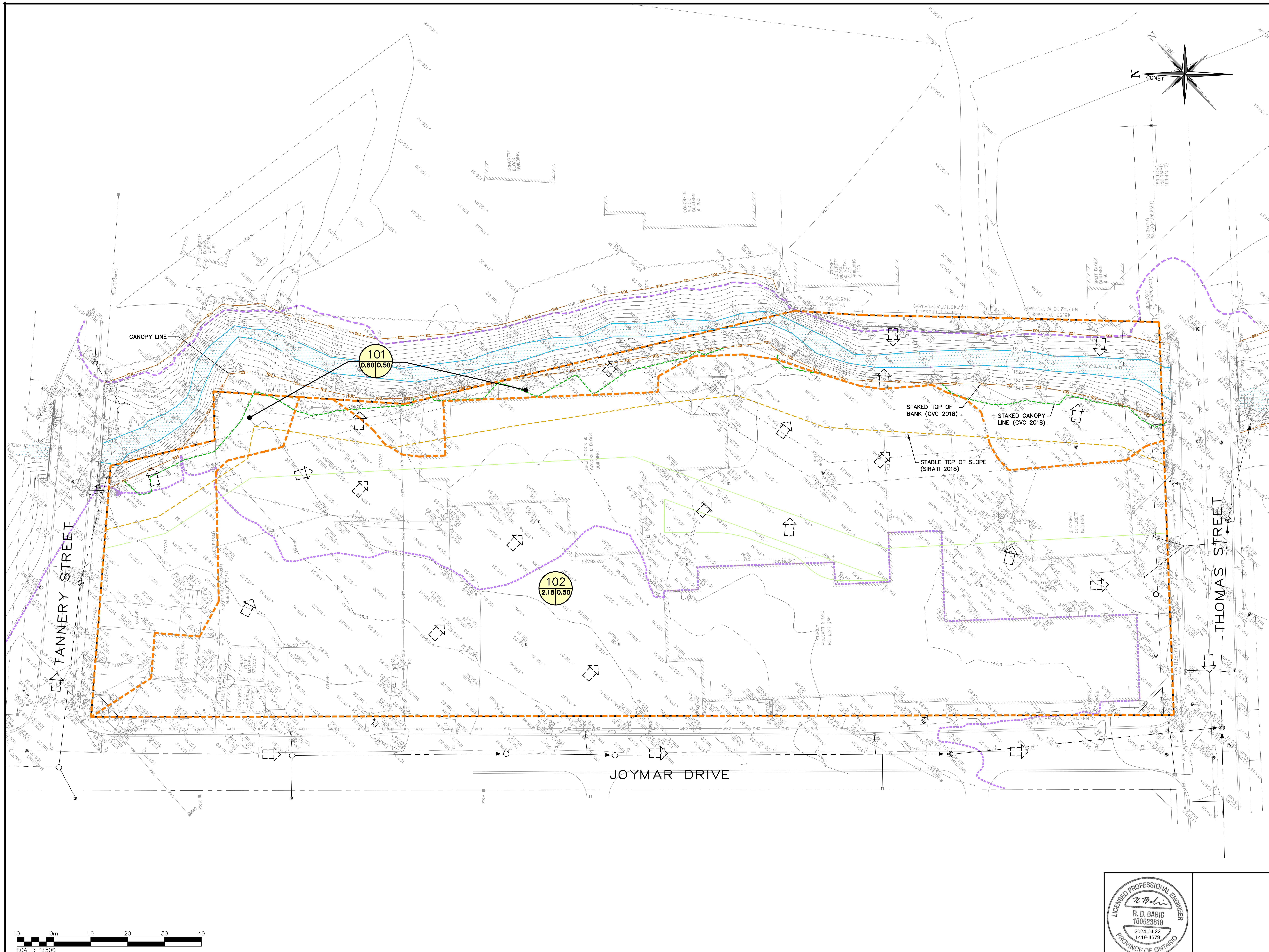
LICENSED PROFESSIONAL ENGINEER
R. D. BABIC
100523818
2024.12.19
1419-4679
PROVINCE OF ONTARIO

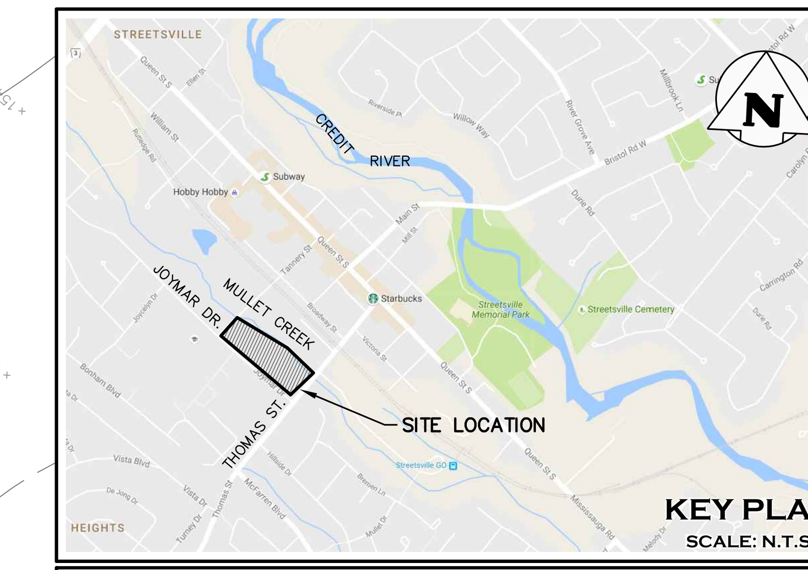
Project
66 THOMAS STREET
CITY OF MISSISSAUGA

Drawing
GRADING PLAN

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

Drawn	Design	Project No.	
S.C.	A.R./A.O.	1419–4679	
Check	**Check**	**Scale**	**Dwg.**
R.B.	R.B./J.R.K.	1:500	C 703





LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m)
- EXISTING CONTOUR (1.00m)
- EXISTING WATERCOURSE (MULLET CREEK)
- EXISTING FENCE
- EXISTING GRADE
- EXISTING OVERLAND FLOW DIRECTION
- STORM DRAINAGE CATCHMENT
- CATCHMENT I.D. — ID; AREA (ha) | RUNOFF COEFFICIENT
- EXISTING REGIONAL WATER ELEVATION (CROZIER 2023)
- STAKED CANOPY LINE (CVC, APRIL 5, 2018)
- LONGTERM STABLE TOP OF SLOPE (SIRATI 2018)
- STAKED TOP OF BANK (CVC 2018)

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CANADIAN GEODETIC VERTICAL DATUM 1928: PRE 1978 ADJUSTMENT.

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DRAWING NAME: TOWNNHOUSE RESIDENTIAL SUBDIVISION - 218072 - SITE PLAN, REV.03 (MAR2023)
FILE No.: 218072DSP01

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Project

66 THOMAS STREET
CITY OF MISSISSAUGA

Drawing

PRE-DEVELOPMENT
DRAINAGE PLAN

LICENSED PROFESSIONAL ENGINEER
R. D. BABIC
100523818
2024.04.22
1419-4679
PROVINCE OF ONTARIO

CROZIER & ASSOCIATES Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875 0026 T
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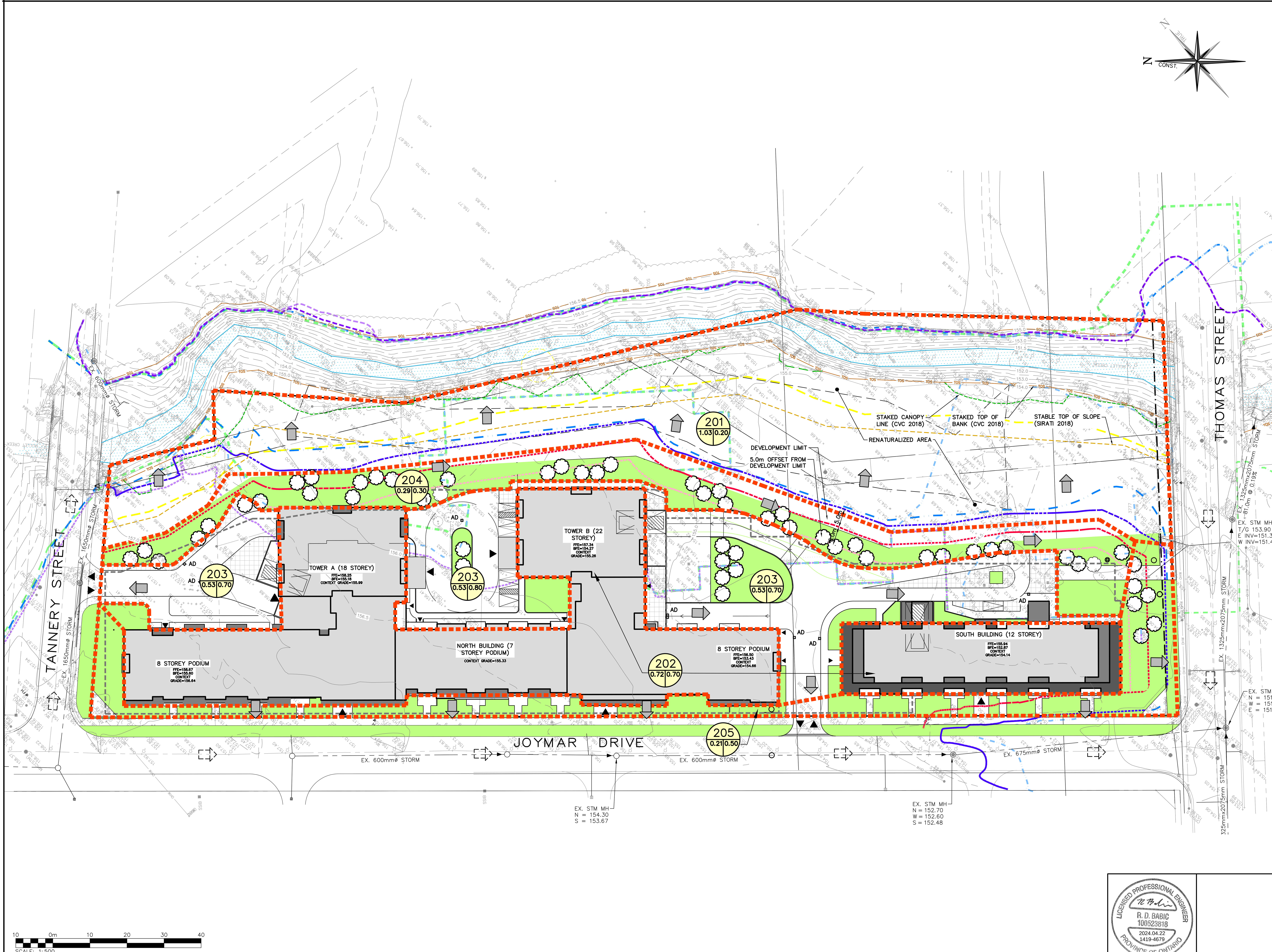
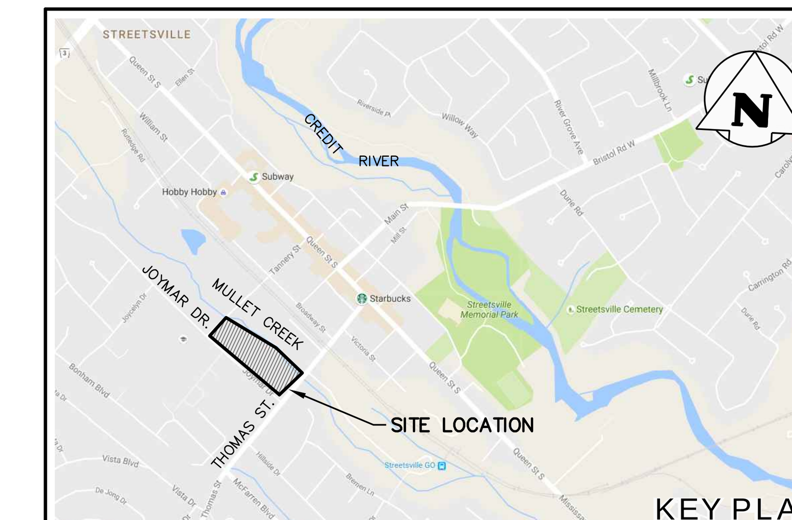
WWW.CFCROZIER.CA

Drawn	S.C.	Design	A.R./A.O.	Project No.	1419-4679
Check	R.B.	Check	R.B./J.R.K.	Scale 1:500	Dwg. C 704





KEY PLAN
SCALE: N.T.S.

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m)
- EXISTING CONTOUR (1.00m)
- EXISTING WATERCOURSE (MULLET CREEK)
- EXISTING FENCE
- 215.00 EXISTING GRADE
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED MAJOR OVERLAND FLOW DIRECTION
- STORM DRAINAGE CATCHMENT
- ID / A RC — CATCHMENT I.D. / AREA (ha) RUNOFF COEFFICIENT
- LIMIT OF DEVELOPMENT (LOD)
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- PROPOSED PROPERTY LINE
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- STAKED CANOPY LINE (CVC 2018)
- LONGTERM STABLE TOP OF SLOPE (SIRATI 2018)
- TOS — TOS STAKED TOP OF BANK (CVC 2018)
- EXISTING STORM CATCHBASIN MANHOLE
- EXISTING STORM SEWER

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DRAWING NAME: TOWNNHOUSE RESIDENTIAL SUBDIVISION – 218072 – SITE PLAN, REV.03 (MAR2023)
FILE No.: 218072DSP01

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Project
66 THOMAS STREET
CITY OF MISSISSAUGA

Drawing
POST-DEVELOPMENT DRAINAGE PLAN

LICENSED PROFESSIONAL ENGINEER
R. D. BABIC
100523818
2024.04.22
1419-4679
PROVINCE OF ONTARIO

CROZIER & ASSOCIATES Consulting Engineers
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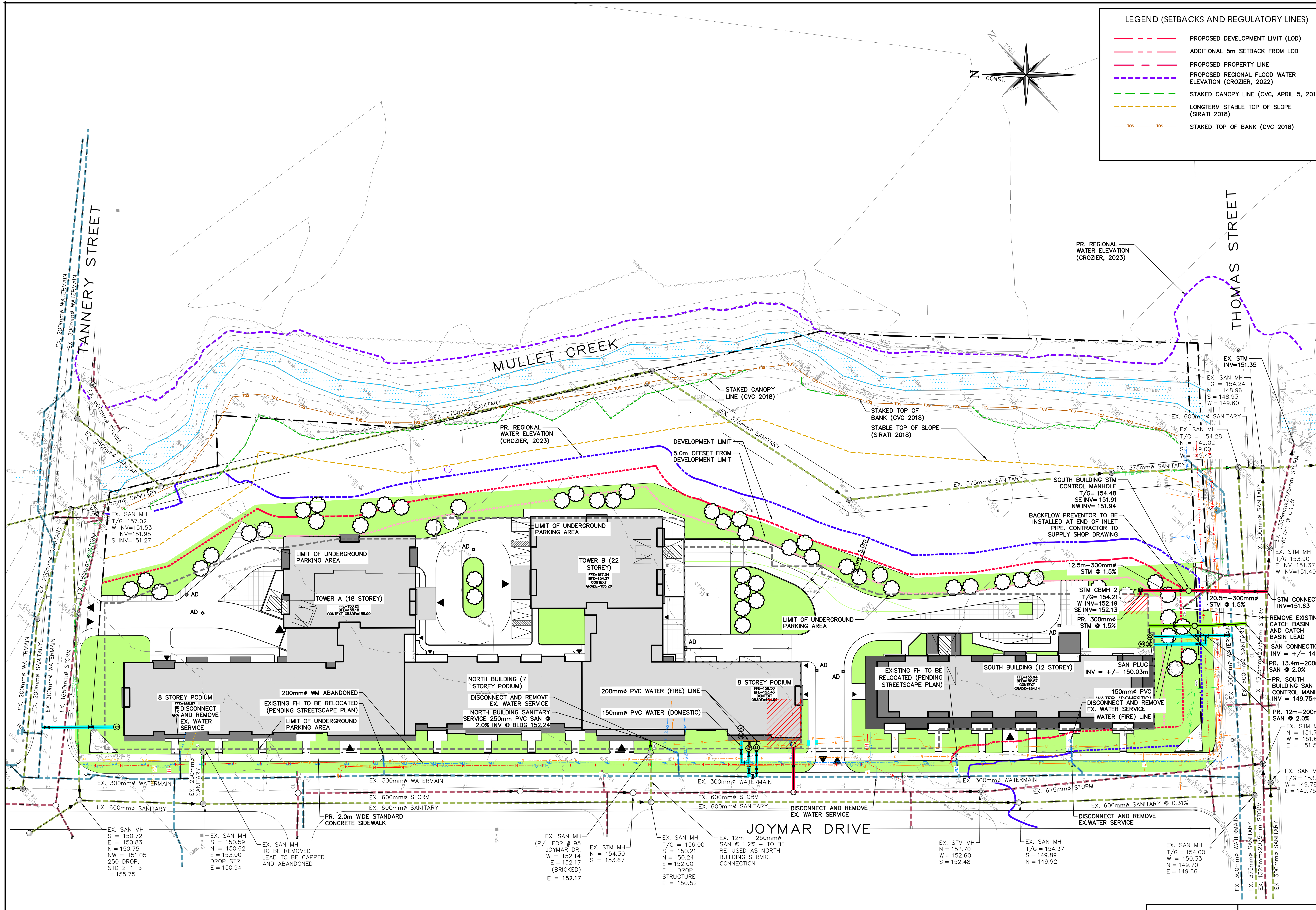
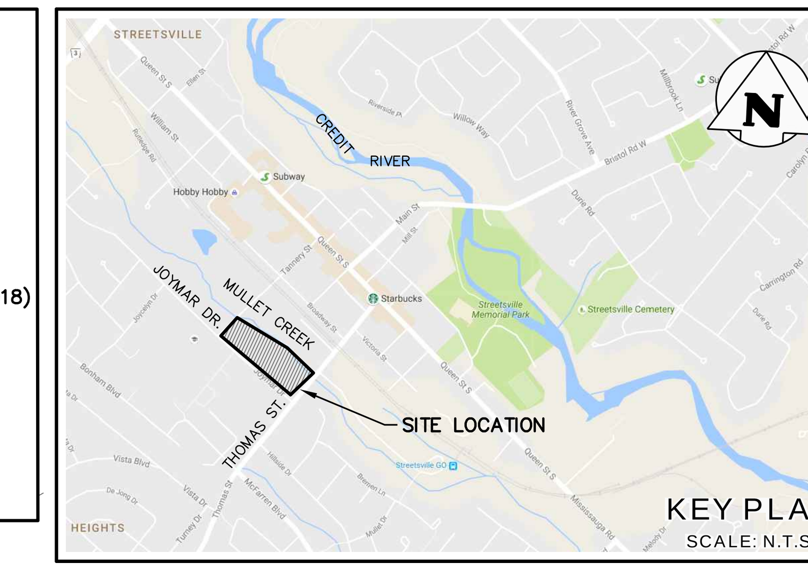
Drawn	S.C.	Design	A.R./A.O.	Project No.	1419-4679
Check	R.B.	Check	R.B./J.R.K.	Scale 1:500	Dwg. C 705





LEGEND

- PROPERTY LINE
- PROPOSED LIMIT OF UNDERGROUND PARKING
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EXISTING STORM CATCHBASIN MANHOLE
- EXISTING SANITARY SEWER
- EXISTING SANITARY MANHOLE
- PROPOSED WATERMAIN
- PROPOSED FIRE HYDRANT & GATE VALVE
- PROPOSED STORM SEWER
- PROPOSED STORM CATCHBASIN MANHOLE
- AD PROPOSED AREA DRAIN PER MECHANICAL DESIGN AND SPECIFICATIONS
- PROPOSED SANITARY SEWER
- M PROPOSED WATER METER PER MECHANICAL DESIGN AND SPECIFICATIONS
- B PROPOSED BACKFLOW PREVENTER PER MECHANICAL DESIGN AND SPECIFICATION
- D PROPOSED DETECTOR CHECK VALVE PER REGION OF PEEL STD. 1-3-1

ELEVATION NOTE:

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK No. 257 LOCATED ON THE SOUTH FACE, 0.61 METRE WEST OF THE EAST CORNER OF THE RED BRICK BUILDING AT THE NORTHWEST CORNER OF THOMAS STREET AND QUEEN STREET, HAVING AN ELEVATION OF 162.08m.
CANADIAN GEODETIC VERTICAL DATUM 1928: PRE 1978 ADJUSTMENT.

SURVEY NOTES:

SURVEY COMPLETED BY DAVID B. SEARLES SURVEYING LTD. (2017/AUG/11) REFERENCE No.: 116-0-16. TOP OF BANK AND CANOPY LINE AS DEFINED BY SITE WALK WITH CVC STAFF (2018/APR/4). SURVEY BY DAVID B. SEARLES (2018/APR/5)

BEARINGS ARE GRID BEARINGS DERIVED FROM GPS OBSERVATIONS USING THE SMARTNET NETWORK AND ARE REFERRED TO THE CENTRAL MERIDIAN OF UTM ZONE 17 (81°00' WEST), NAD83 (CSRS 2010)
BEARINGS ON PLAN SURVEY BY B.J. STASSEN, O.L.S., DATED JUNE 8, 1990 (PI) AND PLAN 43R-16616 (P6) HAVE BEEN ROTATED 01°01'10" COUNTERCLOCKWISE TO MAKE COMPARISONS.
BEARINGS ON PLAN BY C. PEAT O.L.S., DATED OCTOBER 4, 1967 (P3) HAVE BEEN ROTATED 00°53'20" COUNTERCLOCKWISE TO MAKE COMPARISONS
BEARINGS ON TOPO SURVEY BY TONY STAUSKAS, O.L.S., DATED JUNE 9, 2009 (P4) HAVE BEEN ROTATED 00°52'20" COUNTERCLOCKWISE TO MAKE COMPARISONS.

DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999714.

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY 4 ARCHITECTURE INC.
DRAWING NAME: TOWNNHOUSE RESIDENTIAL SUBDIVISION - 218072 - SITE PLAN, REV.03 (MAR2023)
FILE No.: 218072DSP01

DRAWING NOTES:

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THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT. DO NOT SCALE THIS DRAWING.

ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

No.	ISSUE / REVISION	YYYY/MMM/DD
0	ISSUED FOR ZBA SUBMISSION	2024/APR/22

Project
66 THOMAS STREET
CITY OF MISSISSAUGA

Drawing
COMPOSITE UTILITY PLAN

SUE LEGEND:

GM	GAS MAIN
GS	GAS SERVICE
H	HYDRO
WM	WATERMAIN
WS	WATER SERVICE
B	COMMUNICATION BELL
R	COMMUNICATION ROGERS
TFO	COMMUNICATION TELUS FO
SAN	SANITARY SEWER
STM	STORM SEWER
	END CAP (APPROXIMATE LOCATION)
	FLOW DIRECTION
	DROP LEAD
	TEST PIT LOCATION
	CHANGE OF SUE QUALITY LEVEL
"D=0.00m"	APPROXIMATE DEPTH MEASUREMENT FROM LOCATE EQUIPMENT

SCALE: 1:500

LICENSED PROFESSIONAL ENGINEER
R. D. BABIC
100523818
2024.04.22
1419-4679
PROVINCE OF ONTARIO

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Consulting Engineers

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Drawn	Design	Project No.
S.C.	A.R./A.O.	1419-4679
Check	Check	Scale / Dwg.
R.B.	R.B./J.R.K.	1:500 / C 706