TRAFALGAR ENGINEERING

FUNCTIONAL SERVICING REPORT & STORMWATER MANAGEMENT REPORT

Water, Sanitary, and Stormwater Management

PROPOSED MIXED-USE CONDOMINIUM TOWERS
DISTRIKT MIDTOWN

590 ARGUS ROAD
TOWN OF OAKVILLE

OUR FILE: 1798

PREPARED FOR DISTRIKT DEVELOPMENTS INC.

OCTOBER 2024

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REVISION HISTORY

DATE	REVISION	SUBMISSION
April 2023	1	Issued for Rezoning/OPA Application
March 2024	2	Issued for ZBA/OPA/DPS/SPA Application
October 2024	3	TOC Development Submission

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1.0 INTRODUCTION

1.1 Scope of Functional Servicing Report

This report has been prepared in support of the Rezoning (ZBA) and Official Plan Amendment (OPA) to permit the construction of a three-tower mixed-use condominium located at 590 Argus Road in the Town of Oakville (a copy of the Site Plan and site statistics are included in Appendix 'A'). This report discusses how the proposed site can be serviced by the existing and future infrastructure for water, wastewater and storm drainage/stormwater management, site grading and erosion and sediment control. This report may be updated and refined as the project moves through the planning process to support the subdivision and Building Permit Stages.

We are aware that the Town of Oakville is currently undertaking an Official Plan review for the Midtown area. In order to prepare the servicing design we have followed the ongoing progression of the OPA review and where appropriate have reached out to Town and Regional staff to prepare this report based on the most up to date information available.

Information provided in this report is based on our general knowledge of the area as well as information/drawings obtained from the Town of Oakville and the Region of Halton. Additionally, the following documents have been reviewed in support of this application:

- Stormwater Management Report, Oakville Part III Midtown EA, Town of Oakville, Cole Engineering, June 2014 (Midtown EA)
- Water and Wastewater Area Servicing Plan for Midtown Oakville, Final Report, Blue Plan Engineering, September 28, 2017 (ASP)
- Addendum to the Water and Wastewater Area Servicing Plan (ASP) for Midtown Oakville, Blue Plan Engineering, December 2020 (ASP Addendum)
- Draft Proposed Midtown Oakville OPA, released April 2, 2024 for review and discussion.

Future studies initiated by Town of Oakville staff for the Midtown Area may impact some of the assumptions in this report. This report has been prepared based on the most current information made available to us however we acknowledge that continued coordination with Town staff is required.

Trafalgar Engineering recognizes that the re-development of the Midtown node will continue beyond 2051 involving many privately owned parcels, and more importantly requires the re-development of those parcels to complete the full build-out of the Midtown road network. Trafalgar Engineering has prepared designs demonstrating that the development of the site is

feasible independent to the development of adjacent parcels ("interim condition") as well as the scenario where the full build-out of the Midtown road network is complete ("ultimate condition"). The interim roads will be privately owned and maintained whilst the ultimate roads will be public highways. The timing of the full build-out will be dependent on the re-development of the adjacent privately owned parcels and to be completed by others. The precise mechanisms for land transfers (to municipal ownership) will be determined as planning applications progress (i.e., draft plan/subdivision stages).

For the purpose of this report, north is defined as perpendicular to the QEW, and south is Argus Road.

1.2 Site Location and Description

The subject lands consist of 590 Argus Road in the Town of Oakville, having a total area of approximately 1.54 ha. The site currently consists of a six-storey hotel and associated parking. It is bounded to the north by the QEW and South Service Road East, 586 Argus Road to the west, Argus Road and 589 Argus Road to the south, and 226 and 234 South Service Road East to the east. A copy of the topographic survey is provided in Appendix 'A' for reference.

There is an existing 6.10 m wide easement described as Part 11 Plan 20R-15677 subject to a right-of-way as in instrument no. 105451 and 106047 that runs north south through the property. This easement contains a 600 mm diameter wide trunk sanitary sewer, and a 25 mm diameter water service.

1.3 Proposed Development

The development proposal is for three mixed-use condominium towers constructed over six levels of underground parking which extend essentially to the property lines. A copy of the architect's site statistics is included in Appendix 'A' for detail. As this site is adjacent to an MTO corridor, a 14.0 m MTO setback is provided.

There are proposed road widenings and road realignments to Argus Road and South Service Road. Driveway access is provided at two locations off South Service Road at the north of the property.

1.4 Easements

The existing 6.10 m wide servicing easement will be removed and the sanitary sewer moved to align with the future alignment of South Service Road. A new proposed easement over the realigned South Service Road will be in favour of the Town and Region. The details of the

easement will be provided either through a draft reference plan or through a draft plan of subdivision application at a later date.

In an interim condition, a portion of the easement will remain to accommodate an interim alignment of the sanitary trunk sewer until such time that the full realignment of South Service Road is completed.

2.0 MUNICIPAL ROAD NETWORK

The Midtown Oakville Class EA (approved 2014) and the Liveable Oakville Plan OPA 14 (adopted 2017) identify the local road network for the Midtown growth area. Growth Area Schedule L3 of the Liveable Oakville Plan illustrates the approximate alignments and road allowance widths of various future roads in the Midtown Oakville transportation network. Further, the 2024 Draft OP provided an updated road network configuration and widths.

We understand based on discussions with Town staff that the exact locations of the future roads are flexible and can be fixed through the planning process; however, the proposed locations must meet the intent of both the Midtown EA, OPA 14, and Draft OP, and be justified from a traffic and engineering perspective. The proposed design of South Service Road and Argus Road for this application was completed in conjunction with input and support from the traffic consultant. Refer to supporting reports prepared by BA Group.

This development is impacted by the realignment of South Service Road along the north and east sides of the subject lands, and Argus Road realignment to the south.

Typical road cross-sections are provided in Appendix 'B'.

2.1 South Service Road (20.0m Local Road)

South Service Road is to be shifted in a southerly direction and curve south to meet Argus Road at the future intersection location of Street 'C'. The conceptual alignment and road width was provided through the 2024 Draft OP. Trafalgar Engineering along with BA prepared the conceptual design to establish the future vertical and horizontal alignments. Supporting analysis and justification are provided in the Traffic Impact Study prepared by BA Group (under separate cover).

Proposed centreline of road elevations was designed in order to establish the new property line grades for the proposed development using typical urban road design. This demonstrates feasibility of the subject lands to develop in an interim condition until such time that the external roads are built. The proposed South Service Road realignment requires land takings over non-participating landowners, and so the full build-out is recommended to be completed by the Town

in the future. Interim grading, servicing, and landscape designs are provided to demonstrate the feasibility of an interim design, as well as conceptual future design.

2.1.1 Conceptual South Service Road Municipal Services

The existing 600 mm diameter trunk sanitary sewer (at 0.6% slope) that is within the easement through the subject property will be relocated to the newly built South Service Road and the easement eliminated. The proposed sewer is proposed to be upgraded to a 675 mm diameter sewer at 0.4% slope. A sanitary design sheet is provided in Appendix 'C'.

As depicted in the 2017 Region of Halton Area Servicing Plan (ASP), a 300 mm dia. watermain will be installed within the realigned roadway connecting the existing 500 mm dia. watermain within the existing South Service Road to the existing 300 mm dia. watermain on Argus Road.

Stormwater management consisting of catchbasins, cb shields, storm sewers and underground storage is proposed in order to meet the Stormwater Management Criteria for Midtown.

All Services will connect to existing and proposed municipal services at the future intersection of South Service Road and Argus Road. The conceptual design maintains the existing sanitary, water, and stormwater catchment boundaries.

A Conceptual Servicing Design for South Service Road is provided (refer to Drawings P1 and P2).

2.2 Argus Road

As identified in the 2024 Draft OP, Argus Road is proposed to be realigned to extend in a westerly direction through the Midtown area. The north/south leg of Argus Road will be maintained to keep a connection to Cross Ave in its current location. The horizontal alignment of Argus Road and the intersection with the north/south leg was reviewed and refined by the traffic consultant to ensure general intersection guidelines are followed. Supporting analysis and justification is provided in the Traffic Impact Study prepared by BA Group (under separate cover).

Proposed centreline of road elevations were designed in order to establish the new property line grades for the proposed development using typical urban road design. This demonstrates feasibility of the subject lands to develop in an interim condition until such time that the external roads are built. The proposed Argus Road realignment requires multiple land takings over non-participating landowners, and so the full build-out of Argus Road is recommended to be completed by the Town in the future. Interim grading, servicing, and landscape designs are provided to demonstrate the feasibility of an interim design, as well as conceptual future design.

Due do the large amount of existing municipal/regional local and trunk infrastructure within Argus Road in its current alignment, it is anticipated that the road can be realigned without the need to undertake significant infrastructure realignment. Some minor works may be required such as relocating hydrants, catchbasins, adjusting manhole covers etc.

2.3 Conceptual Municipal Road Network Stormwater Management

Stormwater management (quantity and quality) controls for South Service Road will be provided within the Realigned South Service Road via oversized pipes, orifice control, CB shields and an OGS unit. The Town of Oakville requirements for stormwater management are set out in the Midtown Oakville EA Study (June 2014).

The applicable criteria are as follows:

1. Stormwater Quantity Control (Peak Flow Control)

   Utilize the Midtown Oakville EA Study hydrology model to demonstrate that the target flows are met for each subwatershed. Per the midtown EA, the proposed road is to drain to Sixteen Mile Creek (Figure DAP-2). As there are no existing flood concerns for Sixteen Mile Creek in the study area, peak runoff rates from the development are to be controlled to existing rates. In addition to meeting the flows, a minimum storage requirement is 68.2 m^3/ha.

2. Stormwater Runoff Volume Reduction (Water Balance)

   Retain stormwater onsite to achieve an equivalent annual volume of infiltration as per-development conditions, as per Section 3.2 of the MOE Stormwater Management Planning and Design Manual (March 2003); or,

   Provide retention of 25 mm over the entire area of the proposed development in accordance with the Town's Stormwater Master Plan.

3. Stormwater Quality Control

   Achieve Enhanced Level 1 Protection, as per the Ministry of Environment's Stormwater Management Planning and Design Manual (March 2003).

The stormwater management criteria must meet the objectives of the Midtown EA (Appendix J-Stormwater Management Report) as well as any updated Town of Oakville Stormwater Management Requirements.

As discussed in the Midtown Oakville EA, future development, or transportation improvements within the study area, are to meet the required stormwater management criteria. Therefore,

stormwater quantity, quality and water balance requirements apply to the realignment of South Service Road. Any required stormwater management controls are to be designed and constructed by the Town of Oakville as capital works projects. Stormwater management may consist of a series of Low Impact Developments (bioretention swales, infiltration galleries), OGS units, linear underground chambers, and permeable paving. The location of any stormwater management features must be coordinated with the public utility providers within the right-of-way to ensure adequate clearances are met. Trafalgar Engineering understands that Town staff will initiate those conversations; we recommend that this process be initiated forthwith. The specific details will be coordinated with Town staff at the draft plan/subdivision stage.

2.3.1 Stormwater Quantity Control (Peak Flow Control)

Using the minimum storage unit rate of 68.2 m^3/ha for Sixteen Mile Creek, approximately 47 m^3 of storage is required for the sections of South Service Road which are being realigned.

Approximately 239 m of 600 mm dia. storm sewer is provided within Street 'A' to manage both 5-year conveyance and volumetric control. An orifice control plate sized to discharge the 5-year event while flowing full (to provide the required quantity control) is proposed at the downstream end of South Service Road at the Argus Road intersection.

2.3.2 Stormwater Runoff Volume Reduction (Water Balance)

The Town requires 25 mm water balance (retention) for new development based on their updated guidelines. The location of any Low Impact Developments must be coordinated with the public utility providers within the right-of-way to ensure adequate clearances are met. Trafalgar Engineering understands that Town staff will initiate those conversations; we recommend that this process be initiated forthwith.

2.3.3 Stormwater Quality Control

Catch basins on the proposed municipal roads are to be fitted with CB Shields. This provides (conservatively) 50% removal of long term TSS. As part of a treatment train approach, the CB Shields are combined with a downstream Stormceptor EFO6 providing 60% removal of long term TSS. Our design is based on information obtained from the NJDEP Stormwater BMP Manual wherein it provides a simplified equation for the TSS removal rate for two BMP's in a series:

R = A + B – [(A x B) / 100]
= 50% + 60% – [(50% x 60%) / 100]
= 110% – 30%
= 80%

Where:
R = Total TSS Removal Rate
A = TSS Removal Rate of the First or Upstream BMP
B = TSS Removal Rate of the Second or Downstream BMP

The treatment train provides 80% long term TSS removal, meeting the requirements of MECP Enhanced treatment.

3.0 MUNICIPAL WATER

The subject property will be serviced for water through the local water infrastructure on the adjacent roads. The current ASP notes there is sufficient water supply for the 2031 growth scenario, no major infrastructure is required to support development in this timeframe.

3.1 Existing Municipal Water

3.1.1 Existing Linear Infrastructure

There is an existing 900 mm diameter trunk CPP (Concrete Pressure Pipe) along the centreline of Argus Road. There is a 300 mm diameter PVC watermain on the south side of Argus Road. Record drawings (found in Appendix 'F') indicate a water service connection for the property from the 300 mm diameter watermain in Argus Road. The topographic survey and a field visit confirmed the presence of a valve near the property line.

There is an existing 500 mm diameter CPP trunk watermain along the south side of South Service Road within Pressure Zone 2.

Fire hydrants exist on the north and south sides of Argus Road as well as along South Service Road. Flow tests were performed on the hydrant west of the subject lands at 166 South Service Road and directly south of the subject lands at 590 Argus Road. Updated flow tests may be required at the building permit stage. Both hydrants are within the same pressure zone and the results of the flow tests are included in Appendix 'c' and summarized as follows:

Table 1: Base Hydrant at 166 South Service Road

Static Pressure	87 psig
Flow 1445 usgpm (91 L/s)	84 psig
Flow 2328 usgpm (147 L/s)	81 psig
Theoretical Flow 8 568 usgpm (541 L/s)	residual 20 psig
Estimated Max. Daily Plus Fire Service Pressure	82 psig

Table 2: Base Hydrant at 590 Argus Road

Static Pressure	89 psig
Flow 1385 usgpm (91 L/s)	87 psig
Flow 2201 usgpm (147 L/s)	84 psig
Theoretical Flow 9081 usgpm (541 L/s)	residual 20 psig
Estimated Max. Daily Plus Fire Service Pressure	78 psig

3.1.2 Existing Water Demands

Using the development area and Region of Halton design criteria (90 persons per ha for commercial), the existing domestic water usage is estimated and summarized below (see Appendix 'C' for supporting calculations).

Table 3: Existing Water Demands (L/min)

Average Daily Demand	26
Minimum Hourly Demand	26
Maximum Hourly Demand	60
Maximum Daily Demand	60

3.2 Proposed Municipal Water

All proposed services must be in accordance with the Ontario Building Code, Town of Oakville, and Region of Halton standards and requirements. A copy of the Interim and Ultimate Servicing Plans (S1 and S2) are included in Appendix 'G' and should be read in conjunction with this report.

3.2.1 Proposed Linear Infrastructure

Each Tower will have separate water connections for domestic and fire protection. This will allow for the development to be phased, and for each tower to be independent from the others. In both interim and ultimate conditions, proposed water services consist of a 200 mm diameter fire, 150 mm diameter domestic service for the residential units, and 100 mm diameter domestic for non-residential space for each tower. The towers will be serviced from the existing 300mm diameter watermain on Argus Road. The number and sizing of connections may be subject to

change through further detailed design coordination with mechanical through Site Plan and Building Permit stages. Service connections to Region of Halton infrastructure will require a service permit from the Region.

There are existing municipal hydrants within 45 m of each tower. The proposed location of the fire department connection (siamese connection) for each tower will need to be located within 45 m of a fire hydrant. Further detailed design will be completed at a later stage.

3.2.2 Proposed Water Demands

Using the unit count and type together with Table A-4 of the Region of Halton's 2022 Development Charges Background Study population density guidelines for residential dwellings (1.356 persons/unit for less than two bedrooms, and 1.831 persons/unit for 2 or more bedroom units) the residential population is estimated to be 2,816 persons. The commercial population is estimated using Page A-21 of the Region of Halton 2022 DC Study population density for commercial developments (403 ft^2/employee) resulting in a commercial population of 65 persons. The domestic water usage is estimated and summarized below (see Appendix 'C' for supporting calculations). The fire flow is estimated for demand purposes only using the Fire Underwriter's Survey methodology and should be confirmed by a sprinkler consultant at the building permit stage.

Table 4: Estimated Water Demands (2022 DC Study Criteria) (L/min)

Average Daily Demand	550
Minimum Hourly Demand	550
Maximum Hourly Demand	2180
Maximum Daily Demand	1238
Estimated Fire Demand (FUS 1999)	7000
Maximum Daily Plus Fire Demand	8238

4.0 MUNICIPAL WASTEWATER

The subject property will be serviced for wastewater through the local wastewater infrastructure on Argus Road. The ASP notes capacity concerns for the 2031 growth scenario, and potentially some required downstream infrastructure upgrades. It is anticipated that the servicing capacity issues will be addressed in the new ASP. The planned downstream sewer upgrades would have to be constructed and in operation prior to the proposed development proceeding to the Building Permit Phase for the above ground works. Based on the latest conversations with Region staff, the construction of the downstream sanitary sewer upgrades on Trafalgar Road is currently on track for construction in 2025.

In support of this application, Urbantech has completed a Downstream Sanitary Sewer Capacity Assessment (see Appendix "E") to identify the downstream constraints and potential solutions. This study is intended to be read in conjunction with the design presented in this report and aid in discussions with Region staff on how to move forward on the downstream upgrades. Further discussions are required with respect to design, timing, and funding of these works. The study will be updated in future submissions to address changes from the 2024 Draft OP and any changes in the development proposals as further details are provided.

4.1 Existing Municipal Wastewater

4.1.1 Existing Linear Infrastructure

There is an existing 750 mm diameter PVC sanitary sewer flowing west along the east west leg of Argus Road. This sewer drains south down Argus Road to a 600 mm PVC sanitary sewer.

The site is currently serviced through a 200 mm diameter service lateral running within an abandoned 600 mm diameter sanitary sewer which connects to the existing 600 mm diameter sanitary sewer running north-south on Argus Road.

There is an existing 600 mm diameter CPP trunk sewer running through the east portion of the site within an easement. This sewer conveys sanitary flows from existing residential lands north of the QEW. The 600 mm diameter sewer conveys flows to the 750 mm diameter sewer on the east west leg of Argus Road.

4.1.2 Existing Wastewater Demands

Using the development area and Region of Halton design criteria for commercial lands (90 persons per hectare), the estimated existing sanitary discharge is determined with 139 persons and 275 m^3/cap. day (see Appendix 'D' for supporting calculations).

Table 5: Estimated Existing Wastewater Flow (L/s)

Average Daily Dry Weather Flow	0.44
Modified Harmon Peaking Factor	4.20
Infiltration Allowance (0.286 L/s-ha)	0.44
Peak Flow	2.25

4.2 Proposed Municipal Wastewater

All proposed services must be in accordance with the Ontario Building Code, Town of Oakville, and Region of Halton standards and requirements. A copy of the Interim and Ultimate Servicing Plans are included in Appendix 'G' and should be read in conjunction with this report.

4.2.1 Proposed Service Connections

In both interim and ultimate conditions, three new 375 mm diameter PVC sanitary laterals, one for each tower, are proposed to service the development. The laterals will be connected to 1200 mm x 1200 mm cast-in-place diameter property line inspection manholes. The new laterals will replace the existing 200 mm sanitary lateral within the abandoned 600 mm sanitary sewer and connect to the 600 mm diameter sanitary sewer on Argus Road, draining south to Cross Avenue. The number and sizing of connections may be subject to change through further detailed design coordination with mechanical through Site Plan and Building Permit stages. Service connections to Region of Halton infrastructure will require a service permit from the Region.

4.2.2 Proposed Wastewater Demands

The proposed wastewater demands were also estimated using a residential population of 2816 persons and a retail population of 65 persons (determined in section 3.2.2) and 275 L/cap. day. The proposed sanitary discharge is estimated below (see Appendix 'D' for supporting calculations).

Table 6: Estimated Proposed Wastewater Flow (2022 DC Study Criteria) (L/s)

Average Daily Dry Weather Flow	8.96
Modified Harmon Peaking Factor	3.47
Infiltration Allowance (0.286 L/s-ha)	0.29
Peak Flow	31.61

5.0 STORM DRAINAGE AND STORMWATER MANAGEMENT

5.1 Existing Storm Drainage

The existing site slopes generally from north to south, at an average slope at 0.5%. As mentioned, the site is currently occupied by a hotel and paved parking lot, all of which will be removed as part of the development. There is no external drainage through the site under existing conditions. The existing parking lot drains using a series of catchbasins, which connect to a manhole near the southeast corner of the property. This manhole is connected to an existing 300 mm diameter storm sewer draining to the 375 mm diameter storm sewer on Argus Road. This sewer travels

south through 570 Trafalgar Avenue, west through 571 & 587 Argus Road, and south, down Argus Road to Cross Avenue. The storm sewer along Argus Road drains west and outlets to 16 Mile Creek.

5.1.1 Existing Storm Service Connection

The existing site has a 300 mm diameter storm connection to a property line manhole in the southeast corner of the site. This manhole is connected to an existing 300 mm diameter storm sewer draining to the 375 mm diameter storm sewer on Argus Road. This sewer travels south through 570 Trafalgar Road, west through 571 & 587 Argus Road, and south, down Argus Road to Cross Avenue. The storm sewer along Argus Road drains west and outlets to 16 Mile Creek.

5.2 Proposed Storm Drainage

5.2.1 Proposed Storm Service Connection

Two 300 mm diameter storm connections along with property line inspection manholes will connect to a proposed 450 mm diameter storm sewer on Argus Road. Two storm connections are proposed to allow for the underground structure to be constructed in 2 phases. Stormwater management requirements are discussed further in Section 5.3 and proposed municipal sewer extension is discussed in Section 5.4.

5.3 Stormwater Management

The Town of Oakville requirements for stormwater management are set out in the Midtown Oakville EA Study (June 2014).

The applicable criteria are as follows:

1. Stormwater Quantity Control (Peak Flow Control)

   Utilize the Midtown Oakville EA Study hydrology model to demonstrate that the target flows are met for each subwatershed. Per the Midtown EA, the proposed development is to drain to Sixteen Mile Creek (Figure DAP-2). As there are no existing flood concerns for Sixteen Mile Creek in the study area, peak runoff rates from the development are to be controlled to existing rates. In addition to meeting the flows, a minimum storage requirement is 68.2 m^3/ha.

2. Stormwater Runoff Volume Reduction (Water Balance)

   Provide retention of 25mm over the entire site area of the proposed development in accordance with the Town's Stormwater Master Plan, or,

Retain stormwater onsite to achieve an equivalent annual volume of infiltration as per-development conditions, as per Section 3.2 of the MOE Stormwater Management Planning and Design Manual (March 2003).

3. Stormwater Quality Control

   Achieve Enhanced Level 1 Protection, as per the Ministry of Environment's Stormwater Management Planning and Design Manual (March 2003).

The development is contemplated to be completed in 2 underground phases. As such, two storm tanks, and storm outlets are proposed. Detailed design will be provided at a later stage.

5.3.1 Stormwater Quantity Control (Peak Flow Control)

Pre-development flow rates are calculated using the Town of Oakville IDF curves, a runoff coefficient of C=0.9, and a development area of 1.32 ha. Post-development flow rates are calculated using the same IDF data, runoff coefficient of C=0.9 and the same area. In the determination of the post-development runoff coefficient, we have not accounted for any landscaping in the interior courtyard, or rooftop amenity space to remain conservative. This will be refined as detailed design progresses. A conservative value of post-development runoff coefficient ensures adequate sizing of the stormwater management tanks during the preliminary design stage.

The groundwater flow from the site will by-pass the stormwater tank and be directed to the property line storm manhole (after being treated) and flow uncontrolled to the storm sewer in Argus Road. The treatment process will be detailed at the detailed design stage (by others) but must comply with Town By-Law 2009-031. The long-term sub-drain flow (groundwater flow) of 66,000 L/day (0.76 L/s) was determined in the Hydrogeological investigation prepared by B.I.G. Consulting Inc. (BIGC-ENV-554D) dated May 2023 and discussed in further detail in Section 6.0.

To compensate for the uncontrolled groundwater flows, the release rate from the stormwater tank has been overcontrolled such that the total flows from the site do not exceed the pre-development rates. Due to mechanical constraints, the achievable release rate is limited to 60 L/s.

A comparison of pre- and post-development flow is provided in the table below.

Table 7: Stormwater Flows – Phase 1

Return	Pre-Dev Total (L/s)	Post-Development Controlled (L/s)	Groundwater Flow (L/s)	Total Release Rate to Municipal Sewer (L/s)	Total Storage Required (m^3)
2-yr	**177**	60	0.76	61	88
5-yr	246	60	0.76	61	151
10-yr	290	60	0.76	61	192
25-yr	384	60	0.76	61	282
50-yr	435	60	0.76	61	333
100-yr	480	60	0.76	**61**	376

Table 8: Stormwater Flows – Phase 2

Return	Pre-Dev Total (L/s)	Post-Development Controlled (L/s)	Groundwater Flow (L/s)	Total Release Rate to Municipal Sewer (L/s)	Total Storage Required (m^3)
2-yr	**95**	60	0.76	61	22
5-yr	131	60	0.76	61	50
10-yr	155	60	0.76	61	69
25-yr	205	60	0.76	61	111
50-yr	233	60	0.76	61	135
100-yr	257	60	0.76	**61**	156

Based on the analysis completed and summarized in the table above, the proposed stormwater system has been designed to demonstrate that the 100 year post development peak flow is controlled to the 2 year pre-development peak flow and the tanks sized accordingly for both phases.

The minimum storage requirement per the Midtown Oakville EA is 90 m^3. The post- to pre-development storage requirements and mechanical pumping restraints yield a higher storage requirement and therefore govern.

The runoff coefficient and associated tank sizing may be refined as detailed design progresses.

Runoff from the site will be collected through the roof drains and surface drains. The runoff will be conveyed through internal plumbing and the underground parking structure (designed per OBC by others) to the stormwater tank located in the underground parking structure and must be sized to capture and convey the 100-year event. An emergency overland flow route is provided through the site to Argus Road. An emergency overflow from the tank must be designed in coordination with the mechanical consultant at the detailed design stage but will likely discharge to grade in the general vicinity of the tank.

5.3.2 Stormwater Runoff Volume Reduction (Water Balance)

The 25 mm retention volume is 350 m^3 which must be re-used on site.

The stormwater management tanks have been sized to store this volume in addition to the volume required for peak flow control. Due to the built form of the site, there are limited opportunities for infiltration, so the re-use water will be used for onsite irrigation or other acceptable best efforts. Additional details will be provided through detailed design.

In additional to on-site irrigation, rainwater reuse may be used for items such as car wash stations within the underground parking garage, and grey water reuse (for flushing toilets) in common amenity areas or residential units. These systems will be designed at permit stage with appropriate water treatment as required.

5.3.3 Stormwater Quality Control

The Town of Oakville requires that the development meet MECP Enhanced protection (80% long-term removal of TSS). A Stormceptor Jellyfish (or approved equivalent) is proposed to treat sediment laden runoff from the vehicular areas only (approximately 1800 m^2). Clean roof drainage and pedestrian areas are to bypass the filtration system. The Jellyfish is to be located upstream of the stormwater management tank and is provided with an outlet pipe and an overflow weir, both directed to the tank. An adequately maintained filtration system provides 80% long-term removal of TSS. Based on applications of similar scope, a JF4-1-1 model Jellyfish is proposed.

5.4 Municipal Storm Sewer Extension

In order to service the proposed development an extension to the municipal storm sewer on Argus Road is proposed. The municipal storm sewer is to be extended north approximately 84 m, and east along Argus approximately 109 m to the future intersection of South Service Road. The sewer will be used to convey flows from the subject lands and the future South Service Road. Refer to the plan and profile drawing 1798-P3, provided in Appendix 'H' for details.

6.0 GROUNDWATER MANAGEMENT

A Hydrogeological Investigation was performed by B.I.G. Consulting Inc. (dated February 2023) assessing the short-term (construction) and long-term groundwater de-watering needs. Any construction de-watering will be addressed at the Building Permit stage and must comply with Town By-Law 2009-031. The long-term peak groundwater flow rate into the parking garage

subdrains after the initial dewatering stages was estimated to be 66,000 L/day (0.76 L/s). These flows will be treated as required (to be designed by others at the detailed design stage) and will bypass the stormwater management tank system in the underground parking garage before being discharged using the proposed stormwater lateral. The groundwater discharge must be in compliance with Town By-Law 2009-031.

In the event that permanent dewatering is not permitted, the proposed building may be designed and supported by "tanked" water-proofed continuous raft foundation without permanent dewatering.

Refer to the Hydrogeological Investigation prepared by B.I.G. Consulting Inc. (BIGC-ENV-554D) dated May 2023 for details.

7.0 OVERLAND SPILL CONDITION

In 2022, the "Flood Risk Mapping and Spill Quantification - Morrison-Wedgewood Diversion Channel" (dated 2020) report was adopted formally identifying a spill condition that potentially impacts the subject lands; Trafalgar Engineering has obtained a copy of the report and associated models and is undertaking a high-level assessment of the spill condition to estimate the order-of-magnitude of flooding in the vicinity of Distrikt's lands. Our assessment will be made available in a subsequent submission. The development of the site shall not increase the flood risk on adjacent sites.

We understand that ongoing studies by others are reviewing the same. Trafalgar will review and incorporate findings of said studies at such time as they are available; however, for the purpose of this submission it is acknowledged that further review of this condition is required.

8.0 SITE GRADING

The proposed grading must ensure that drainage from the 100-year event is collected by the building's mechanical system and conveyed to the stormwater management tank. All building air intake and exhaust shafts must be protected from overland flow by being set a minimum of 0.2 m above the spill elevation. The proposed grading has maintained no external drainage, matching the existing condition.

Proposed grades along the south limit of the property have been set considering the future road alignment of Argus Road and are generally compatible with the existing grades.

The emergency overland flow route through the site generally flows from north to south to Argus Road. Within the Privately Owned Public Space (POPS) runoff generally flows from north to south.

A copy of the Grading Plan is provided in Appendix 'G' and should be read in conjunction with this report.

9.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment controls must be installed prior to the commencement of any construction. The erosion and sediment control devices should follow the Erosion and Sediment Control Guidelines for Urban Construction as set out by the Greater Golden Horseshoe Conservation Authority. Erosion and sediment control measures may be implemented as follows:

- Double wrapped catch basins: The proposed storm sewer catch basins and catch basin manholes located within the subject site and adjacent municipal roads shall be double wrapped in a woven geotextile material. Woven geotextile material is to be replaced periodically when accumulated sediments interfere with drainage. The abutting streets should be monitored and if required, swept to mitigate the accumulation of tracked material on the roads on a routine basis in keeping with good construction housekeeping practices.
- Gravel Access Pad: A gravel access (mud) mat will be installed at the entrance to the construction zone to prevent mud tracking from the site to the municipal roads.
- Silt Fencing: Silt fence will be installed along the property line to intercept sheet flow.

10.0 CONCLUSION

The information presented in this Functional Servicing Report demonstrates that the proposed development can be serviced by the existing and future adjacent infrastructure for water, wastewater, stormwater in the interim and ultimate condition and can meet the Town of Oakville stormwater management criteria.

The following is a summary of the report findings:

- There is existing municipal water infrastructure adjacent to the site that can readily service the site. The proposed average daily water demand for the site is 550 L/min with an estimated maximum daily plus fire demand of 8238 L/min.
- There is existing wastewater infrastructure servicing on Argus Road adjacent to the site. The proposed development will be serviced off this existing infrastructure by way of three, 375 mm diameter sanitary laterals, one for each tower. The estimated peak wastewater flow is 31.61 L/s for the entire site.

- Stormwater quantity controls will be provided by controlling post development peak flows to the pre-development peak flows. Storage will be provided by two stormwater tanks located in the underground parking structure. Stormwater will be pumped to a maximum release rate of 60 L/s to Argus Road by way of two 300 mm diameter storm sewer connections. The required storage volume is 376 m^3 and 156 m^3.
- Groundwater will be collected, treated, and discharged uncontrolled to the municipal storm sewer. The allowable stormwater release rate has been reduced to account for the uncontrolled groundwater flows.
- The water balance criteria of 25 mm is equivalent to 350 m^3. This water will also be stored in the underground stormwater tank and will be re-used for irrigation and other best efforts to be determined at the detailed design stage.
- Water quality criteria is met by means of a stormwater filtration system (Jellyfish unit), placed upstream of the stormwater tank.
- Grading of the site is designed to ensure runoff from the 100-year event is captured, and there is an emergency overland flow route.
- Erosion and sediment controls will be implemented during construction in accordance with the Erosion and Sediment Control Guidelines for Urban Construction as set out by the Greater Golden Horseshoe Conservation Authority.

Based on the above, we support the proposed development from a civil engineering perspective for rezoning and Official Plan Amendment.

PREPARED BY TRAFALGAR ENGINEERING LTD.

Digitally signed by Nicole Sylvester
Date: 2024.10.04 16:13:10 -04'00'

LICENSED PROFESSIONAL ENGINEER
N.A. SYLVESTER
100199487
PROVINCE OF ONTARIO

Malcolm Wallace, EIT
Intermediate Designer

Nicole Sylvester, P.Eng.
Principal

APPENDIX ‘A’

SHEET LIST

DEVELOPMENT UNIT MIX

NAME	MIN (SM)	MIN (SF)	MAX (SM)	MAX (SF)	COUNT	%
STUDIO	31.15 m²	335 SF	45.48 m²	490 SF	153	8.2%
1B	40.24 m²	433 SF	63.53 m²	684 SF	449	24.2%
1B+D	45.03 m²	485 SF	68.12 m²	733 SF	623	33.6%
2B	56.20 m²	605 SF	73.32 m²	789 SF	505	27.2%
3B					126	6.8%

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UNIT MIX TOWER A

NAME	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
STUDIO	340 SF	490 SF	45	7.8%
1B	476 SF	593 SF	93	16.1%
1B+D	505 SF	733 SF	205	35.6%
2B	633 SF	773 SF	179	31.1%
3B	769 SF	903 SF	54	9.4%
			576	100.0%

UNIT MIX TOWER B

NAME	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
STUDIO	340 SF	422 SF	46	8%
1B	483 SF	684 SF	99	16%
1B+D	485 SF	728 SF	258	42%
2B	629 SF	789 SF	148	24%
3B	762 SF	920 SF	58	10%
			609	100%

UNIT MIX TOWER C

UNIT TYPE	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
STUDIO	335 SF	436 SF	62	9.2%
1B	433 SF	577 SF	257	38.3%
1B+D	517 SF	639 SF	160	23.8%
2B	605 SF	746 SF	178	26.5%
3B			14	2.1%
			671	100.0%

UNIT SUMMARY (PER LEVEL) TOWER A

LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	429 SF	429 SF	1
LEVEL 02	1B	517 SF	524 SF	2
LEVEL 02	1B+D	572 SF	733 SF	8
LEVEL 02	2B	650 SF	715 SF	3
				14
LEVEL 03	STUDIO	407 SF	407 SF	1
LEVEL 03	1B	518 SF	518 SF	2
LEVEL 03	1B+D	574 SF	642 SF	7
LEVEL 03	2B	649 SF	694 SF	3
				13
LEVEL 04	STUDIO	408 SF	408 SF	1
LEVEL 04	1B	518 SF	518 SF	2
LEVEL 04	1B+D	574 SF	642 SF	8
LEVEL 04	2B	649 SF	694 SF	3
				14
LEVEL 05	STUDIO	416 SF	416 SF	1
LEVEL 05	1B	510 SF	518 SF	3
LEVEL 05	1B+D	551 SF	641 SF	9
LEVEL 05	2B	649 SF	687 SF	5
LEVEL 05	3B	830 SF	830 SF	1
				19
LEVEL 06	STUDIO	490 SF	490 SF	1
LEVEL 06	1B	476 SF	517 SF	4
LEVEL 06	1B+D	551 SF	680 SF	9
LEVEL 06	2B	645 SF	675 SF	4
LEVEL 06	3B	830 SF	830 SF	1
				19
LEVEL 07	STUDIO	381 SF	437 SF	2
LEVEL 07	1B	510 SF	517 SF	2
LEVEL 07	1B+D	551 SF	677 SF	8
LEVEL 07	2B	651 SF	730 SF	3
LEVEL 07	3B	801 SF	830 SF	2
				17
LEVEL 08	1B	510 SF	510 SF	1
LEVEL 08	1B+D	551 SF	676 SF	8
LEVEL 08	2B	651 SF	675 SF	3
LEVEL 08	3B	830 SF	857 SF	3
				15
LEVEL 09	1B	510 SF	510 SF	1
LEVEL 09	1B+D	551 SF	682 SF	7
LEVEL 09	2B	646 SF	678 SF	4
LEVEL 09	3B	830 SF	876 SF	2
				14
LEVEL 10	STUDIO	346 SF	370 SF	2
LEVEL 10	1B	491 SF	535 SF	3
LEVEL 10	1B+D	551 SF	645 SF	3
LEVEL 10	2B	650 SF	675 SF	4
LEVEL 10	3B	769 SF	830 SF	2
				14
LEVEL 11	1B	482 SF	510 SF	2
LEVEL 11	1B+D	551 SF	639 SF	5
LEVEL 11	2B	637 SF	730 SF	5
LEVEL 11	3B	830 SF	830 SF	1
				13
LEVEL 12	STUDIO	340 SF	340 SF	1
LEVEL 12	1B	510 SF	510 SF	1
LEVEL 12	1B+D	551 SF	639 SF	3
LEVEL 12	2B	633 SF	712 SF	4
LEVEL 12	3B	769 SF	830 SF	3
				12
LEVEL 13	STUDIO	340 SF	340 SF	1
LEVEL 13	1B	510 SF	512 SF	2
LEVEL 13	1B+D	551 SF	637 SF	4
LEVEL 13	2B	643 SF	672 SF	4
LEVEL 13	3B	830 SF	830 SF	1
				12
LEVEL 14,17 to 45	STUDIO	340 SF	340 SF	30
LEVEL 14,17 to 45	1B	510 SF	512 SF	60
LEVEL 14,17 to 45	1B+D	551 SF	637 SF	120
LEVEL 14,17 to 45	2B	643 SF	672 SF	120
LEVEL 14,17 to 45	3B	830 SF	830 SF	30
				360
LEVEL 15	STUDIO	340 SF	340 SF	1
LEVEL 15	1B	512 SF	593 SF	3
LEVEL 15	1B+D	507 SF	591 SF	2
LEVEL 15	2B	643 SF	672 SF	3
LEVEL 15	3B	829 SF	829 SF	1
				10
LEVEL 16	STUDIO	340 SF	340 SF	1
LEVEL 16	1B	512 SF	586 SF	3
LEVEL 16	1B+D	505 SF	591 SF	2
LEVEL 16	2B	643 SF	672 SF	3
LEVEL 16	3B	828 SF	828 SF	1
				10
LEVEL 47,46	STUDIO	352 SF	352 SF	2
LEVEL 47,46	1B	509 SF	509 SF	2
LEVEL 47,46	1B+D	588 SF	588 SF	2
LEVEL 47,46	2B	666 SF	773 SF	8
LEVEL 47,46	3B	831 SF	903 SF	6
				20
TOTAL				576

UNIT SUMMARY (PER LEVEL) TOWER B

LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	422 SF	422 SF	1
LEVEL 02	1B	515 SF	523 SF	2
LEVEL 02	1B+D	575 SF	728 SF	6
LEVEL 02	2B	649 SF	703 SF	3
				12
LEVEL 03	STUDIO	407 SF	407 SF	1
LEVEL 03	1B	517 SF	517 SF	2
LEVEL 03	1B+D	574 SF	642 SF	7
LEVEL 03	2B	648 SF	694 SF	3
				13
LEVEL 04	STUDIO	408 SF	408 SF	1
LEVEL 04	1B	518 SF	518 SF	2
LEVEL 04	1B+D	551 SF	727 SF	10
LEVEL 04	2B	649 SF	694 SF	4
LEVEL 04	3B	823 SF	823 SF	1
				18
LEVEL 05	STUDIO	416 SF	416 SF	1
LEVEL 05	1B	507 SF	518 SF	3
LEVEL 05	1B+D	551 SF	641 SF	10
LEVEL 05	2B	649 SF	687 SF	4
LEVEL 05	3B	823 SF	823 SF	1
				19
LEVEL 06	STUDIO	402 SF	402 SF	1
LEVEL 06	1B	507 SF	555 SF	4
LEVEL 06	1B+D	551 SF	674 SF	10
LEVEL 06	2B	641 SF	666 SF	3
LEVEL 06	3B	823 SF	823 SF	1
				19
LEVEL 07	STUDIO	383 SF	416 SF	2
LEVEL 07	1B	507 SF	566 SF	2
LEVEL 07	1B+D	551 SF	679 SF	9
LEVEL 07	2B	666 SF	733 SF	2
LEVEL 07	3B	797 SF	823 SF	2
				17
LEVEL 08	1B	507 SF	507 SF	1
LEVEL 08	1B+D	551 SF	679 SF	9
LEVEL 08	2B	666 SF	666 SF	2
LEVEL 08	3B	823 SF	857 SF	3
				15
LEVEL 09	1B	507 SF	507 SF	1
LEVEL 09	1B+D	551 SF	679 SF	8
LEVEL 09	2B	641 SF	682 SF	3
LEVEL 09	3B	823 SF	869 SF	2
				14
LEVEL 10	STUDIO	340 SF	378 SF	2
LEVEL 10	1B	490 SF	527 SF	3
LEVEL 10	1B+D	551 SF	638 SF	4
LEVEL 10	2B	655 SF	666 SF	3
LEVEL 10	3B	762 SF	823 SF	2
				14
LEVEL 11	1B	483 SF	507 SF	2
LEVEL 11	1B+D	551 SF	632 SF	6
LEVEL 11	2B	656 SF	716 SF	4
LEVEL 11	3B	823 SF	823 SF	1
				13
LEVEL 12	STUDIO	344 SF	344 SF	1
LEVEL 12	1B	514 SF	514 SF	1
LEVEL 12	1B+D	551 SF	637 SF	3
LEVEL 12	2B	629 SF	709 SF	3
LEVEL 12	3B	764 SF	830 SF	3
				11
LEVEL 13	STUDIO	344 SF	344 SF	1
LEVEL 13	1B	507 SF	514 SF	2
LEVEL 13	1B+D	551 SF	637 SF	5
LEVEL 13	2B	641 SF	666 SF	3
LEVEL 13	3B	830 SF	830 SF	1
				12
LEVEL 14,17 to 48	STUDIO	344 SF	344 SF	33
LEVEL 14,17 to 48	1B	507 SF	514 SF	66
LEVEL 14,17 to 48	1B+D	551 SF	637 SF	165
LEVEL 14,17 to 48	2B	641 SF	666 SF	99
LEVEL 14,17 to 48	3B	830 SF	830 SF	33
				396
LEVEL 15	STUDIO	345 SF	345 SF	1
LEVEL 15	1B	511 SF	684 SF	3
LEVEL 15	1B+D	485 SF	592 SF	2
LEVEL 15	2B	643 SF	661 SF	3
LEVEL 15	3B	794 SF	794 SF	1
				10
LEVEL 16	STUDIO	345 SF	345 SF	1
LEVEL 16	1B	509 SF	680 SF	3
LEVEL 16	1B+D	485 SF	590 SF	2
LEVEL 16	2B	643 SF	661 SF	3
LEVEL 16	3B	794 SF	794 SF	1
				10
LEVEL 50,49	1B	587 SF	587 SF	2
LEVEL 50,49	1B+D	662 SF	662 SF	2
LEVEL 50,49	2B	720 SF	789 SF	6
LEVEL 50,49	3B	876 SF	920 SF	6
				16
TOTAL				609

UNIT SUMMARY (PER LEVEL) TOWER C

LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
Not Placed	3B			2
				2
LEVEL 03	STUDIO	370 SF	436 SF	2
LEVEL 03	1B	511 SF	528 SF	4
LEVEL 03	1B+D	548 SF	630 SF	6
LEVEL 03	2B	629 SF	744 SF	5
				17
LEVEL 04	STUDIO	370 SF	436 SF	2
LEVEL 04	1B	509 SF	526 SF	4
LEVEL 04	1B+D	548 SF	630 SF	6
LEVEL 04	2B	629 SF	741 SF	5
				17
LEVEL 05	STUDIO	370 SF	436 SF	3
LEVEL 05	1B	510 SF	519 SF	4
LEVEL 05	1B+D	548 SF	630 SF	6
LEVEL 05	2B	629 SF	729 SF	7
				20
LEVEL 06	STUDIO	368 SF	378 SF	2
LEVEL 06	1B	504 SF	519 SF	4
LEVEL 06	1B+D	517 SF	615 SF	5
LEVEL 06	2B	625 SF	729 SF	8
				19
LEVEL 07	STUDIO	367 SF	411 SF	3
LEVEL 07	1B	511 SF	569 SF	5
LEVEL 07	1B+D	529 SF	639 SF	4
LEVEL 07	2B	674 SF	746 SF	4
LEVEL 07	3B	797 SF	797 SF	1
				17
LEVEL 08	STUDIO	369 SF	378 SF	2
LEVEL 08	1B	504 SF	528 SF	5
LEVEL 08	1B+D	564 SF	606 SF	4
LEVEL 08	2B	655 SF	746 SF	3
LEVEL 08	3B	783 SF	870 SF	2
				16
LEVEL 09	STUDIO	377 SF	378 SF	2
LEVEL 09	1B	433 SF	528 SF	5
LEVEL 09	1B+D	554 SF	606 SF	3
LEVEL 09	2B	625 SF	746 SF	4
LEVEL 09	3B	842 SF	842 SF	1
				15
LEVEL 10	STUDIO	335 SF	378 SF	2
LEVEL 10	1B	463 SF	528 SF	6
LEVEL 10	1B+D	589 SF	589 SF	1
LEVEL 10	2B	659 SF	746 SF	4
LEVEL 10	3B	768 SF	768 SF	1
				14
LEVEL 11	STUDIO	366 SF	378 SF	2
LEVEL 11	1B	500 SF	528 SF	5
LEVEL 11	1B+D	570 SF	616 SF	3
LEVEL 11	2B	648 SF	746 SF	4
				14
LEVEL 12	STUDIO	378 SF	378 SF	1
LEVEL 12	1B	516 SF	528 SF	4
LEVEL 12	1B+D	575 SF	614 SF	2
LEVEL 12	2B	674 SF	746 SF	4
LEVEL 12	3B	795 SF	795 SF	1
				12
LEVEL 13	STUDIO	378 SF	378 SF	1
LEVEL 13	1B	516 SF	527 SF	5
LEVEL 13	1B+D	575 SF	605 SF	3
LEVEL 13 ,17 to 53	2B	655 SF	746 SF	3
,17 to 53				12
LEVEL 14 ,17 to 53	STUDIO	378 SF	378 SF	38
LEVEL 14	1B	515 SF	528 SF	190
LEVEL 14	1B+D	575 SF	605 SF	114
LEVEL 14	2B	655 SF	745 SF	114
				456
LEVEL 15	STUDIO	378 SF	378 SF	1
LEVEL 15	1B	516 SF	522 SF	4
LEVEL 15	1B+D	589 SF	605 SF	2
LEVEL 15	2B	655 SF	746 SF	3
				10
LEVEL 16 ,54	STUDIO	378 SF	378 SF	1
LEVEL 16 ,54	1B	516 SF	522 SF	4
LEVEL 16 ,54	1B+D	589 SF	589 SF	1
LEVEL 16 ,54	2B	605 SF	746 SF	4
				10
TOWER C PH - 55	1B	487 SF	577 SF	8
TOWER C PH - 55	2B	643 SF	715 SF	6
TOWER C PH - 55	3B	849 SF	929 SF	6
				20
TOTAL				671

DEVELOPMENT UNIT SUMMARY (PER LEVEL)

LEVEL	UNIT CATEGORY	MIN(SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	378 SF	429 SF	3
LEVEL 02	1B	515 SF	524 SF	4
LEVEL 02	1B+D	572 SF	733 SF	14
LEVEL 02	2B	649 SF	715 SF	6
LEVEL 03	STUDIO	370 SF	436 SF	4
LEVEL 03	1B	511 SF	528 SF	8
LEVEL 03	1B+D	548 SF	642 SF	20
LEVEL 03	2B	629 SF	744 SF	11
LEVEL 04	STUDIO	370 SF	436 SF	4
LEVEL 04	1B	509 SF	526 SF	8
LEVEL 04	1B+D	548 SF	727 SF	24
LEVEL 04	2B	629 SF	741 SF	12
LEVEL 04	3B	823 SF	823 SF	1
LEVEL 05	STUDIO	370 SF	436 SF	5
LEVEL 05	1B	507 SF	519 SF	10
LEVEL 05	1B+D	548 SF	641 SF	25
LEVEL 05	2B	629 SF	729 SF	16
LEVEL 05	3B	823 SF	830 SF	2
LEVEL 06	STUDIO	368 SF	490 SF	4
LEVEL 06	1B	476 SF	555 SF	12
LEVEL 06	1B+D	517 SF	680 SF	24
LEVEL 06	2B	625 SF	729 SF	15
LEVEL 06	3B	823 SF	830 SF	2
LEVEL 07	STUDIO	367 SF	437 SF	7
LEVEL 07	1B	507 SF	569 SF	9
LEVEL 07	1B+D	529 SF	679 SF	21
LEVEL 07	2B	651 SF	746 SF	9
LEVEL 07	3B	797 SF	830 SF	5
LEVEL 08	STUDIO	369 SF	378 SF	2
LEVEL 08	1B	504 SF	528 SF	7
LEVEL 08	1B+D	551 SF	679 SF	21
LEVEL 08	2B	651 SF	746 SF	8
LEVEL 08	3B	783 SF	870 SF	8
LEVEL 09	STUDIO	377 SF	378 SF	2
LEVEL 09	1B	433 SF	528 SF	7
LEVEL 09	1B+D	551 SF	682 SF	18
LEVEL 09	2B	625 SF	746 SF	11
LEVEL 09	3B	823 SF	876 SF	5
LEVEL 10	STUDIO	335 SF	378 SF	6
LEVEL 10	1B	463 SF	535 SF	12
LEVEL 10	1B+D	551 SF	645 SF	8
LEVEL 10	2B	650 SF	746 SF	11
LEVEL 10	3B	762 SF	830 SF	5
LEVEL 11	STUDIO	366 SF	378 SF	2
LEVEL 11	1B	482 SF	528 SF	9
LEVEL 11	1B+D	551 SF	639 SF	14
LEVEL 11	2B	637 SF	746 SF	13
LEVEL 11	3B	823 SF	830 SF	2
LEVEL 12	STUDIO	340 SF	378 SF	3
LEVEL 12	1B	510 SF	528 SF	6
LEVEL 12	1B+D	551 SF	639 SF	8
LEVEL 12	2B	629 SF	746 SF	11
LEVEL 12	3B	764 SF	830 SF	7
LEVEL 13	STUDIO	340 SF	344 SF	2
LEVEL 13	1B	507 SF	527 SF	9
LEVEL 13	1B+D	551 SF	637 SF	12
LEVEL 13	2B	641 SF	746 SF	10
LEVEL 13	3B	830 SF	830 SF	2
LEVEL 14,17 TO 45	STUDIO	340 SF	340 SF	30
LEVEL 14,17 TO 45	1B	510 SF	512 SF	60
LEVEL 14,17 TO 45	1B+D	551 SF	637 SF	120
LEVEL 14,17 TO 45	2B	643 SF	672 SF	120
LEVEL 14,17 TO 45	3B	830 SF	830 SF	30
LEVEL 14,17 TO 48	STUDIO	344 SF	344 SF	33
LEVEL 14,17 TO 48	1B	507 SF	514 SF	66
LEVEL 14,17 TO 48	1B+D	551 SF	637 SF	165
LEVEL 14,17 TO 48	2B	641 SF	666 SF	99
LEVEL 14,17 TO 48	3B	830 SF	830 SF	33
LEVEL 14,17 TO 55	STUDIO	378 SF	378 SF	38
LEVEL 14,17 TO 55	1B	515 SF	528 SF	190
LEVEL 14,17 TO 55	1B+D	575 SF	605 SF	114
LEVEL 14,17 TO 55	2B	655 SF	745 SF	114
LEVEL 15	STUDIO	340 SF	378 SF	3
LEVEL 15	1B	511 SF	684 SF	10
LEVEL 15	1B+D	485 SF	605 SF	6
LEVEL 15	2B	643 SF	746 SF	9
LEVEL 15	3B	794 SF	829 SF	2
LEVEL 16	STUDIO	340 SF	378 SF	3
LEVEL 16	1B	509 SF	680 SF	10
LEVEL 16	1B+D	485 SF	591 SF	5
LEVEL 16	2B	605 SF	746 SF	10
LEVEL 16	3B	794 SF	828 SF	2
LEVEL 46 & 47	STUDIO	352 SF	352 SF	2
LEVEL 46 & 47	1B	509 SF	509 SF	2
LEVEL 46 & 47	1B+D	588 SF	588 SF	2
LEVEL 46 & 47	2B	666 SF	773 SF	8
LEVEL 46 & 47	3B	831 SF	903 SF	6
LEVEL 49 & 50	1B	587 SF	587 SF	2
LEVEL 49 & 50	1B+D	662 SF	662 SF	2
LEVEL 49 & 50	2B	720 SF	789 SF	6
LEVEL 49 & 50	3B	876 SF	920 SF	6
LEVEL 54 & 55	1B	487 SF	577 SF	8
LEVEL 54 & 55	2B	643 SF	715 SF	6
LEVEL 54 & 55	3B			8
TOTAL				1856

TOWN OF OAKVILLE ZONING BY-LAW 2014-014

SITE AREA	TOTAL = **15,378 m²** (AREA WITHIN PROPERTY LINES)	
	AREA OF ROAD CONVEYANCES = **1,431.07 m²**	
	NET SITE AREA = **13,946.93 m²** (SITE AREA-AREA OF ROAD CONVEYANCES)	
	PRIVATELY OWNED PUBLIC ACCESSIBLE SPACES = **2,417.52 m²** (WEST **1,171.12 m²**; EAST **1,246.40 m²**)	
	MTO SETBACK (SETBACK NOT TO BE CONVEYED) = **1,305.1 m²**	
SITE INFORMATION	SITE AREA PROVIDED BY: **J. D. BARNES LTD**	
PROGRAM	MULTI-TOWER RESIDENTIAL DEVELOPMENT WITH 6-STY PODIUM; TOWER A @ 47 STY + MPH; TOWER B @ 50 STY + MPH; TOWER C @ 55 STY + MPH WITH A TOTAL OF **_1856_** RESIDENTIAL UNITS	
	REQUIRED / PERMITTED	PROVIDED
MAXIMUM BUILDING HEIGHT	--	TOWER A @ 47 STY + MPH; TOWER B @ 50 STY + MPH; TOWER C @ 55 STY + MPH
WASTE LOADING	4.00 m (W) x 13.00 m (L) x 7.5 m (H)	4.00 m (W) x 13.00 m (L) x 7.5 m (H)
GROSS FLOOR AREA*	TOTAL GFA 151,324.40 m² RESIDENTIAL GFA **148,327.61 m²** NON-RESIDENTIAL 1 GFA (RETAIL) **1,017.65 m²** NON-RESIDENTIAL 2 GFA (DAYCARE) **456.48 m²** NON-RESIDENTIAL 3 GFA (OFFICE) **947.21 m²**	* *FLOOR AREA, GROSS* DEFINITION AS PER TOWN OF OAKVILLE BY-LAW NUMBER 2023-065 "MEANS THE TOTAL AREA OF ALL OF THE FLOORS IN A *BUILDING* MEASURED FROM THE EXTERIOR FACES OF THE EXTERIOR WALLS, BUT SHALL NOT INCLUDE AN *ATTIC, BASEMENT* OR *MECHANICAL PENTHOUSE*."
GROSS FLOOR SPACE INDEX **	151,324.40 m² (TOTAL GFA) / **15,378 m²** (GROSS LOT AREA) = **9.84**	** FLOOR SPACE INDEX (FSI), DEFINITION PER TOWN OF OAKVILLE BYLAW 2014-014 & AMENDED IN BY-LAW 2023-065 "MEANS THE *GROSS FLOOR AREA* OF ALL *BUILDINGS* ON A *LOT* DIVIDED BY THE *LOT AREA*."
NET FLOOR SPACE INDEX	151,324.40 m² (TOTAL GFA) / **13,946.93 m²** (NET LOT AREA) = **10.85**	
NUMBER OF UNITS	**_1856_** RESIDENTIAL UNITS	

AMENITY AREA PROVISIONS	REQUIRED / PERMITTED		PROVIDED
INDOOR AMENITY SPACE	0	**_1856_** UNITS @ 2.0 PER = **3712**	**3,856.44 m²**
OUTDOOR AMENITY SPACE	0	**_1856_** UNITS @ 1.4 PER = **2598.4**	**3,460.95 m²**

PARKING PROVISIONS

REFER TO BA GROUP'S FEBRUARY, 2024 TRAFFIC IMPACT STUDY (TIS) REPORT FOR DISCUSSION RELATED TO RECOMMENDED PARKING RATES VS.PROPOSED PARKING RATES INDICATED ON THIS SHEET

		REQUIRED	PROVIDED	RATE PROVIDED (RESIDENTIAL) or QUANTITY RECOMMENDED IN BA T.I.S. (NON-RES)
VEHICULAR PARKING	RESIDENT (R)	ZERO (0)	**987**	0.58 RESIDENTIAL PARKING SPACES PER UNIT (1,703 TOTAL - STUDIO UNITS NOT FACTORED INTO THIS CALCULATION)
	RES. VISITOR (V)	ZERO (0)	**279**	0.15 VISITOR PARKING SPACES PER UNIT (1856 TOTAL)
	NON-RESIDENTIAL (C1) (RETAIL)	ZERO (0)	**12**	**1,017.65 m²** (1.08/100 m²) = **11**
	NON-RESIDENTIAL (C2) (DAYCARE)	ZERO (0)	**12**	**456.48 m²** (1.08/100 m²) = **5**
	NON-RESIDENTIAL (C3) (OFFICE)	ZERO (0)	**12**	**947.21 m²** (1.08/100 m²) = **10**
TOTAL REQUIRED		ZERO (0)	**_1292_**	

			PROVIDED
BICYCLE PARKING ** 25% OF TOTAL REQ'D RESIDENTIAL BIKE PARKING IS DEDICATED FOR REQ'D VISITOR BIKE PARKING* ***(NON-RESIDENTIAL PARKING REQUIREMENT - THE GREATER OF 2 OR 1.0 PER 1,000 m²)* *OAKVILLE ZONING 2014-014 BYLAW 5.4.1*	TOTAL **1856**	RESIDENTIAL REQUIRED (*75% OF TOTAL*) **1392** VISITOR REQUIRED (*25% OF TOTAL*) **464**	**1428** BICYCLE STACKER 1 - LONG-TERM RESIDENTIAL (450x1800) **570** BICYCLE STACKER 2 - LONG-TERM RESIDENTIAL (450x1800) VISITOR
	NON-RESIDENTIAL 1** (RETAIL)	**1,017.65 m²** (1.00/1,000 m²) = **2**	
	NON-RESIDENTIAL 2** (DAYCARE)	**456.48 m²** (1.00/1,000 m²) = **2**	
	NON-RESIDENTIAL 3** (OFFICE)	**947.21 m²** (1.00/1,000 m²) = **2**	
TOTAL REQUIRED		1862	**_1998_**

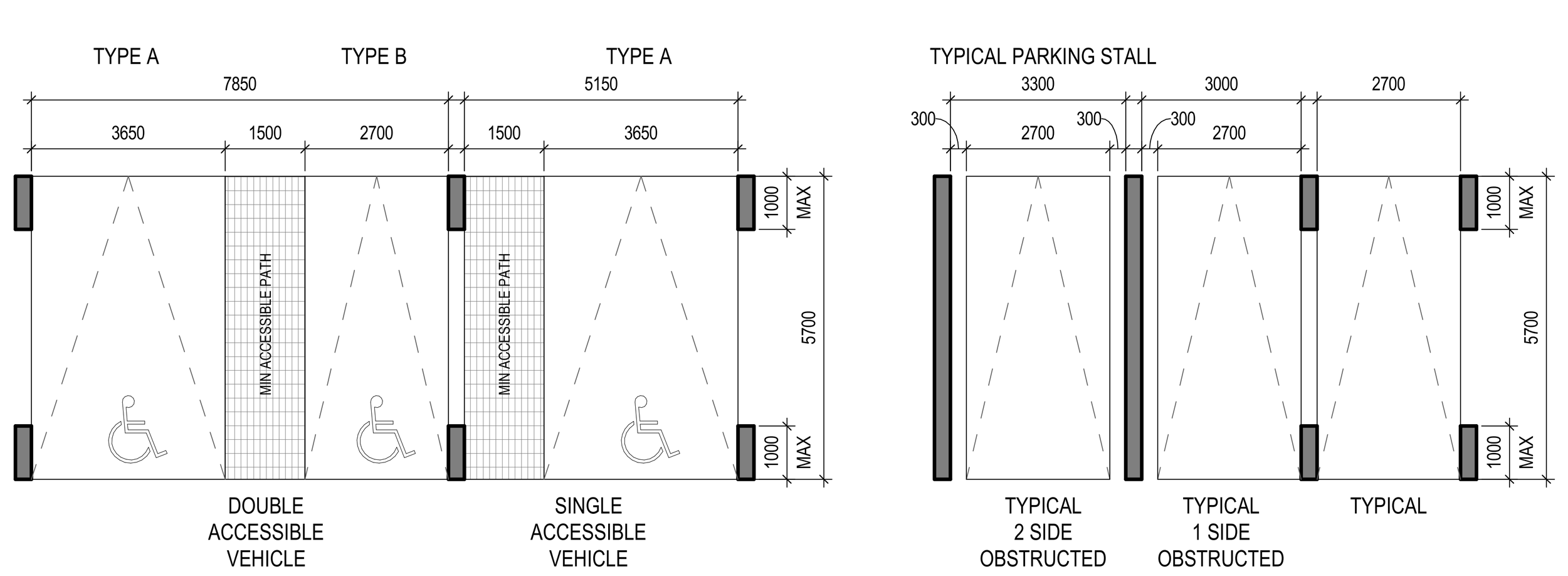
STORAGE LOCKERS PROVIDED	
LEVEL P6	221
LEVEL P5	227
LEVEL P4	245
LEVEL P3	245
LEVEL P2	237
LEVEL P1	82
LEVEL 02	216
LEVEL 03	56
LEVEL 04	56
LEVEL 05	56
LEVEL 06	32
LEVEL 07	32
LEVEL 08	32
LEVEL 09	32
LEVEL 10	6
TOTAL	1775

VEHICULAR PARKING PROVISION BREAKDOWN BY FLOOR LEVEL

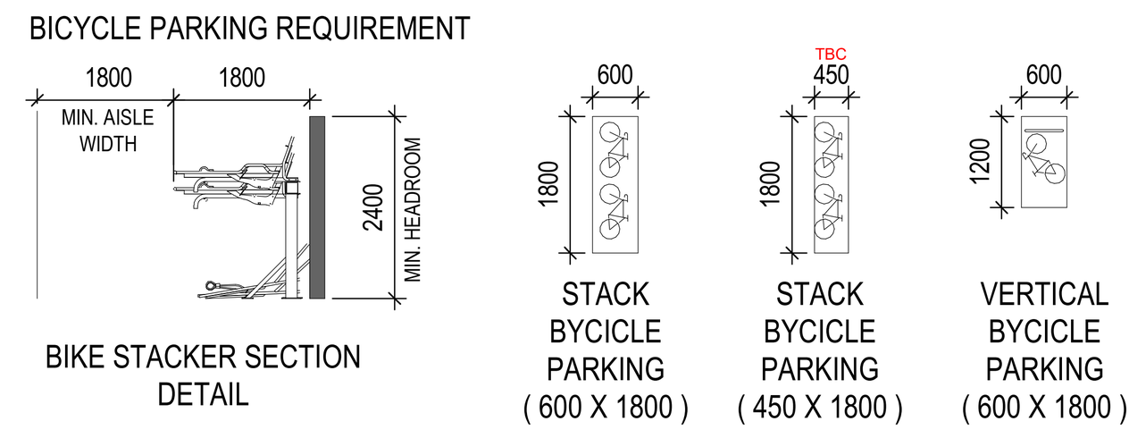
LEVEL	RESIDENTIAL	VISITOR	NON-RES. 1, 2, 3	TOTAL
P6	230	0	0	230
P5	225	0	0	225
P4	234	0	0	234
P3	233	0	0	233
P2	65	163	0	228
P1	0	106	36	142
TOTAL	987	269	36	_1292_

BICYCLE PARKING PROVISION BREAKDOWN BY FLOOR LEVEL

LEVEL	RESIDENTIAL	VISITOR	NON-RES. 1, 2, 3	TOTAL
P1	1428	0	0	1428
L01	0	570	0	285
L02	0	0	0	285
TOTAL	1428	570	0	_1998_



PARKING SPACE DIAGRAM
1 : 100



BICYCLE PARKING REQUIREMENTS
1 : 100

Teeple Architects Inc.
5 Camden Street, Toronto, ON, Canada, M5V 1V2
T. 416.598.0554
www.teeplearch.com

NO.	DATE:	ISSUED FOR:
1	2023-03-20	ISSUED FOR OPA/ZBA
2	2023-08-28	ISSUED FOR COORDINATION / PRICING
3	2024-03-20	ISSUED FOR OPA/ZBA - 2nd SUBMISSION

ARCHITECT
Teeple Architects Inc.
5 Camden Street, Toronto, ON, Canada, M5V 1V2
T. 416.598.0554

STRUCTURAL
-

MECHANICAL
-

ELECTRICAL
-

LANDSCAPE
Public City Architecture Inc.
11-600 Clifton Street, Winnpieg, MN, R3G 2X6
T. 204.475.9323

CIVIL
Trafalgar Engineering Limited
1-481 Morden Road, Oakville, ON, L6K 2W6
T. 905.338.3366

TRAFFIC
BA Consulting Group Limited
300-45 St. Clair Avenue West, Toronto, ON, M4V 1K9
T. 416.961.7110

SOLID WASTE MANAGEMENT
R.J. Burnside & Asscoiates Limited
1465 Pickering Parkway, Pickering, ON, L1V 7G7
T. 1.800.265.9662

PLANNING
Bousfields Inc.
3 Church Street, Toronto, ON, M5E 1M2
T. 416.947.9744

CLIENT
Distrikt Developments
1-90 Wingold Avenue, Toronto, ON, Canada M6B 1P5
T. 416.628.8038

DISTRIKT

OAKVILLE
590 Argus Road, Oakville, ON, Canada

SEAL

SHEET LIST, ZONING REQUIREMENTS

Author	Checker		
DRAWN BY	CHECKED BY		
22-106	**As indicated**	**ARCH E**	**2024-03-20**
PROJ NO	SCALE	FORMAT	PLOT DATE

A001

NOTE: REFER TO DWG. A112 TOWER SEPARATION DIAGRAM FOR TOWER SEPARATION DISTANCES

590 ARGUS RD ESTABLISHED GRADE - EL. 104.960m

ESTABLISHED GRADE INDICATED IS CALCULATED BASED ON DEFINITION FOR "GRADE, ESTABLISHED" PROVIDED IN TOWN OF OAKVILLE ZONING BYLAW 2014-014:

GRADE, ESTABLISHED (2021-068) MEANS THE GRADE ELEVATION MEASURED AT:
A) THE CENTRE POINT OF THE *FRONT LOT LINE* FOR INTERIOR LOTS; AND,
B) THE AVERAGE OF THE CENTRE POINTS OF EACH *LOT LINE* ABUTTING A ROAD FOR CORNER LOTS, THROUGH LOTS, THROUGH CORNER LOTS AND INTERIOR LOTS HAVING MORE THANT ONE SEPARATE *FRONT LOT LINE*.

Teeple Architects℠
5 Camden Street,
Toronto, ON, Canada, M5V 1V2
T. 416.598.0554
www.teeplearch.com

NO.	DATE:	ISSUED FOR:

ARCHITECT
Teeple Architects Inc.
5 Camden Street, Toronto, ON, Canada, M5V 1V2
T. 416.598.0554

STRUCTURAL
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MECHANICAL
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ELECTRICAL
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T. 416.628.8038

DISTRIKT

OAKVILLE

590 Argus Road, Oakville, ON, Canada

SEAL

SITE PLAN @ ROOF LEVEL

Author	Checker		
DRAWN BY	CHECKED BY		
22-106	1 : 200	ARCH E	07/24/24
PROJ NO	SCALE	FORMAT	PLOT DATE

A111

PLAN OF SURVEY ILLUSTRATING TOPOGRAPHY OF
LOT 15
REGISTERED PLAN 1333 AND
PART OF LOTS 13 AND 14
CONCESSION 3
SOUTH OF DUNDAS STREET
(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)
TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON

SCALE 1 : 200

5 0 10 metres

J.D. BARNES LIMITED

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

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC DATUM (CGVD-1928:78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GLOBAL MODEL HT2.0.

LOCAL BENCHMARK

CUT CROSS IN CONCRETE SIDEWALK, LOCATED ON THE SOUTH SIDE OF ARGUS ROAD, APPROXIMATELY 11.6 METRES FROM THE WESTERN CORNER OF THE BUILDING AT No. 587 ARGUS ROAD AND 5.3 METRES FROM A WATER VALVE IN THE ROAD, AS SHOWN ON THE FACE OF PLAN.
ELEVATION=104.28m

NOTES

BEARINGS ARE UTM GRID, DERIVED FROM OBSERVED REFERENCE POINTS A AND B, BY REAL TIME NETWORK (RTN) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (2010.0).

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.9997261.

FOR BEARING COMPARISONS, A ROTATION OF 0°25'30" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P1 AND P6.

FOR BEARING COMPARISONS, A ROTATION OF 11°50" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P2 AND P3.

FOR BEARING COMPARISONS, A ROTATION OF 11°40" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P4.

FOR BEARING COMPARISONS, A ROTATION OF 15°10" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P5.

INTEGRATION DATA

OBSERVED REFERENCE POINTS (ORPs): UTM ZONE 17, NAD83 (CSRS) (2010.0)
COORDINATES TO AN URBAN ACCURACY PER SECTION 14 (2) OF O.REG 216/10.

POINT ID	EASTING	NORTHING
ORP Ⓐ	606 340.48	4 812 463.44
ORP Ⓑ	606 485.37	4 812 608.06

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

THE RESULTANT BE BETWEEN ORP Ⓐ AND ORP Ⓑ IS 204.76 N45°03'10"E

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
□	DENOTES	SURVEY MONUMENT SET
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
RIB	DENOTES	ROUND IRON BAR
IB	DENOTES	IRON BAR
IP	DENOTES	IRON PIPE
CM	DENOTES	CONCRETE MONUMENT
PB	DENOTES	PLASTIC PIN BAR
WIT	DENOTES	WITNESS
P1	DENOTES	REGISTERED PLAN 1333
P2	DENOTES	PLAN 20R-15677
P3	DENOTES	PLAN 20R-17555
P4	DENOTES	PLAN 20R-4346
P5	DENOTES	PLAN OF SURVEY BY GLENN E. GIDDY, O.L.S., DATED APRIL 8, 1998 (FCF. No. F-1984)
P6	DENOTES	SURVEYOR'S REAL PROPERTY REPORT BY TARASICK, McMILLAN LIMITED, O.L.S., DATED NOVEMBER 1, 2000 (FILE No. 2621)
MEAS	DENOTES	MEASURED
JDB	DENOTES	J.D. BARNES LIMITED
MTO	DENOTES	MINISTRY OF TRANSPORTATION ONTARIO
926	DENOTES	MACNAUGHTON, HERMSEN, BRITTON, CLARKSON, PLANNING LIMITED, O.L.S.
686	DENOTES	McCONNELL, MALCOLM LTD., O.L.S.
923	DENOTES	TARASICK, McMILLAN KUBICKI LIMITED, O.L.S.
1574	DENOTES	DELPH & JENKINS LIMITED, O.L.S.
MMP	DENOTES	MACKEY, MASCOTTO & PETERS LIMITED, O.L.S.
OU	DENOTES	ORION UNKNOWN

N=NORTH / S=SOUTH / E=EAST / W=WEST

ALL SET SIB AND PB MONUMENTS WERE USED DUE TO LACK OF OVERBURDEN AND/OR PROXIMITY OF UNDERGROUND UTILITIES IN ACCORDANCE WITH SECTION 11 (4) OF O.REG. 525/98.

LEGEND

CB	DENOTES	CATCHBASIN
TC	DENOTES	TELEPHONE CHAMBER
HPED	DENOTES	HYDRO PEDESTAL
G METER	DENOTES	GAS METER
GV	DENOTES	GAS VALVE
MH	DENOTES	MANHOLE
SAN MH	DENOTES	SANITARY MANHOLE
BOL	DENOTES	BOLLARD
HP	DENOTES	HYDRO POLE
LS	DENOTES	LIGHT STANDARD
TJB	DENOTES	TELEPHONE JUNCTION BOX
PED	DENOTES	TELEPHONE PEDESTAL
CJB	DENOTES	CABLE TV JUNCTION BOX
H	DENOTES	FIRE HYDRANT
FDC	DENOTES	FIRE DEPARTMENT CONNECTION
WV	DENOTES	WATER VALVE
BM	DENOTES	BENCH MARK
HC	DENOTES	BURIED HYDRO CABLE
OC	DENOTES	OVERHEAD CABLE
	DENOTES	CONIFEROUS TREE DIA=DIAMETER OF TRUNK IN METRES
	DENOTES	DECIDUOUS TREE DIA=DIAMETER OF TRUNK IN METRES

AREA = 15,378 sq.m.
(3.7999 acres)

BEFORE DIGGING, UNDERGROUND SERVICES SHOULD BE LOCATED ON SITE BY THE RESPECTIVE AGENCIES.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT LOCAL BENCHMARKS HAVE NOT BEEN ALTERED OR DISTURBED AND THAT THE RELATIVE ELEVATIONS AGREE WITH THE INFORMATION SHOWN ON THIS PLAN.

PRIMARY CONTOURS ARE AT 1.00m INTERVALS
SECONDARY CONTOURS ARE AT 0.25m INTERVALS.

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 REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 17th DAY OF MAY, 2022.

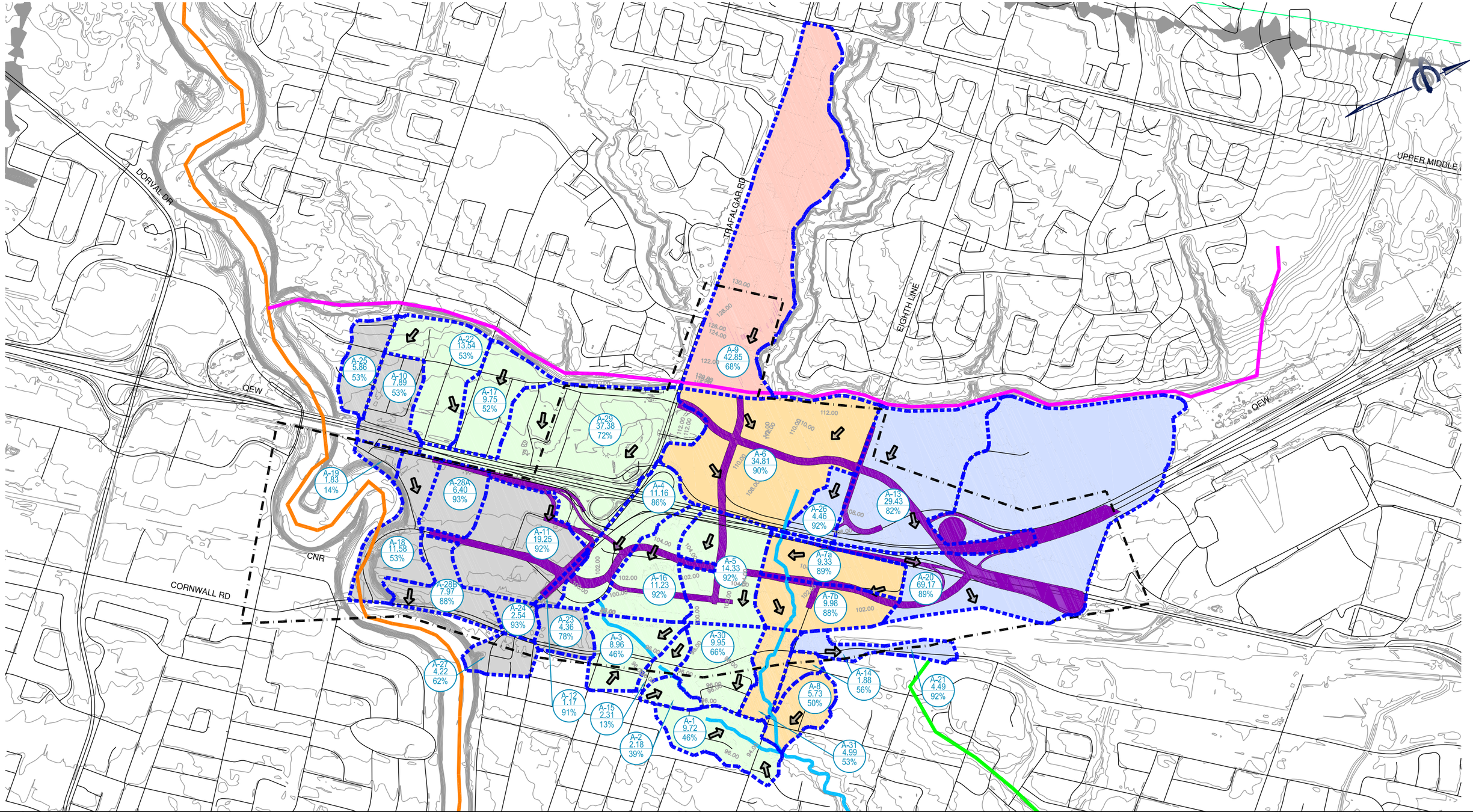
APRIL 2, 2022
DATE

R.S. QUERUBIN
ONTARIO LAND SURVEYOR

J.D. BARNES LIMITED
LAND INFORMATION SPECIALISTS
901 WHEELABRATOR WAY, SUITE A, MILTON, ON L9T 3C3
T (905) 875-2355 F (905) 875-9956 www.jdbarnes.com

DRAWN BY: MP/MG | CHECKED BY: RSQ | REFERENCE NO.: 22-30-886-00-A
FILE: © \22-30-886\00\Drawing\22-30-886-00-A.dgn | DATED: 05/31/2022
PLOTTED: 6/02/22

APPENDIX 'B'



COLE ENGINEERING
70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5
T:416.987.6161 / 905.940.6161 F:905.940.2064

LEGEND

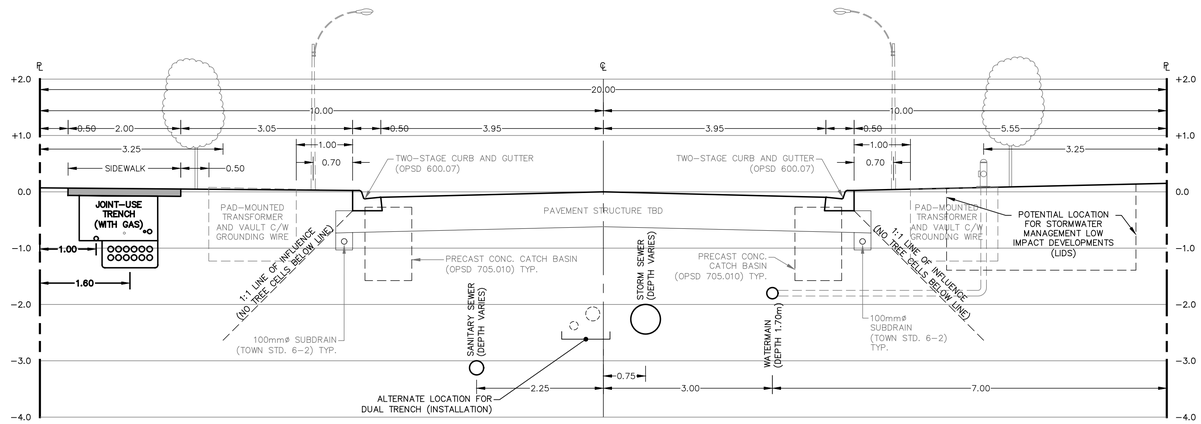
A-28 14.88 79%
- DRAINAGE NAME
- DRAINAGE AREA (HECTARES)
- IMPERVIOUSNESS

- DRAINAGE TO LOWER MORRISON (RIVER 1)
- DRAINAGE TO LOWER MORRISON (RIVER 2)
- DRAINAGE TO 16 MILE
- DRAINAGE TO WEDGEWOOD MORRISON DIVERSION CHANNEL
- DRAINAGE TO WEDGEWOOD
- LOWER MORRISON CREEK
- 16 MILE CREEK
- WEDGEWOOD CREEK
- MORRISON WEDGEWOOD DIVERSION CHANNEL
- 227.50 EXISTING CONTOUR LINE
- EMERGENCY SPILL / OVERLAND FLOW DIRECTION
- ROADS
- STUDY LIMIT
- PROPOSED ROAD

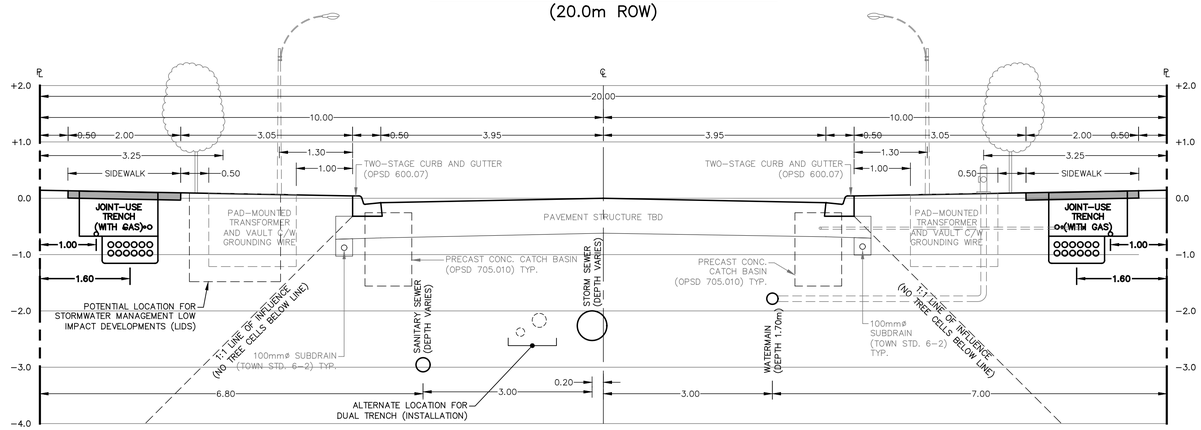
MAJOR DRAINAGE AREAS (PROPOSED CONDITIONS)

MIDTOWN ENVIRONMENTAL ASSESSMENT
TOWN OF OAKVILLE

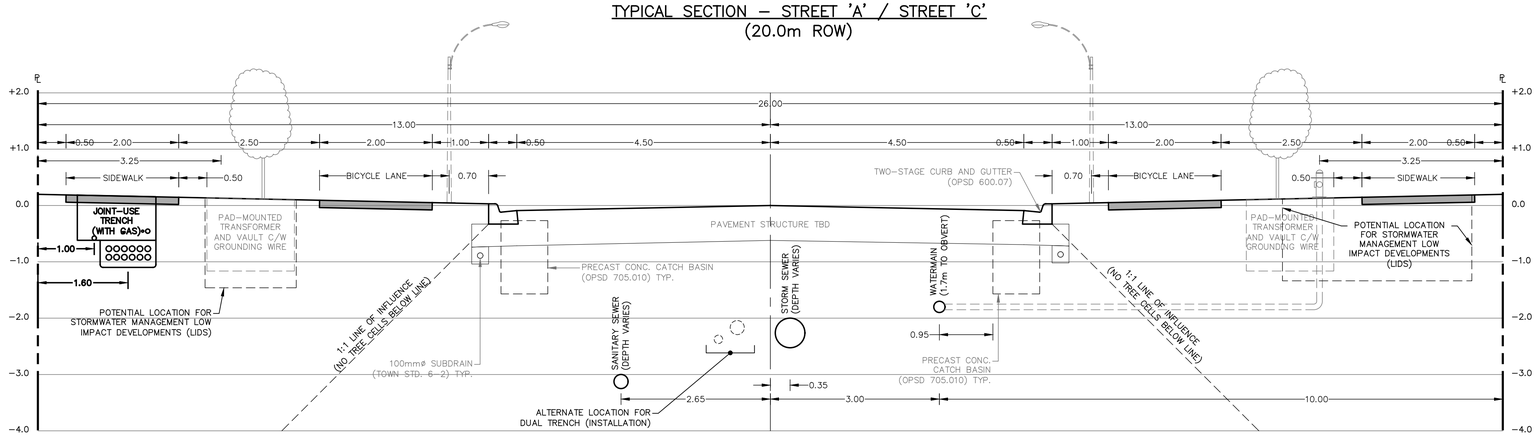
DATE:	MAY 2014	PROJECT No.:	T11-767
SCALE:	1:15,000	FIGURE No.:	DAP-2



TYPICAL SECTION – SOUTH SERVICE ROAD
(20.0m ROW)



TYPICAL SECTION – STREET 'A' / STREET 'C'
(20.0m ROW)



TYPICAL SECTION – STREET 'B' / ARGUS
(26.0m ROW)

NOTE:
THESE SECTIONS ARE PRELIMINARY AND ARE SUBJECT TO COORDINATION WITH THE VARIOUS STAKEHOLDERS, INCLUDING UTILITY COMPANIES TO ENSURE ADEQUATE CLEARANCES ARE MET.

PROJECT TITLE
MIDTOWN CORE
TOWN OF OAKVILLE

DRAWING TITLE
TYPICAL ROAD CROSS−SECTIONS

TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

DESIGN BY	NS	SCALE	N.T.S.	DRAWING No.	FIG. 1
DRAWN BY	GL	DATE	2024/09/20		

FILENAME: P:\1768 District Midtown ASP\Drawings\DWG\1768-ROAD.dwg
PLOTDATE: Sep 20, 2024 - 12:10pm

APPENDIX 'C'

TRAFALGAR ENGINEERING LTD.

ESTIMATED EXISTING WATER DEMAND

Project: 590 Argus Road
Desc: Rezoning/OPA TOC Development Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

	Occupancy Data					Peaking Factors			Demand Flow		
Land Use / Occupancy Type	Site Area (ha)	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Demand (L/min)	Min. Hour	Peak Hour	Max. Daily	Min. Hour Demand (L/min)	Max. Hour Demand (L/min)	Max. Daily Demand (L/min)
Light Commercial	1.54	90	139	275	26	1.00	2.25	2.25	26	60	60
TOTAL	**1.54**		**139**		**26**				**26**	**60**	**60**

Average Daily Demand: **26 (L/min)**
Minimum Hourly Demand: **26 (L/min)**
Maximum Hourly Demand: **60 (L/min)**
Maximum Daily Demand: **60 (L/min)**

TRAFALGAR ENGINEERING LTD.

ESTIMATED WATER DEMAND (2022 DC STUDY GUIDELINES)

Project: 590 Argus Road
Desc: Rezoning/OPA TOC Development Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

	Occupancy Data					Peaking Factors			Demand Flow		
Land Use / Occupancy Type	Unit Count / GFA	Population Density (pers/unit)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Demand (L/min)	Min. Hour	Peak Hour	Max. Daily	Min. Hour Demand (L/min)	Max. Hour Demand (L/min)	Max. Daily Demand (L/min)
Apartments - One Bedroom/Bach.	1225	1.356	1661	275	317	1.00	4.00	2.25	317	1269	714
Apartments - Two or More Bedroom	631	1.831	1155	275	221	1.00	4.00	2.25	221	883	496
Non-residential (sq ft)	26063	403.0	65	275	12	1.00	2.25	2.25	12	28	28
TOTAL	**27919**		**2881**		**550**				**550**	**2179**	**1238**

Average Daily Demand: 550 (L/min)
Minimum Hourly Demand: 550 (L/min)
Maximum Hourly Demand: 2179 (L/min)
Maximum Daily Demand: 1238 (L/min)
Max. Daily Plus Fire: 8238 (L/min)

Fire Flow
Using Fire Underwriters Survey Methodology:

1. **An estimate of the fire flow is given by the formula** $F = 220C\sqrt{A}$

Where:
F = The required fire flow in litres per minute
C = Coefficient related to the type of construction
A = The total floor area in square metres (including all storeys but excluding basements at least 50% below grade)

Type of Construction: Fire-Resistive Coefficient: 0.60 Total Floor Area: 2926.4 (m^2)

F = 7000 (L/min)

Adequately Protected Vertical Openings: Yes

Area Note: For fire resistive buildings, consider the two largest adjoining floors plus 50% of the remaining floors up to eight, when openings are inadequately protected. For adequately protected vertical openings consider only the area of the largest floor plus 25% of each of the two immediately adjoining floors

2. **Adjust the value in No. 1 for occupancy surcharge/reduction**

Occupancy Contents: Combustible Factor: 0%

F = 7000 (L/min)

3. **Adjust the value in No. 2 for sprinkler**

NFPA 13 Sprinkler:	Yes	Reduction:	20%
Standard Water Supply:	Yes	Reduction:	10%
Fully Supervised:	Yes	Reduction:	10%
		Total Reduction:	**40%**
		Sprinkler Reduction:	**2800 (L/min)**

4. Adjust the value in No. 2 for exposure

	Separation (m)	Charge
North	132	0%
East	23	10%
South	16	15%
West	16	15%
Total Charge:		**40%**
Exposure Charge:		**2800 (L/min)**

5. **Estimated Fire Flow is value in No. 2 less *Sprinkler Reduction* plus *Exposure Charge* , rounded to the nearest 1000**

F = 7000 (L/min)

TRAFALGAR ENGINEERING LTD.

ESTIMATED DEMAND PRESSURE
(AT MAIN)

Hydrant Opposite 603 Argus Road

Project: 590 Argus Road
Desc: 2nd Submission ZBA/OPA

Project No.: 1798
Prepared By: MW
Checked By: NAS

Hydrant Residual Flow (Refer to Attached Flow Test Results)

Coefficient	$C=$	0.9	
Port Diameter	$D=$	2.5	(inch)
Pitot Pressure	$P_{pit}=$	68	(psig)
Residual Flow	$Q_R=$	1384	(us gpm)
Residual Flow	$Q_R=$	5238	(L/min)

Hydrant Theoretical Flow (Refer to Attached Flow Test Results)

Static Pressure	$P_{stat}=$	89	(psig)
Residual Pressure	$P_{res}=$	84	(psig)
Theoretical Pressure	$P_{theo}=$	20	(psig)
Theoretical Flow	$Q_T=$	5710	(us gpm)
Theoretical Flow	$Q_T=$	21612	(L/min)

Max. Demand Pressure

Maximum Demand	$Q_D=$	8182	(L/min)
Maximum Demand	$Q_D=$	2162	(us gpm)
Calculated Pressure	$P=$	78	(psig)

Where:

$$Q_R = 29.84 \times C \times D^2 \times P_{pit}^{0.5}$$

$$Q_T = Q_R \times [(P_{stat} - P_{theo})/(P_{stat} - P_{res})]^{0.54}$$

$$P = P_{stat} - (Q_D/Q_R)^{1.852} \times (P_{stat} - P_{res})$$

Notes:

Refer to attached hydrant flow test results for 300mm main on Argus Road prepared by Aquacom Contracting dated May 13, 2022.

AQUACOM CONTRACTING

81 Todd Road Suite 202 Georgetown Ont. L7G 4R8

(o) 905-467-5853 (c) 905-971-9956 (e) mark@aquacom.ca

HYDRANT FLOW TEST REPORT

		HYDRANT MAKE	SEC. VALVE CONDITION	TECH.	TIME	STATIC PSI	PITO 1-2.50" PSI	FLOW 1-2.50" US GPM	RESIDUAL 1-2.50" PSI	PITO 2-2.50" PSI	FLOW 2-2.50" US GPM	RESIDUAL 2-2.50" PSI	COLOUR CODE
F1	OPP 603 ARGUS RD	CV	OK/OPEN	MC	10:25		67	1375		42	2176		BLUE
R1	581 ARGUS RD	CV	OK/OPEN	JD		89			87			84	
F2	227 CROSS AV	CV	OK/OPEN	MC	10:40		78	1483		46	2276		BLUE
R2	581 ARGUS RD	CV	OK/OPEN	JD		89			86			82	
F3	581 ARGUS RD	CV	OK/OPEN	MC	10:55		68	1385		43	2201		BLUE
R3	OPP 603 ARGUS RD	CV	OK/OPEN	JD		89			87			84	
F4													
R4													
F5													
R5													

CUSTOMER	LOCATION	CONTACTS ON SITE
TRAFALGAR ENGINEERING	ARGUS ROAD AREA	
	TOWN OF OAKVILLE	REGION OF HALTON OPERATOR

AQUACOM CONTRACTING
81 Todd Road Suite 202 Georgetown Ont. L7G 4R8
(o) 905-467-5853 (C) 905-971-9956 (e) mark@aquacom.ca

SITE NAME	ARGUS RD AREA
TEST DATE TIME	FRIDAY MAY 13 2022 @ 10:25
SITE ADDRESS	ARGUS RD AREA, TOWN OF OAKVILLE
TECHNICIANS	MARC COULTER & JEFF DAM
COMMENTS	MUNICIPAL HYDRANTS

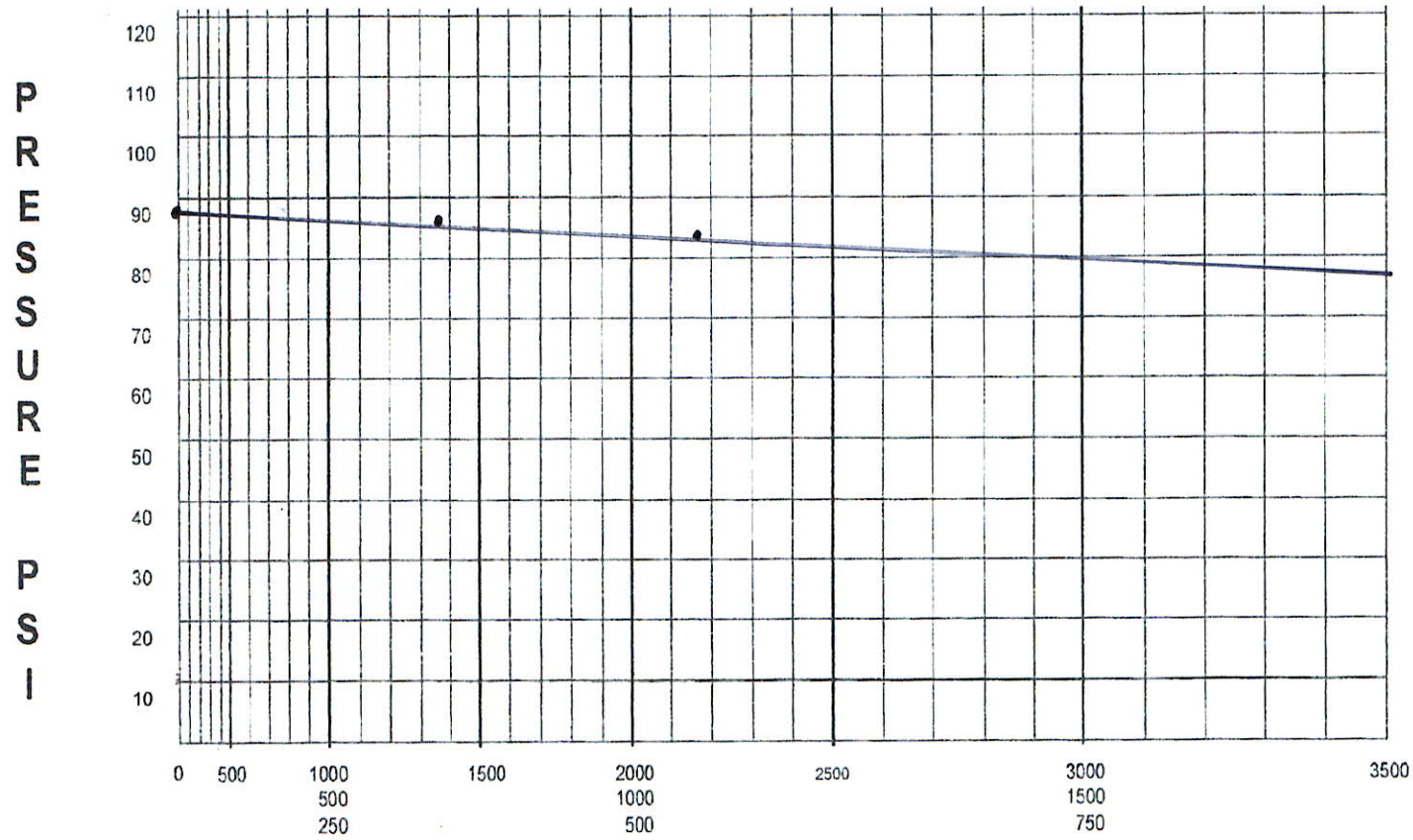
LOCATION OF FLOW HYDRANT

OPP 603 ARGUS RD

LOCATION OF RESIDUAL HYDRANT

581 ARGUS RD

# OUTLETS	SIZE INCHES	PITO PSI	FLOW USGPM	RESIDUAL PSI	STATIC PSI	PIPE DIA. MM
ONE	2.50	67	1375	87	89	300MM
TWO	2.50	42	2176	84		PVC
		THEORETICAL	8978	20	TEST #	ONE
NOZZLE COEFF.		.90				



AQUACOM CONTRACTING
81 Todd Road Suite 202 Georgetown Ont. L7G 4R8
(o) 905-467-5853 (C) 905-971-9956 (e) mark@aquacom.ca

SITE NAME ARGUS RD AREA

TEST DATE TIME FRIDAY MAY 13 2022 @ 10:55

SITE ADDRESS ARGUS RD AREA, TOWN OF OAKVILLE

TECHNICIANS MARC COULTER & JEFF DAM

COMMENTS MUNICIPAL HYDRANTS

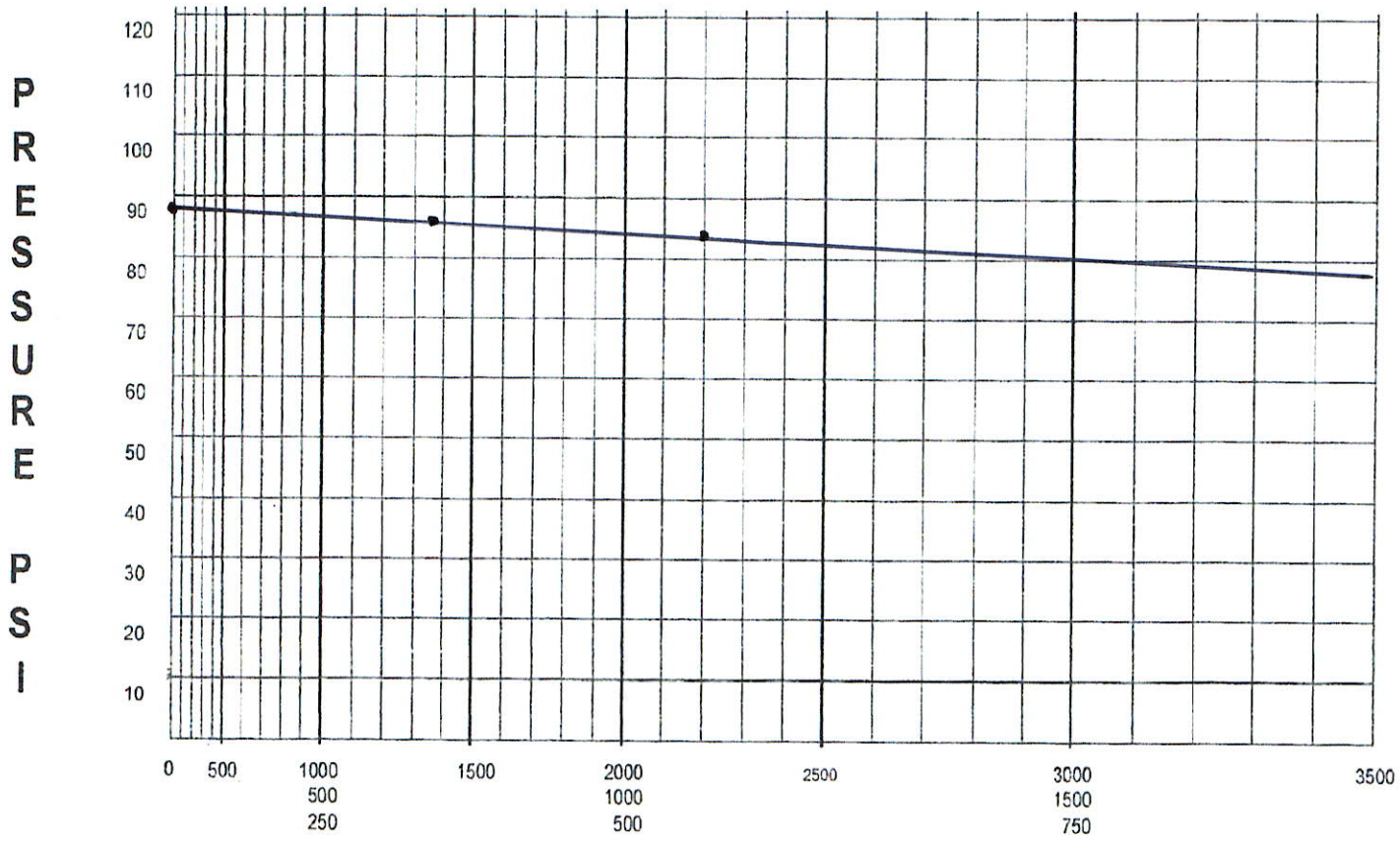
LOCATION OF FLOW HYDRANT

581 ARGUS RD

LOCATION OF RESIDUAL HYDRANT

OPP 603 ARGUS RD

# OUTLETS	SIZE INCHES	PITO PSI	FLOW USGPM	RESIDUAL PSI	STATIC PSI	PIPE DIA. MM
ONE	2.50	68	1385	87	89	300MM
TWO	2.50	43	2201	84		PVC
		THEORETICAL	9081	20	TEST #	THREE
NOZZLE COEFF.		.90				



AQUACOM CONTRACTING
81 Todd Road Suite 202 Georgetown Ont. L7G 4R8
(o) 905-467-5853 (C) 905-971-9956 (e) mark@aquacom.ca

SITE NAME ARGUS RD AREA

TEST DATE TIME FRIDAY MAY 13 2022 @ 10:40

SITE ADDRESS ARGUS RD AREA, TOWN OF OAKVILLE

TECHNICIANS MARC COULTER & JEFF DAM

COMMENTS MUNICIPAL HYDRANTS

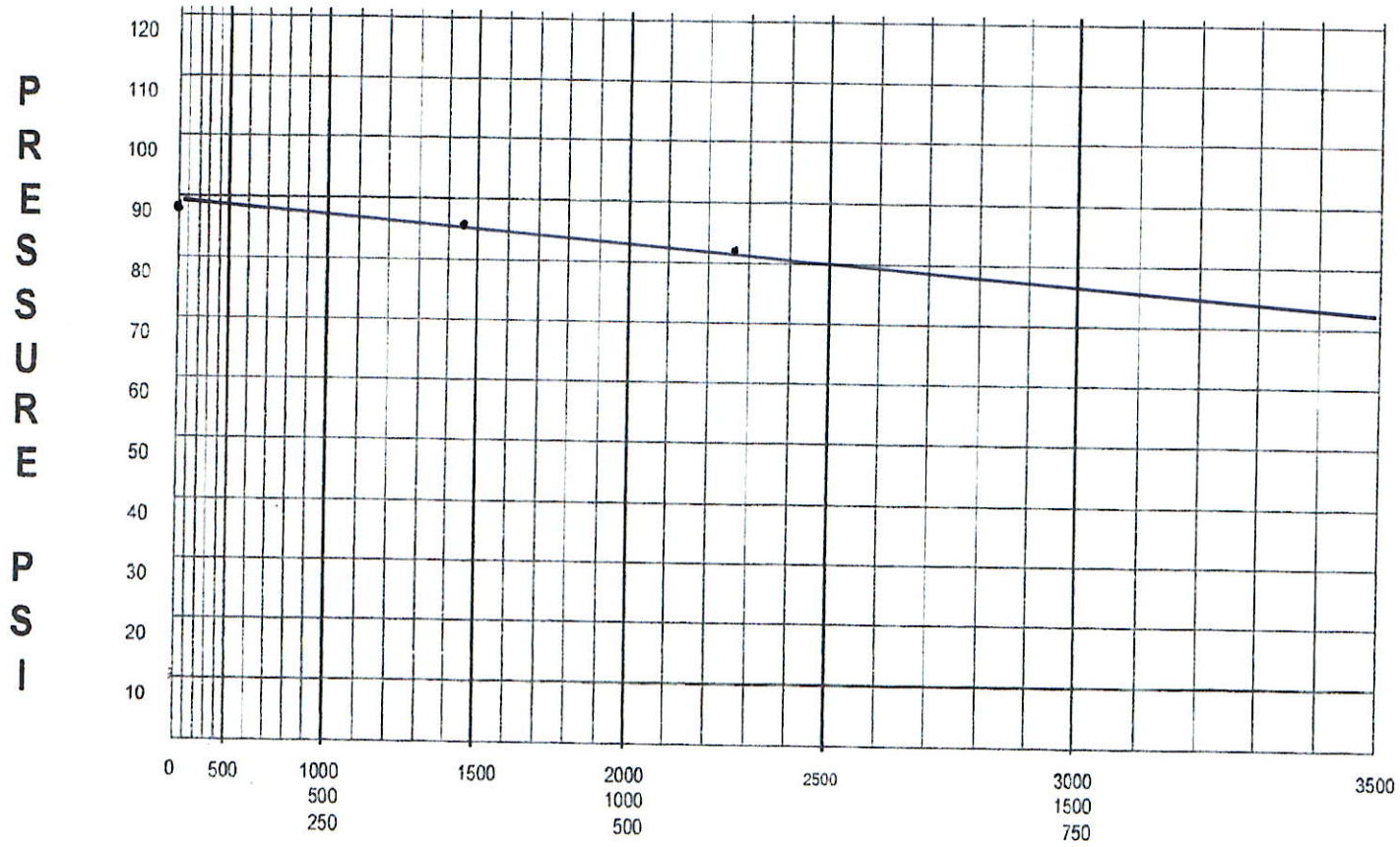
LOCATION OF FLOW HYDRANT

227 CROSS AV

LOCATION OF RESIDUAL HYDRANT

581 ARGUS RD

# OUTLETS	SIZE INCHES	PITO PSI	FLOW USGPM	RESIDUAL PSI	STATIC PSI	PIPE DIA. MM
ONE	2.50	78	1483	86	89	300MM
TWO	2.50	46	2276	82		PVC
		THEORETICAL	7831	20	TEST #	TWO
NOZZLE COEFF.		.90				



APPENDIX ‘D’

TRAFALGAR ENGINEERING LTD.

ESTIMATED EXISTING SANITARY FLOW

Project: 590 Argus Road
Desc: Rezoning/OPA TOC Development Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Residential

Land Use / Occupancy Type	Site Area (ha)	Population Density (pers/ha)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
TOTAL	**0.00**		**0**		**0.0**

Industrial / Commercial / Institutional

Land Use / Occupancy Type	Site Area (ha)	Population Density (pers/ha)	Eq. Population (cap.)	Unit Sewage Flow (L/Ha. Day)	Average Daily Dry Weather Flow (L/s)
Light Commerical	1.54	90.0	139	24750	0.4
TOTAL	**1.54**		**139**		**0.44**

Residential Peaking Factor:	4.50	
ICI Peaking Factor:	4.20	
Include ICI Peaking?	Yes	
Tributary Area:	1.54	(ha)
Infiltration Allowance:	0.286	(L/s ha)
Foundation Drain Allowance:	0.00	(L/s ha)
Infilitration Avg Flow:	0.44	(L/s)
ICI Average Flow:	0.44	(L/s)
Groundwater Discharge:		(L/s)
Total Average Flow:	**0.88**	**(L/s)**
Infiltration Flow:	0.44	(L/s)
ICI Peak Flow:	1.85	(L/s)
Groundwater Discharge:		(L/s)
Total Peak Flow:	**2.29**	**(L/s)**

TRAFALGAR ENGINEERING LTD.

ESTIMATED PROPOSED SANITARY FLOW (2022 DC STUDY GUIDELINES)

Project: 590 Argus Road
Desc: Rezoning/OPA TOC Development Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

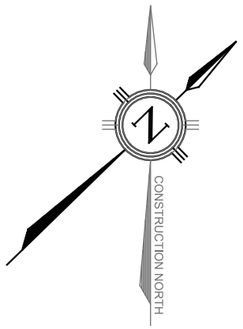
Residential

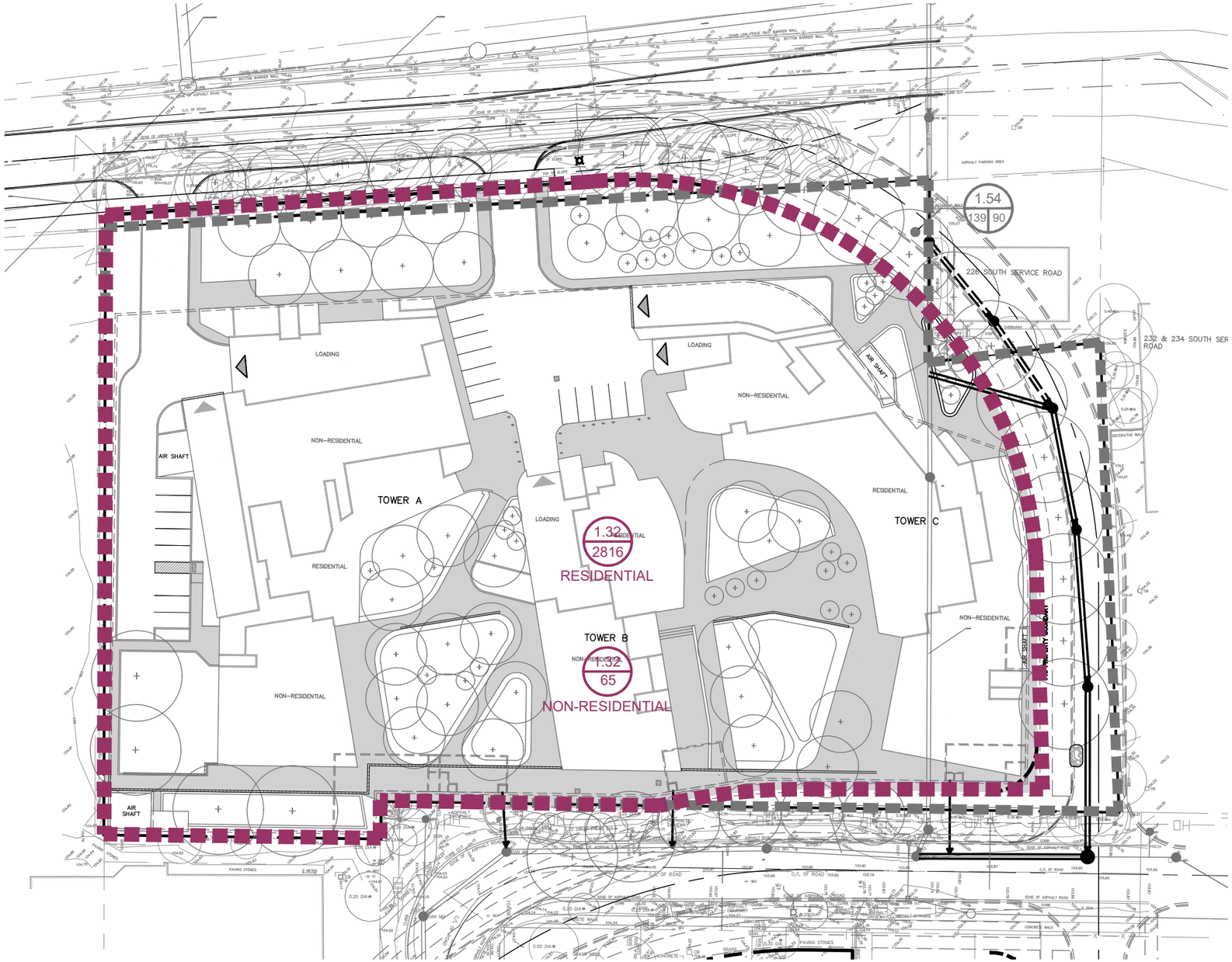
Land Use / Occupancy Type	Unit Count / GFA	Population Density (pers/unit)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Apartments Less than two bedrooms	1225	1.356	1661	275	5.29
Apartments two or more bedrooms	631	1.831	1155	275	3.68
TOTAL	**1856**	**3.19**	**2816**		**8.96**

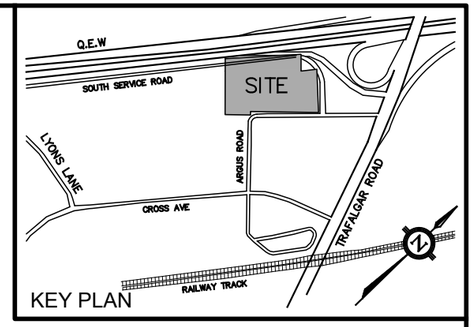
Industrial / Commercial / Institutional

Land Use / Occupancy Type	GFA (m^2)	Population Density (m^2/pers)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Non-Residential / Commercial	2422	37.4	65	275	0.2
TOTAL	**2422.00**		**65**		**0.21**

Residential Peaking Factor:	3.47	
ICI Peaking Factor:	4.29	
Include ICI Peaking?	No	
Tributary Area:	1.21	(ha)
Infiltration Allowance:	0.286	(L/s ha)
Foundation Drain Allowance:	0.00	(L/s ha)
Residential + Infilitration Avg Flow:	9.3	(L/s)
ICI Average Flow:	0.2	(L/s)
Groundwater Discharge:		(L/s)
Total Average Flow:	**9.52**	**(L/s)**
Residential Peak Flow:	31.4	(L/s)
ICI Peak Flow:	0.2	(L/s)
Groundwater Discharge:		(L/s)
Total Peak Flow:	**31.61**	**(L/s)**







LEGEND

- 1.54 / 107 | 90 — PRE DEVELOPMENT SANITARY AREA IN HECTARES; POPULATION DENSITY
  - EQUIVALENT POPULATION
- 1.00 / 1000 — POST DEVELOPMENT SANITARY AREA IN HECTARES
  - ESTIMATED POPULATION
- PRE DEVELOPMENT SANITARY DRAINAGE AREA BOUNDARY
- POST DEVELOPMENT SANITARY DRAINAGE AREA BOUNDARY

PROJECT TITLE

590 ARGUS RD.

PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

DRAWING TITLE

SANITARY DRAINAGE PLAN

TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

DESIGN BY	MW	SCALE	1:750	DRAWING No.	FIG. 1
DRAWN BY	ZI	DATE	2023/03/28		

FILENAME: P:\1798 Distrikt 590 Argus\04-CAD\04-Rezoning_OPA\1798GS.dwg
PLOTDATE: Sep 20, 2024 - 4:14pm

TRAFALGAR ENGINEERING

Prepared By: MW
Checked By: NAS
Project No. : 1798

SANITARY SEWER DESIGN SHEET

Regional Municipality of Halton

Project Name : 590 Argus Road
Municipal Number:
Date: 2024-03-04
Sheet: 1 of 1

			TRIBUTARY AND FLOW DATA																		PIPE DATA										
			Tributary Area					Population Tributary			Average Demand				Peaking Factor												Velocity				
			Residential		ICI																										
LOCATION	FROM MH	TO MH	Area (ha)	Density (ppha)	Area (ha)	Density (ppha)	Total (ha)	Res (pers.)	ICI (pers.)	Total (pers.)	Res (L/cap. Day)	ICI (L/cap. Day)	Incr. Avg. Q (L/s)	Total Avg. Q (L/s)	K_{avg}	M_{avg}	Peak Q, Q_P (L/s)	Infiltr. (L/s)	Design Flow, Q_D (L/s)	Length, L (m)	Pipe Dia., D (mm)	Slope, s (%)	Manning's Coeff., n	Full Flow Capacity, Q_F (L/s)	Full (m/s)	Actual (m/s)	Flow Depth, d (mm)	d/D	Type	Class
Upstream Lands	4634A	40854A	259.14				259.14	15739		15739	275		50.10	50.1	1.0	2.76	138.1	74.1	212.2	43.5	600	0.8	0.013	565.8	1.94	1.82	256	0.42	PVC	DR-35
Realigned Sewer Along SSR	40854A	106A	0.14	61			259.28	9		15748	275		0.03	50.1	1.0	2.76	138.2	74.2	212.3	41.9	600	0.6	0.013	496.2	1.70	1.67	274	0.45	PVC	DR-36
	106A	102A	0.00	0			259.28	0		15748	275		0.0	50.1	1.0	2.76	138.2	74.2	212.3	21.2	675	0.9	0.013	832.0	2.25	1.92	233	0.34	PVC	DR-37
	102A	103A	0.00	0			259.28	0		15748	275		0.0	50.1	1.0	2.76	138.2	74.2	212.3	20.0	675	0.4	0.013	554.6	1.50	1.44	288	0.42	PVC	DR-38
	103A	104A	1.80	90			261.08	2835	68	18651	275	275	9.2	59.4	1.0	2.68	159.3	74.7	233.9	25.5	675	0.4	0.013	554.6	1.50	1.45	309	0.45	PVC	DR-39
	104A	105A	1.15				262.23	104		18755	275		0.3	59.7	1.0	4.00	160.6	75.0	235.6	27.5	750	0.6	0.013	899.7	1.97	1.72	259.08	0.34	PVC	DR-40
Tying back into existing sewer	105A	29684A	0.00	0			262.23	0		18755	275		0.0	59.7	1.0	2.68	160.0	75.0	235.0	27.7	750	0.6	0.013	899.7	1.97	1.72	259.08	0.34	PVC	DR-35
TRIBUTARY AREA TOTAL			262.23		0.00		**1822.53**	18687	68	**119144**																					

Notes:
1) Pipe diameter is nominal
2) Capacity and velocity are based on Imperial I.D. (Nom. Dia x 25.4/25)
3} Existng system flows are taken from Midtown Wastewater Capacity Analysis by Urbantech dated February 26, 2024

Peaking Factor $M = K_{avg} \times (1+14 / (4+P^{1/2}))$
Where P is Total population in thousands
$K_{avg} = (A_R + 0.8 \times A_{ICI}) / (A_{Total})$
Infiltration = 0.286 L/ha/s

Full Flow Capacity (Manning's Equation), Q_F
$Q_F = (1/n) \times A \times R^{2/3} \times s^{1/2}$
$= (1/n) \times 311.7 \times D^{8/3} \times s^{1/2}$

APPENDIX ‘E’

Memorandum

URBANTECH®

To:	Sasha Lauzon Senior Director of Planning & Development Distrikt	**Date:**	February 26, 2024
From:	Kate Connell Senior Project Manager Urbantech Consulting	**Project #:**	**22-282W**
Re:	**Midtown Oakville Wastewater Capacity Analysis (Existing and Future Conditions)**		

This memo has been prepared by Urbantech to support on-going development applications for Distrikt properties in Midtown Oakville.

The sections that follow describe the capacity available in the Midtown wastewater pipe network, under both existing and future conditions, using a first-principles approach. The analysis was completed to:

- Confirm existing capacity constraints, prior to the Region's planned trunk sewer upgrades (on-going capital project).
- Evaluate capacity available in the future system (with trunk sewer upgrades complete), under a variety of development scenarios.
- Identify additional upgrades that may be required in the local sanitary system to support development.

Results of the analysis indicate that the future system will be able to accommodate all of the Distrikt developments (plus additional growth) with only minor upgrades to the local network.

1. Midtown Oakville Existing Wastewater System

Figure 1 shows the existing Midtown Oakville wastewater network. The main trunk sewer (West Trunk) that services Midtown Oakville (west of Trafalgar Road) also provides sanitary capacity for approximately 260 ha north of the QEW. This trunk sewer runs south along Argus Road, through the GO Station parking lot and along Trafalgar Road to Cornwall.

A second, smaller sub-trunk sewer (East Trunk) provides sanitary capacity for Midtown east of Trafalgar Road (as well as a small area west of Trafalgar Road, north of Cross Avenue). This sub-trunk runs west along Davis Road and south on Trafalgar to Cornwall.

The two trunk sewers combine south of Cornwall and drain to the Rebecca Trunk sewer, terminating at the Oakville Southwest Wastewater Treatment Plant.

The Region has noted existing capacity constraints in both the West Trunk and East Trunk. They have initiated a capital project to upgrade the sewer extents as shown in **Figure 1** (blue and orange). The Region intends to have the upgrades completed in the 2026 timeframe.

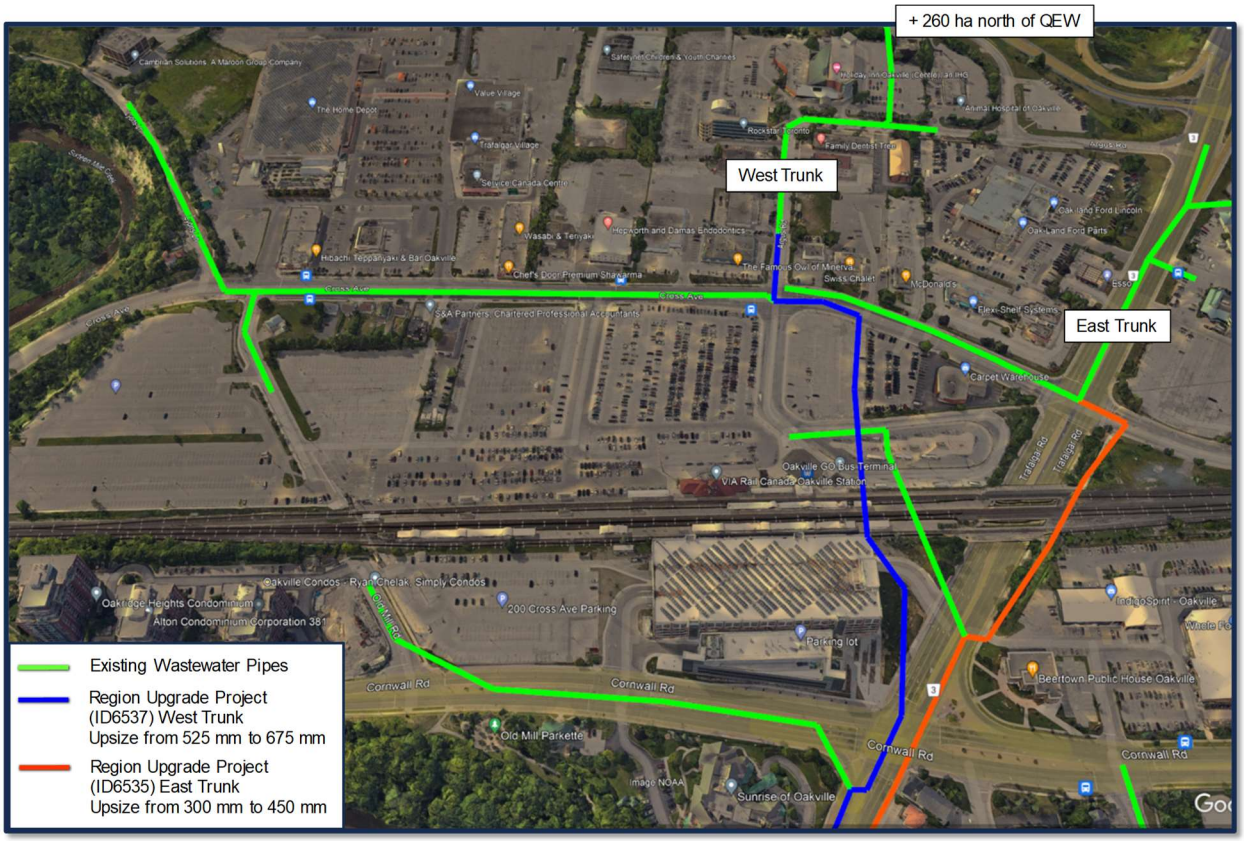


Figure 1: Midtown Oakville Wastewater Network (Existing)

2. Existing Wastewater Capacity Analysis

A first-principles wastewater analysis was undertaken to evaluate capacity in the existing sanitary network. This approach uses current land use, typical population densities and per-capita flow generation rates (in accordance with Region of Halton standards) to calculate pipe flow at the individual component level. This allows a pipe-by-pipe assessment of both trunk and local sewers.

Figure 2 shows the results of the existing conditions analysis for the Midtown sewer system. Lighter coloured pipes have more capacity and darker are more constrained. The limiting pipe segments for each trunk are identified. Results confirm an existing constraint in the West Trunk, through the GO Station parking lot. The East Trunk shows limited residual existing capacity.

Full details are available in **Attachment 1**, including associated drawings, drainage areas, key assumptions, and sanitary design sheets. It is noted that the West Trunk assessment includes calculations for the 260 ha north of the QEW which drain through Midtown. All flows are calculated using the Harmon peaking factor and inflow / infiltration in accordance with the Region's Linear Design Manual (2019).

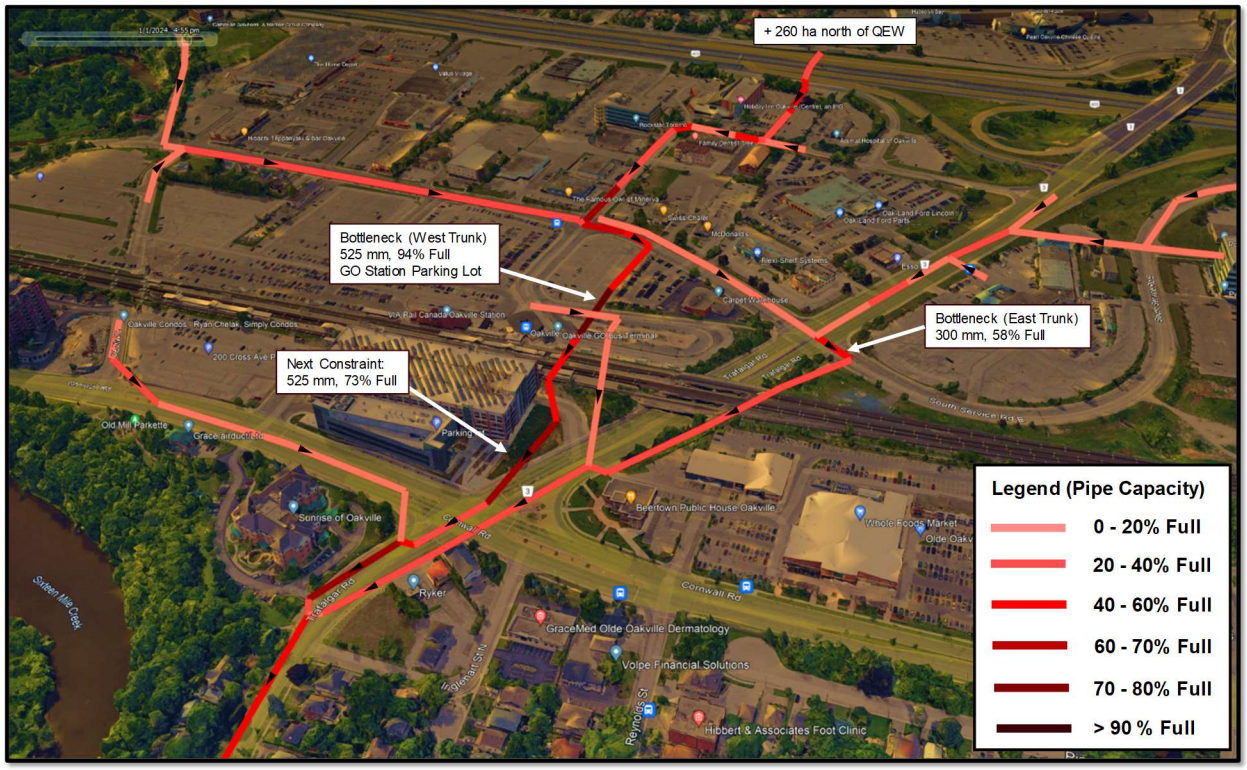


Figure 2: Midtown Oakville Existing Conditions – Pipe Capacity Analysis Results

3. Future Wastewater Capacity Analysis

The future wastewater capacity analysis for Midtown uses the same approach as outlined in Section 2 but augments the sanitary design sheet to upsize pipe components associated with the Region's upgrade project as shown in **Figure 1** (i.e., 525 mm updated to 675 mm, and 300 mm updated to 450 mm). The alignment and slopes of the existing pipe network are kept the same. These may change as the Region progresses their design, but minor changes are not anticipated to impact the results of this analysis.

Four (4) future scenarios were run to assess the impact of development on the Midtown Oakville wastewater system:

Scenario 1 (Base Case):

- Region trunk sewer upgrades complete.
- No new development added to the system (existing conditions).

Scenario 2A:

- Region trunk sewer upgrades complete.
- Population and employment projections for Distrikt planned developments added to the sewer network at appropriate nodes (all new wastewater flow directed to the West Trunk).

Scenario 2B:

- Region trunk sewer upgrades complete.
- Population and employment projections for Distrikt planned developments added to the sewer network at appropriate nodes (wastewater flow is split between the West and East Trunks)

Scenario 3:

- Region trunk sewer upgrades complete.
- Population and employment projections for all near-term development in Midtown Oakville (including Distrikt developments) added to the system at appropriate nodes. This includes 627 Lyons Lane, 349 Davis Road and 177 Cross Avenue.

Attachment 2 includes mapping, a summary of results, and detailed design sheets for the four (4) future scenarios. Population estimates for Distrikt developments are based on current engineering design (population and employment estimates) as provided by Trafalgar Engineering.

In general, results show that:

- The Region's planned trunk sewer upgrades resolve the existing capacity constraints in the Midtown system. The trunk sewer upgrades (as proposed) provide sufficient downstream capacity under all scenarios tested.
- The local 300 mm sanitary sewer on Cross Avenue (running east/west from Argus Road to Lyons Lane) has existing capacity to accommodate full build-out of Distrikt's 157/165 Cross Avenue site. Any additional development connecting to the Cross Avenue sewer will trigger an upsize from 300 mm to 450 mm diameter for a short section (approximately 140 m total, from Argus Road to 140 m west of Argus Road). The 450 mm diameter size is sufficient to support new growth under all scenarios tested (including Scenario 3 which adds 166 South Service Road, 627 Lyons Lane and 177 Cross Avenue future developments to the Cross Avenue local sewer).
- There are no other local capacity constraints in any of the future scenarios considered. Further infrastructure planning will be required to identify ultimate (i.e., 2041, 2051) servicing needs. The analysis herein, however, confirms that the system can support near-term development (currently in the pipeline) with only minor modifications.

4. Conclusions

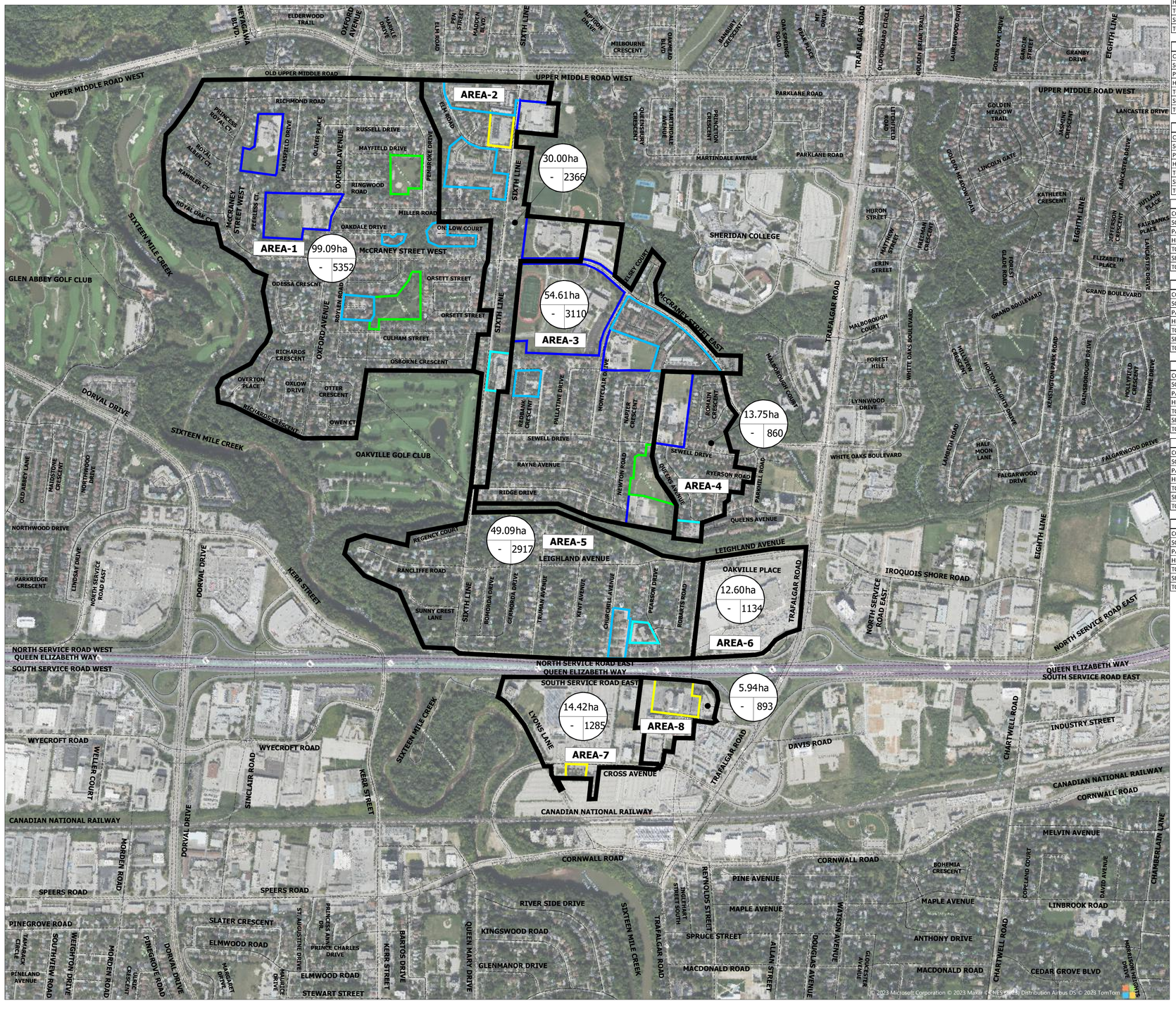
The wastewater system in Midtown Oakville provides opportunities for near-term development. The first-principles analysis of system capacity shows that:

- The Region's planned trunk sewer upgrades alleviate the existing capacity constraints in the trunk sewer system.
- Once the trunk sewers are upgraded, there is capacity in the West Trunk and East Trunk to support all development currently in the pipeline (including all Distrikt developments), with spare capacity for other landowners.
- The local sanitary system has sufficient capacity to accommodate all near-term growth, with the exception of a short (140 m) section of the existing Cross Avenue sewer (from Argus Road to 140 m west of Argus Road). This sewer can accommodate full build-out of the 157/165 Cross Avenue site but would need to be upgraded from a 300 mm diameter sewer to a 450 mm diameter sewer to facilitate additional development.

Report Prepared By:

Kate Connell, P.Eng.
Senior Project Manager
Urbantech

ATTACHMENT 1:
Existing System Capacity Analysis



AREA-1	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	0.00	90.00	0
SCHOOL	5.76	40.00	230
PARK	3.31	0.00	0
HIGHRISE	0.00	285.00	0
TOWNHOUSE	2.13	135.00	288
SINGLE FAMILY	87.90	55.00	4834
TOTAL	99.09		5352

AREA-2	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	0.93	90.00	84
SCHOOL	4.51	40.00	180
PARK	0.00	0.00	0
HIGHRISE	1.02	285.00	290
TOWNHOUSE	6.46	135.00	872
SINGLE FAMILY	17.08	55.00	940
TOTAL	30.00		2366

AREA-3	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	0.00	90.00	0
SCHOOL	16.02	40.00	641
PARK	1.57	0.00	0
HIGHRISE	0.00	285.00	0
TOWNHOUSE	5.41	135.00	730
SINGLE FAMILY	31.61	55.00	1739
TOTAL	54.61		3110

AREA-4	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	0.00	90.00	0
SCHOOL	2.75	40.00	110
PARK	0.00	0.00	0
HIGHRISE	0.63	285.00	180
TOWNHOUSE	0.00	135.00	0
SINGLE FAMILY	10.37	55.00	570
TOTAL	13.75		860

AREA-5	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	0.00	90.00	0
SCHOOL	0.00	40.00	0
PARK	0.00	0.00	0
HIGHRISE	0.57	285.00	162
TOWNHOUSE	1.07	135.00	144
SINGLE FAMILY	47.45	55.00	2610
TOTAL	49.09		2917

AREA-6	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	12.60	90.00	1134
SCHOOL	0.00	40.00	0
PARK	0.00	0.00	0
HIGHRISE	0.00	285.00	0
TOWNHOUSE	0.00	135.00	0
SINGLE FAMILY	0.00	55.00	0
TOTAL	12.60		1134

AREA-7	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	14.06	90.00	1265
SCHOOL	0.00	40.00	0
PARK	0.00	0.00	0
HIGHRISE	0.00	285.00	0
TOWNHOUSE	0.00	135.00	0
SINGLE FAMILY	0.36	55.00	20
TOTAL	14.42		1285

AREA-8	AREA (ha)	EQUIVALENT POPULATION DENSITY (P/ha)	POPULATION
COMMERCIAL	4.08	90.00	367
SCHOOL	0.00	40.00	0
PARK	0.00	0.00	0
HIGHRISE	1.84	285.00	524
TOWNHOUSE	0.00	135.00	0
SINGLE FAMILY	0.02	55.00	1
TOTAL	5.94		893

TOTAL POPULATION: 17916

LEGEND:

- EXISTING DRAINAGE AREA BOUNDARY
- EXISTING HIGH-RISE BUILDING
- EXISTING PARK AREA
- EXISTING COMMERCIAL AREA
- EXISTING SCHOOL AREA
- EXISTING TOWNHOUSE

0.45ha | 0 | 0

- EXISTING DRAINAGE AREA (ha)
- EXISTING POPULATION
- EXISTING DENSITY (P/ha)

No.	REVISION	DATE	BY

OAKVILLE MID-TOWN (DISTRIKT OAKVILLE)

OAKVILLE

Halton REGION

TOWN FILE No. XXXX

REGION FILE No. XXXXX

URBANTECH®

Urbantech® Consulting
A Division of Leighton-Zec West Ltd.
2030 Bristol Circle, Suite 105
Oakville, ON. L6H 0H2
TEL 905.829.8818 • urbantech.com

DESIGNED:	CHECKED: B.M.	PROJECT No.:	22-282
DRAWN: X.S.	DATE: DECEMBER 2023	SHEET No.:	
SCALE: 1:7000		DRAWING No.:	

	area(ha)	EQUIVALENT POPULATION DENSITY(P/ha)	POPULATION
COMMERCIAL	49.10	90	4419
HIGH-RISE	4.51	285	1285
SINGLE FAMILY	0.15	55	8
ROAD	1.77	-	-
TOTAL	53.76		5713

LEGEND:

- EXISTING DRAINAGE AREA BOUNDARY (COMMERCIAL)
- EXISTING DRAINAGE AREA BOUNDARY (HIGH-RISE BUILDING)
- EXISTING DRAINAGE AREA BOUNDARY (SINGLE FAMILY BUILDING)
- EXISTING DRAINAGE AREA BOUNDARY (ROAD)
- 0.45ha / 0 / 0 — EXISTING DRAINAGE AREA (ha); EXISTING POPULATION; EXISTING DENSITY (P/ha)

No.	REVISION	DATE	BY

OAKVILLE MID-TOWN (DISTRIKT OAKVILLE)

OAKVILLE

Halton REGION

TOWN FILE No. XXXX

REGION FILE No. XXXXX

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DESIGNED:	CHECKED: B.M.	PROJECT No.:	22-282
DRAWN: X.S.	DATE: DECEMBER 2023	SHEET No.:	
SCALE: 1:3000 (30m 0m 30m 60m 120m)		DRAWING No.:	

URBANTECH®

SANITARY SEWER DESIGN SHEET (EXISTING)

Midtown - Existing Conditions

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 12-Jan-24
Designed by: J.P.O
Checked by: KC

DESIGN CRITERIA

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s
Avg. Domestic Flow = 275.0 l/c/d
Infiltration = 0.286 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 2.00

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Area-1	Area-1	Area-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		200				
Area-2	Area-2	Area-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		200				
Area-4	Area-4	Area-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		200				
Area-3	Area-3	MH1293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		200				
Area-5	MH1293	MH1290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	675	420.3	1.17	1.13	48%
Area-6	MH1294	MH1290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	250	91.2	1.86	1.41	19%
	MH1290	MH1288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	600	542.3	1.92	1.73	39%
	MH1288	MH1287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	600	467.6	1.65	1.59	45%
	MH1287	MH1286			259.14					15739	1.80	1.94	90		162	175	74.7	15914	2.75	139.4			214.1	0.70	600	513.7	1.82	1.69	42%
	MH1286	MH1285			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.87	600	572.7	2.03	1.82	37%
	MH1285	MH1284			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.85	600	566.1	2.00	1.80	38%
	MH1291	MH1284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	300	116.8	1.65	0.51	1%
	MH1284	MH1292			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	0.22	750	522.2	1.18	1.10	41%
	MH1292	MH1283			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	1.48	750	1354.4	3.07	2.24	16%
	MH1283	MH1282			259.14					15739	1.95	5.04	90		176	455	75.6	16194	2.74	141.5			217.0	0.77	600	538.8	1.91	1.77	40%
	MH1282	MH1279			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.88	600	576.0	2.04	1.83	38%
	MH1279	MH1275			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.22	600	288.0	1.02	1.11	75%
	MH1262	MH1263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	250	54.8	1.12	0.55	5%
	MH1263	MH1265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	250	30.3	0.62	0.36	8%
	MH1265	MH1264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	250	59.5	1.21	0.63	5%
	MH1264	MH1266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	300	72.4	1.02	0.50	4%
	MH1266	MH1267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	300	73.6	1.04	0.51	4%
	MH1269	MH1268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	300	64.1	0.91	0.24	1%
	MH1268	MH1267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	250	35.7	0.73	0.19	1%
	MH1267	MH1270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	300	58.8	0.83	0.69	26%
	MH1270	MH1271									2.92	14.20	90		263	1279	4.1	1279	3.73	15.2			19.2	0.45	300	64.9	0.92	0.80	30%
	MH1271	MH1272									1.24	15.44	90		112	1391	4.4	1391	3.70	16.4			20.8	0.38	300	59.6	0.84	0.76	35%
	MH1272	MH1273										15.44				1391	4.4	1391	3.70	16.4			20.8	0.60	300	74.9	1.06	0.90	28%
	MH1273	MH1274										15.44				1391	4.4	1391	3.70	16.4			20.8	0.52	300	69.7	0.99	0.86	30%
	MH1274	MH1275										15.44				1391	4.4	1391	3.70	16.4			20.8	0.85	300	89.2	1.26	1.00	23%
	MH1275	MH1276			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	0.66	525	349.4	1.61	1.69	66%
	MH1276	MH1277			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	1.47	525	521.4	2.41	2.24	44%
	MH1277	MH1280			259.14					15739	0.66	21.14	90		60	1906	80.2	17645	2.71	152.0			232.2	1.45	525	517.9	2.39	2.30	45%
	MH1280	MH1278			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.67	525	555.8	2.57	2.39	42%
	MH1278	MH1281			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.33	525	247.1	1.14	1.29	94%
	MH1281	MH1247			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.08	525	446.9	2.06	2.04	52%
	MH1247	MH1246			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.92	525	412.5	1.91	1.92	56%
	MH1246	MH1245			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.54	525	316.0	1.46	1.56	73%
	MH1245	MH1240			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	6.53	525	1099.0	5.08	3.91	21%
	MH1240	MH1239			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.89	525	405.7	1.87	1.89	57%
	MH1234	MH1235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	200	46.6	1.48	0.77	5%
	MH1235	MH1236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	200	23.0	0.73	0.59	25%
	MH1236	MH1237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	250	40.8	0.83	0.58	14%
	MH1237	MH1238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	300	65.6	0.93	0.59	10%
	MH1238	MH1239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	300	109.8	1.55	0.84	6%
	MH1239	MH1241			259.14					15739	0.96	26.51	90		87	2391	81.7	18130	2.70	155.5			237.2	0.29	600	330.7	1.17	1.25	72%

URBANTECH®

SANITARY SEWER DESIGN SHEET (EXISTING)

Midtown - Existing Conditions

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

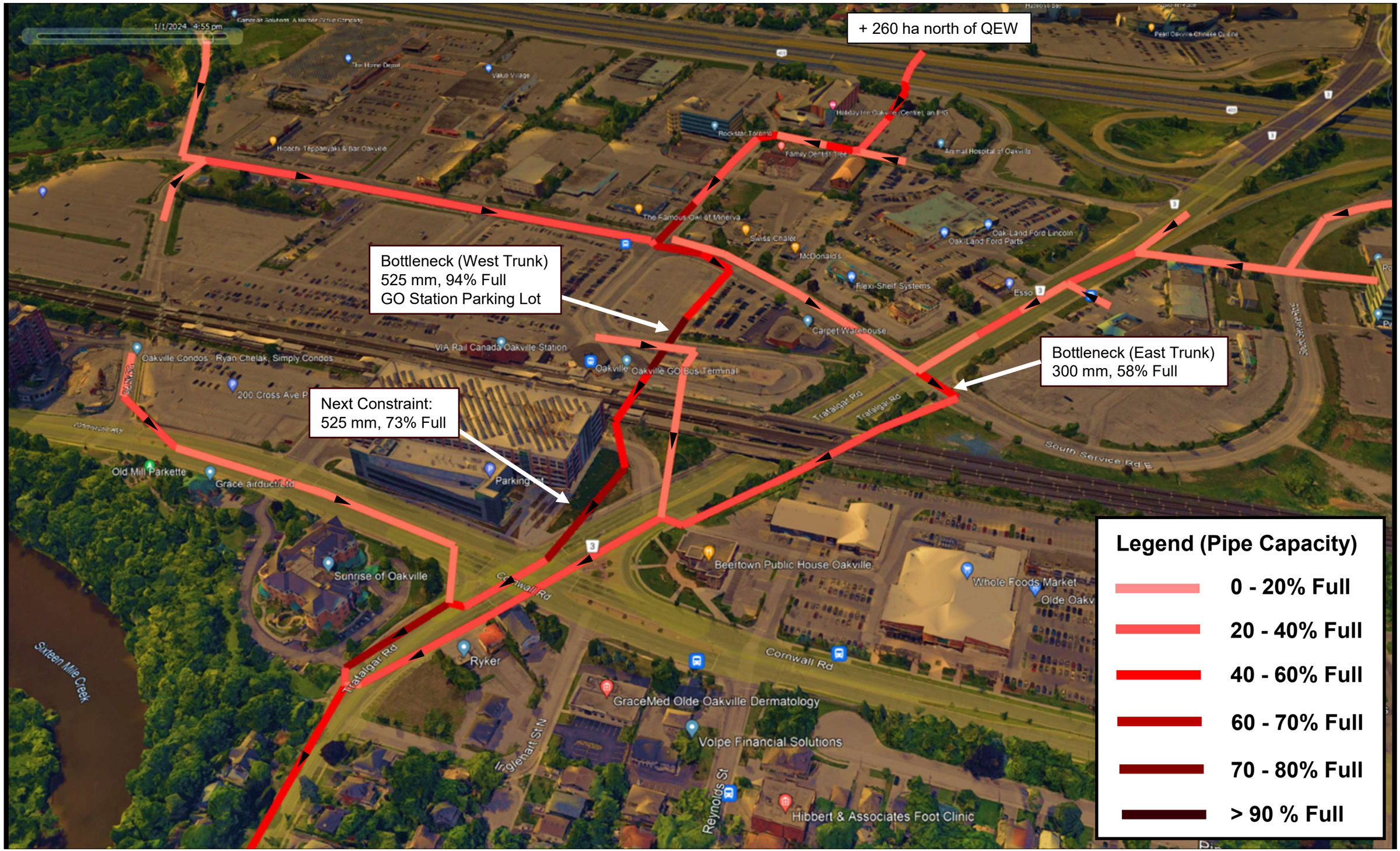
Project No: 22-282
Date: 12-Jan-24
Designed by: J.P.O
Checked by: KC

DESIGN CRITERIA

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s
Avg. Domestic Flow = 275.0 l/c/d
Infiltration = 0.286 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 2.00

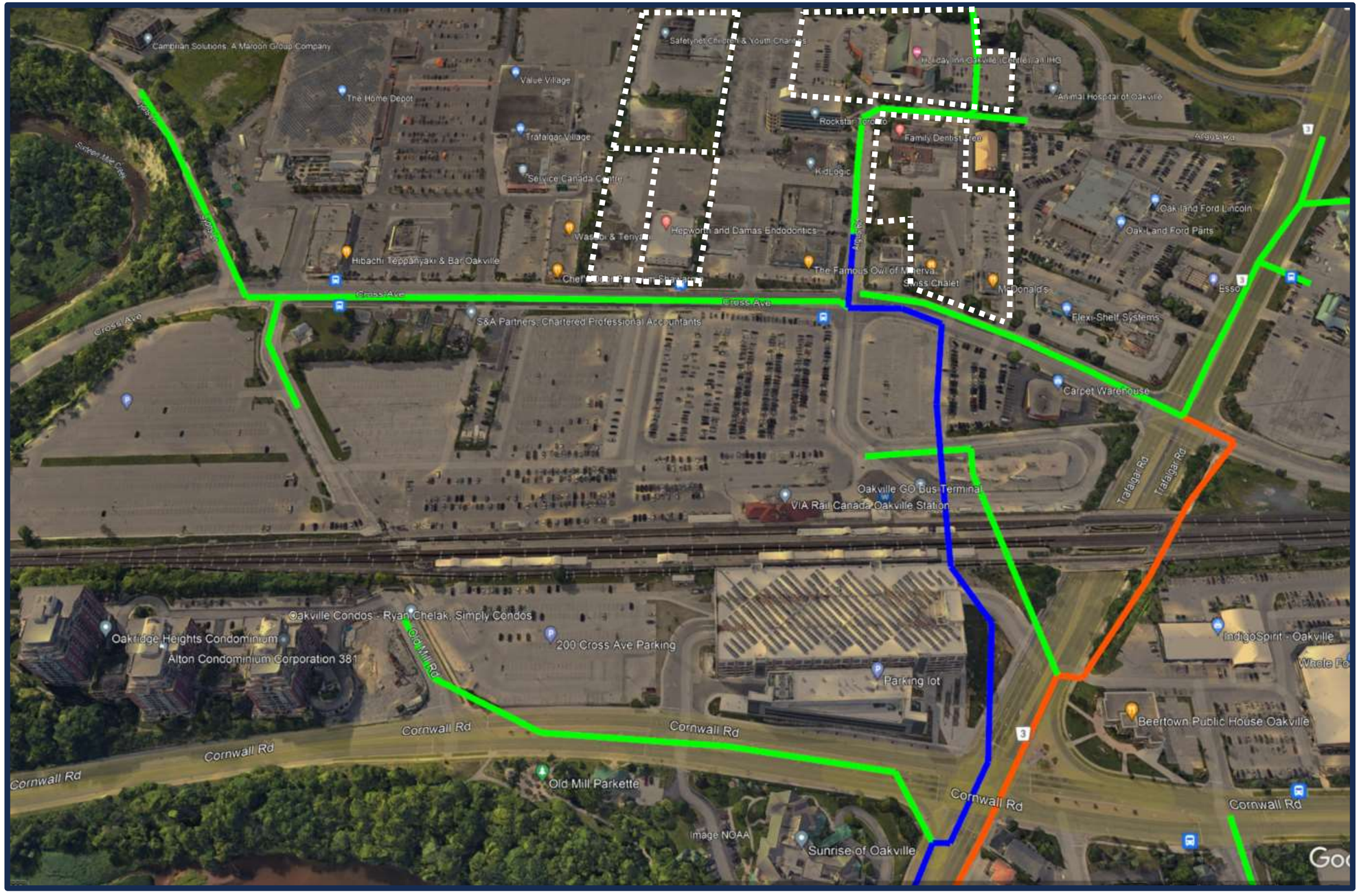
NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
	MH1241	MH1242			259.14					15739		26.51				2391	81.7	18130	2.70	155.5			237.2	1.02	600	620.1	2.19	1.97	38%
	MH1298	MH1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	300	106.8	1.51	0.39	1%
	MH1299	MH1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	300	71.7	1.01	0.63	9%
	MH1303	MH1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	300	85.9	1.22	0.72	8%
	MH1302	MH1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	300	54.7	0.77	0.58	18%
	MH1301	MH1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	300	65.6	0.93	0.68	16%
	MH1297	MH1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	250	30.9	0.63	0.57	38%
	MH1296	MH1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	200	20.7	0.66	0.50	18%
	MH1295	MH1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	300	97.7	1.38	1.05	19%
	MH1300	MH1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	300	72.4	1.02	0.83	25%
	MH1261	MH1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	300	103.7	1.47	1.10	18%
	MH1258	MH1257									2.62	2.62	90		236	236	0.7	236	4.00	3.0			3.8	0.58	250	45.3	0.92	0.54	8%
	MH1257	MH1256										2.62				236	0.7	236	4.00	3.0			3.8	0.69	300	80.3	1.14	0.56	5%
	MH1256	MH1260										2.62				236	0.7	236	4.00	3.0			3.8	1.81	300	130.1	1.84	0.77	3%
	MH1260	MH1255										2.62				236	0.7	236	4.00	3.0			3.8	0.26	300	49.3	0.70	0.41	8%
	MH1255	MH1254										16.05				1447	4.6	1447	3.69	17.0			21.6	0.15	300	37.5	0.53	0.54	58%
	MH1254	MH1253									0.35	16.40	90		32	1479	4.7	1479	3.68	17.3			22.0	0.48	300	67.0	0.95	0.82	33%
	MH1253	MH1259										16.40				1479	4.7	1479	3.68	17.3			22.0	0.50	300	68.4	0.97	0.84	32%
	MH1259	MH1249									1.20	17.60	90		108	1587	5.0	1587	3.66	18.5			23.5	0.46	300	65.6	0.93	0.84	36%
	MH1249	MH1248										17.60				1587	5.0	1587	3.66	18.5			23.5	0.53	300	70.4	1.00	0.87	33%
	MH1252	MH1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	200	20.7	0.66	0.26	2%
	MH1251	MH1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	200	52.5	1.67	0.58	2%
	MH1250	MH1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	200	25.4	0.81	0.36	4%
	MH1248	MH1244										18.26				1647	5.2	1647	3.65	19.1			24.4	0.62	300	76.1	1.08	0.94	32%
	MH1244	MH1243										18.26				1647	5.2	1647	3.65	19.1			24.4	0.44	300	64.1	0.91	0.82	38%
	MH1243	MH1242										18.26				1647	5.2	1647	3.65	19.1			24.4	2.39	300	149.5	2.11	1.54	16%
	MH1242	MHX			259.14					15739		44.77				4038	86.9	19777	2.66	167.3			254.2	0.64	600	491.2	1.74	1.72	52%


+ 260 ha north of QEW
Bottleneck (West Trunk)
525 mm, 94% Full
GO Station Parking Lot
Next Constraint:
525 mm, 73% Full
Bottleneck (East Trunk)
300 mm, 58% Full
Legend (Pipe Capacity)
0 - 20% Full
20 - 40% Full
40 - 60% Full
60 - 70% Full
70 - 80% Full
> 90 % Full

ATTACHMENT 2:
Future System Capacity Analysis

Scenario 1: Trunk Sewer Upgrades Complete, No New Development



Results:

Existing system bottlenecks within the Midtown Area are resolved with planned sewer upgrades.

No sewer component exceeds 55% full (this assumes existing conditions – no new development).

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 1

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

DESIGN CRITERIA

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s
Avg. Domestic Flow = 275.0 l/c/d
Infiltration = 0.286 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 2.00

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Area-1	Area-1	Area-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		200				
Area-2	Area-2	Area-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		200				
Area-4	Area-4	Area-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		200				
Area-3	Area-3	MH1293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		200				
Area-5	MH1293	MH1290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	675	420.3	1.17	1.13	48%
Area-6	MH1294	MH1290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	250	91.2	1.86	1.41	19%
	MH1290	MH1288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	600	542.3	1.92	1.73	39%
	MH1288	MH1287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	600	467.6	1.65	1.59	45%
	MH1287	MH1286			259.14					15739	1.80	1.94	90		162	175	74.7	15914	2.75	139.4			214.1	0.70	600	513.7	1.82	1.69	42%
	MH1286	MH1285			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.87	600	572.7	2.03	1.82	37%
	MH1285	MH1284			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.85	600	566.1	2.00	1.80	38%
	MH1291	MH1284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	300	116.8	1.65	0.51	1%
	MH1284	MH1292			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	0.22	750	522.2	1.18	1.10	41%
	MH1292	MH1283			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	1.48	750	1354.4	3.07	2.24	16%
	MH1283	MH1282			259.14					15739	1.95	5.04	90		176	455	75.6	16194	2.74	141.5			217.0	0.77	600	538.8	1.91	1.77	40%
	MH1282	MH1279			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.88	600	576.0	2.04	1.83	38%
	MH1279	MH1275			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.22	**675**	394.3	1.10	1.11	55%
	MH1262	MH1263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	250	54.8	1.12	0.55	5%
	MH1263	MH1265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	250	30.3	0.62	0.36	8%
	MH1265	MH1264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	250	59.5	1.21	0.63	5%
	MH1264	MH1266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	300	72.4	1.02	0.50	4%
	MH1266	MH1267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	300	73.6	1.04	0.51	4%
	MH1269	MH1268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	300	64.1	0.91	0.24	1%
	MH1268	MH1267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	250	35.7	0.73	0.19	1%
	MH1267	MH1270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	300	58.8	0.83	0.69	26%
	MH1270	MH1271									2.92	14.20	90		263	1279	4.1	1279	3.73	15.2			19.2	0.45	300	64.9	0.92	0.80	30%
	MH1271	MH1272									1.24	15.44	90		112	1391	4.4	1391	3.70	16.4			20.8	0.38	300	59.6	0.84	0.76	35%
	MH1272	MH1273										15.44				1391	4.4	1391	3.70	16.4			20.8	0.60	300	74.9	1.06	0.90	28%
	MH1273	MH1274										15.44				1391	4.4	1391	3.70	16.4			20.8	0.52	300	69.7	0.99	0.86	30%
	MH1274	MH1275										15.44				1391	4.4	1391	3.70	16.4			20.8	0.85	300	89.2	1.26	1.00	23%
	MH1275	MH1276			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	0.66	**675**	682.9	1.91	1.66	34%
	MH1276	MH1277			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	1.47	**675**	1019.2	2.85	2.25	23%
	MH1277	MH1280			259.14					15739	0.66	21.14	90		60	1906	80.2	17645	2.71	152.0			232.2	1.45	**675**	1012.2	2.83	2.23	23%
	MH1280	MH1278			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.67	**675**	1086.3	3.04	2.34	21%
	MH1278	MH1281			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.33	**675**	482.9	1.35	1.30	48%
	MH1281	MH1247			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.08	**675**	873.6	2.44	2.03	27%
	MH1247	MH1246			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.92	**675**	806.3	2.25	1.92	29%
	MH1246	MH1245			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.54	**675**	617.7	1.73	1.55	38%
	MH1245	MH1240			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	6.53	**675**	2148.0	6.00	3.96	11%
	MH1240	MH1239			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.89	**675**	793.0	2.22	1.88	29%
	MH1234	MH1235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	200	46.6	1.48	0.77	5%
	MH1235	MH1236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	200	23.0	0.73	0.59	25%
	MH1236	MH1237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	250	40.8	0.83	0.58	14%
	MH1237	MH1238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	300	65.6	0.93	0.59	10%
	MH1238	MH1239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	300	109.8	1.55	0.84	6%
	MH1239	MH1241			259.14					15739	0.96	26.51	90		87	2391	81.7	18130	2.70	155.5			237.2	0.29	**675**	452.7	1.26	1.25	52%

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 1

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

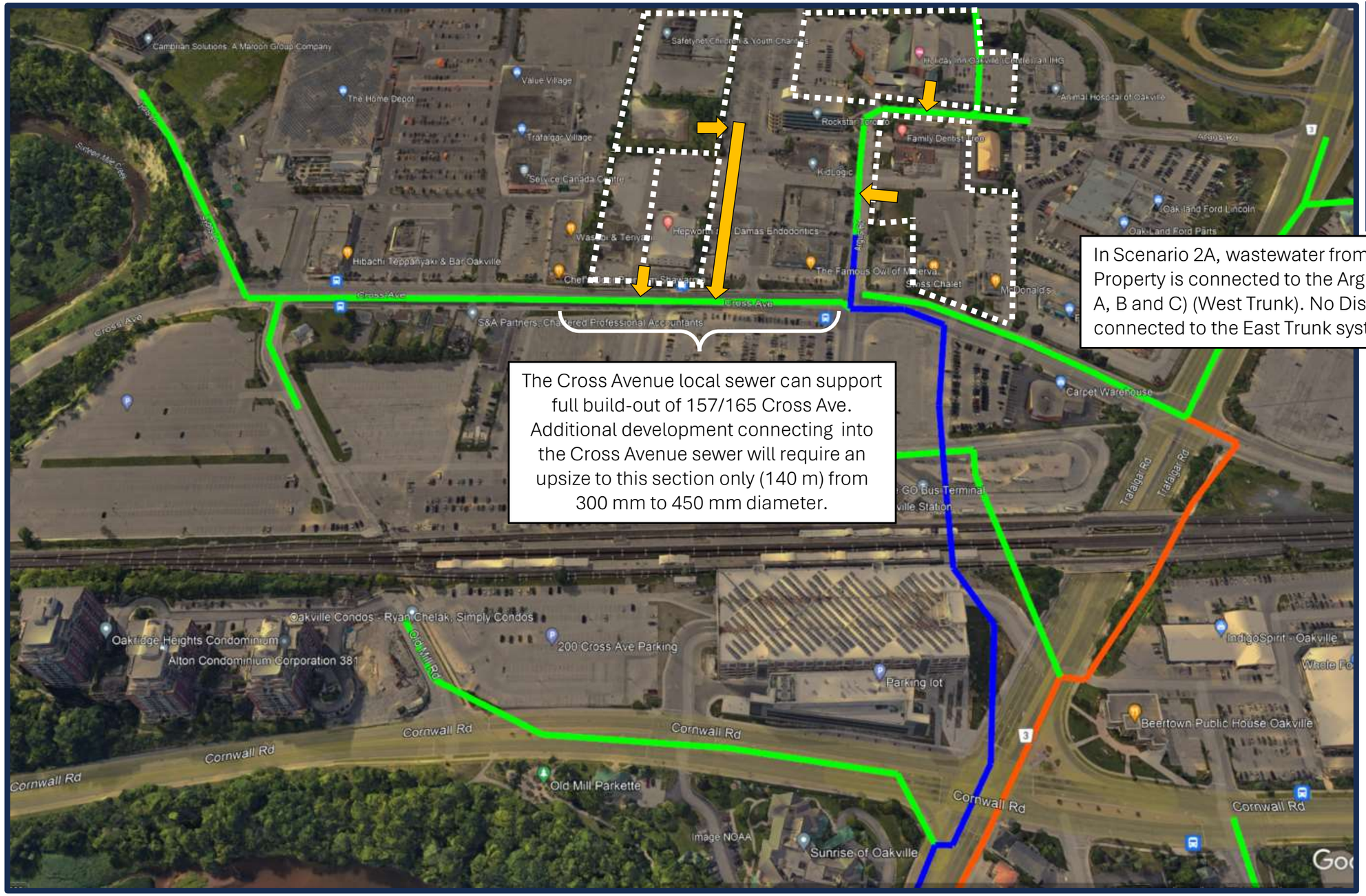
DESIGN CRITERIA

Min Diameter =	200	mm	Avg. Domestic Flow =	275.0	l/c/d
Mannings 'n'=	0.013		Infiltration =	0.286	l/s/ha
Min. Velocity =	0.60	m/s	Max. Peaking Factor =	4.00	
Max. Velocity =	3.00	m/s	Min. Peaking Factor=	2.00	

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
	MH1241	MH1242			259.14					15739		26.51				2391	81.7	18130	2.70	155.5			237.2	1.02	**675**	849.0	2.37	2.02	28%
	MH1298	MH1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	300	106.8	1.51	0.39	1%
	MH1299	MH1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	300	71.7	1.01	0.63	9%
	MH1303	MH1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	300	85.9	1.22	0.72	8%
	MH1302	MH1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	300	54.7	0.77	0.58	18%
	MH1301	MH1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	300	65.6	0.93	0.68	16%
	MH1297	MH1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	250	30.9	0.63	0.57	38%
	MH1296	MH1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	200	20.7	0.66	0.50	18%
	MH1295	MH1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	300	97.7	1.38	1.05	19%
	MH1300	MH1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	300	72.4	1.02	0.83	25%
	MH1261	MH1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	300	103.7	1.47	1.10	18%
	MH1258	MH1257									2.62	2.62	90		236	236	0.7	236	4.00	3.0			3.8	0.58	250	45.3	0.92	0.54	8%
	MH1257	MH1256										2.62				236	0.7	236	4.00	3.0			3.8	0.69	300	80.3	1.14	0.56	5%
	MH1256	MH1260										2.62				236	0.7	236	4.00	3.0			3.8	1.81	300	130.1	1.84	0.77	3%
	MH1260	MH1255										2.62				236	0.7	236	4.00	3.0			3.8	0.26	300	49.3	0.70	0.41	8%
	MH1255	MH1254										16.05				1447	4.6	1447	3.69	17.0			21.6	0.15	**450**	110.4	0.69	0.53	20%
	MH1254	MH1253									0.35	16.40	90		32	1479	4.7	1479	3.68	17.3			22.0	0.48	**450**	197.5	1.24	0.82	11%
	MH1253	MH1259										16.40				1479	4.7	1479	3.68	17.3			22.0	0.50	**450**	201.6	1.27	0.84	11%
	MH1259	MH1249									1.20	17.60	90		108	1587	5.0	1587	3.66	18.5			23.5	0.46	**450**	193.4	1.22	0.81	12%
	MH1249	MH1248										17.60				1587	5.0	1587	3.66	18.5			23.5	0.53	**450**	207.6	1.31	0.86	11%
	MH1252	MH1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	200	20.7	0.66	0.26	2%
	MH1251	MH1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	200	52.5	1.67	0.58	2%
	MH1250	MH1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	200	25.4	0.81	0.36	4%
	MH1248	MH1244										18.26				1647	5.2	1647	3.65	19.1			24.4	0.62	**450**	224.5	1.41	0.93	11%
	MH1244	MH1243										18.26				1647	5.2	1647	3.65	19.1			24.4	0.44	**450**	189.1	1.19	0.82	13%
	MH1243	MH1242										18.26				1647	5.2	1647	3.65	19.1			24.4	2.39	**450**	440.8	2.77	1.50	6%
	MH1242	MHX			259.14					15739		44.77				4038	86.9	19777	2.66	167.3			254.2	0.64	**675**	672.5	1.88	1.69	38%

Scenario 2A: Trunk Sewer Upgrades Complete, All Distrikt Developments Connected (Option 1)



The Cross Avenue local sewer can support full build-out of 157/165 Cross Ave. Additional development connecting into the Cross Avenue sewer will require an upsize to this section only (140 m) from 300 mm to 450 mm diameter.

Distrikt Developments

Existing Wastewater Pipes

Region Upgrade Project (ID6537) West Trunk
Upsize from 525 mm to 675 mm

Region Upgrade Project (ID6535) East Trunk
Upsize from 300 mm to 450 mm

In Scenario 2A, wastewater from the 587 Argus Property is connected to the Argus Road sewer (Tower A, B and C) (West Trunk). No Distrikt developments are connected to the East Trunk system.

Results:

In this Scenario, all Distrikt developments connect to the GO Station Trunk system (West Trunk). Once the trunk sewer is upgraded to 675 mm in diameter, there are no capacity constraints identified, except for the existing local 300 mm pipe on Cross Ave (west of Argus, as noted).

Excluding the 300 mm pipe, no sewer component exceeds 72% full.

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 2A

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

DESIGN CRITERIA

Min Diameter =	200	mm	Avg. Domestic Flow =	275.0	l/c/d
Mannings 'n'=	0.013		Infiltration =	0.286	l/s/ha
Min. Velocity =	0.60	m/s	Max. Peaking Factor =	4.00	
Max. Velocity =	3.00	m/s	Min. Peaking Factor=	2.00	

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Area-1	Area-1	Area-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		200				
Area-2	Area-2	Area-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		200				
Area-4	Area-4	Area-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		200				
Area-3	Area-3	MH1293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		200				
Area-5	MH1293	MH1290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	675	420.3	1.17	1.13	48%
Area-6	MH1294	MH1290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	250	91.2	1.86	1.41	19%
	MH1290	MH1288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	600	542.3	1.92	1.73	39%
	MH1288	MH1287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	600	467.6	1.65	1.59	45%
	MH1287	MH1286			259.14				**3439**	19178	1.80	1.94	90		162	175	74.7	19353	2.67	164.3			238.9	0.70	600	513.7	1.82	1.74	47%
	MH1286	MH1285			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.87	600	572.7	2.03	1.88	42%
	MH1285	MH1284			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.85	600	566.1	2.00	1.86	42%
	MH1291	MH1284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	300	116.8	1.65	0.51	1%
	MH1284	MH1292			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	0.22	750	522.2	1.18	1.13	46%
	MH1292	MH1283			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	1.48	750	1354.4	3.07	2.30	18%
	MH1283	MH1282			259.14				**3657**	22835	1.95	5.04	90		176	455	75.6	23290	2.59	191.7			267.3	0.77	600	538.8	1.91	1.89	50%
	MH1282	MH1279			259.14					22835		5.04				455	75.6	23290	2.59	191.7			267.3	0.88	600	576.0	2.04	1.96	46%
	MH1279	MH1275			259.14					22835		5.04				455	75.6	23290	2.59	191.7			267.3	0.22	**675**	394.3	1.10	1.16	68%
	MH1262	MH1263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	250	54.8	1.12	0.55	5%
	MH1263	MH1265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	250	30.3	0.62	0.36	8%
	MH1265	MH1264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	250	59.5	1.21	0.63	5%
	MH1264	MH1266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	300	72.4	1.02	0.50	4%
	MH1266	MH1267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	300	73.6	1.04	0.51	4%
	MH1269	MH1268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	300	64.1	0.91	0.24	1%
	MH1268	MH1267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	250	35.7	0.73	0.19	1%
	MH1267	MH1270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	300	58.8	0.83	0.69	26%
	MH1270	MH1271							**3540**	3540	2.92	14.20	90		263	1279	4.1	4819	3.26	50.0			54.1	0.45	300	64.9	0.92	1.01	**83%**
	MH1271	MH1272							**2716**	6256	1.24	15.44	90		112	1391	4.4	7647	3.07	74.7			79.1	0.38	300	59.6	0.84	0.96	**133%**
	MH1272	MH1273								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.60	300	74.9	1.06	1.21	**106%**
	MH1273	MH1274								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.52	300	69.7	0.99	1.12	**113%**
	MH1274	MH1275								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.85	300	89.2	1.26	1.40	**89%**
	MH1275	MH1276			259.14					29091		20.48				1846	80.0	30937	2.46	242.6			322.6	0.66	**675**	682.9	1.91	1.83	47%
	MH1276	MH1277			259.14					29091		20.48				1846	80.0	30937	2.46	242.6			322.6	1.47	**675**	1019.2	2.85	2.48	32%
	MH1277	MH1280			259.14					29091	0.66	21.14	90		60	1906	80.2	30997	2.46	243.0			323.2	1.45	**675**	1012.2	2.83	2.46	32%
	MH1280	MH1278			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	1.67	**675**	1086.3	3.04	2.64	30%
	MH1278	MH1281			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.33	**675**	482.9	1.35	1.42	67%
	MH1281	MH1247			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	1.08	**675**	873.6	2.44	2.20	37%
	MH1247	MH1246			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.92	**675**	806.3	2.25	2.10	40%
	MH1246	MH1245			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.54	**675**	617.7	1.73	1.71	52%
	MH1245	MH1240			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	6.53	**675**	2148.0	6.00	4.32	15%
	MH1240	MH1239			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.89	**675**	793.0	2.22	2.06	41%
	MH1234	MH1235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	200	46.6	1.48	0.77	5%
	MH1235	MH1236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	200	23.0	0.73	0.59	25%
	MH1236	MH1237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	250	40.8	0.83	0.58	14%
	MH1237	MH1238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	300	65.6	0.93	0.59	10%
	MH1238	MH1239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	300	109.8	1.55	0.84	6%
	MH1239	MH1241			259.14					29091	0.96	26.51	90		87	2391	81.7	31482	2.46	246.2			327.9	0.29	**675**	452.7	1.26	1.35	72%

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 2A

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

DESIGN CRITERIA

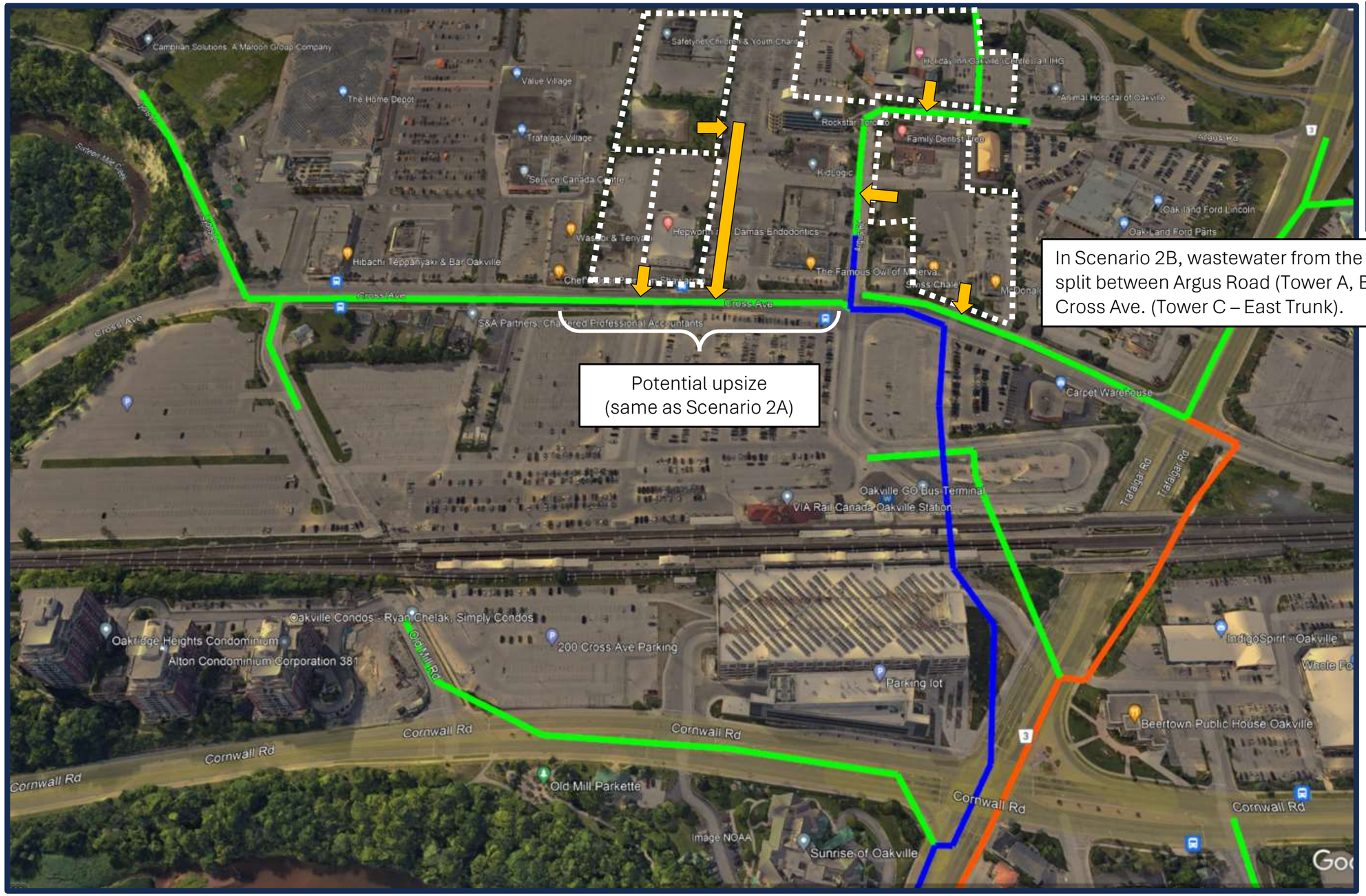
Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Avg. Domestic Flow = 275.0 l/c/d
Infiltration = 0.286 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 2.00

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
	MH1241	MH1242			259.14					29091		26.51				2391	81.7	31482	2.46	246.2			327.9	1.02	**675**	849.0	2.37	2.14	39%
	MH1298	MH1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	300	106.8	1.51	0.39	1%
	MH1299	MH1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	300	71.7	1.01	0.63	9%
	MH1303	MH1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	300	85.9	1.22	0.72	8%
	MH1302	MH1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	300	54.7	0.77	0.58	18%
	MH1301	MH1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	300	65.6	0.93	0.68	16%
	MH1297	MH1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	250	30.9	0.63	0.57	38%
	MH1296	MH1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	200	20.7	0.66	0.50	18%
	MH1295	MH1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	300	97.7	1.38	1.05	19%
	MH1300	MH1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	300	72.4	1.02	0.83	25%
	MH1261	MH1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	300	103.7	1.47	1.10	18%
	MH1258	MH1257									2.62	2.62	90		236	236	0.7	236	4.00	3.0			3.8	0.58	250	45.3	0.92	0.54	8%
	MH1257	MH1256										2.62				236	0.7	236	4.00	3.0			3.8	0.69	300	80.3	1.14	0.56	5%
	MH1256	MH1260										2.62				236	0.7	236	4.00	3.0			3.8	1.81	300	130.1	1.84	0.77	3%
	MH1260	MH1255										2.62				236	0.7	236	4.00	3.0			3.8	0.26	300	49.3	0.70	0.41	8%
	MH1255	MH1254										16.05				1447	4.6	1447	3.69	17.0			21.6	0.15	**450**	110.4	0.69	0.53	20%
	MH1254	MH1253									0.35	16.40	90		32	1479	4.7	1479	3.68	17.3			22.0	0.48	**450**	197.5	1.24	0.82	11%
	MH1253	MH1259										16.40				1479	4.7	1479	3.68	17.3			22.0	0.50	**450**	201.6	1.27	0.84	11%
	MH1259	MH1249									1.20	17.60	90		108	1587	5.0	1587	3.66	18.5			23.5	0.46	**450**	193.4	1.22	0.81	12%
	MH1249	MH1248										17.60				1587	5.0	1587	3.66	18.5			23.5	0.53	**450**	207.6	1.31	0.86	11%
	MH1252	MH1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	200	20.7	0.66	0.26	2%
	MH1251	MH1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	200	52.5	1.67	0.58	2%
	MH1250	MH1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	200	25.4	0.81	0.36	4%
	MH1248	MH1244										18.26				1647	5.2	1647	3.65	19.1			24.4	0.62	**450**	224.5	1.41	0.93	11%
	MH1244	MH1243										18.26				1647	5.2	1647	3.65	19.1			24.4	0.44	**450**	189.1	1.19	0.82	13%
	MH1243	MH1242										18.26				1647	5.2	1647	3.65	19.1			24.4	2.39	**450**	440.8	2.77	1.50	6%
	MH1242	MHX			259.14					29091		44.77				4038	86.9	33129	2.44	256.8			343.7	0.64	**675**	672.5	1.88	1.86	51%

Scenario 2B: Trunk Sewer Upgrades Complete, All Distrikt Developments Connected (Option 2)



Results:

In this Scenario, all Distrikt developments connect to the GO Station Trunk system (West Trunk), except for Tower C on the 587 Argus Road property, which connects into the Cross Ave sewer (east of Argus) and the Trafalgar Road trunk (East Trunk).

Similar to Scenario 2A, there are no trunk sewer capacity constraints identified.

Excluding the 300 mm pipe, no sewer component exceeds 70% full.

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 2B

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

DESIGN CRITERIA

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s
Avg. Domestic Flow = 275.0 l/c/d
Infiltration = 0.286 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 2.00

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Area-1	Area-1	Area-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		200				
Area-2	Area-2	Area-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		200				
Area-4	Area-4	Area-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		200				
Area-3	Area-3	MH1293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		200				
Area-5	MH1293	MH1290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	675	420.3	1.17	1.13	48%
Area-6	MH1294	MH1290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	250	91.2	1.86	1.41	19%
	MH1290	MH1288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	600	542.3	1.92	1.73	39%
	MH1288	MH1287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	600	467.6	1.65	1.59	45%
	MH1287	MH1286			259.14				**3439**	19178	1.80	1.94	90		162	175	74.7	19353	2.67	164.3			238.9	0.70	600	513.7	1.82	1.74	47%
	MH1286	MH1285			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.87	600	572.7	2.03	1.88	42%
	MH1285	MH1284			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.85	600	566.1	2.00	1.86	42%
	MH1291	MH1284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	300	116.8	1.65	0.51	1%
	MH1284	MH1292			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	0.22	750	522.2	1.18	1.13	46%
	MH1292	MH1283			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	1.48	750	1354.4	3.07	2.30	18%
	MH1283	MH1282			259.14				**1989**	21167	1.95	5.04	90		176	455	75.6	21622	2.62	180.2			255.8	0.77	600	538.8	1.91	1.83	47%
	MH1282	MH1279			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.88	600	576.0	2.04	1.89	44%
	MH1279	MH1275			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.22	**675**	394.3	1.10	1.16	65%
	MH1262	MH1263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	250	54.8	1.12	0.55	5%
	MH1263	MH1265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	250	30.3	0.62	0.36	8%
	MH1265	MH1264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	250	59.5	1.21	0.63	5%
	MH1264	MH1266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	300	72.4	1.02	0.50	4%
	MH1266	MH1267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	300	73.6	1.04	0.51	4%
	MH1269	MH1268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	300	64.1	0.91	0.24	1%
	MH1268	MH1267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	250	35.7	0.73	0.19	1%
	MH1267	MH1270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	300	58.8	0.83	0.69	26%
	MH1270	MH1271							**3540**	3540	2.92	14.20	90		263	1279	4.1	4819	3.26	50.0			54.1	0.45	300	64.9	0.92	1.01	**83%**
	MH1271	MH1272							**2716**	6256	1.24	15.44	90		112	1391	4.4	7647	3.07	74.7			79.1	0.38	300	59.6	0.84	0.96	**133%**
	MH1272	MH1273								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.60	300	74.9	1.06	1.21	**106%**
	MH1273	MH1274								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.52	300	69.7	0.99	1.12	**113%**
	MH1274	MH1275								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.85	300	89.2	1.26	1.40	**89%**
	MH1275	MH1276			259.14					27423		20.48				1846	80.0	29269	2.49	231.8			311.7	0.66	**675**	682.9	1.91	1.83	46%
	MH1276	MH1277			259.14					27423		20.48				1846	80.0	29269	2.49	231.8			311.7	1.47	**675**	1019.2	2.85	2.48	31%
	MH1277	MH1280			259.14					27423	0.66	21.14	90		60	1906	80.2	29329	2.49	232.2			312.3	1.45	**675**	1012.2	2.83	2.46	31%
	MH1280	MH1278			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	1.67	**675**	1086.3	3.04	2.58	29%
	MH1278	MH1281			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.33	**675**	482.9	1.35	1.42	65%
	MH1281	MH1247			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	1.08	**675**	873.6	2.44	2.20	36%
	MH1247	MH1246			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.92	**675**	806.3	2.25	2.03	39%
	MH1246	MH1245			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.54	**675**	617.7	1.73	1.71	51%
	MH1245	MH1240			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	6.53	**675**	2148.0	6.00	4.32	15%
	MH1240	MH1239			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.89	**675**	793.0	2.22	1.99	39%
	MH1234	MH1235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	200	46.6	1.48	0.77	5%
	MH1235	MH1236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	200	23.0	0.73	0.59	25%
	MH1236	MH1237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	250	40.8	0.83	0.58	14%
	MH1237	MH1238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	300	65.6	0.93	0.59	10%
	MH1238	MH1239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	300	109.8	1.55	0.84	6%
	MH1239	MH1241			259.14					27423	0.96	26.51	90		87	2391	81.7	29814	2.48	235.3			317.0	0.29	**675**	452.7	1.26	1.35	70%

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 2B

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

DESIGN CRITERIA

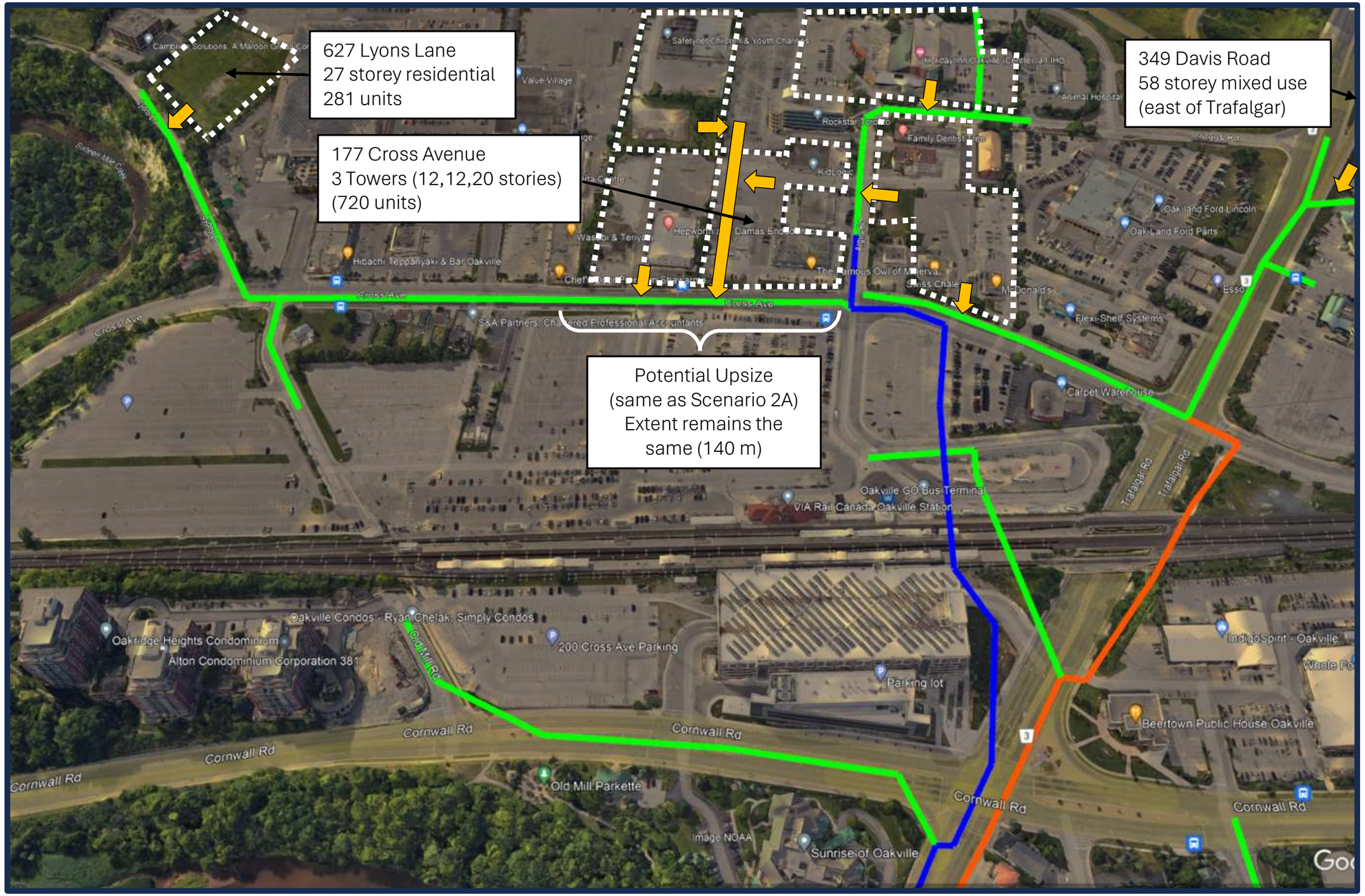
Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Avg. Domestic Flow = 275.0 l/c/d
Infiltration = 0.286 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 2.00

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
	MH1241	MH1242			259.14					27423		26.51				2391	81.7	29814	2.48	235.3			317.0	1.02	**675**	849.0	2.37	2.14	37%
	MH1298	MH1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	300	106.8	1.51	0.39	1%
	MH1299	MH1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	300	71.7	1.01	0.63	9%
	MH1303	MH1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	300	85.9	1.22	0.72	8%
	MH1302	MH1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	300	54.7	0.77	0.58	18%
	MH1301	MH1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	300	65.6	0.93	0.68	16%
	MH1297	MH1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	250	30.9	0.63	0.57	38%
	MH1296	MH1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	200	20.7	0.66	0.50	18%
	MH1295	MH1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	300	97.7	1.38	1.05	19%
	MH1300	MH1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	300	72.4	1.02	0.83	25%
	MH1261	MH1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	300	103.7	1.47	1.10	18%
	MH1258	MH1257							**1668**	1668	2.62	2.62	90		236	236	0.7	1904	3.60	21.8			22.6	0.58	250	45.3	0.92	0.91	50%
	MH1257	MH1256								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.69	300	80.3	1.14	0.97	28%
	MH1256	MH1260								1668		2.62				236	0.7	1904	3.60	21.8			22.6	1.81	300	130.1	1.84	1.36	17%
	MH1260	MH1255								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.26	300	49.3	0.70	0.67	46%
	MH1255	MH1254								1668		16.05				1447	4.6	3115	3.43	34.0			38.6	0.15	**450**	110.4	0.69	0.62	35%
	MH1254	MH1253								1668	0.35	16.40	90		32	1479	4.7	3147	3.42	34.3			39.0	0.48	**450**	197.5	1.24	0.96	20%
	MH1253	MH1259								1668		16.40				1479	4.7	3147	3.42	34.3			39.0	0.50	**450**	201.6	1.27	0.96	19%
	MH1259	MH1249								1668	1.20	17.60	90		108	1587	5.0	3255	3.41	35.3			40.4	0.46	**450**	193.4	1.22	0.94	21%
	MH1249	MH1248								1668		17.60				1587	5.0	3255	3.41	35.3			40.4	0.53	**450**	207.6	1.31	0.99	19%
	MH1252	MH1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	200	20.7	0.66	0.26	2%
	MH1251	MH1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	200	52.5	1.67	0.58	2%
	MH1250	MH1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	200	25.4	0.81	0.36	4%
	MH1248	MH1244								1668		18.26				1647	5.2	3315	3.41	35.9			41.2	0.62	**450**	224.5	1.41	1.06	18%
	MH1244	MH1243								1668		18.26				1647	5.2	3315	3.41	35.9			41.2	0.44	**450**	189.1	1.19	0.94	22%
	MH1243	MH1242								1668		18.26				1647	5.2	3315	3.41	35.9			41.2	2.39	**450**	440.8	2.77	1.72	9%
	MH1242	MHX			259.14					29091		44.77				4038	86.9	33129	2.44	256.8			343.7	0.64	**675**	672.5	1.88	1.86	51%

Scenario 3: Trunk Sewer Upgrades Complete, All Current Midtown Development Applications Connected



Results:

In this Scenario, wastewater flows from current Midtown Development Applications are added to the system.

There are no trunk sewer capacity constraints noted in the upgraded pipes. Excluding the 300 mm pipe on Cross Ave., no sewer component exceeds 73% full.

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 3

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

DESIGN CRITERIA

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s
Avg. Domestic Flow = 275.0 l/c/d
Infiltration = 0.286 l/s/ha
Max. Peaking Factor = 4.00
Min. Peaking Factor= 2.00

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Area-1	Area-1	Area-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		200				
Area-2	Area-2	Area-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		200				
Area-4	Area-4	Area-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		200				
Area-3	Area-3	MH1293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		200				
Area-5	MH1293	MH1290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	675	420.3	1.17	1.13	48%
Area-6	MH1294	MH1290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	250	91.2	1.86	1.41	19%
	MH1290	MH1288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	600	542.3	1.92	1.73	39%
	MH1288	MH1287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	600	467.6	1.65	1.59	45%
	MH1287	MH1286			259.14				**3439**	19178	1.80	1.94	90		162	175	74.7	19353	2.67	164.3			238.9	0.70	600	513.7	1.82	1.74	47%
	MH1286	MH1285			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.87	600	572.7	2.03	1.88	42%
	MH1285	MH1284			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.85	600	566.1	2.00	1.86	42%
	MH1291	MH1284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	300	116.8	1.65	0.51	1%
	MH1284	MH1292			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	0.22	750	522.2	1.18	1.13	46%
	MH1292	MH1283			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	1.48	750	1354.4	3.07	2.30	18%
	MH1283	MH1282			259.14				**1989**	21167	1.95	5.04	90		176	455	75.6	21622	2.62	180.2			255.8	0.77	600	538.8	1.91	1.83	47%
	MH1282	MH1279			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.88	600	576.0	2.04	1.89	44%
	MH1279	MH1275			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.22	**675**	394.3	1.10	1.16	65%
	MH1262	MH1263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	250	54.8	1.12	0.55	5%
	MH1263	MH1265							**515**	515		1.74				157	0.5	672	3.90	8.4			8.8	0.26	250	30.3	0.62	0.53	29%
	MH1265	MH1264								515	0.50	2.24	90		45	202	0.6	717	3.89	8.9			9.5	1.00	250	59.5	1.21	0.88	16%
	MH1264	MH1266								515		2.24				202	0.6	717	3.89	8.9			9.5	0.56	300	72.4	1.02	0.71	13%
	MH1266	MH1267								515		2.24				202	0.6	717	3.89	8.9			9.5	0.58	300	73.6	1.04	0.72	13%
	MH1269	MH1268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	300	64.1	0.91	0.24	1%
	MH1268	MH1267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	250	35.7	0.73	0.19	1%
	MH1267	MH1270								515	8.74	11.28	90		787	1016	3.2	1531	3.67	17.9			21.1	0.37	300	58.8	0.83	0.75	36%
	MH1270	MH1271							**3540**	4055	2.92	14.20	90		263	1279	4.1	5334	3.22	54.6			58.7	0.45	300	64.9	0.92	1.04	**91%**
	MH1271	MH1272							**2716**	6771	1.24	15.44	90		112	1391	4.4	8162	3.04	79.0			83.4	0.38	300	59.6	0.84	0.96	**140%**
	MH1272	MH1273								6771		15.44				1391	4.4	8162	3.04	79.0			83.4	0.60	300	74.9	1.06	1.21	**111%**
	MH1273	MH1274							**1300**	8071		15.44				1391	4.4	9462	2.98	89.7			94.1	0.52	300	69.7	0.99	1.12	**135%**
	MH1274	MH1275								8071		15.44				1391	4.4	9462	2.98	89.7			94.1	0.85	300	89.2	1.26	1.44	**106%**
	MH1275	MH1276			259.14					29238		20.48				1846	80.0	31084	2.46	243.6			323.6	0.66	**675**	682.9	1.91	1.83	47%
	MH1276	MH1277			259.14					29238		20.48				1846	80.0	31084	2.46	243.6			323.6	1.47	**675**	1019.2	2.85	2.48	32%
	MH1277	MH1280			259.14					29238	0.66	21.14	90		60	1906	80.2	31144	2.46	244.0			324.1	1.45	**675**	1012.2	2.83	2.46	32%
	MH1280	MH1278			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	1.67	**675**	1086.3	3.04	2.64	30%
	MH1278	MH1281			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.33	**675**	482.9	1.35	1.42	67%
	MH1281	MH1247			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	1.08	**675**	873.6	2.44	2.20	37%
	MH1247	MH1246			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.92	**675**	806.3	2.25	2.10	40%
	MH1246	MH1245			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.54	**675**	617.7	1.73	1.71	52%
	MH1245	MH1240			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	6.53	**675**	2148.0	6.00	4.32	15%
	MH1240	MH1239			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.89	**675**	793.0	2.22	2.06	41%
	MH1234	MH1235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	200	46.6	1.48	0.77	5%
	MH1235	MH1236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	200	23.0	0.73	0.59	25%
	MH1236	MH1237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	250	40.8	0.83	0.58	14%
	MH1237	MH1238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	300	65.6	0.93	0.59	10%
	MH1238	MH1239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	300	109.8	1.55	0.84	6%
	MH1239	MH1241			259.14					29238	0.96	26.51	90		87	2391	81.7	31629	2.45	247.1			328.8	0.29	**675**	452.7	1.26	1.35	73%

URBANTECH®

SANITARY SEWER DESIGN SHEET (Midtown)

SCENARIO 3

TOWN OF OAKVILLE

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

DESIGN CRITERIA

Min Diameter =	200	mm	Avg. Domestic Flow =	275.0	l/c/d
Mannings 'n'=	0.013		Infiltration =	0.286	l/s/ha
Min. Velocity =	0.60	m/s	Max. Peaking Factor =	4.00	
Max. Velocity =	3.00	m/s	Min. Peaking Factor=	2.00	

NOMINAL PIPE SIZE USED

STREET	FROM MH	TO MH	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
				AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/Unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (P/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
	MH1241	MH1242			259.14					29238		26.51				2391	81.7	31629	2.45	247.1			328.8	1.02	675	849.0	2.37	2.14	39%
	MH1298	MH1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	300	106.8	1.51	0.39	1%
	MH1299	MH1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	300	71.7	1.01	0.63	9%
	MH1303	MH1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	300	85.9	1.22	0.72	8%
	MH1302	MH1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	300	54.7	0.77	0.58	18%
	MH1301	MH1297							720	720	0.45	7.56	90		41	682	2.2	1402	3.70	16.5			18.7	0.46	300	65.6	0.93	0.79	28%
	MH1297	MH1295								720		8.31				750	2.4	1470	3.69	17.2			19.6	0.27	250	30.9	0.63	0.65	64%
	MH1296	MH1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	200	20.7	0.66	0.50	18%
	MH1295	MH1300								720	2.51	13.43	90		226	1211	3.8	1931	3.60	22.1			26.0	1.02	300	97.7	1.38	1.15	27%
	MH1300	MH1261								720		13.43				1211	3.8	1931	3.60	22.1			26.0	0.56	300	72.4	1.02	0.92	36%
	MH1261	MH1255								720		13.43				1211	3.8	1931	3.60	22.1			26.0	1.15	300	103.7	1.47	1.19	25%
	MH1258	MH1257							1668	1668	2.62	2.62	90		236	236	0.7	1904	3.60	21.8			22.6	0.58	250	45.3	0.92	0.91	50%
	MH1257	MH1256								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.69	300	80.3	1.14	0.97	28%
	MH1256	MH1260								1668		2.62				236	0.7	1904	3.60	21.8			22.6	1.81	300	130.1	1.84	1.36	17%
	MH1260	MH1255								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.26	300	49.3	0.70	0.67	46%
	MH1255	MH1254								2388		16.05				1447	4.6	3835	3.35	40.9			45.5	0.15	450	110.4	0.69	0.65	41%
	MH1254	MH1253								2388	0.35	16.40	90		32	1479	4.7	3867	3.35	41.2			45.9	0.48	450	197.5	1.24	0.98	23%
	MH1253	MH1259								2388		16.40				1479	4.7	3867	3.35	41.2			45.9	0.50	450	201.6	1.27	1.00	23%
	MH1259	MH1249								2388	1.20	17.60	90		108	1587	5.0	3975	3.34	42.2			47.2	0.46	450	193.4	1.22	0.98	24%
	MH1249	MH1248								2388		17.60				1587	5.0	3975	3.34	42.2			47.2	0.53	450	207.6	1.31	1.03	23%
	MH1252	MH1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	200	20.7	0.66	0.26	2%
	MH1251	MH1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	200	52.5	1.67	0.58	2%
	MH1250	MH1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	200	25.4	0.81	0.36	4%
	MH1248	MH1244								2388		18.26				1647	5.2	4035	3.33	42.8			48.0	0.62	450	224.5	1.41	1.09	21%
	MH1244	MH1243								2388		18.26				1647	5.2	4035	3.33	42.8			48.0	0.44	450	189.1	1.19	0.96	25%
	MH1243	MH1242								2388		18.26				1647	5.2	4035	3.33	42.8			48.0	2.39	450	440.8	2.77	1.83	11%
	MH1242	MHX			259.14					31626		44.77				4038	86.9	35664	2.40	272.9			359.8	0.64	675	672.5	1.88	1.86	54%

APPENDIX 'F'

TRAFALGAR ENGINEERING LTD.

COMPOSITE RUNOFF COEFFICIENT

Project: 590 Argus Road - Phase 1 **Project No.:** 1798
Desc: OPA/RZA TOC Submission **Prepared By:** MW
Checked By: NAS

Pre-Development Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
Existing building and parking	8600	0.90	7740	100%	8600
			-		-
			-		-
			-		-
Totals	**8600**		**7740**		**8600**
		C = 'AC'/'A'=	**0.90**	**%I = 'AI'/'A' =**	**100%**

External Drainage Area Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
			-		-
			-		-
			-		-
Totals	**-**		**-**		**-**
		C = 'AC'/'A'=	**-**	**%I = 'AI'/'A' =**	**-**

Post-Development Controlled Area Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
Development Site	8600	0.90	7740	100%	8600
			-		-
Totals	**8600**		**7740**		**8600**
		C = 'AC'/'A'=	**0.90**	**%I = 'AI'/'A' =**	**100%**

Post-Development Uncontrolled Area Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
			-	50%	-
			-		-
			-		-
			-		-
			-		-
Totals	**-**		**-**		**-**
		C = 'AC'/'A'=	**-**	**%I = 'AI'/'A' =**	**-**

TRAFALGAR ENGINEERING LTD.

RATIONAL METHOD FLOWS

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 1 **Project No.:** 1798
Desc: OPA/RZA TOC Submission **Prepared By:** MW
Checked By: NAS

Pre-Development Parameters

	Site	External	Total
'C'	0.900	0.000	0.900
'A' (ha)	0.860	0.000	0.860
'AC'	0.774	0.000	0.774

Pre-Development Flow

Return	Intensity (mm/hr)	Site Flow (L/s)	External Flow (L/s)	Total Flow (L/s)
2-yr	82.2	177	0	177
5-yr	114.2	246	0	246
10-yr	134.8	290	0	290
25-yr	162.2	384	0	384
50-yr	182.1	435	0	435
100-yr	200.8	480	0	480

Flows have been adjusted using 25-, 50-, and 100-yr factors of 1.1, 1.2, and 1.25 (To a maximum C of 1.0)

Post-Development Parameters

	Controlled	Uncontrolled	External	Total
'C'	0.900	0.000	0.000	0.900
'A' (ha)	0.860	0.000	0.000	0.860
'AC'	0.774	0.000	0.000	0.774

Post-Development Flow

Return	Intensity (mm/hr)	Peak Inflow (L/s)	Uncontrolled Flow (L/s)	Peak Rooftop Flow (L/s)	External Flow (L/s)	Total Flow (L/s)
2-yr	82.2	177	0	0	0	177
5-yr	114.2	246	0	0	0	246
10-yr	134.8	290	0	0	0	290
25-yr	162.2	384	0	0	0	384
50-yr	182.1	435	0	0	0	435
100-yr	200.8	480	0	0	0	480

Flows have been adjusted using 25-, 50-, and 100-yr factors of 1.1, 1.2, and 1.25 (To a maximum C of 1.0)

Post-to-Pre Comparison*

Return	Pre-Dev Total (L/s)	Post-Dev Total (L/s)	Percent Change
5-yr	246	246	0%
10-yr	290	290	0%
25-yr	384	384	0%
50-yr	435	435	0%
100-yr	480	480	0%

*Storage may be required, refer to Modified Rational Method Storage Calculation and Summary sheets if applicable

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 1
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.8600
Runoff Coefficient	0.90
TC (min)	10
Control Level	2-Yr

Pre-Development Peak Intensity: 82.2 mm/hr
Pre-Development Peak Discharge: 0.177 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.8600	
Runoff Coefficient	0.90	(1.00 Adj. Factor)
Time of Concentration	10	
Control Level	2-Yr	

Post-Development Peak Intensity: 82.2 mm/hr
Post-Development Peak Discharge: 0.177 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	82.18	0.177	0.000	0.060	106.0	36.0	70.0
15	64.96	0.140	0.000	0.060	125.7	45.0	80.7
20	54.15	0.116	0.000	0.060	139.7	54.0	85.7
25	46.68	0.100	0.000	0.060	150.6	63.0	87.6
30	41.19	0.089	0.000	0.060	159.4	72.0	87.4
35	36.95	0.079	0.000	0.060	166.8	81.0	85.8
40	33.58	0.072	0.000	0.060	173.3	90.0	83.3
45	30.83	0.066	0.000	0.060	179.0	99.0	80.0
50	28.54	0.061	0.000	0.060	184.1	108.0	76.1
55	26.59	0.057	0.000	0.060	188.7	117.0	71.7
60	24.92	0.054	0.000	0.060	192.9	126.0	66.9
90	18.33	0.039	0.000	0.060	212.8	180.0	32.8
120	14.68	0.032	0.000	0.060	227.2	234.0	0

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 1
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.8600
Runoff Coefficient	0.90
TC (min)	10
Control Level	5-Yr

Pre-Development Peak Intensity: 114.2 mm/hr
Pre-Development Peak Discharge: 0.246 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.8600	
Runoff Coefficient	0.90	(1.00 Adj. Factor)
Time of Concentration	10	
Control Level	5-Yr	

Post-Development Peak Intensity: 114.2 mm/hr
Post-Development Peak Discharge: 0.246 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	114.21	0.246	0.000	0.060	147.3	36.0	111.3
15	90.59	0.195	0.000	0.060	175.3	45.0	130.3
20	75.54	0.162	0.000	0.060	194.9	54.0	140.9
25	65.06	0.140	0.000	0.060	209.8	63.0	146.8
30	57.31	0.123	0.000	0.060	221.8	72.0	149.8
35	51.33	0.110	0.000	0.060	231.8	81.0	150.8
40	46.57	0.100	0.000	0.060	240.3	90.0	150.3
45	42.67	0.092	0.000	0.060	247.7	99.0	148.7
50	39.43	0.085	0.000	0.060	254.3	108.0	146.3
55	36.67	0.079	0.000	0.060	260.2	117.0	143.2
60	34.31	0.074	0.000	0.060	265.6	126.0	139.6
90	25.00	0.054	0.000	0.060	290.2	180.0	110.2
120	19.87	0.043	0.000	0.060	307.6	234.0	73.6

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 1
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.8600
Runoff Coefficient	0.90
TC (min)	10
Control Level	10-Yr

Pre-Development Peak Intensity: 134.8 mm/hr
Pre-Development Peak Discharge: 0.29 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.8600	
Runoff Coefficient	0.90	(1.00 Adj. Factor)
Time of Concentration	10	
Control Level	10-Yr	

Post-Development Peak Intensity: 134.8 mm/hr
Post-Development Peak Discharge: 0.29 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	134.79	0.290	0.000	0.060	173.9	36.0	137.9
15	106.76	0.230	0.000	0.060	206.6	45.0	161.6
20	88.94	0.191	0.000	0.060	229.5	54.0	175.5
25	76.53	0.165	0.000	0.060	246.8	63.0	183.8
30	67.37	0.145	0.000	0.060	260.7	72.0	188.7
35	60.30	0.130	0.000	0.060	272.2	81.0	191.2
40	54.67	0.118	0.000	0.060	282.1	90.0	192.1
45	50.07	0.108	0.000	0.060	290.6	99.0	191.6
50	46.24	0.099	0.000	0.060	298.2	108.0	190.2
55	42.99	0.092	0.000	0.060	305.0	117.0	188.0
60	40.20	0.086	0.000	0.060	311.2	126.0	185.2
90	29.24	0.063	0.000	0.060	339.4	180.0	159.4
120	23.21	0.050	0.000	0.060	359.2	234.0	125.2
240	13.15	0.028	0.000	0.060	407.1	450.0	0

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 1
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.8600
Runoff Coefficient	0.99
TC (min)	10
Control Level	25-Yr

Pre-Development Peak Intensity: 162.2 mm/hr
Pre-Development Peak Discharge: 0.384 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.8600	
Runoff Coefficient	0.99	(1.10 Adj. Factor)
Time of Concentration	10	
Control Level	25-Yr	

Post-Development Peak Intensity: 162.2 mm/hr
Post-Development Peak Discharge: 0.384 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	162.17	0.384	0.000	0.060	230.1	36.0	194.1
15	128.00	0.303	0.000	0.060	272.4	45.0	227.4
20	106.39	0.252	0.000	0.060	301.9	54.0	247.9
25	91.40	0.216	0.000	0.060	324.3	63.0	261.3
30	80.36	0.190	0.000	0.060	342.1	72.0	270.1
35	71.85	0.170	0.000	0.060	356.9	81.0	275.9
40	65.09	0.154	0.000	0.060	369.5	90.0	279.5
45	59.58	0.141	0.000	0.060	380.4	99.0	281.4
50	54.99	0.130	0.000	0.060	390.1	108.0	282.1
55	51.10	0.121	0.000	0.060	398.8	117.0	281.8
60	47.77	0.113	0.000	0.060	406.7	126.0	280.7
90	34.67	0.082	0.000	0.060	442.8	180.0	262.8
120	27.48	0.065	0.000	0.060	468.0	234.0	234.0
240	15.53	0.037	0.000	0.060	529.0	450.0	79.0
270	14.08	0.033	0.000	0.060	539.5	504.0	35.5
360	11.07	0.026	0.000	0.060	565.6	666.0	0

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 1
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.8600
Runoff Coefficient	1.00
TC (min)	10
Control Level	50-Yr

Pre-Development Peak Intensity: 182.1 mm/hr
Pre-Development Peak Discharge: 0.435 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.8600	
Runoff Coefficient	1.00	(1.20 Adj. Factor)
Time of Concentration	10	
Control Level	50-Yr	

Post-Development Peak Intensity: 182.1 mm/hr
Post-Development Peak Discharge: 0.435 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	182.06	0.435	0.000	0.060	261.0	36.0	225.0
15	143.68	0.343	0.000	0.060	308.9	45.0	263.9
20	119.36	0.285	0.000	0.060	342.2	54.0	288.2
25	102.47	0.245	0.000	0.060	367.2	63.0	304.2
30	90.02	0.215	0.000	0.060	387.1	72.0	315.1
35	80.44	0.192	0.000	0.060	403.5	81.0	322.5
40	72.82	0.174	0.000	0.060	417.5	90.0	327.5
45	66.61	0.159	0.000	0.060	429.6	99.0	330.6
50	61.43	0.147	0.000	0.060	440.3	108.0	332.3
55	57.06	0.136	0.000	0.060	449.8	117.0	332.8
60	53.30	0.127	0.000	0.060	458.4	126.0	332.4
90	38.57	0.092	0.000	0.060	497.6	180.0	317.6
120	30.51	0.073	0.000	0.060	524.8	234.0	290.8
240	17.14	0.041	0.000	0.060	589.6	450.0	139.6
270	15.52	0.037	0.000	0.060	600.6	504.0	96.6
360	12.17	0.029	0.000	0.060	628.0	666.0	0

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 1
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.8600
Runoff Coefficient	1.00
TC (min)	10
Control Level	100-Yr

Pre-Development Peak Intensity: 200.8 mm/hr
Pre-Development Peak Discharge: 0.48 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.8600	
Runoff Coefficient	1.00	(1.25 Adj. Factor)
Time of Concentration	10	
Control Level	100-Yr	

Post-Development Peak Intensity: 200.8 mm/hr
Post-Development Peak Discharge: 0.48 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	200.80	0.480	0.000	0.060	287.8	36.0	251.8
15	158.27	0.378	0.000	0.060	340.3	45.0	295.3
20	131.37	0.314	0.000	0.060	376.6	54.0	322.6
25	112.72	0.269	0.000	0.060	403.9	63.0	340.9
30	98.99	0.236	0.000	0.060	425.7	72.0	353.7
35	88.43	0.211	0.000	0.060	443.6	81.0	362.6
40	80.03	0.191	0.000	0.060	458.8	90.0	368.8
45	73.19	0.175	0.000	0.060	472.0	99.0	373.0
50	67.49	0.161	0.000	0.060	483.7	108.0	375.7
55	62.68	0.150	0.000	0.060	494.1	117.0	377.1
60	58.55	0.140	0.000	0.060	503.5	126.0	377.5
90	42.35	0.101	0.000	0.060	546.3	180.0	366.3
120	33.49	0.080	0.000	0.060	576.0	234.0	342.0
240	18.81	0.045	0.000	0.060	646.9	450.0	196.9
270	17.03	0.041	0.000	0.060	659.1	504.0	155.1
360	13.35	0.032	0.000	0.060	689.0	666.0	23.0
720	7.40	0.018	0.000	0.060	763.8	1314.0	0

TRAFALGAR ENGINEERING LTD.

COMPOSITE RUNOFF COEFFICIENT

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
Existing building and parking	4600	0.90	4140	100%	4600
			-		-
Totals	**4600**		**4140**		**4600**
		C = 'AC'/'A'= 0.90		**%I = 'AI'/'A' = 100%**	

External Drainage Area Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
			-		-
			-		-
			-		-
Totals	**-**		**-**		**-**
		C = 'AC'/'A'= -		**%I = 'AI'/'A' = -**	

Post-Development Controlled Area Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
Development Site	4600	0.90	4140	100%	4600
			-		-
Totals	**4600**		**4140**		**4600**
		C = 'AC'/'A'= 0.90		**%I = 'AI'/'A' = 100%**	

Post-Development Uncontrolled Area Composite Runoff Coefficient

Surface	'A' (m^2)	'C'	'AC'	% Imp	'AI'
			-	50%	-
			-		-
			-		-
			-		-
			-		-
Totals	**-**		**-**		**-**
		C = 'AC'/'A'= -		**%I = 'AI'/'A' = -**	

TRAFALGAR ENGINEERING LTD.

RATIONAL METHOD FLOWS

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development Parameters

	Site	External	Total
'C'	0.900	0.000	0.900
'A' (ha)	0.460	0.000	0.460
'AC'	0.414	0.000	0.414

Pre-Development Flow

Return	Intensity (mm/hr)	Site Flow (L/s)	External Flow (L/s)	Total Flow (L/s)
2-yr	82.2	95	0	95
5-yr	114.2	131	0	131
10-yr	134.8	155	0	155
25-yr	162.2	205	0	205
50-yr	182.1	233	0	233
100-yr	200.8	257	0	257

Flows have been adjusted using 25-, 50-, and 100-yr factors of 1.1, 1.2, and 1.25 (To a maximum C of 1.0)

Post-Development Parameters

	Controlled	Uncontrolled	External	Total
'C'	0.900	0.000	0.000	0.900
'A' (ha)	0.460	0.000	0.000	0.460
'AC'	0.414	0.000	0.000	0.414

Post-Development Flow

Return	Intensity (mm/hr)	Peak Inflow (L/s)	Uncontrolled Flow (L/s)	Peak Rooftop Flow (L/s)	External Flow (L/s)	Total Flow (L/s)
2-yr	82.2	95	0	0	0	95
5-yr	114.2	131	0	0	0	131
10-yr	134.8	155	0	0	0	155
25-yr	162.2	205	0	0	0	205
50-yr	182.1	233	0	0	0	233
100-yr	200.8	257	0	0	0	257

Flows have been adjusted using 25-, 50-, and 100-yr factors of 1.1, 1.2, and 1.25 (To a maximum C of 1.0)

Post-to-Pre Comparison*

Return	Pre-Dev Total (L/s)	Post-Dev Total (L/s)	Percent Change
2-yr	95	95	0%
5-yr	131	131	0%
10-yr	155	155	0%
25-yr	205	205	0%
50-yr	233	233	0%
100-yr	257	257	0%

*Storage may be required, refer to Modified Rational Method Storage Calculation and Summary sheets if applicable

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.4600
Runoff Coefficient	0.90
TC (min)	10
Control Level	2-Yr

Pre-Development Peak Intensity: 82.2 mm/hr
Pre-Development Peak Discharge: 0.095 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.4600	
Runoff Coefficient	0.90	(1.00 Adj. Factor)
Time of Concentration	10	
Control Level	2-Yr	

Post-Development Peak Intensity: 82.2 mm/hr
Post-Development Peak Discharge: 0.095 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	82.18	0.095	0.000	0.060	56.7	36.0	20.7
15	64.96	0.075	0.000	0.060	67.2	45.0	22.2
20	54.15	0.062	0.000	0.060	74.7	54.0	20.7
25	46.68	0.054	0.000	0.060	80.5	63.0	17.5
30	41.19	0.047	0.000	0.060	85.3	72.0	13.3
35	36.95	0.042	0.000	0.060	89.2	81.0	8.2
40	33.58	0.039	0.000	0.060	92.7	90.0	2.7
45	30.83	0.035	0.000	0.060	95.7	99.0	0

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.4600
Runoff Coefficient	0.90
TC (min)	10
Control Level	5-Yr

Pre-Development Peak Intensity: 114.2 mm/hr
Pre-Development Peak Discharge: 0.131 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.4600	
Runoff Coefficient	0.90	(1.00 Adj. Factor)
Time of Concentration	10	
Control Level	5-Yr	

Post-Development Peak Intensity: 114.2 mm/hr
Post-Development Peak Discharge: 0.131 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	114.21	0.131	0.000	0.060	78.8	36.0	42.8
15	90.59	0.104	0.000	0.060	93.8	45.0	48.8
20	75.54	0.087	0.000	0.060	104.2	54.0	50.2
25	65.06	0.075	0.000	0.060	112.2	63.0	49.2
30	57.31	0.066	0.000	0.060	118.6	72.0	46.6
35	51.33	0.059	0.000	0.060	124.0	81.0	43.0
40	46.57	0.054	0.000	0.060	128.5	90.0	38.5
45	42.67	0.049	0.000	0.060	132.5	99.0	33.5
50	39.43	0.045	0.000	0.060	136.0	108.0	28.0
55	36.67	0.042	0.000	0.060	139.2	117.0	22.2
60	34.31	0.039	0.000	0.060	142.0	126.0	16.0
90	25.00	0.029	0.000	0.060	155.2	180.0	0

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.4600
Runoff Coefficient	0.90
TC (min)	10
Control Level	10-Yr

Pre-Development Peak Intensity: 134.8 mm/hr
Pre-Development Peak Discharge: 0.155 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.4600	
Runoff Coefficient	0.90	(1.00 Adj. Factor)
Time of Concentration	10	
Control Level	10-Yr	

Post-Development Peak Intensity: 134.8 mm/hr
Post-Development Peak Discharge: 0.155 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	134.79	0.155	0.000	0.060	93.0	36.0	57.0
15	106.76	0.123	0.000	0.060	110.5	45.0	65.5
20	88.94	0.102	0.000	0.060	122.7	54.0	68.7
25	76.53	0.088	0.000	0.060	132.0	63.0	69.0
30	67.37	0.077	0.000	0.060	139.4	72.0	67.4
35	60.30	0.069	0.000	0.060	145.6	81.0	64.6
40	54.67	0.063	0.000	0.060	150.9	90.0	60.9
45	50.07	0.058	0.000	0.060	155.5	99.0	56.5
50	46.24	0.053	0.000	0.060	159.5	108.0	51.5
55	42.99	0.049	0.000	0.060	163.2	117.0	46.2
60	40.20	0.046	0.000	0.060	166.4	126.0	40.4
90	29.24	0.034	0.000	0.060	181.6	180.0	1.6
120	23.21	0.027	0.000	0.060	192.1	234.0	0

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.4600
Runoff Coefficient	0.99
TC (min)	10
Control Level	25-Yr

Pre-Development Peak Intensity: 162.2 mm/hr
Pre-Development Peak Discharge: 0.205 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.4600	
Runoff Coefficient	0.99	(1.10 Adj. Factor)
Time of Concentration	10	
Control Level	25-Yr	

Post-Development Peak Intensity: 162.2 mm/hr
Post-Development Peak Discharge: 0.205 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	162.17	0.205	0.000	0.060	123.1	36.0	87.1
15	128.00	0.162	0.000	0.060	145.7	45.0	100.7
20	106.39	0.135	0.000	0.060	161.5	54.0	107.5
25	91.40	0.116	0.000	0.060	173.4	63.0	110.4
30	80.36	0.102	0.000	0.060	183.0	72.0	111.0
35	71.85	0.091	0.000	0.060	190.9	81.0	109.9
40	65.09	0.082	0.000	0.060	197.6	90.0	107.6
45	59.58	0.075	0.000	0.060	203.5	99.0	104.5
50	54.99	0.070	0.000	0.060	208.7	108.0	100.7
55	51.10	0.065	0.000	0.060	213.3	117.0	96.3
60	47.77	0.060	0.000	0.060	217.5	126.0	91.5
90	34.67	0.044	0.000	0.060	236.8	180.0	56.8
120	27.48	0.035	0.000	0.060	250.3	234.0	16.3

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.4600
Runoff Coefficient	1.00
TC (min)	10
Control Level	50-Yr

Pre-Development Peak Intensity: 182.1 mm/hr
Pre-Development Peak Discharge: 0.233 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.4600	
Runoff Coefficient	1.00	(1.20 Adj. Factor)
Time of Concentration	10	
Control Level	50-Yr	

Post-Development Peak Intensity: 182.1 mm/hr
Post-Development Peak Discharge: 0.233 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	182.06	0.233	0.000	0.060	139.6	36.0	103.6
15	143.68	0.184	0.000	0.060	165.2	45.0	120.2
20	119.36	0.153	0.000	0.060	183.0	54.0	129.0
25	102.47	0.131	0.000	0.060	196.4	63.0	133.4
30	90.02	0.115	0.000	0.060	207.1	72.0	135.1
35	80.44	0.103	0.000	0.060	215.9	81.0	134.9
40	72.82	0.093	0.000	0.060	223.3	90.0	133.3
45	66.61	0.085	0.000	0.060	229.8	99.0	130.8
50	61.43	0.078	0.000	0.060	235.5	108.0	127.5
55	57.06	0.073	0.000	0.060	240.6	117.0	123.6
60	53.30	0.068	0.000	0.060	245.2	126.0	119.2
90	38.57	0.049	0.000	0.060	266.2	180.0	86.2
120	30.51	0.039	0.000	0.060	280.7	234.0	46.7

TRAFALGAR ENGINEERING LTD.

MODIFIED RATIONAL METHOD STORAGE

Based on Town of Oakville IDF Data

Project: 590 Argus Road - Phase 2
Desc: OPA/RZA TOC Submission

Project No.: 1798
Prepared By: MW
Checked By: NAS

Pre-Development

Catchment Area (ha)	0.4600
Runoff Coefficient	1.00
TC (min)	10
Control Level	100-Yr

Pre-Development Peak Intensity: 200.8 mm/hr
Pre-Development Peak Discharge: 0.257 (cms)

Post-Development Uncontrolled

Catchment Area (ha)	0.0000
Runoff Coefficient	0.00
TC (min)	10
Control Level	100-Yr

Uncontrolled Peak Discharge: 0 (cms)

External Drainage

Catchment Area (ha)	0
Runoff Coefficient	0.00
TC (min)	10
Control Level	**100-Yr**

External Peak Discharge: 0 (cms)

Post-Development Controlled

Catchment Area (ha)	0.4600	
Runoff Coefficient	1.00	(1.25 Adj. Factor)
Time of Concentration	10	
Control Level	100-Yr	

Post-Development Peak Intensity: 200.8 mm/hr
Post-Development Peak Discharge: 0.257 (cms)
Allowable Release Rate: 0.06 (cms)

Storm Duration T_D (min)	Intensity $i = A \times T_D^{-C}$ (mm/hr)	Inflow Rate $Q_P = CiA/360$ (m^3/s)	Average Roof Discharge (m^3/s)	Max. Release Rate $Q_A = Ci_{2YR}A$ (m^3/s)	Inflow Volume $V_I = 60Q_PT_D$ (m^3)	Outflow Volume $V_O = 30Q_A(T_D+T_C)$ (m^3)	Storage $S = V_I - V_O$ (m^3)
10	200.80	0.257	0.000	0.060	153.9	36.0	117.9
15	158.27	0.202	0.000	0.060	182.0	45.0	137.0
20	131.37	0.168	0.000	0.060	201.4	54.0	147.4
25	112.72	0.144	0.000	0.060	216.1	63.0	153.1
30	98.99	0.126	0.000	0.060	227.7	72.0	155.7
35	88.43	0.113	0.000	0.060	237.3	81.0	156.3
40	80.03	0.102	0.000	0.060	245.4	90.0	155.4
45	73.19	0.094	0.000	0.060	252.5	99.0	153.5
50	67.49	0.086	0.000	0.060	258.7	108.0	150.7
55	62.68	0.080	0.000	0.060	264.3	117.0	147.3
60	58.55	0.075	0.000	0.060	269.3	126.0	143.3
90	42.35	0.054	0.000	0.060	292.2	180.0	112.2
120	33.49	0.043	0.000	0.060	308.1	234.0	74.1

TRAFALGAR ENGINEERING LTD.

WATER BALANCE AND WATER QUALITY

Project: 590 Argus Road - Phase 2 **Project No.:** 1798
Desc: OPA/RZA TOC Submission **Prepared By:** MW
Checked By: NAS

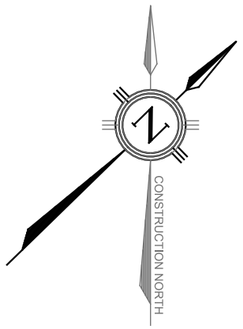
Water Balance

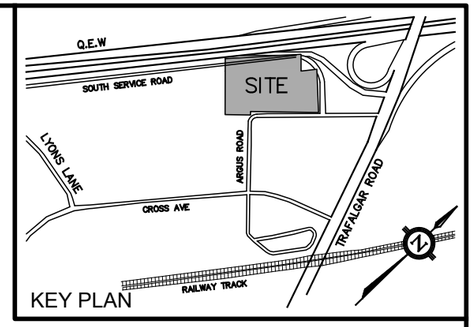
Surface	'A' (m^2)	%Total A	IA (mm)	%Total x IA
Site	14000	100%	0.0	0.0

Totals	**14000**	**Total Retention:**	**0.0**	**(mm)**
		Target Retention:	25.0	(mm)
		Balance:	25.0	(mm)
		Volume Required:	**350.0**	**(m^3)**

Total Suspended Solids

Surface	'A' (m^2)	Removal Rate, 'R'	A x R
Jellyfish	14000	80%	11200
Totals	**14000**		**11200**
		Effective Removal:	**80%**





LEGEND

1.19 / 0.84	PRE DEVELOPMENT STORM AREA IN HECTARES / PRE DEVELOPMENT STORM RUN-OFF COEFFICIENT
0.90 / 0.90	POST DEVELOPMENT STORM AREA IN HECTARES / POST DEVELOPMENT STORM RUN-OFF COEFFICIENT
▬ ▬ ▬ ▬	PRE & POST DEVELOPMENT STORM DRAINAGE AREA BOUNDARY

PROJECT TITLE
590 ARGUS RD.
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

DRAWING TITLE
STORM DRAINAGE PLAN

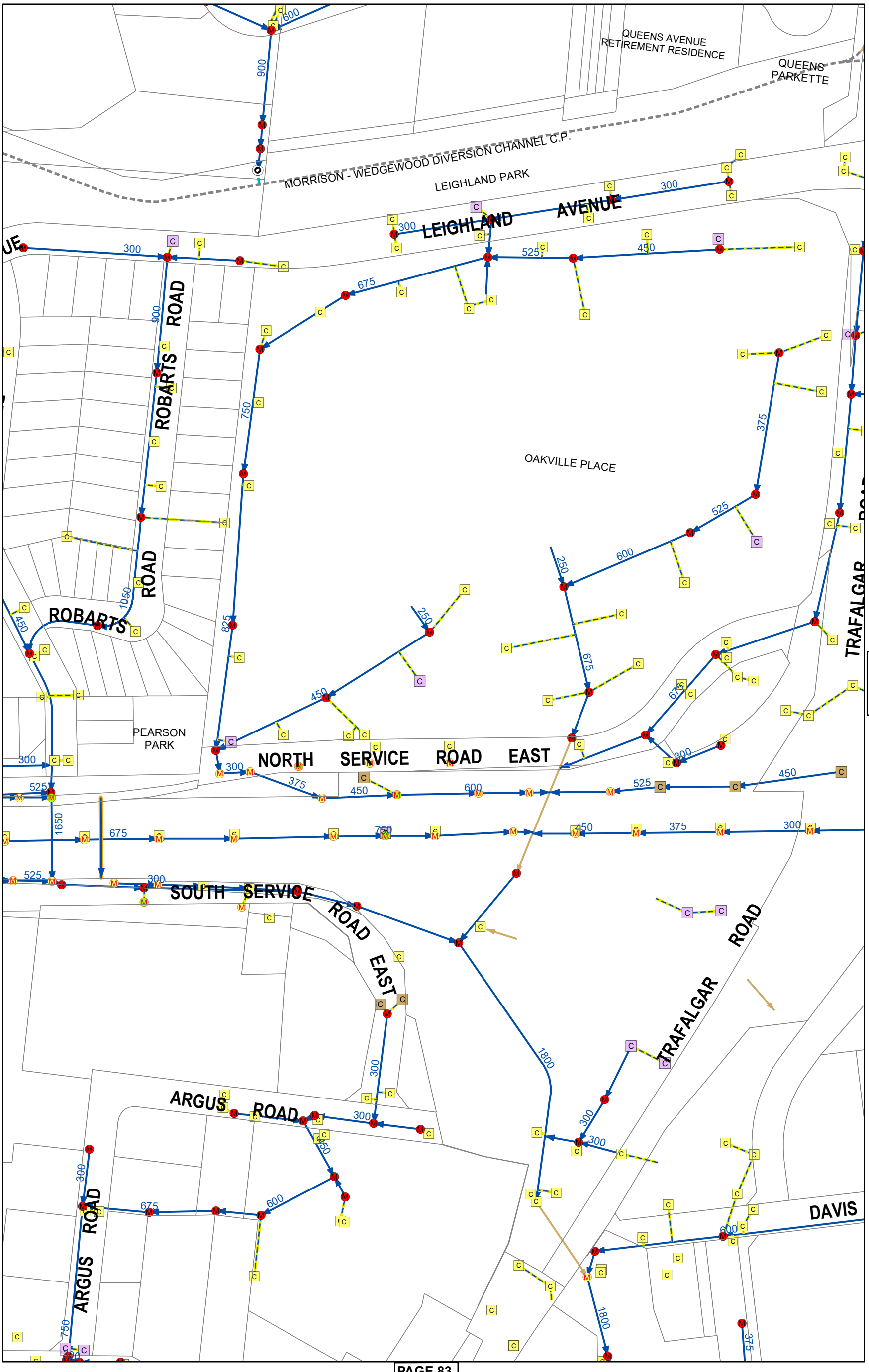
TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

DESIGN BY	MW	SCALE	1:750
DRAWN BY	ZI	DATE	2023/03/28

DRAWING No. FIG. 2

FILENAME: P:\1798 Distrikt 590 Argus\04-CAD\04-Rezoning_OPA\1798GS.dwg
PLOTDATE: Sep 20, 2024 - 4:20pm

APPENDIX ‘G’



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PAGE 111

PAGE 83

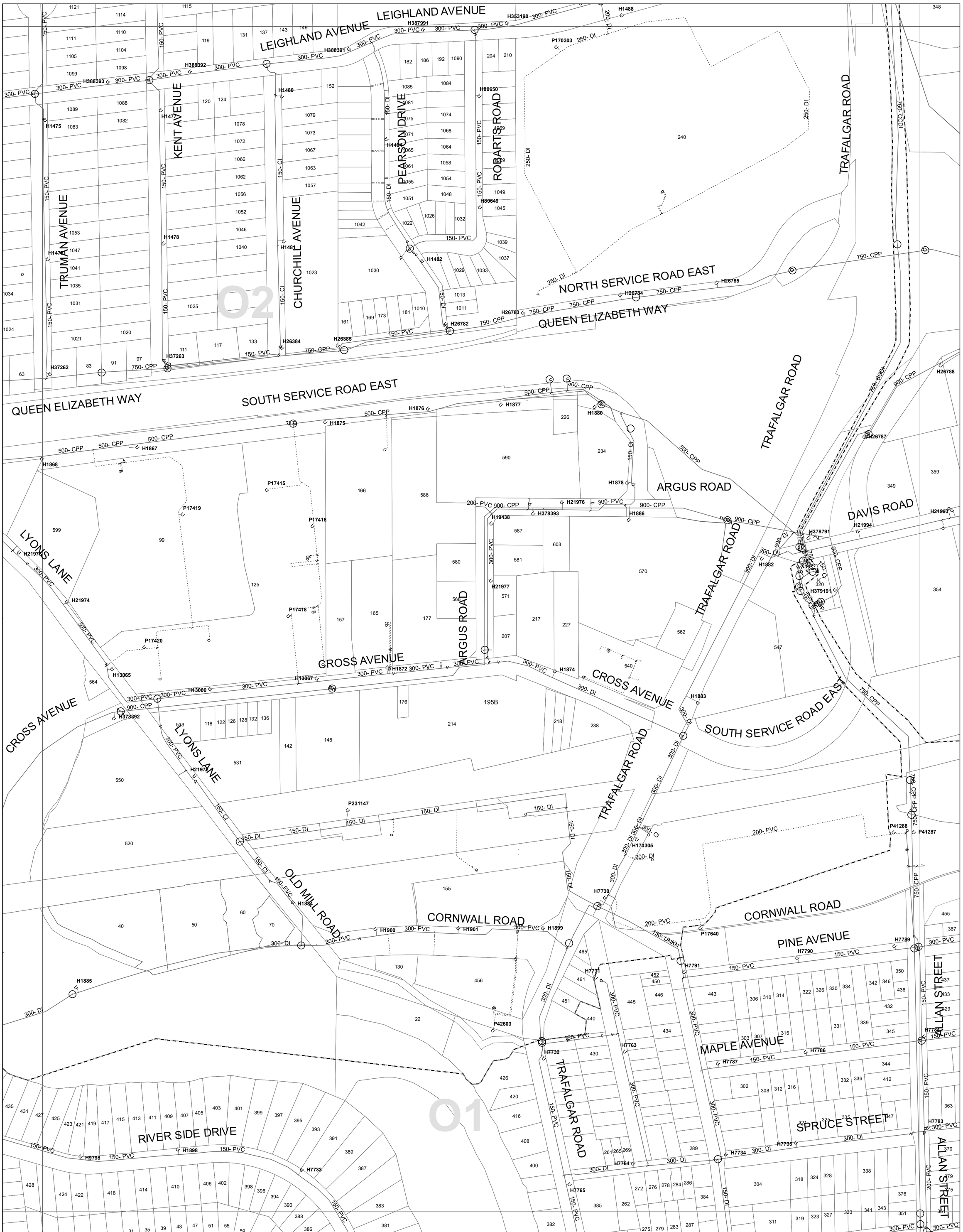
Town of Oakville
Engineering &
Construction
1225 Trafalgar Road
Oakville, Ontario

STORM SEWER INFORMATION
MAR, 2020
PAGE 110

- Storm Sewers
- Culvert
- Foundation Drain
- Catch Basin Lead
- Private Drain Connection
- Lateral
- Channel - ConcreteLined
- Channel - Ditch
- Channel - GrassLined
- Natural Channel
- Ditch Inlet
- Double Catch Basin
- Pup Inlet
- Side Entry CB
- Single Catch Basin
- Connection
- Inlet
- Outlet
- Maintenance Hole
- Catch Basin MH
- Double Catch Basin MH
- Foundation Drain MH

Abandoned Pipe

- Storm Main
- Culvert
- Foundation Drain
- Lateral



Halton REGION

REGIONAL MUNICIPALITY OF HALTON

Department of Public Works

WATER OPERATING MAPS

TOWN OF OAKVILLE

Protection Valve Type

- Q Air Release
- N Check
- ° Pressure Reducing
- Surge
- Vacuum

Control Valve

- Valve In Chamber
- System
- Zone Isolation, No ByPass
- Zone Isolation, With ByPass

Fittings

- o Cap
- p Cross
- q Reducer
- v Sleeve
- r Tee
- s Tapping Sleeve

System Structure

- K Booster Station
- L Intake
- J Municipal Well
- I Reservoir
- H Tank
- G Water Purification Plant

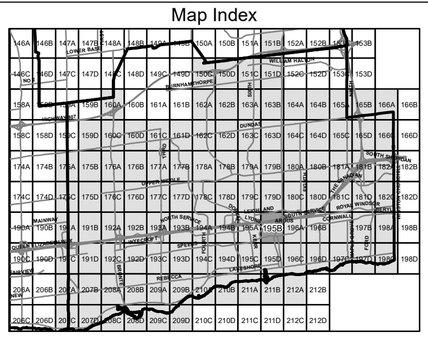
Other

- In Service Watermain
- Proposed Watermain
- Private Watermain/Service Lead
- M System Meter
- U Hydrant
- Chamber
- Pressure Zone
- Municipal Boundary

Meters

0 25 50 100 150 200

Map Index



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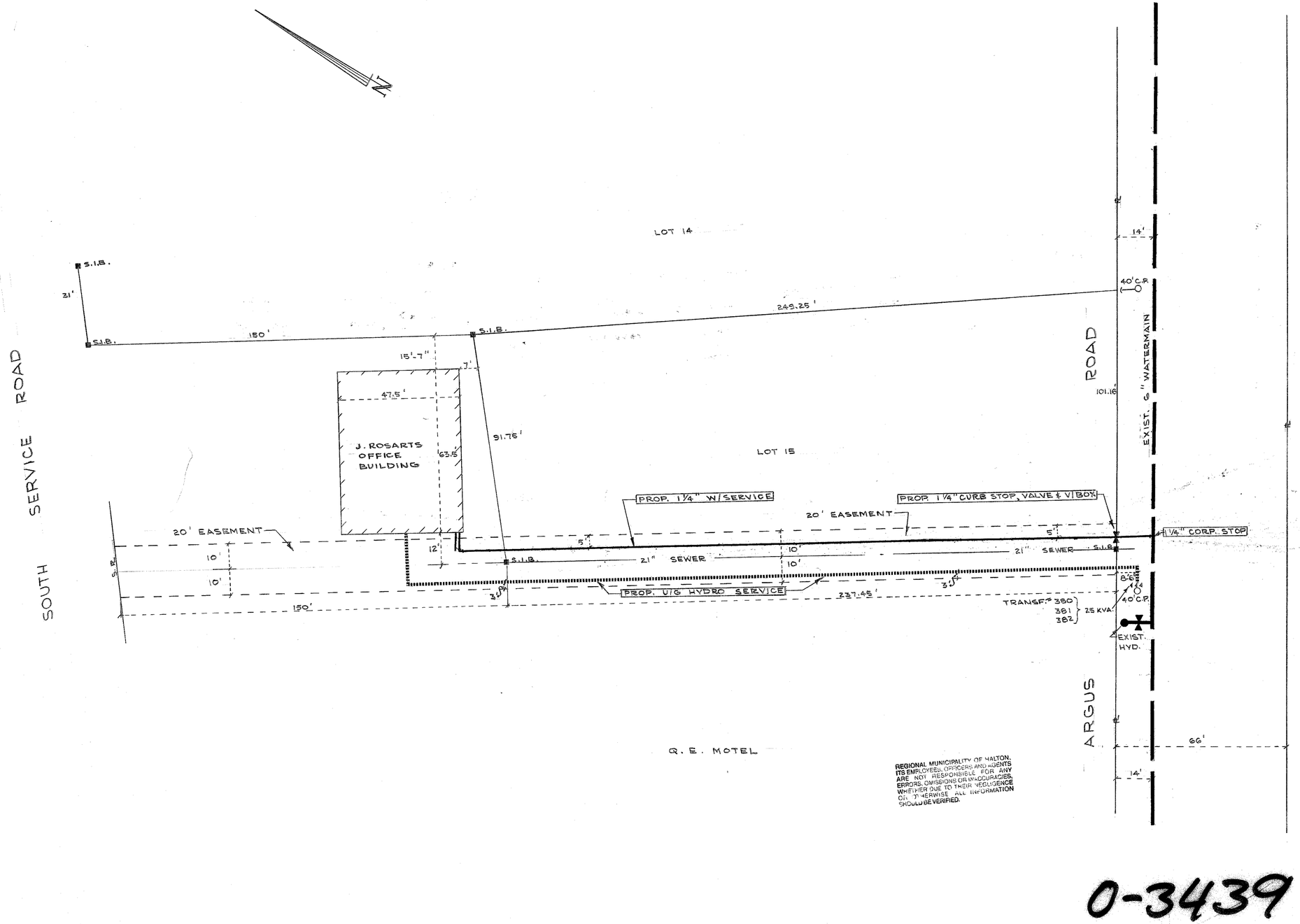
Print Date: Jan 31, 2022



REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE. ALL INFORMATION SHOULD BE VERIFIED.

LEGEND

———	PROP. W/SERVICE
▪▪▪▪▪▪▪	PROP. U/G HYDRO SERV.
———	EXIST. WATERMAIN

PROP. W/SERVICE & U/G HYDRO SERVICE FROM ARGUS RD. TO J. ROSARTS BUILDING.

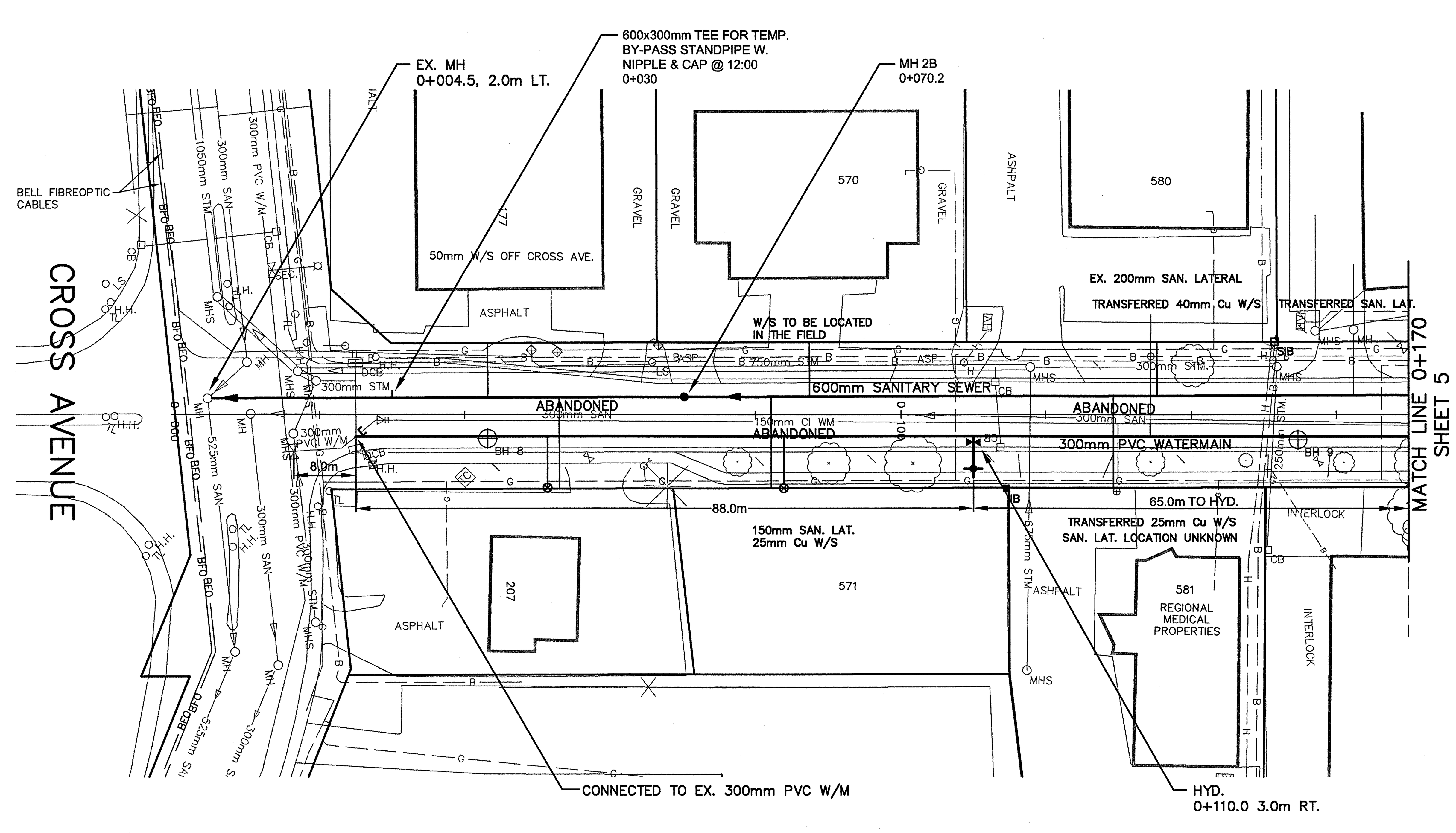
1" = 20'

G.M.N. NOV. 19/69

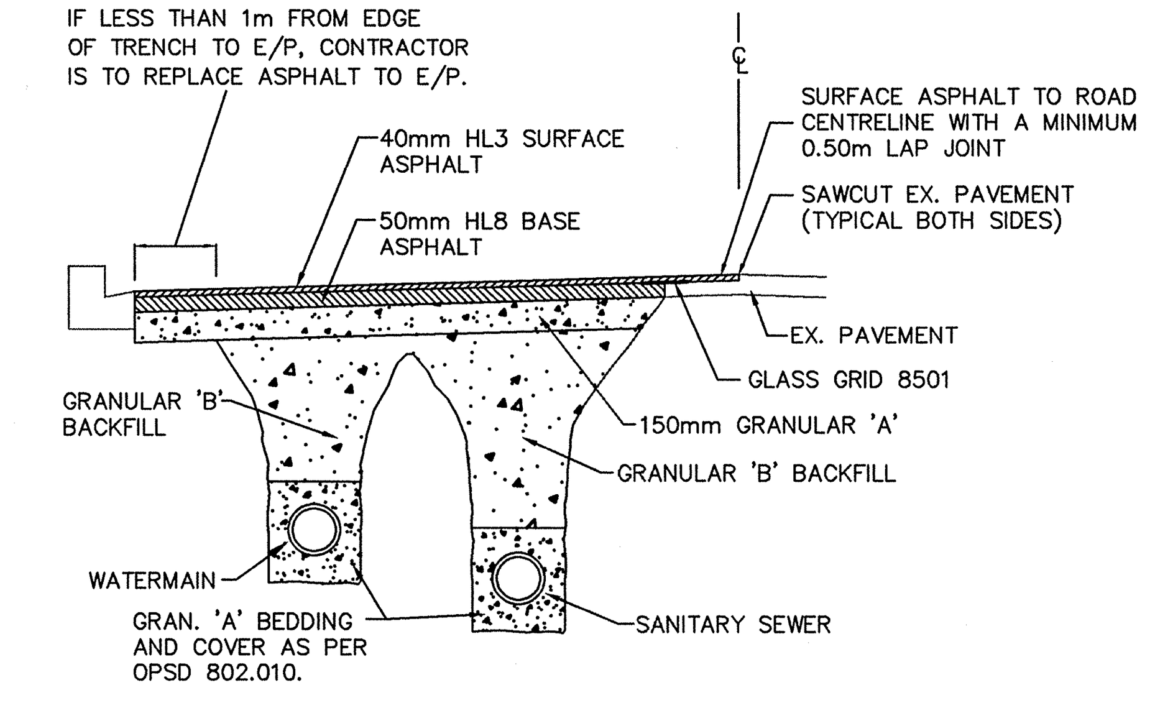
W - 718

0-3439

0-3439



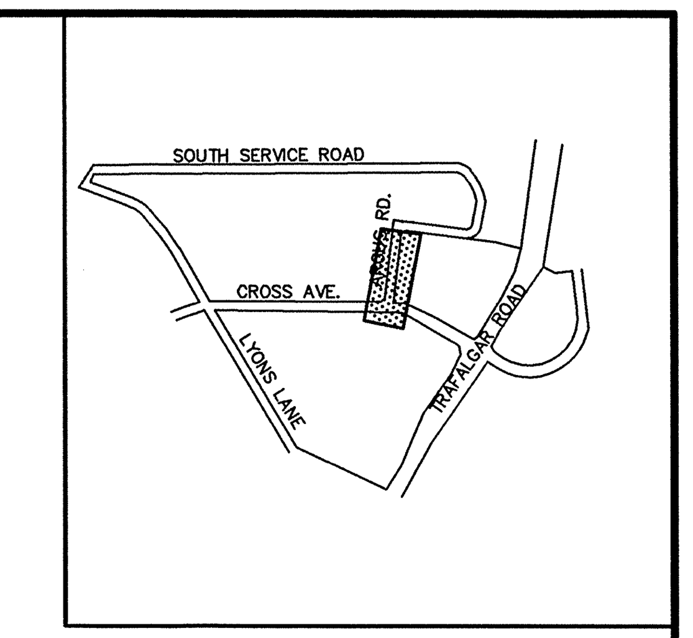
ARGUS ROAD

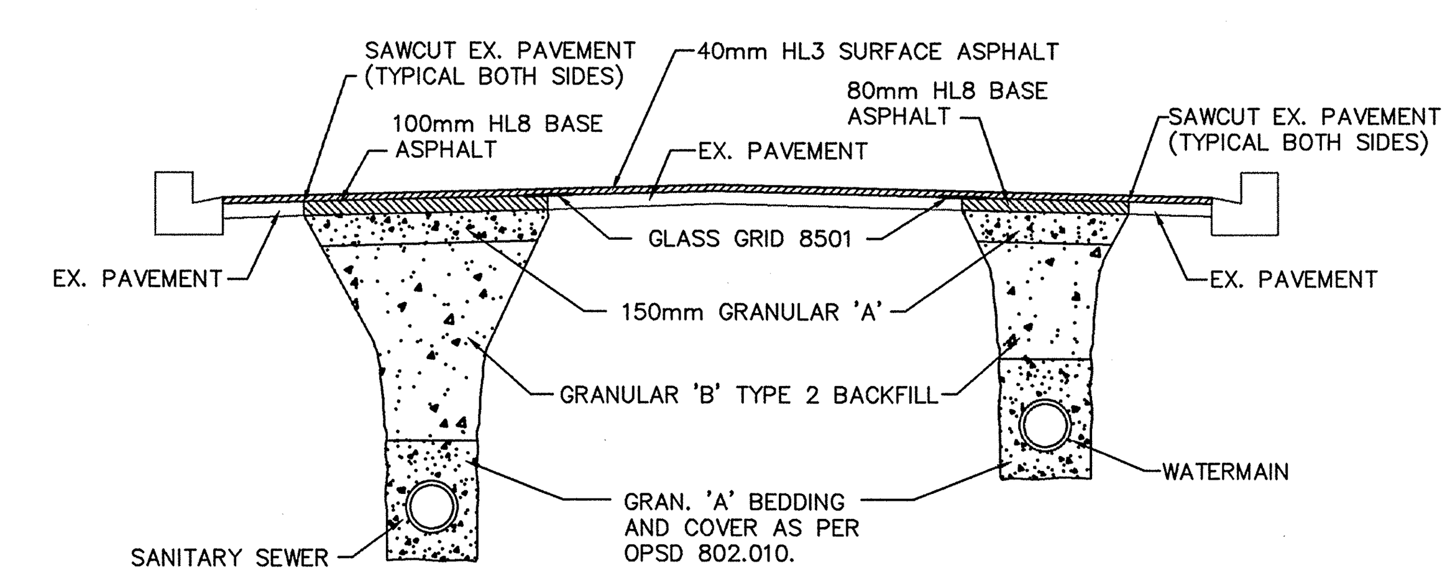


LYONS LANE (SOUTH OF CROSS AVE.)
ROAD RESTORATION DETAIL

N.T.S.

NOTE: ASPHALT DRIVEWAY RESTORATION IS TO BE FULL WIDTH OF DRIVEWAY WITH 50mm HL3A.

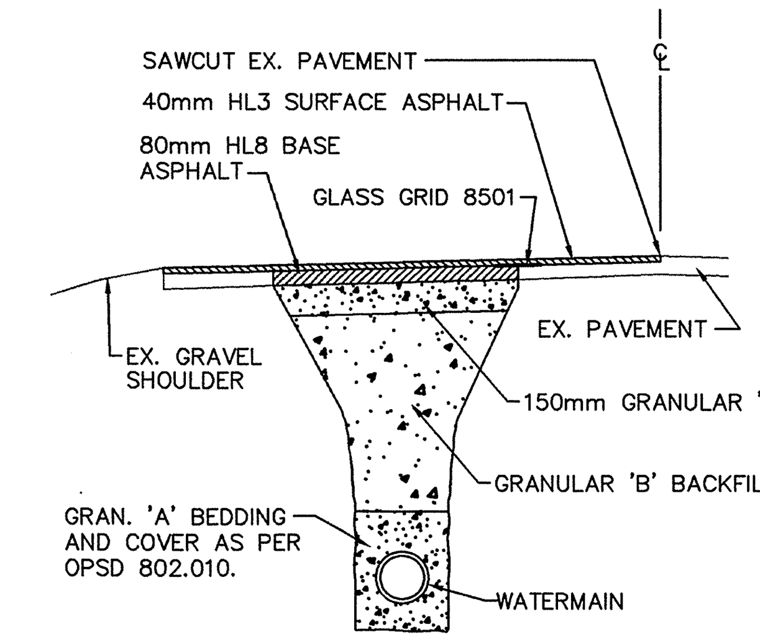




ARGUS ROAD AND SOUTH SERVICE ROAD
ROAD RESTORATION DETAIL

N.T.S.

NOTE: ASPHALT DRIVEWAY RESTORATION IS TO BE FULL WIDTH OF DRIVEWAY WITH 50mm HL3A.

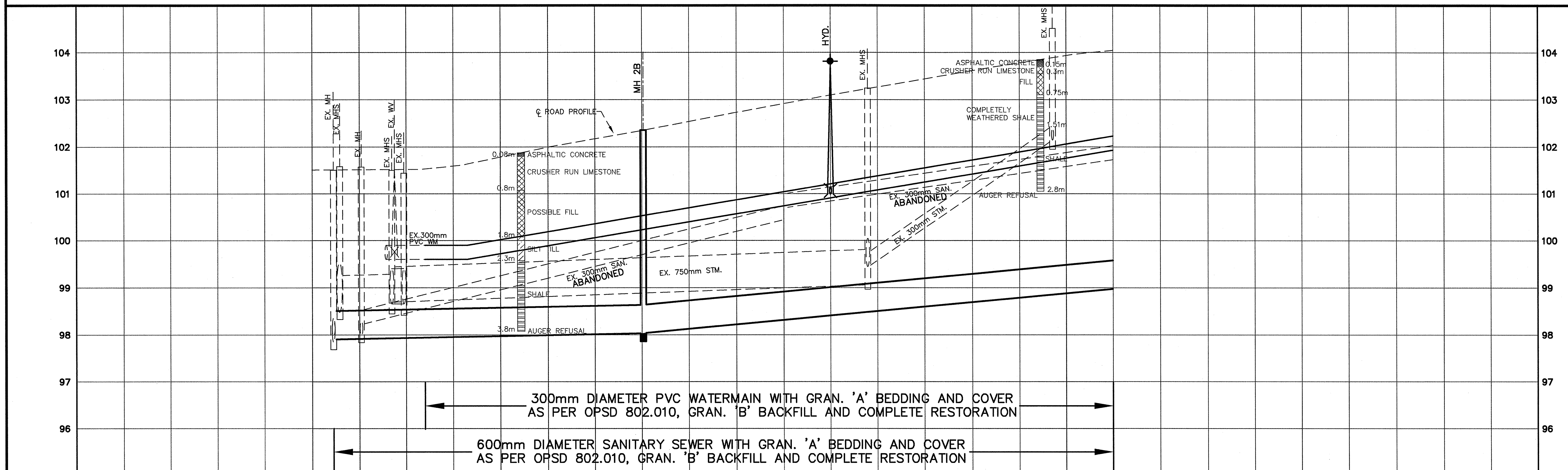


LYONS LANE (NORTH OF CROSS AVE.)
ROAD RESTORATION DETAIL

N.T.S.

NOTE: ASPHALT DRIVEWAY RESTORATION IS TO BE FULL WIDTH OF DRIVEWAY WITH 50mm HL3A.

SEE SHEET 1 FOR GENERAL NOTES.



℄ ELEVATIONS			101.51	101.59	101.78	102.00	102.17	102.35	102.54	102.73	102.92	103.10	103.27	103.44	103.62	103.78	103.94	104.04
WATERMAIN INVERTS																		
SANITARY SEWER INVERTS	W. 97.98 E. 97.84 N. 97.87	65.8m @ 0.24%					S. 98.03 N. 98.06	114.2m @ 0.92%										
CHAINAGE	0+000	0+004.5	0+020	0+040	0+060	0+070.2	0+080	0+100	0+120	0+140	0+160							

Nº	Date	By	REVISIONS	MANU	CAD
2	OCT. 08	E.W.S.	AS CONSTRUCTED		X
1	FEB. 05	C.S.J.	MH 2A ADDED	X	X

Design	BK	Ch'kd		Date: JANUARY 2003
Drawn	EWS	Ch'kd		

Scale: Horiz. 1:500, Vert. 1:50

References

APPROVALS

Field Notes: REGION BOOK 675

Municipal

Stamp

Regional

Director, Engineering Services

Manager, Design Services

Halton

WATERMAIN AND SANITARY SEWER REPLACEMENT ON
ARGUS ROAD
IN THE TOWN OF OAKVILLE
FROM CROSS AVE. TO 180m NORTH

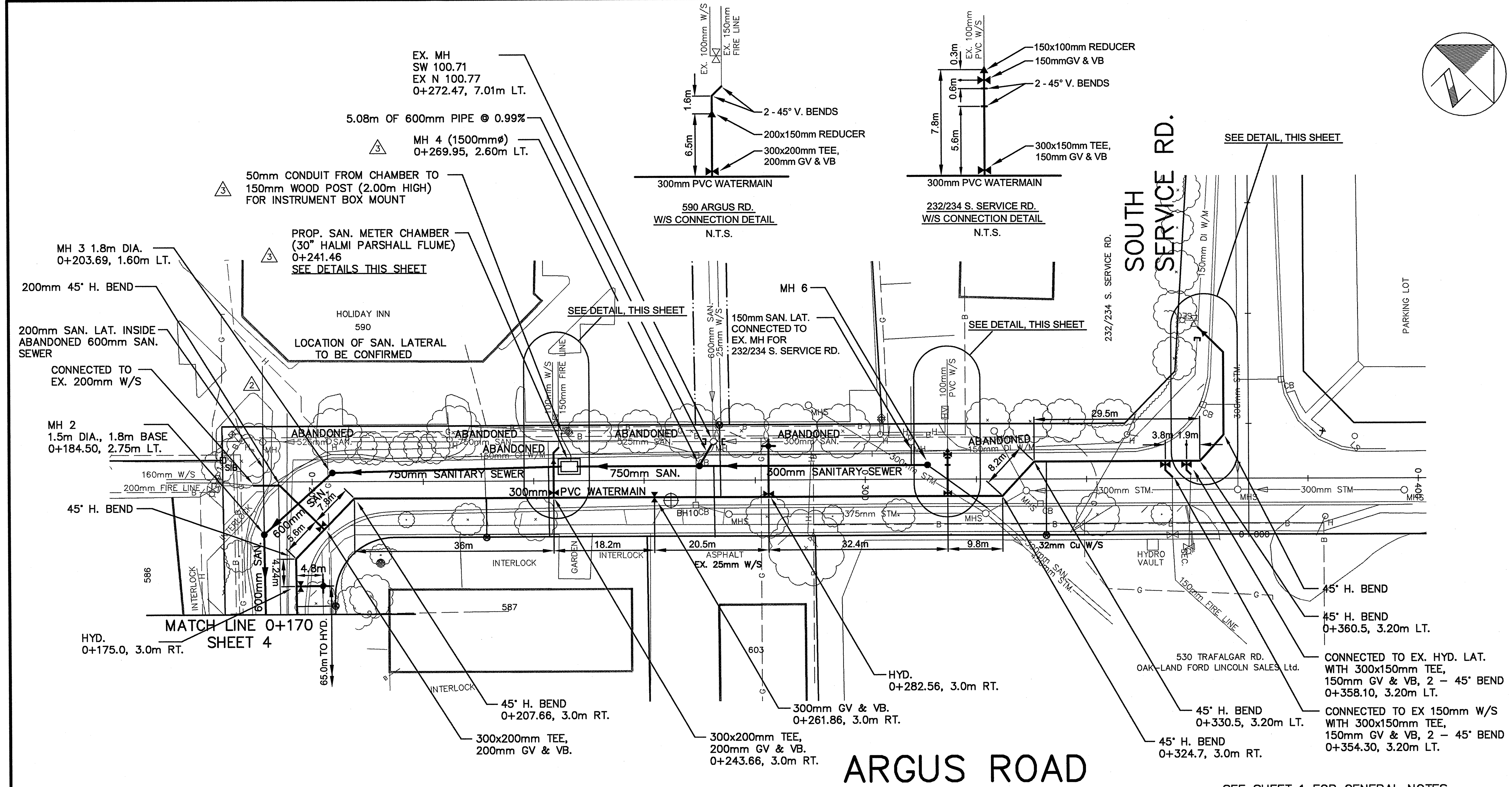
Consultant File Nº O-14703

CONTRACT Nº WS-1782-05

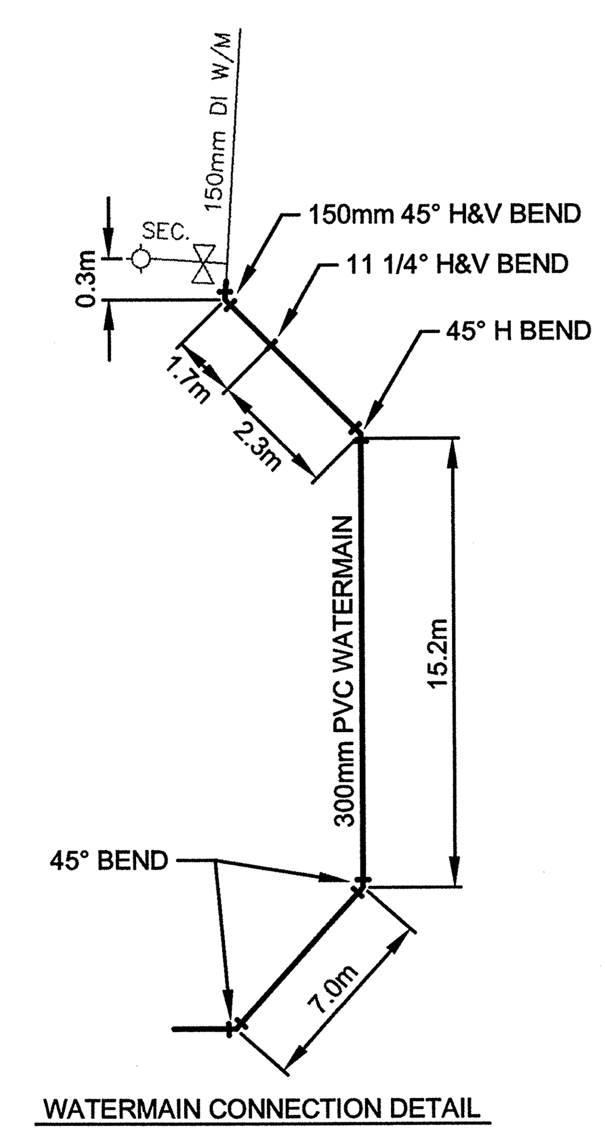
Drawing Nº SHEET 4 OF 5

O-14703

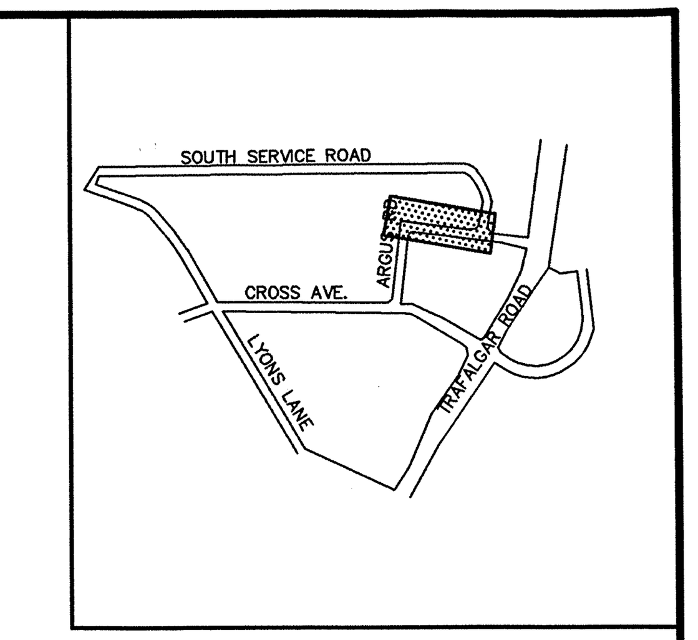
PR-1782-05 4 of 5

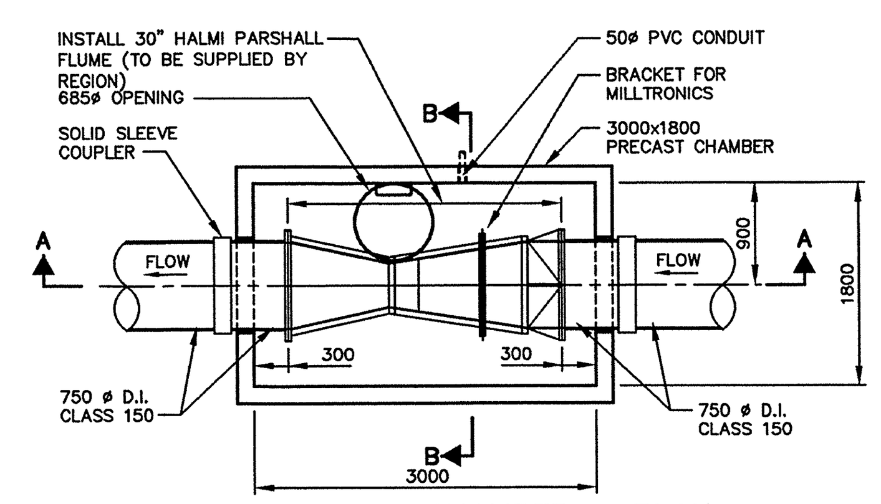


SEE SHEET 1 FOR GENERAL NOTES.
SEE SHEET 4 FOR RESTORATION DETAILS.

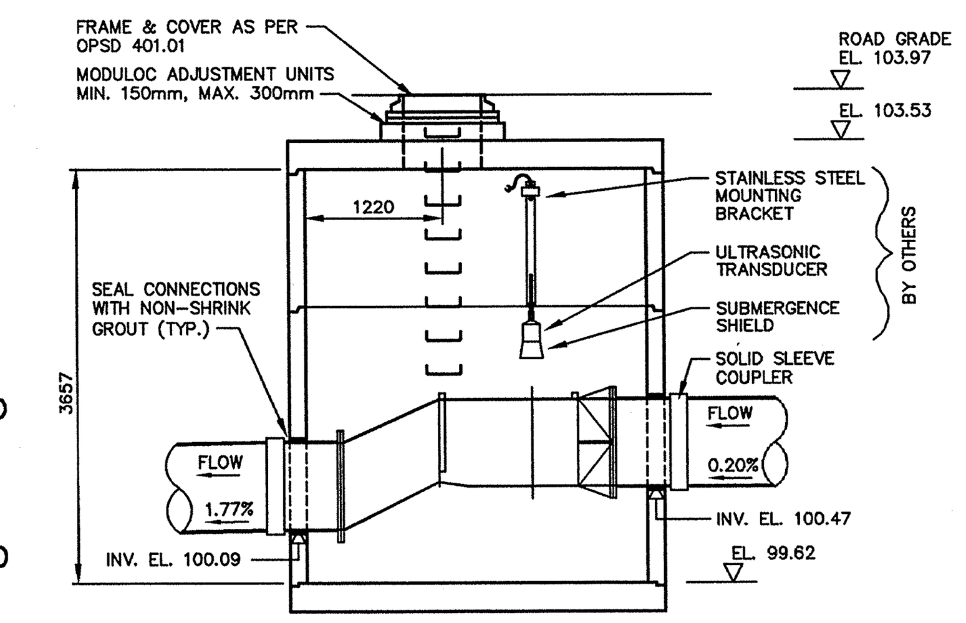


WATERMAIN CONNECTION DETAIL
N.T.S.

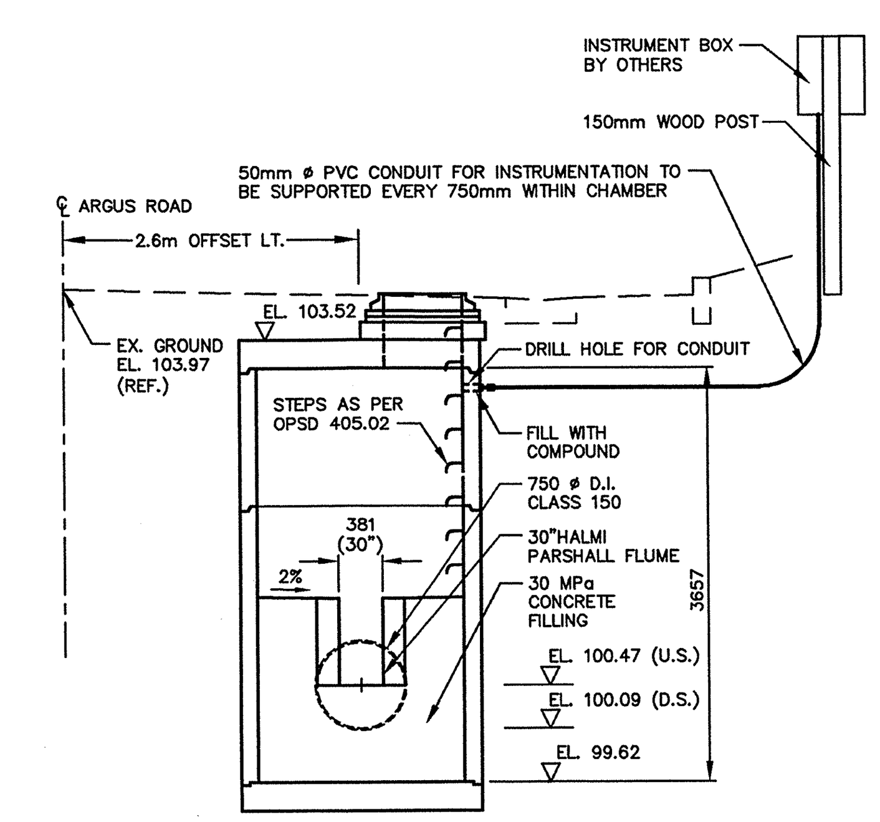




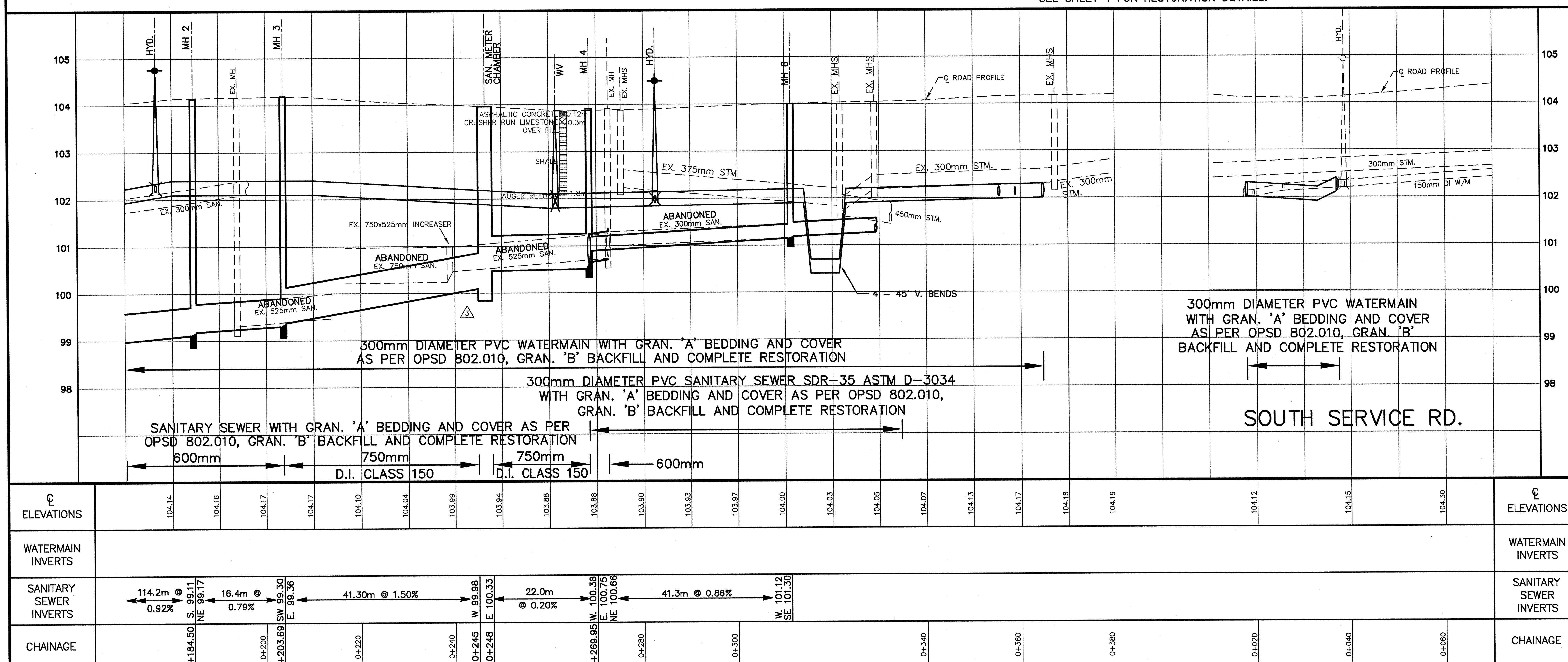
SANITARY METER CHAMBER – PLAN
(30" HALMI PARSHALL FLUME)
N.T.S.



SANITARY METER CHAMBER
SECTION A–A
N.T.S.



SANITARY METER CHAMBER
SECTION B–B
N.T.S.



Nº	Date	By	REVISIONS	MANU	CAD
4	OCT. 08	E.W.S.	AS CONSTRUCTED		X
3	FEB. 05	C.S.J.	KEN. NOZ. CHANGED TO H.P. FLUME	X	X
2	FEB. 05	C.S.J.	HOLIDAY INN SANITARY LATERAL ADDED	X	X
1	JAN. 05	E.W.S.	W/M CONNECTION ON S. SERVICE RD.	X	X

Design	BK	Ch'kd	
Drawn	EWS	Ch'kd	

Date: JANUARY 2003

Horiz. 1:500
Vert. 1:50

References

APPROVALS

Municipal

Regional

Director, Engineering Services

Manager, Design Services

Field Notes: REGION BOOK 675

Stamp

Halton

WATERMAIN AND SANITARY SEWER REPLACEMENT ON ARGUS ROAD

IN THE TOWN OF OAKVILLE

FROM 180m N. OF CROSS AVE. TO 40m E. OF SOUTH SERVICE RD.

Consultant File Nº: O-14704

CONTRACT Nº: WS–1782–05

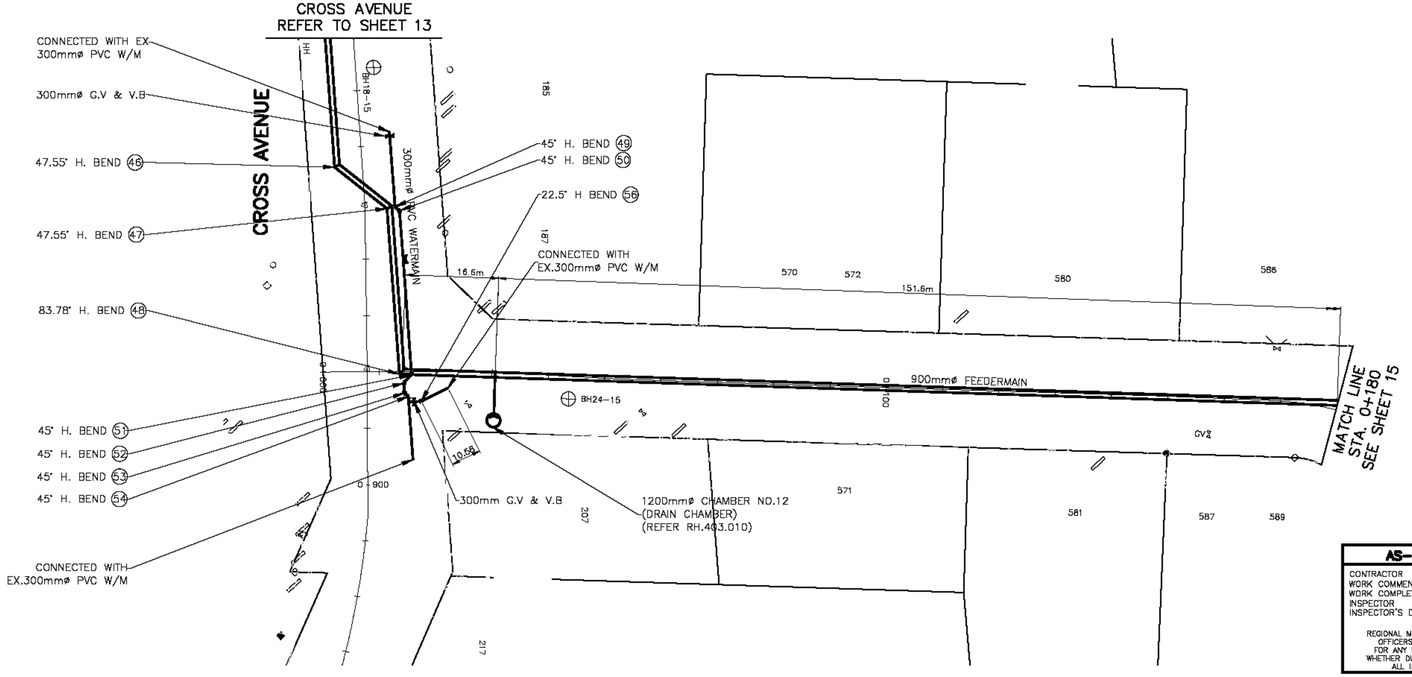
Drawing Nº: SHEET 5 OF 5

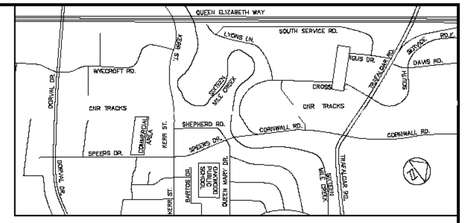
O-14704

PR–1782–05 5 of 5

O-23164

REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE. ALL INFORMATION SHOULD BE VERIFIED



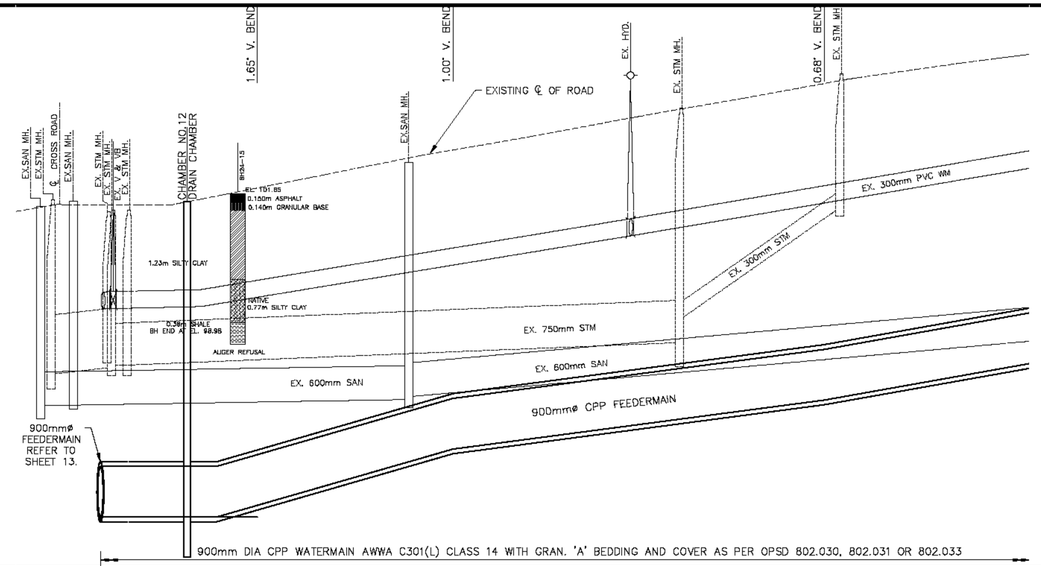


AS CONSTRUCTED FEEDERMAIN & WATERMAIN DATA ON ARGUS ROAD				
DISCRIPTION	STATION	OFFSET	NORTHING	EASTING
900mmø CPP FEEDERMAIN				
47.55° H. BEND (46)	0+002.71	36.49 L	4812303.275	606467.058
47.55° H. BEND (47)	0+011.86	29.12 L	4812314.861	606465.174
83.78° H. BEND (48)	0+013.97	0.07 L	4812337.951	606483.281
CHAMBER NO.12 (DRAIN CHAMBER)	0+030.61	8.73 R	4812354.860	606476.625
300mmø PVC WATERMAIN (ARGUS ROAD)				
CONNECTED TO EX 300mmø PVC W/M (CROSS AVE WEST)	0+011.93	42.58 L	4812305.093	606456.123
300mm G.V & V.B	0+011.98	41.83 L	4812305.683	606456.560
45° H.BEND (49)	0+013.67	28.57 L	4812315.589	606484.396
45° H.BEND (50)	0+012.88	29.26 L	4812316.627	606464.273
45° H.BEND (51)	0+015.74	1.20 R	4812340.352	606483.020
45° H.BEND (52)	0+014.73	2.35 R	4812340.480	606484.113
45° H.BEND (53)	0+014.80	3.35 L	4812341.263	606484.734
45° H.BEND (54)	0+015.48	7.96 L	4812342.157	606484.829
300mm G.V & V.B	0+016.14	5.35 R	4812343.377	606485.272
22.5° H.BEND (56)	0+017.39	5.26 R	4812344.156	606484.288
CONNECTED TO EX. 300mmø PVC W/M ON ARGUS ROAD	0+022.14	2.93 R	4812345.623	606479.208
CONNECTED TO EX.300mmø ON CROSS ROAD	0+014.98	15.34 R	4812350.135	606492.990

AS-CONSTRUCTED DRAWING

CONTRACTOR	D'IORAZIO INFRASTRUCTURE GROUP
WORK COMMENCED	NOVEMBER 16, 2016
WORK COMPLETED	AUGUST 27, 2019
INSPECTOR	CONSTANCIO PALPARAN
INSPECTOR'S DIARY	E-0040

REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE ALL INFORMATION SHOULD BE VERIFIED.



℄ ELEVATIONS	101.33	101.45	101.70	102.09	102.47	102.83	103.19	103.54	103.86	104.11
FEEDERMAIN INVERTS										
CHAINAGE	0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180

№	Date	By	REVISIONS	CAD
8	19-09-01	HI	ISSUED FOR AS-BUILT	WZ
7	16-10-19	JLP	ISSUED FOR CONSTRUCTION	KM
6	16-07-26	JLP	ISSUED FOR TENDER	KM
5	16-04-21	BS	ISSUED FOR 90% REVIEW	BS
4	16-03-03	BS	ISSUED FOR HYDRATEK REVIEW	BS
3	16-02-09	BS	ISSUED FOR 50% REVIEW	BS
2	15-09-21	HI	ISSUED FOR 50% REVIEW	BS
1	15-06-26	HI	ISSUED FOR 10% REVIEW	BS

Design	BS	Ch'kd	HI	Date
Drawn	BS	Ch'kd	JLP	NOV 2014

Scale 1:500 Horiz. 1:50 Vert. (10 5 0 10; 0.5 0 1)

References

Regional

Field Notes

ACCEPTED FOR CONSTRUCTION OF REGIONAL INFRASTRUCTURE

Reviewed For Compliance With Regional Standards Only.

Director, Engineering and Construction

Manager, Capital Engineering and Construction

Stamp

Design: BURNSIDE — As Constructed: EIS

Halton REGION

TITLE

900mmø FEEDERMAIN ON

ARGUS ROAD

IN THE TOWN OAKVILLE

FROM CROSS AVENUE TO 180m NORTHWEST ON ARGUS ROAD

Consultant File №: RL BURNSIDE NO.300036140 EIS NO. EE16-026

Regional Drawing №

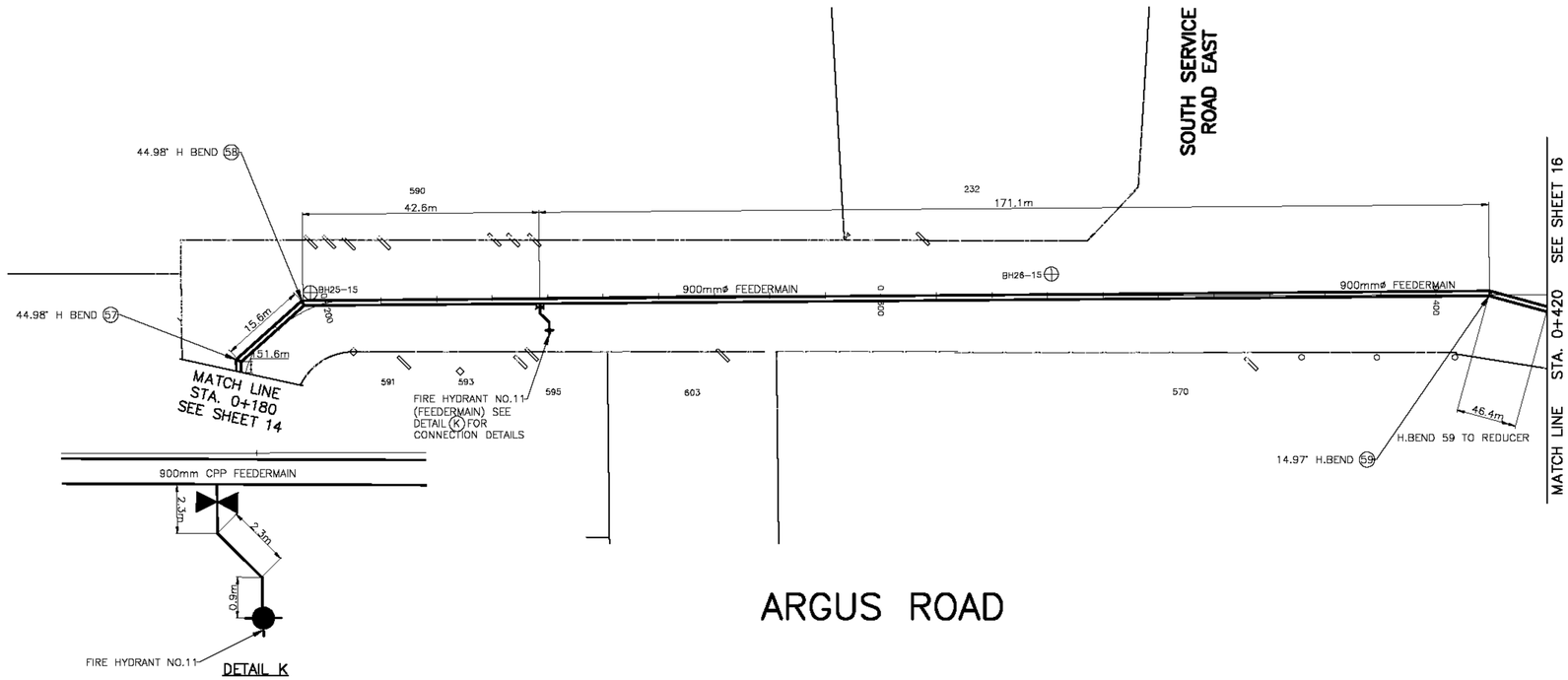
CONTRACT №: W-2998-16

Drawing №: SHEET 14 OF 43

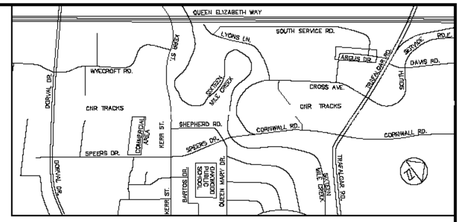
W-2998-16 14 of 43

Drawing: Z:\CAD_2016 PROJECTS\EE16-026 DAVIS ROAD 900MM FEEDERMAIN\CAD\14_AS CONSTRUCTED DWG\ACAD AC DRAWING\04-AC-DAVISFEEDERMAIN-PP.DWG
Layout Tab: SHEET 14 AC
Date: 07/22/2020 Time: 05:16:50 PM

O-23165



DETAIL K
N.T.S.

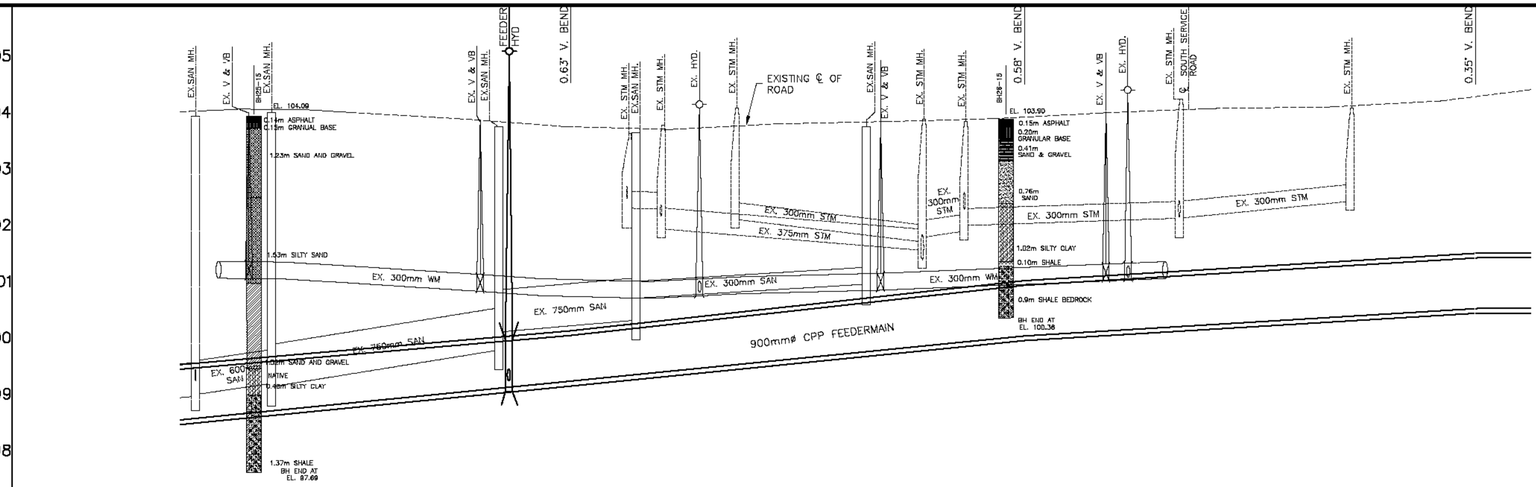


AS CONSTRUCTED FEEDERMAIN & WATERMAIN DATA ON ARGUS ROAD				
DISCRIPTION	STATION	OFFSET	NORTHING	EASTING
900mmø CPP FEEDERMAIN				
44.98° H. BEND	0+181.68	1.85 L	4812455.709	606363.179
44.98° H. BEND	0+216.29	1.47 L	4812471.230	606384.031
FIRE HYDRANT NO.11	0+240.23	5.94 R	4812501.092	606384.496
14.95° H. BEND	0+409.62	0.30 L	4812623.518	606513.950

AS-CONSTRUCTED DRAWING

CONTRACTOR	D'DRAZIO INFRASTRUCTURE GROUP
WORK COMMENCED	NOVEMBER 16, 2016
WORK COMPLETED	AUGUST 27, 2019
INSPECTOR	CONSTANCIO PALPARAN
INSPECTOR'S DIARY	E-0040

REGIONAL MUNICIPALITY OF HALTON, ITS EMPLOYEES, OFFICERS AND AGENTS ARE NOT RESPONSIBLE FOR ANY ERRORS, OMISSIONS OR INACCURACIES, WHETHER DUE TO THEIR NEGLIGENCE OR OTHERWISE ALL INFORMATION SHOULD BE VERIFIED.



900mm DIA CPP WATERMAIN AWWA C301(L) CLASS 14 WITH GRAN. 'A' BEDDING AND COVER AS PER OPSD 802.030, 802.031 OR 802.033 DEPENDING ON THE SOIL CONDITIONS

℄ ELEVATIONS	104.11	104.14	104.02	103.88	103.80	103.68	103.83	103.98	104.09	104.17	104.20	104.30	104.50
FEEDERMAIN INVERTS													
CHAINAGE	0+180	0+200	0+220	0+240	0+260	0+280	0+300	0+320	0+340	0+360	0+380	0+400	0+420

NO	Date	By	REVISIONS	CAD
8	19-09-01	HI	ISSUED FOR AS-BUILT	WZ
7	16-10-19	JLP	ISSUED FOR CONSTRUCTION	KM
6	16-07-26	JLP	ISSUED FOR TENDER	KM
5	16-04-21	BS	ISSUED FOR 90% REVIEW	BS
4	16-03-03	BS	ISSUED FOR HYDRATEK REVIEW	BS
3	16-02-09	BS	ISSUED FOR 50% REVIEW	BS
2	15-09-21	HI	ISSUED FOR 50% REVIEW	BS
1	15-06-26	HI	ISSUED FOR 10% REVIEW	BS

Design	BS	Ch'kd	HI	Date NOV 2014
Drawn	BS	Ch'kd	JLP	

Scale 1:500 Horiz. 10 5 0 10
1:50 Vert. 0.5 0 1

References

Regional

Field Notes

ACCEPTED FOR CONSTRUCTION OF REGIONAL INFRASTRUCTURE

Reviewed For Compliance With Regional Standards Only.

Director, Engineering and Construction

Manager, Capital Engineering and Construction

Stamp

Design BURNSIDE

As Constructed EIS

Halton REGION

TITLE

900mnø FEEDERMAIN ON ARGUS ROAD

IN THE TOWN OAKVILLE

180m FROM CROSS AVENUE TO 80m TO TRAFALGAR ROAD

Consultant File № R.J. BURNSIDE NO.300036140 EIS NO. EE16-028

Regional Drawing №

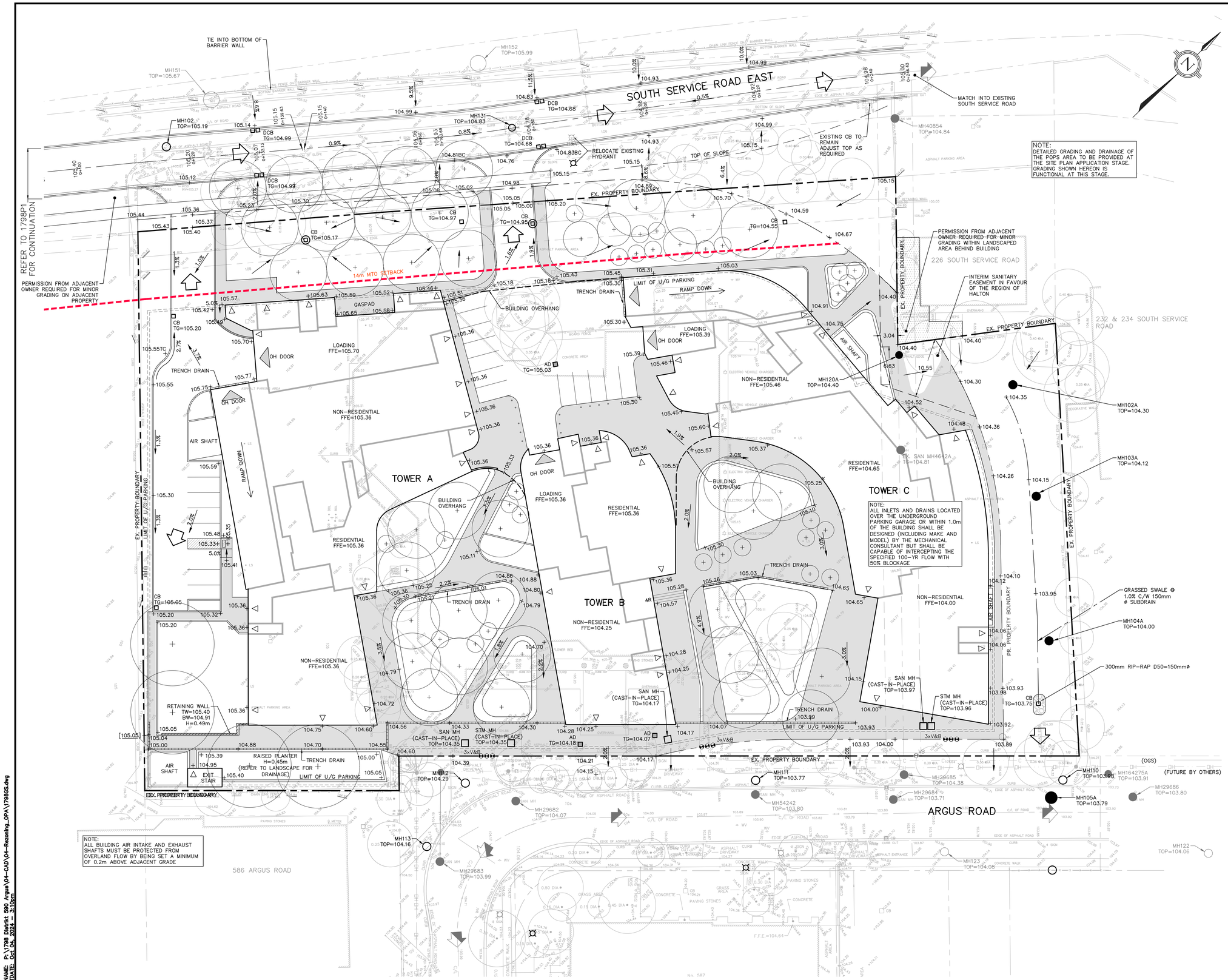
CONTRACT № W-2998-16

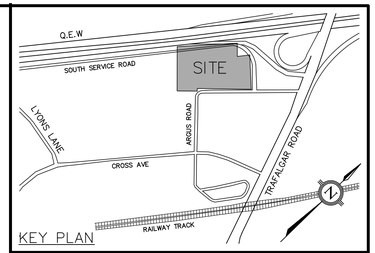
Drawing № SHEET 15 OF 43

W-2998-16 15 of 43

Drawing: Z:\CAD_2018 PROJECTS\EE16-028 DAVIS ROAD 900MM FEEDERMAIN\CAD\14_AS CONSTRUCTED DWG\ACAD AC DRAWING\04-AC-DA\SFEEDERMAIN-PP.DWG
Layout: Layout1 Plotted: 05-17-51 PM
Date: 01/22/2020

APPENDIX 'H'





KEY PLAN

LEGEND

- PROPOSED CATCHBASIN
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED VALVE & BOX
- 153.78 PROPOSED FINISHED ELEVATION
- 153.46 EXISTING ELEVATION
- 153.46 EXISTING ELEVATION TO REMAIN
- EXISTING CATCHBASIN
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING FIRE HYDRANT
- BH1 BOREHOLE
- PROPOSED RETAINING WALL
- PROPOSED SLOPE (3:1)
- 1.0% PROPOSED SLOPE
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- [153.78] INTERPOLATED EXISTING GRADE
- PROPOSED TRENCH DRAIN
- PROPOSED AREA DRAIN (300mm x 300mm)
- 103.00TC 102.85BC PROPOSED TOP & BOTTOM CURB ELEVATION
- PROPERTY BOUNDARY
- EMERGENCY PONDING AREA

NO.	DATE	BY/DRAWN	REVISIONS
4	OCT 04, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 17, 2022	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 1798GS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Oct 04, 2024

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928: 78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

LOCAL BENCHMARK

CUT CROSS IN CONCRETE SIDEWALK, LOCATED ON THE SOUTH SIDE OF ARGUS ROAD, APPROXIMATELY 11.6 METRES FROM THE WESTERN CORNER OF THE BUILDING AT No. 587 ARGUS ROAD AND 5.3 METRES FROM A WATER VALVE IN THE ROAD, AS SHOWN ON THE FACE OF PLAN. ELEVATION=104.28m

THE TOPOGRAPHIC DETAIL SHOWN HEREON WAS ACQUIRED ON MAY 17, 2022, BY J.D.BARNES LTD, LAND INFORMATION SPECIALISTS

LICENSED PROFESSIONAL ENGINEER N. A. SYLVESTER 100199487 OCTOBER 4, 2024 PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT
TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

PROJECT TITLE
590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
PRELIMINARY GRADING PLAN (INTERIM)

0 3 6 9 12 15 1:300

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	1 OF 1
PROJECT No.	1798	PLAN No.	G1

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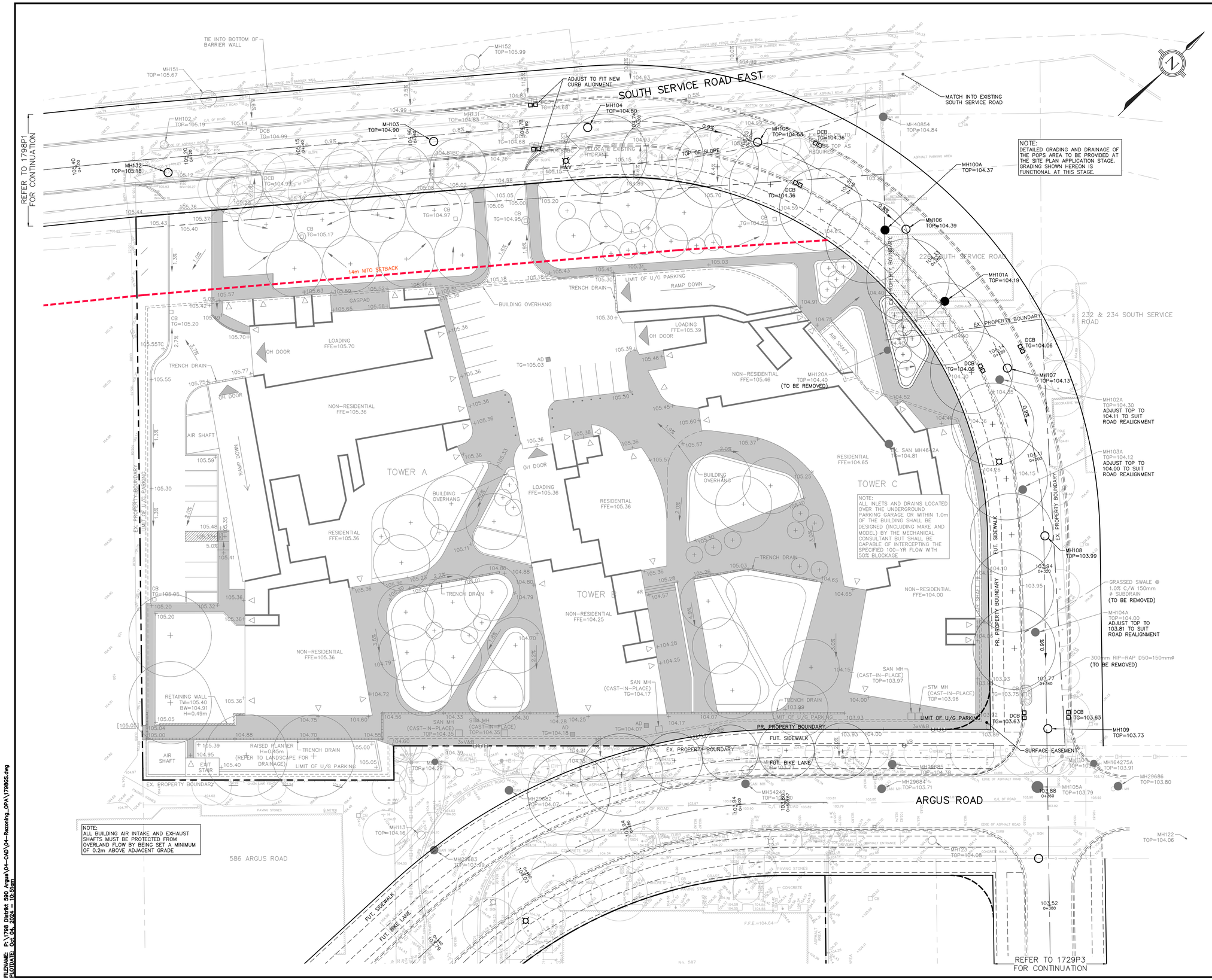
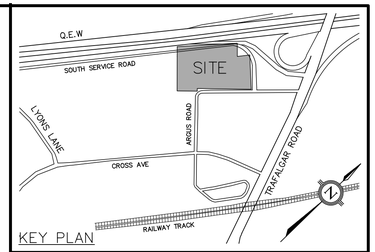
PLOTDATE: Oct 04, 2024 - 3:10pm





KEY PLAN

LEGEND

- PROPOSED CATCHBASIN
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED VALVE & BOX
- 153.78 PROPOSED FINISHED ELEVATION
- 153.46 EXISTING ELEVATION
- 153.46 EXISTING ELEVATION TO REMAIN
- EXISTING CATCHBASIN
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING FIRE HYDRANT
- BH BOREHOLE
- PROPOSED RETAINING WALL
- PROPOSED SLOPE (3:1)
- 1.0% PROPOSED SLOPE
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- [153.78] INTERPOLATED EXISTING GRADE
- PROPOSED TRENCH DRAIN
- PROPOSED AREA DRAIN (300mm x 300mm)
- 103.00TC 102.85BC PROPOSED TOP & BOTTOM CURB ELEVATION
- PROPERTY BOUNDARY
- EMERGENCY PONDING AREA

NO.	DATE	BY/DRAWN	REVISIONS
4	OCT 04, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 17, 2022	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 1798GS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Oct 04, 2024

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928: 78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

LOCAL BENCHMARK

CUT CROSS IN CONCRETE SIDEWALK, LOCATED ON THE SOUTH SIDE OF ARGUS ROAD, APPROXIMATELY 11.6 METRES FROM THE WESTERN CORNER OF THE BUILDING AT No. 587 ARGUS ROAD AND 5.3 METRES FROM A WATER VALVE IN THE ROAD, AS SHOWN ON THE FACE OF PLAN. ELEVATION=104.28m

THE TOPOGRAPHIC DETAIL SHOWN HEREON WAS ACQUIRED ON MAY 17, 2022, BY J.D.BARNES LTD, LAND INFORMATION SPECIALISTS

LICENSED PROFESSIONAL ENGINEER N. A. SYLVESTER 100199487 OCTOBER 4 2024 PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT

TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

PROJECT TITLE

590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION

590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE

PRELIMINARY GRADING PLAN (ULTIMATE)

0 3 6 9 12 15 1:300

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	1 OF 1

PROJECT No. 1798 | PLAN No. G2

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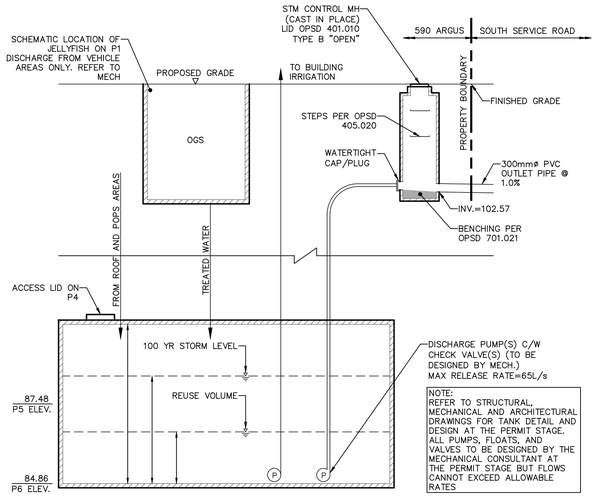
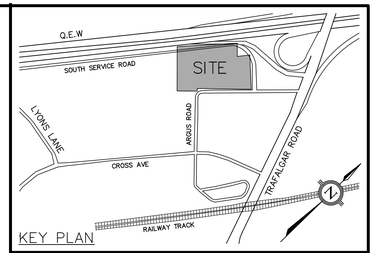
PLOTTED: Oct 04, 2024 - 10:51am



CONCEPTUAL STORMWATER MANAGEMENT TANK SECTION

SCALE N.T.S.



KEY PLAN

LEGEND

NO.	DATE	BY/DRAWN	REVISIONS
4	OCT 04, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 17, 2022	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 1798OS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Oct 04, 2024

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928:78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

LOCAL BENCHMARK

CUT CROSS IN CONCRETE SIDEWALK, LOCATED ON THE SOUTH SIDE OF ARGUS ROAD, APPROXIMATELY 11.6 METRES FROM THE WESTERN CORNER OF THE BUILDING AT No. 587 ARGUS ROAD AND 5.3 METRES FROM A WATER VALVE IN THE ROAD, AS SHOWN ON THE FACE OF PLAN.
ELEVATION=104.28m

THE TOPOGRAPHIC DETAIL SHOWN HEREON WAS ACQUIRED ON MAY 17, 2022, BY J.D.BARNES LTD, LAND INFORMATION SPECIALISTS

LICENSED PROFESSIONAL ENGINEER
N. A. SYLVESTER
100199487
OCT 04 2024
PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT
TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

PROJECT TITLE
590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

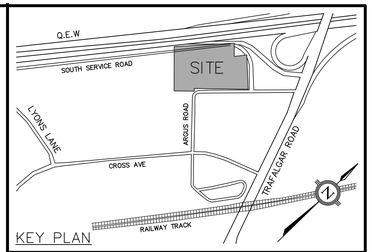
LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
TYPICAL SECTIONS

SCALE AS NOTED	DESIGN BY MW	PROJECT No. 1798
DRAWN BY ZI	CHECKED BY NAS	PLAN No. D1
DATE 2022/10/26	SHEET 1 OF 1	

FILENAME: P:\1798 District 590 Argus\04-CAD\04-Rezoning_OPA\1798OS.dwg
PLOTDATE: Oct 04, 2024 - 10:07am

CROSSING	
C1	SAN INV.=102.22 STM OBV.=101.72 =0.50m
C2	STM INV.=101.63 SAN OBV.=101.22 =0.59m
C3	WS INV.=101.81 SAN OBV.=101.22 =0.59m
C4	WS INV.=101.84 WM OBV.=100.25 =1.59m
C5	WS INV.=102.10 STM OBV.=101.77 =0.33m
C6	WS INV.=102.60 STM OBV.=100.81 =1.79m
C7	WS INV.=102.00 WM OBV.=100.15 =1.85m
C8	WS INV.=101.97 SAN OBV.=100.60 =1.37m
C9	WS INV.=102.23 SAN OBV.=99.87 =2.36m
C10	WS INV.=102.23 WM OBV.=99.70 =2.53m
C11	WS INV.=102.23 STM OBV.=100.58 =1.65m
C12	SAN INV.=101.46 STM OBV.=100.77 =0.69m
C13	SAN INV.=101.69 STM OBV.=100.61 =1.08m



KEY PLAN

LEGEND

- PROPOSED STORM SEWER + MANHOLE
- EXISTING STORM SEWER + MANHOLE
- PROPOSED WATER SERVICE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER + MANHOLE
- PROPOSED SANITARY SEWER + MANHOLE
- PROPERTY BOUNDARY
- PROPOSED CATCHBASIN
- PROPOSED WATER METER
- PROPOSED FIRE HYDRANT
- PROPOSED VALVE & BOX
- 153.78 PROPOSED FINISHED ELEVATION
- 153.46 EXISTING ELEVATION
- 153.46 EXISTING ELEVATION TO REMAIN
- EXISTING CATCHBASIN
- BH1 BOREHOLE
- PROPOSED AREA DRAIN
- PROPOSED RETAINING WALL
- PROPOSED TRENCH DRAIN

NO.	DATE	BY/DRAWN	REVISIONS
4	OCT 04, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 17, 2022	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 1798GS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Oct 04, 2024

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928:78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

LOCAL BENCHMARK

CUT CROSS IN CONCRETE SIDEWALK, LOCATED ON THE SOUTH SIDE OF ARGUS ROAD, APPROXIMATELY 11.6 METRES FROM THE WESTERN CORNER OF THE BUILDING AT No. 587 ARGUS ROAD AND 5.3 METRES FROM A WATER VALVE IN THE ROAD, AS SHOWN ON THE FACE OF PLAN.
ELEVATION=104.28m

THE TOPOGRAPHIC DETAIL SHOWN HEREON WAS ACQUIRED ON MAY 17, 2022, BY J.D.BARNES LTD, LAND INFORMATION SPECIALISTS

LICENSED PROFESSIONAL ENGINEER N. A. SYLVESTER 100199487 OCT 04 2024 PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT
TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

PROJECT TITLE
590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
PRELIMINARY SERVICING PLAN (INTERIM)

1:300

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	1 OF 1
PROJECT No.	1798		
PLAN No.	S1		

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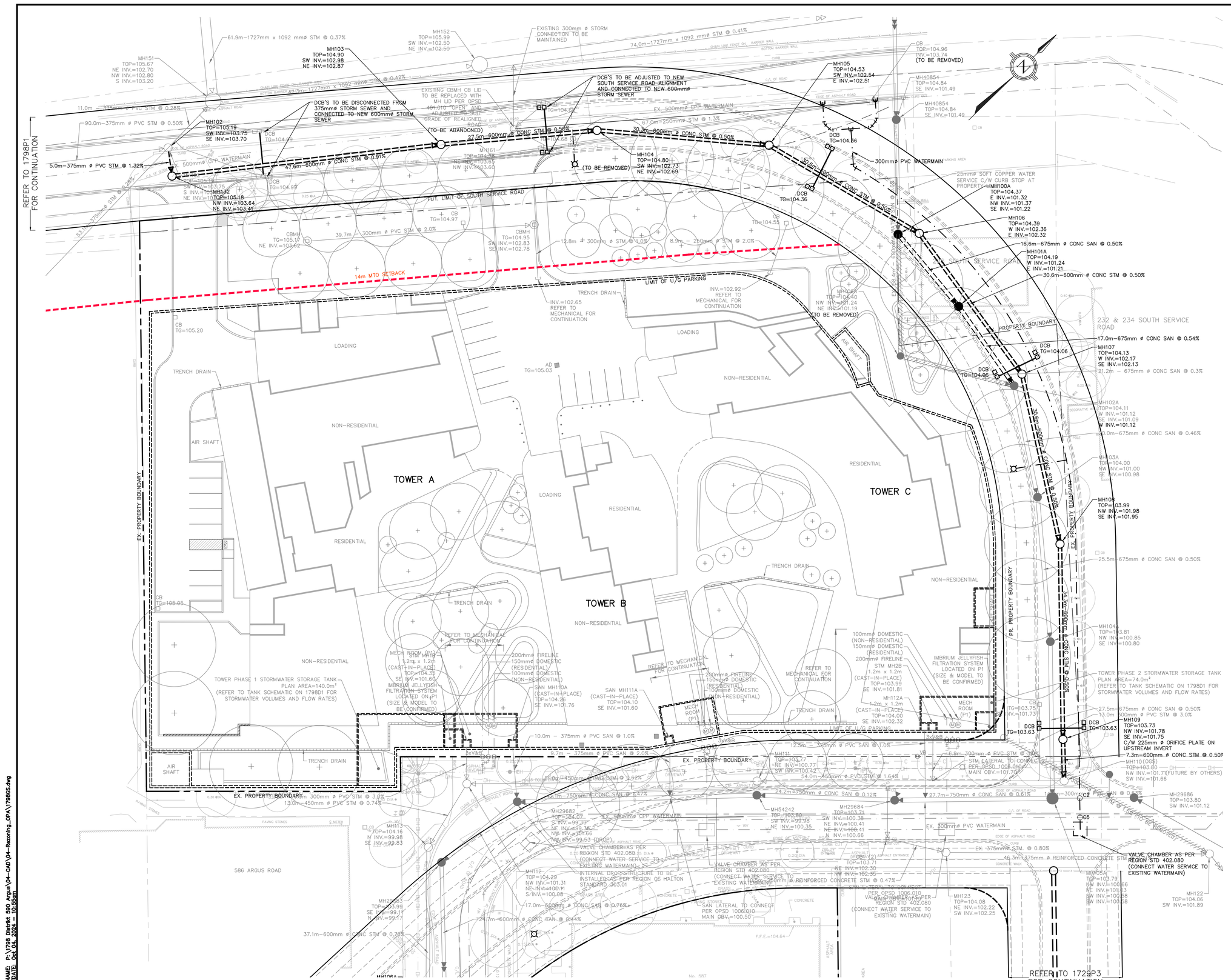
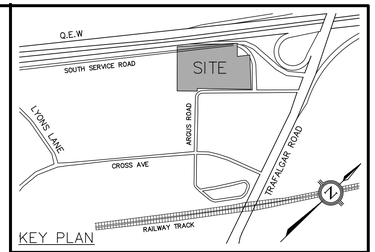
PLOTDATE: Oct 04, 2024 - 10:50am





KEY PLAN

LEGEND

- PROPOSED STORM SEWER + MANHOLE
- EXISTING STORM SEWER + MANHOLE
- PROPOSED WATER SERVICE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER + MANHOLE
- PROPOSED SANITARY SEWER + MANHOLE
- PROPERTY BOUNDARY
- PROPOSED CATCHBASIN
- PROPOSED CATCHBASIN C/W CB SHIELD
- PROPOSED WATER METER
- PROPOSED FIRE HYDRANT
- PROPOSED VALVE & BOX
- 153.78 PROPOSED FINISHED ELEVATION
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- 153.46 EXISTING ELEVATION TO REMAIN
- EXISTING CATCHBASIN
- BOREHOLE
- PROPOSED AREA DRAIN
- PROPOSED RETAINING WALL
- PROPOSED TRENCH DRAIN

NO.	DATE	BY/DRAWN	REVISIONS
4	OCT 04, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 17, 2022	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 1798GS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Oct 04, 2024

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928: 78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

LOCAL BENCHMARK

CUT CROSS IN CONCRETE SIDEWALK, LOCATED ON THE SOUTH SIDE OF ARGUS ROAD, APPROXIMATELY 11.6 METRES FROM THE WESTERN CORNER OF THE BUILDING AT No. 587 ARGUS ROAD AND 5.3 METRES FROM A WATER VALVE IN THE ROAD, AS SHOWN ON THE FACE OF PLAN. ELEVATION=104.28m

THE TOPOGRAPHIC DETAIL SHOWN HEREON WAS ACQUIRED ON MAY 17, 2022, BY J.D.BARNES LTD, LAND INFORMATION SPECIALISTS

LICENSED PROFESSIONAL ENGINEER N. A. SYLVESTER 100199487 OCT/04/2024 PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT

TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

PROJECT TITLE

590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION

590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE

PRELIMINARY SITE SERVICING PLAN (ULTIMATE)

0 3 6 9 12 15 1:300

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	1 OF 1
PROJECT No.	1798		
PLAN No.	S2		

PLOTTED: Oct 04, 2024 - 10:55am
FILENAME: P:\1798 Distrikt 590 Argus\04-CAD\04-Rezoning_OPA\1798GS.dwg

GENERAL NOTES

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS OF THE REGIONAL MUNICIPALITY OF HALTON, TOWN OF OAKVILLE AND THE ONTARIO BUILDING CODE (PART 7). ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS (OPSS & OPSD) SHALL BE USED IN ABSENCE OF LOCAL STANDARDS.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL, MECHANICAL AND LANDSCAPE DRAWINGS.
3. ALL INFORMATION SHOWN REGARDING THE LOCATION AND SIZE OF EXISTING UTILITIES AND/OR SERVICES HAS NOT BEEN VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATION OF UTILITIES PRIOR TO CONSTRUCTION AND PROTECTING AND MAINTAINING DURING CONSTRUCTION.
4. THE CONTRACTOR SHALL CHECK AND VERIFY ALL GIVEN GRADES AND ELEVATIONS PRIOR TO CONSTRUCTION AND REPORT ALL DISCREPENCIES TO THE ENGINEER.
5. ALL GRADING CHANGES SHALL BE APPROVED BY THE ENGINEER AND TOWN OF OAKVILLE PRIOR TO IMPLEMENTATION.
6. CONTRACTOR TO REFER TO GEOTECHNICAL REPORT FOR PAVEMENT CONSTRUCTION AND DEWATERING DETAILS.
7. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.

PAVEMENT STRUCTURE (ABOVE PARKING GARAGE ROOF)

HL-3	40mm
HL-8	40mm
GRANULAR 'A'	75mm (MINIMUM)

PAVEMENT STRUCTURE (ON GRADE AND PRIVATE DRIVEWAY))

HL-3	40mm
HL-8	60mm
19mmCRL	
(OR GRANULAR 'A')	150mm
GRANULAR 'B' (TYPE 1)	300mm

WATERMAINS

1. ALL WATERMAINS 100mm AND LARGER SHALL BE PVC, C-900, CLASS 150, SDR18 C/W MECHANICAL RESTRAINTS & TRACER WIRE PER REGION REQUIREMENTS.
2. WATER SERVICE CONNECTION LESS THAN 50mm TO BE COPPER, TYPE "K" SOFT COPPER TUBING.
3. BEDDING ON WATER SERVICE SHALL BE PER OPSD 802.010*.
4. * INDICATES O.P.S.D. CAN BE USED AS MODIFIED BY REGION OF HALTON.
5. VALVE AND BOX FOR 100mm TO 300mm WATER SERVICE PER REGION STDS.
6. COVER SHALL BE 1.7m MIN. UNLESS OTHERWISE NOTED.
7. CONNECTION TO EXISTING WATERMAIN SHALL BE PER REGION OF HALTON STD RH 409.010.
8. WATER SYSTEM SHALL BE TESTED AND DISINFECTED TO MEET REGIONAL REQUIREMENTS.
9. HYDRANTS SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C502 AND SHALL HAVE STEAMER PORTS AS PER REGION STANDARD SPECIFICATIONS (SEE NOTE 12). ALL HYDRANTS SHALL BE INSTALLED AS PER OPSD 1105.010*. IF HYDRANT BARREL DEPTH EXCEEDS 1.7m A HYDRANT THAT CAN BE RAISED FROM THE BOTTOM WITHOUT INCREASING ROD LENGTH IS TO BE USED.
10. MINIMUM LATERAL SEPARATION FROM OTHER UTLITIES IS 2.5m.
11. WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARNACE OF 0.30m (12 INCHES) OVER, 0.50m (20 INCHES) UNDER SEWERS AND ALL OTHER UTILITIES.
12. STORZ PUMPER CONNECTION FOR HYDRANTS AS FOLLOWS:
13. TWO (2) 63.5mm (2 1/2") WITH CSA STANDARD THREAD, 63.5mm I.D., 5 THREADS PER 25mm, 31.75mm SQUARE OPERATING NUT, AND STORZ CAP PAINTED GLOSS BLACK.

SANITARY SEWERS

1. ALL SANITARY SEWERS SHALL BE PVC SDR28, BEDDING PER OPSD 802.010*.
2. SANITARY MANHOLE SHALL BE AS PER OPSD 701.010* c/w COVER PER OPSD 401.010*, STEPS PER OPSD 405.010.
3. * INDICATES O.P.S.D. CAN BE USED MODIFIED BY REGION OF HALTON.
4. BENCHING IN MANHOLES SHALL BE UP TO THE OBVERT OF THE PIPE.

STORM SEWERS

1. ALL STORM SEWERS 600 mm AND SMALLER SHALL BE PVC SDR35 WITH BEDDING PER OPSD 802.010 UNLESS OTHERWISE NOTED
2. ALL STORM SEWERS 675 mm AND LARGER SHALL BE REINFORCED CONCRETE PIPE CLASS 65-D CSA A257.2 COMPLETE WITH BEDDING PER OPSD 802.030.
3. CATCHBASIN SHALL BE PER OPSD 705.010, DOUBLE CATCHBASIN PER OPSD 705.020 C/W GRATE PER OPSD 400.020
4. CATCHBASINS IN LANDSCAPED AREAS SHALL BE SUMPLESS AND C/W BEEHIVE TOP AS PER TOWN STD.5-2
5. ALL CATCHBASINS IN LANDSCAPED AREAS SHALL BE INSTALLED WITH A SUB-DRAIN. SUB-DRAIN TO BE 100mm DIA. PERFORATED PIPE C/W FILTER SOCK SURROUNDED BY 13mm CLEAR STONE AS PER SUB-DRAIN DETAIL
6. ALL CATCHBASIN LEAD SHALL 250mm DIA. AT 2.0% MIN. UNLESS OTHERWISE NOTED.
7. ALL CATCHBASIN MANHOLES SHALL BE BENCHED.
8. ALL STORM MANHOLES SHALL BE 1200mm DIA PER OPSD 701.010 c/w COVER PER OPSD 401.010, UNLESS OTHERWISE NOTED.
9. ALL CATCHBASIN AND CATCHBASIN MANHOLES IN PAVED AREAS SHALL BE INSTALLED WITH 3.0m - 100mmø PERFORATED PIPE C/W FILTER SOCK EXTENDING OUT FROM THE CATCHBASIN AND LOCATED BELOW THE SUBGRADE SURROUNDED BY 50mm GRANULAR 'A'

GRADING NOTES

1. ALL TOPSOIL SHALL BE STRIPPED PRIOR TO GRADING.
2. ALL FILL PLACEMENT SHALL BE DONE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEERS RECOMMENDATIONS.
3. RETAINING WALLS WITH A HEIGHT GREATER THAN 0.6m ARE TO BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER.
4. ALL DISTURBED AREAS TO BE RESTORED WITH 200mm TOPSOIL AND SEED.
5. ALL DISTURBED AREAS WITHIN THE PUBLIC RIGHT-OF-WAY TO BE RESTORED WITH 200mm TOPSOIL AND SOD.
1. ALL WORKS WITHIN THE PUBLIC ROADWAY TO RESTORED TO THE SATISFACTION OF THE MUNICIPALITY.
6. ALL CURBING SHALL BE 150mm HIGH BARRIER CURB PER OPSD 600.110. UNLESS OTHERWISE NOTED

SERVICING NOTES

1. UNLESS NOTED OTHERWISE, ALL UTILITIES SHALL BE BACKFILLED WITH GRANULAR BACKFILL COMPACTED TO 98% S.P.M.D.D. NATIVE BACKFILL MAY BE USED WITH THE PERMISSION OF THE GEOTECHNICAL CONSULTANT. BEDDING AND COVER MATERIAL SHALL BE PER THE GEOTECHNICAL CONSULTANTS' RECOMMENDATIONS.
2. BACKFILLING AND RESTORATION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE TOWN OF OAKVILLE ROAD CUT PERMIT AND TO THE SATISFACTION OF THE ENGINEERING & CONSTRUCTION DEPARTMENT.
3. SURROUND ALL MANHOLES WITH A MINIMUM OF 1.0m COMPACTED GRANULAR 'C' BACKFILL.
4. ALL ENDS OF SERVICE CONNECTIONS SHALL BE MARKED WITH 50x100 LUMBER PLACED FROM INVERT OF SERVICE TO 1.0m ABOVE GRADE.
5. ALL SEWERS SHALL BE FLUSHED AND CCTV INSPECTED AT COMPLETION.
6. ALL REMOVED OR DAMAGED CURBS, SIDEWALK, GRANULARS, ASPHALT AND SOD RESULTING FROM SERVICE INSTALLATION SHALL BE REINSTATED BY THE CONTRACTOR TO THE SATISFACTION OF THE MUNICIPALITY.

EROSION AND SEDIMENT CONTROL NOTES

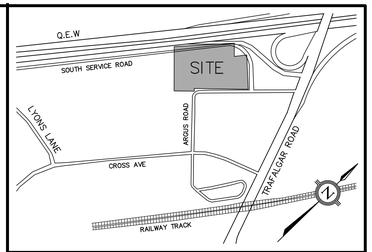
1. THE CONTRACTOR IS RESPONSIBLE TO CLEAN ALL MUD TRACKED ON TO ADJACENT ROADWAYS.
2. THE MEASURES AS PROPOSED MAY BE MODIFIED AT THE DISCRETION OF THE ENGINEER TO SUIT THE PROPOSED CONSTRUCTION PROGRAMS. THE GENERAL INTENT OF THE PROPOSED EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES.
3. ANY DISTURBED AREA NOT SCHEDULED FOR FURTHER CONSTRUCTION WITHIN 30 DAYS SHALL BE PROVIDED WITH A TEMPORARY SEED.
4. INSTALL CATCHBASIN SEDIMENT CONTROL ON EXISTING CATCHBASINS PRIOR TO START OF CONSTRUCTION.
5. INSTALL CATCHBASIN SEDIMENT CONTROL ON NEW CATCHBASINS AT TIME OF INSTALLATION.
6. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED ACCORDING TO THE APPROVED PLANS PRIOR TO COMMENCEMENT OF ANY EARTH MOVING WORK ON THE SITE AND SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED WITH THE INTENDED GROUND COVER.
7. EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED BY THE BUILDER/DEVELOPER:
   - WEEKLY
   - BEFORE AND AFTER ANY PREDICTED RAINFALL EVENT
   - FOLLOWING AN UNPREDICTED RAINFALL EVENT
   - DAILY, DURING EXTENDED DURATION RAINFALL EVENTS
   - AFTER SIGNIFICANT SNOW MELT EVENTS
8. EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES. DAMAGED OR CLOGGED DEVICES SHALL BE REPAIRED WITHIN 48 HOURS.
9. WHERE A SITE REQUIRES DEWATERING AND WHERE THE EXPELLED WATER CAN BE FREELY RELEASED TO A SUITABLE RECEIVER, THE EXPELLED WATER SHALL BE TREATED TO CAPTURE SUSPENDED PARTICLES GREATER THAN 40 MICRON IN SIZE. THE CAPTURED SEDIMENT SHALL BE DISPOSED OF PROPERLY PER MOECC GUIDELINES. THE CLEAN EXPELLED WATER SHALL FREELY RELEASE TO A SUITABLE RECEIVER THAT DOES NOT CREATE DOWNSTREAM ISSUES INCLUDING BUT NOT LIMITED TO EROSION, FLOODING - NUISANCE OR OTHERWISE, INTERFERENCE ISSUES, ETC.
10. EXISTING STORM SEWER AND DRAINAGE DITCHES ADJACENT TO THE WORKS SHALL BE PROTECTED AT ALL TIMES FROM THE ENTRY OF SEDIMENT/SILT THAT MAY MIGRATE FROM THE SITE. FOR STORM SEWERS: ALL INLETS (REAR LOT CATCHBASINS, ROAD CATCHBASINS, PIPE INLETS, ETC.) MUST BE SECURED/FITTED WITH SILTATION CONTROL MEASURES. FOR DRAINAGE DITCHES: THE INSTALLATION OF ROCK CHECK DAMS, SILTATION FENCE, SEDIMENT CONTAINMENT DEVICES MUST BE INSTALLED TO TRAP AND CONTAIN SEDIMENT. THESE SILTATION CONTROL DEVICES SHALL BE INSPECTED AND MAINTAINED PER ABOVE.
11. IN THE EVENT OF A SPILL (RELEASE OF DELETERIOUS MATERIAL) ON OR EMANATING FROM THE SITE, THE OWNER OR OWNERS AGENT SHALL IMMEDIATELY NOTIFY THE MOECC AND FOLLOW ANY PRESCRIBED CLEAN UP PROCEDURE. THE OWNER OF OWNERS AGENT WILL ADDITIONALLY IMMEDIATELY NOTIFY THE TOWN.

CONSTRUCTION NOTES

1. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY TRAFFIC CONTROLS, PER MTO BOOK 7.
2. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION LAYOUT, WITH CONTROL BARS PROVIDED BY THE OWNER. PROTECTION OF CONTROL BARS IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. CONTRACTOR IS RESPONSIBLE TO VERIFY THE SIZE AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION, INCLUDING VAC TRUCK AND RESTORATION AS REQUIRED.
4. CONTRACTOR SHALL PROVIDE THIRD-PARTY DIGITAL AS-BUILTS IN CAD, TO INCLUDE ALL NEW SITE SERVICING INCLUDING TOPS AND INVERTS, AND FINISHED GRADES, INCLUDING PAVED AREAS, SWALES, CURBS, SIDEWALKS AND RETAINING WALLS, TO THE SATISFACTION OF THE ENGINEER.
5. CONTRACTOR SHALL FLUSH AND VIDEO ALL EXISTING SEWERS PRIOR TO AND AFTER CONNECTION, AND NEW AND DISTURBED SEWERS UPON INSTALLATION AND LATER UPON COMPLETION OF TOP WORKS AND LANDSCAPING, PER OPSS 409. VIDEOS TO BE PROVIDED TO THE ENGINEER FOR REVIEW AND APPROVAL.

TREE PROTECTION NOTES

1. TREE PROTECTION BARRIERS SHALL BE PLACED AS PER TOWN OF OAKVILLE STANDARD.
2. ADDITIONAL TREE PROTECTION LOCATIONS MAY BE REQUIRED AS DETERMINED BY THE TOWN OF OAKVILLE AND/OR THE ENGINEER.



LEGEND

NO.	DATE	BY/DRAWN	REVISIONS
4	OCT 04, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 24, 2022	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 17980S.dwg | PLOT SCALE: 1:1 | PLOT DATE: Oct 04, 2024

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928:78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HT2.0.

LOCAL BENCHMARK

CUT CROSS IN CONCRETE SIDEWALK, LOCATED ON THE SOUTH SIDE OF ARGUS ROAD, APPROXIMATELY 11.6 METRES FROM THE WESTERN CORNER OF THE BUILDING AT No. 587 ARGUS ROAD AND 5.3 METRES FROM A WATER VALVE IN THE ROAD, AS SHOWN ON THE FACE OF PLAN. ELEVATION=104.28m

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LICENSED PROFESSIONAL ENGINEER
N. A. SYLVESTER
100199487
OCT/04/24
PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT
TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

PROJECT TITLE
590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
GENERAL NOTES

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	1 OF 1
PROJECT No.	1798		
PLAN No.	N1		

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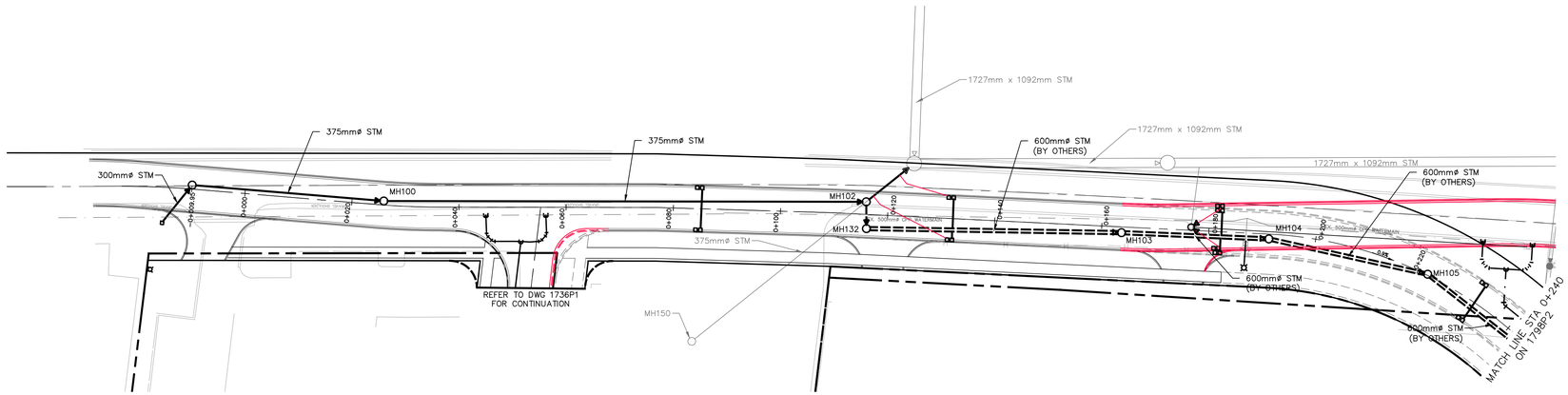
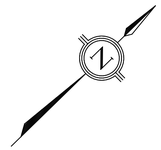
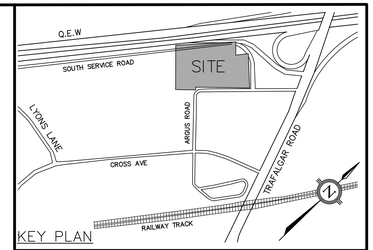






KEY PLAN

LEGEND

- PROPOSED STORM MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SANITARY MANHOLE
- EX. SANITARY SEWER
- PROPOSED WATER SERVICE
- EX. SANITARY MANHOLE
- EX. SANITARY SEWER
- EX. STORM MANHOLE
- EX. STORM SEWER
- EX. CATCHBASIN
- H&V EX. HYDRANT & VALVE
- WV EX. WATER VALVE
- EX. WATERMAIN
- GM EX. GASMAIN
- OH EX. OVERHEAD WIRE
- HS EX. HYDRO SERVICE
- PROPERTY LINE
- RED DENOTES WORKS COMPLETED IN AN INTERIM CONDITION TO BE REMOVED UNDER ULTIMATE BUILD OUT (BY OTHERS)

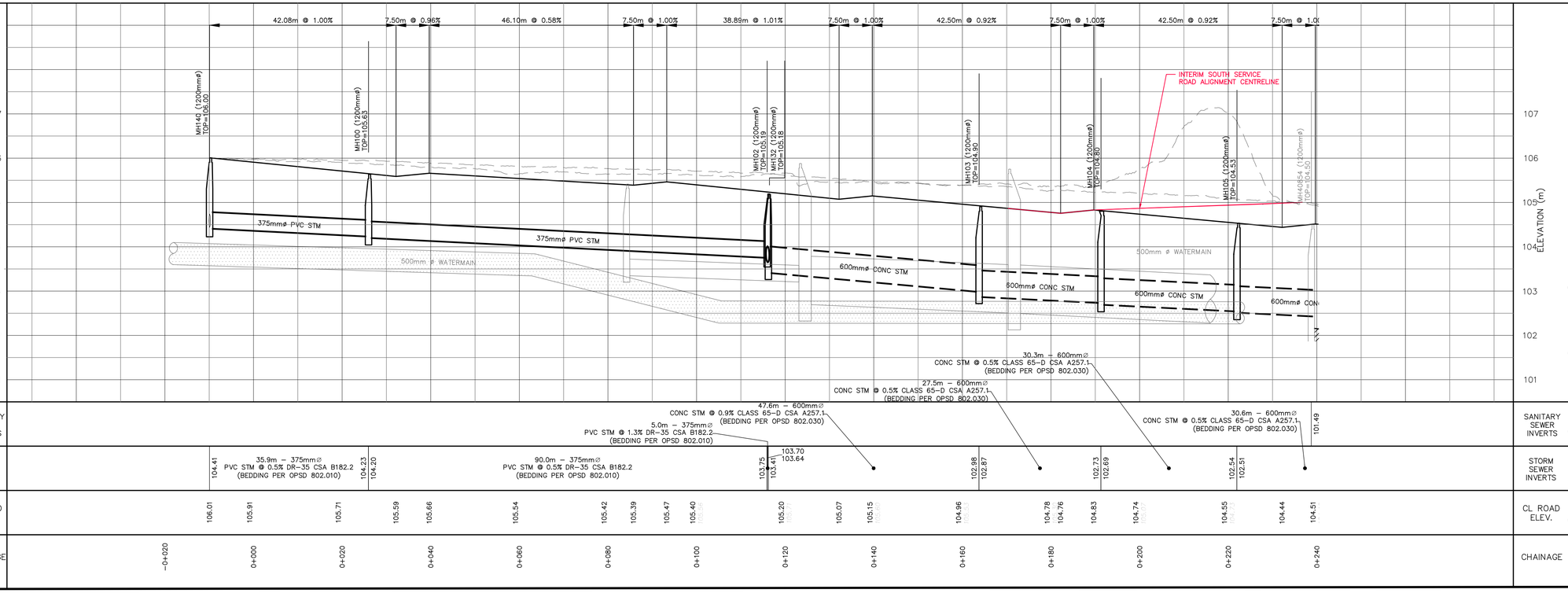
BENCHMARK

ALL ELEVATIONS SHOWN HEREON ARE GEODETIC AND WERE DERIVED FROM THE TOWN OF OAKVILLE BENCHMARK 0-186 HAVING AN ELEVATION OF 86.605m (CGVD-1928:1978).

NOTE

THE TOPOGRAPHIC DETAIL SHOWN HEREON IS OBTAINED FROM TARASICK McMILLIAN KUBICKI LIMITED, ONTARIO LAND SURVEYORS., COMPLETED ON THE 28TH OF OCTOBER, 2022.

SOUTH SERVICE ROAD (20.0m LOCAL ROAD)



No	DD/MM/YY	By/DRN	REVISIONS
1	OCT 04, 2024	MW/ZI	TOC DEVELOPMENT SUBMISSION
0	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA

Design - Chk'd -
Drawn - Chk'd -
Cad File 1798GS.dwg
Plot Date 10/04/24
Scale 0 5 10 15 20 25 1:500
References

APPROVALS

Municipal
APPROVED IN PRINCIPLE SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF OAKVILLE STANDARDS AND SPECIFICATIONS.
Date:
Manager of Development Engineering

Regional Approval
DESIGN OF WATER &/OR WASTEWATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATION APPROVAL FROM AREA MUNICIPALITY.
SIGNED: DATE:
LEGISLATIVE AND PLANNING SERVICES DEPT.

Field Notes

Bell Hydro
Gas Cable
Traf. Water

LICENSED PROFESSIONAL ENGINEER
N. A. SYLVESTER
100199487
OCTOBER 17, 2024
PROVINCE OF ONTARIO

Consultant
TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

Municipality
OAKVILLE Halton REGION

Title
590 ARGUS
(DISTRIKT DEVELOPMENTS)
CONCEPTUAL SOUTH SERVICE ROAD
SSR ULTIMATE PLAN & PROFILE
STA 0+000 TO 0+240

Municipal No. -
Regional No. -
Contract No. -
Consultant No. 1798
Sheet P1

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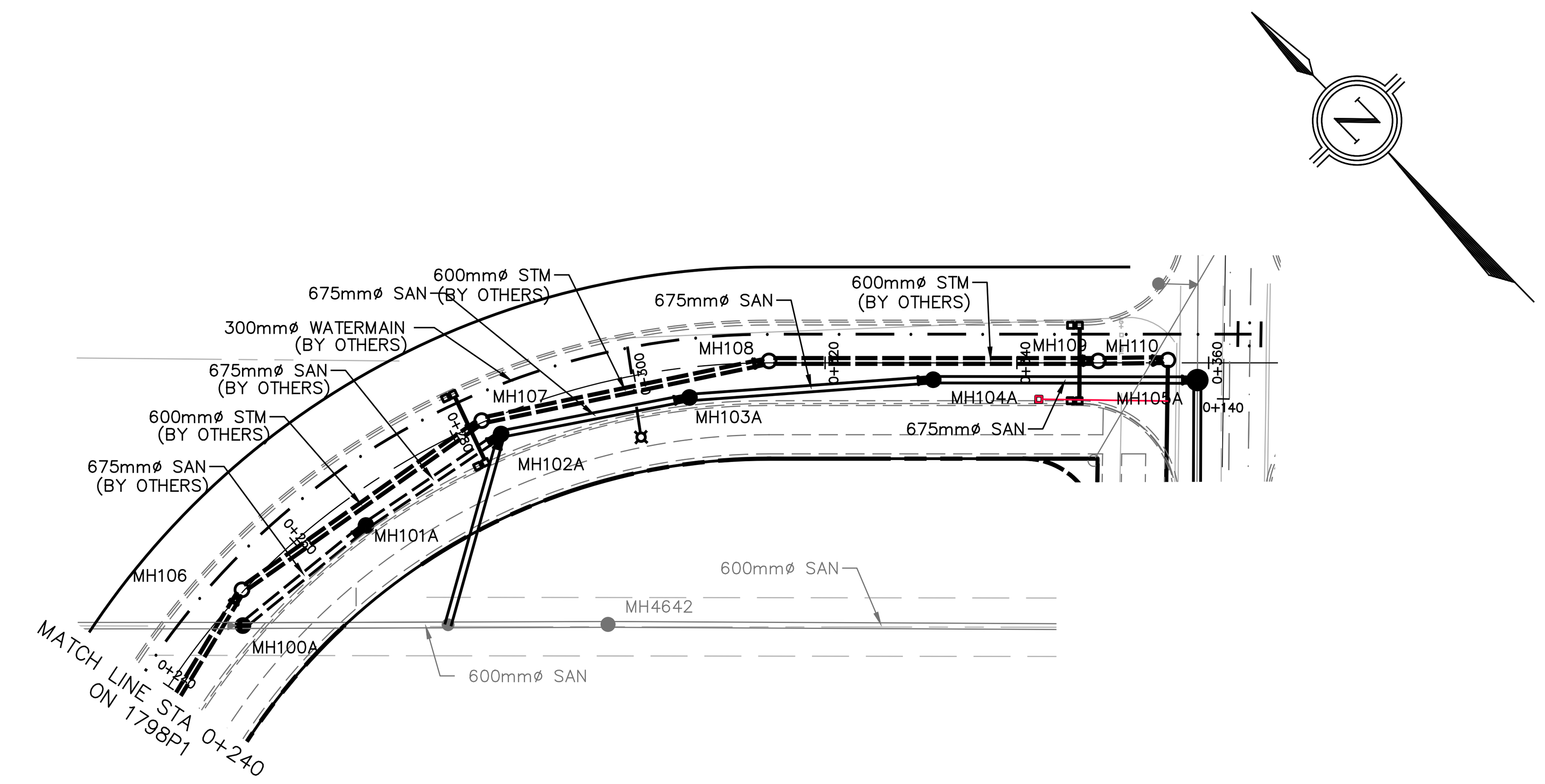
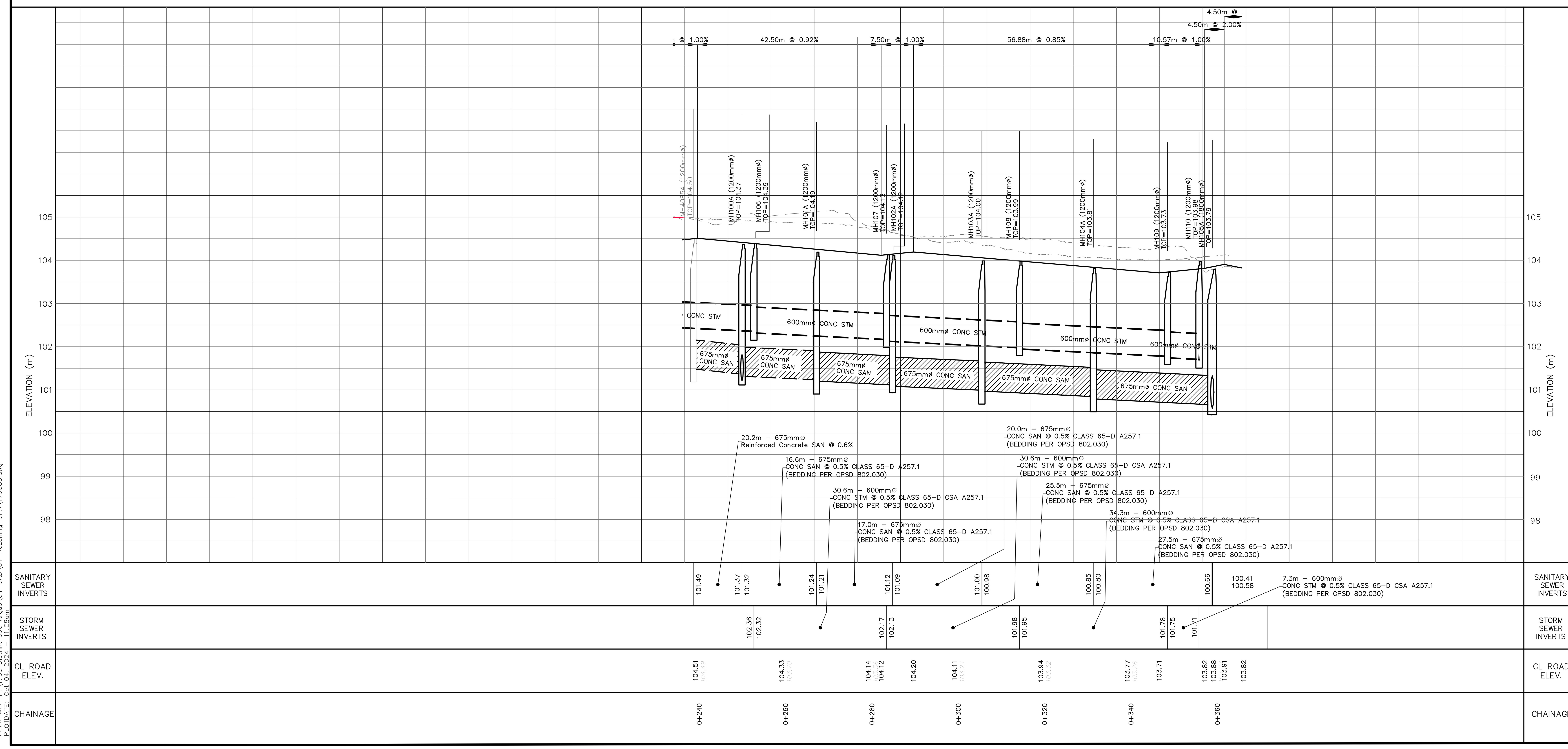
PLOTDATE: Oct 04, 2024 - 1:47pm

20M-



SOUTH SERVICE ROAD (20.0m LOCAL ROAD)



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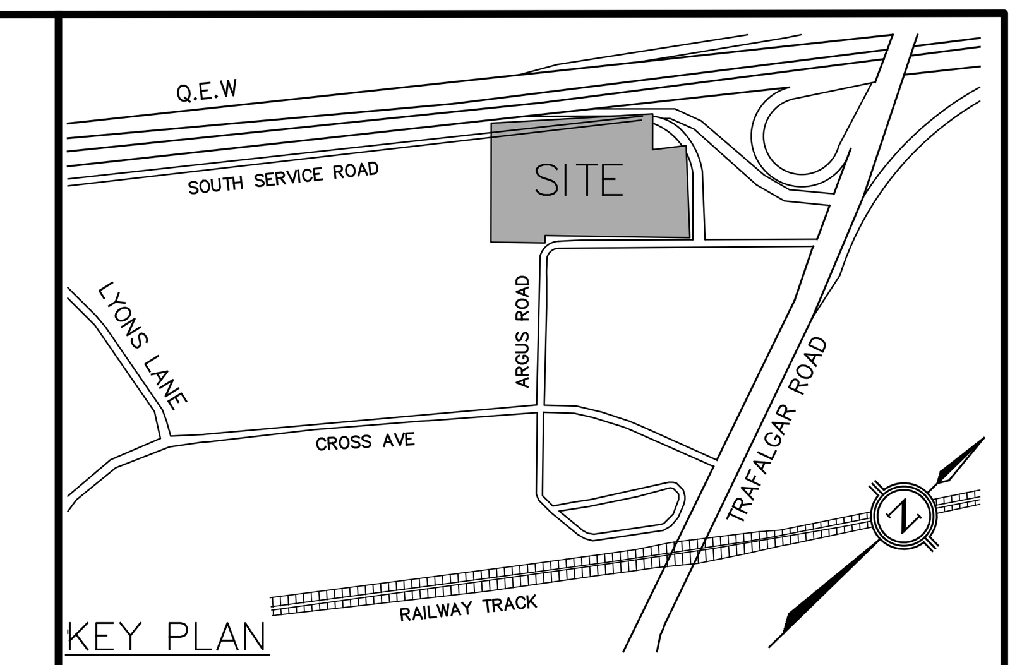


KEY PLAN

LEGEND

Symbol	Description
○	PROPOSED STORM MANHOLE
▶	PROPOSED STORM SEWER
●	PROPOSED SANITARY MANHOLE
▶	EX. SANITARY SEWER
— · —	PROPOSED WATER SERVICE
●	EX. SANITARY MANHOLE
▶	EX. SANITARY SEWER
○	EX. STORM MANHOLE
▷	EX. STORM SEWER
▣	EX. CATCHBASIN
H&V	EX. HYDRANT & VALVE
WV	EX. WATER VALVE
— · —	EX. WATERMAIN
— — —	PROPERTY LINE
red line	RED DENOTES WORKS COMPLETED IN AN INTERIM CONDITION TO BE REMOVED UNDER ULTIMATE BUILD OUT (BY OTHERS)

BENCHMARK

ALL ELEVATIONS SHOWN HEREON ARE GEODETIC AND WERE DERIVED FROM THE TOWN OF OAKVILLE BENCHMARK O–186 HAVING AN ELEVATION OF 86.605m (CGVD–1928:1978).

NOTE

THE TOPOGRAPHIC DETAIL SHOWN HEREON IS OBTAINED FROM TARASICK McMILLIAN KUBICKI LIMITED, ONTARIO LAND SURVEYORS., COMPLETED ON THE 28TH OF OCTOBER, 2022.

No	DD/MM/YY	By/DRN	REVISIONS
1	SEPT 20, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
0	MAR 18, 2024	MW/ZI	RE–ISSUED FOR OPA/ZBA

Design -	Chk'd -	Cad File	1798GS.dwg
Drawn -	Chk'd -	Plot Date	10/04/24
Scale 0 5 10 15 20 25 1:500		References	

APPROVALS

Municipal
APPROVED IN PRINCIPLE SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF OAKVILLE STANDARDS AND SPECIFICATIONS.
Date:
Manager of Development Engineering

Field Notes

Bell	☐	Hydro	☐
Gas	☐	Cable	☐
Traf.	☐	Water	☐

Regional Approval
DESIGN OF WATER &/OR WASTEWATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATION APPROVAL FROM AREA MUNICIPALITY.
SIGNED: DATE:
LEGISLATIVE AND PLANNING SERVICES DEPT.

LICENSED PROFESSIONAL ENGINEER
N. A. SYLVESTER
100199487
OCTOBER 4-2024
PROVINCE OF ONTARIO

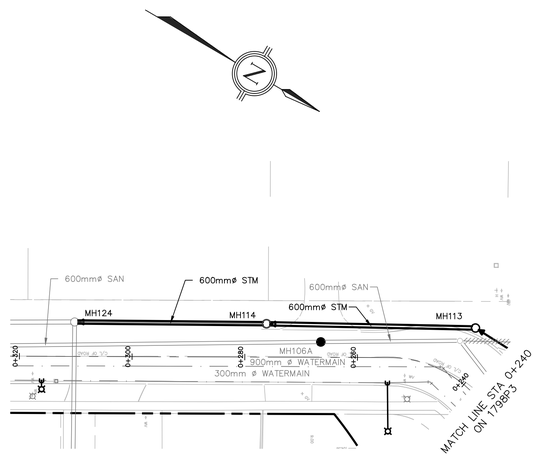
Consultant
TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

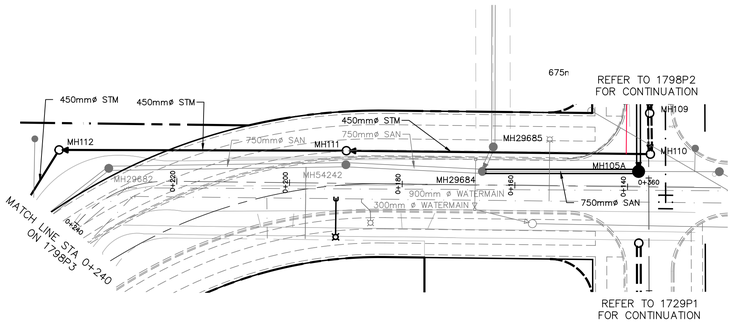
Municipality
OAKVILLE
Halton REGION

Title
590 ARGUS
(DISTRIKT DEVELOPMENTS)
CONCEPTUAL SOUTH SERVICE ROAD
SSR ULTIMATE PLAN & PROFILE
STA 0+240 TO 0+360

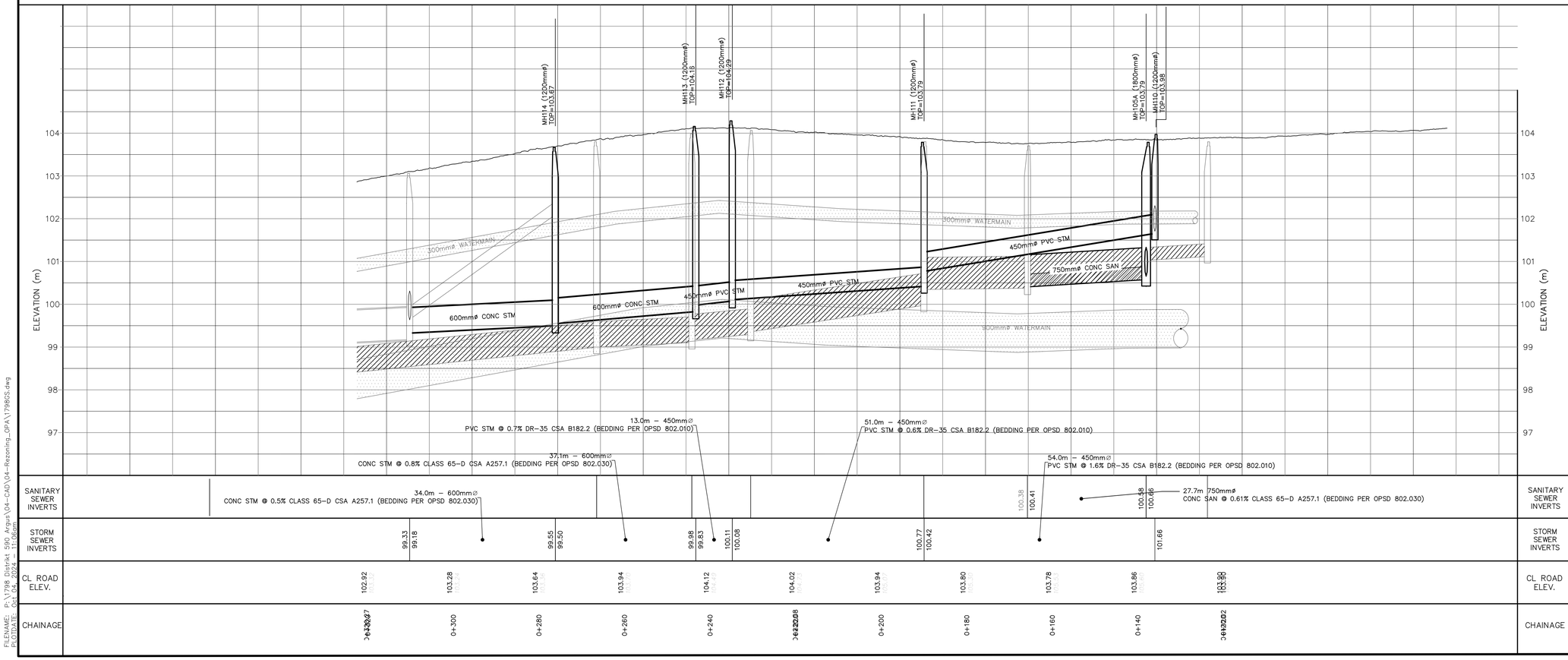
Municipal No. -	Regional No. -
Contract No. -	Consultant No. 1798
	Sheet P2

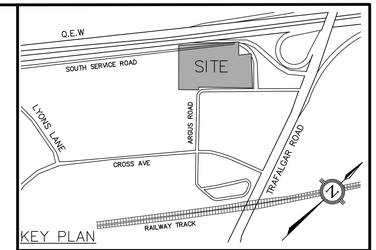
20M-





ARGUS ROAD





LEGEND

- PROPOSED STORM MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SANITARY MANHOLE
- EX. SANITARY SEWER
- PROPOSED WATER SERVICE
- EX. SANITARY MANHOLE
- EX. SANITARY SEWER
- EX. STORM MANHOLE
- EX. STORM SEWER
- EX. CATCHBASIN
- H&V EX. HYDRANT & VALVE
- WV EX. WATER VALVE
- EX. WATERMAIN
- GM EX. GASMAIN
- OH EX. OVERHEAD WIRE
- HS EX. HYDRO SERVICE
- PROPERTY LINE
- RED DENOTES WORKS COMPLETED IN AN INTERIM CONDITION TO BE REMOVED UNDER ULTIMATE BUILD OUT (BY OTHERS)

BENCHMARK

ALL ELEVATIONS SHOWN HEREON ARE GEODETIC AND WERE DERIVED FROM THE TOWN OF OAKVILLE BENCHMARK 0-186 HAVING AN ELEVATION OF 86.605m (CGVD-1928:1978).

NOTE

THE TOPOGRAPHIC DETAIL SHOWN HEREON IS OBTAINED FROM TARASICK McMILLIAN KUBICKI LIMITED, ONTARIO LAND SURVEYORS., COMPLETED ON THE 28TH OF OCTOBER, 2022.

No	DD/MM/YY	By/DRN	REVISIONS
1	OCT 04, 2024	MW/MW	TOC DEVELOPMENT SUBMISSION
0	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA

Design - Chk'd - Cad File 1798GS.dwg

Drawn - Chk'd - Plot Date 10/04/24

Scale 0 5 10 15 20 25 1:500

References

APPROVALS

Field Notes

Municipal

APPROVED IN PRINCIPLE SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF OAKVILLE STANDARDS AND SPECIFICATIONS.

Date: ____

Manager of Development Engineering

Bell ☐ Hydro ☐ Gas ☐ Cable ☐ Traf. ☐ Water ☐

Regional Approval

DESIGN OF WATER &/OR WASTEWATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATION APPROVAL FROM AREA MUNICIPALITY.

SIGNED: ____ DATE: ____

LEGISLATIVE AND PLANNING SERVICES DEPT.

LICENSED PROFESSIONAL ENGINEER N. A. SYLVESTER 100199487 OCTOBER 22 2024 PROVINCE OF ONTARIO

Consultant

TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
www.trafalgareng.com

Municipality

OAKVILLE Halton REGION

Title

590 ARGUS
(DISTRIKT DEVELOPMENTS)
CONCEPTUAL SOUTH SERVICE ROAD
ARGUS ROAD PLAN AND PROFILE
STA 0+120 TO 0+320

Municipal No.	Regional No.
-	-
Contract No.	Consultant No.
-	1798
	Sheet P3

FILENAME: P:\1798 District 590 Argus\04-CAD\04-Rezoning_OPA\1798GS.dwg
PLOTDATE: Oct 04, 2024
PLOTTED BY: Mike Wong

20M-