TRAFALGAR ENGINEERING

FUNCTIONAL SERVICING 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.

March 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 *Revisions are italicized.*

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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), Official Plan Amendment (OPA), and *Draft Plan of Subdivision (DPS)* 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, storm drainage/stormwater management, site grading, and erosion and sediment control. This report also briefly discusses the proposed local roads required as part of the Midtown Oakville EA (2014). This report may be updated and refined as the project moves through the planning process to support the subdivision design.

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 Pan Engineering, December 2020 (ASP Addendum)

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 consisting of *1754* residential units and approximately *2902* m^2 of non-residential space. The building is to be 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. As a result, the total developable area is 1.21 ha. Driveway access is provided off South Service Road at the north of the property.

The existing 6.10 m wide servicing easement will be removed along with the existing services that are located within the easement.

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.

2.0 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 (refer to Appendix 'B') of the Liveable Oakville Plan illustrates the approximate alignments and road allowance widths of various future roads in the Midtown Oakville transportation network.

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 and OPA 14 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 widening to the south.

2.1 South Service Road

South Service Road is to be shifted in a southerly direction to accommodate a proposed QEW off-ramp. Preliminary design of South Service Road was undertaken by Cole Engineering as part of the Midtown EA; however, the Town of Oakville has been in ongoing discussions with MTO regarding the details of the realignment. Town staff provided the consultant team with conceptual drawings that were used to establish a future centreline and consequently the northerly and easterly limits of the development.

Appendix 'K' of the Midtown EA contains several preliminary design details for the Midtown transportation network. One such detail is the typical cross-section of South Service Road. It's worth noting that the EA identifies South Service Road as having a 16.0 m road allowance (see drawing 31 of 36, "Typical Sections", in Appendix 'B') although the d*raft* OPA *released May 2023* indicates *22.0 m* road allowance. While the Cole Engineering centreline location has been maintained, a 16.0 m cross-section is reimagined. A conceptual road cross-section has been developed and *is shown on Drawing 'D'* This road cross-section has been designed in collaboration *and with support of* the developer's traffic consultant, BA Group.

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 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 Drawing S2).

2.1.2 Conceptual South Service Road Stormwater Management

The realigned South Service Road will be designed with stormwater management controls for quantity, and quality. 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)

   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 pre-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 Environments 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.

2.1.2.1 South Service Road Stormwater Quantity Control (Peak Flow Control)

Using the minimum storage quantity rate of 68.2m^3/ha for Sixteen Mile Creek, approximately 24.3 m^3 of storage is required for the sections of South Service Road which immediately abut the subject lands.

Stormwater volume storage may be provided within the boulevard of South Service Road outside of the 14.0 m MTO setback to provide volumetric control, discharge from the tank will be controlled to

the 5-year event. It is anticipated that as other sites develop along this road, additional controls may be required, however this should be reviewed and refined as part of the Town's Midtown study.

Catchbasins and local storm sewers will be designed to collect and convey runoff from all storm events up to and including the 100-year.

A Conceptual Servicing Design for South Service Road is provided (refer to *Drawing S3*).

2.1.2.2 South Service Road Runoff Volume Reduction (Water Balance)

The Town requires 25 mm water balance (retention) for new development based on their updated guidelines. However, it is not practicable to provide infiltration or reuse within the corridor for several reasons. It is preferable to avoid saturation of the road base, minimum setbacks from watermains must be respected (MECP F-6-1), and a minimum separation of 5 m between infiltration (drywells) facilities and buildings must be provided to meet Ontario Building Code criteria. Given that buildings are proposed with minimal setback in this high-density area, there is insufficient space within the road corridor to accommodate infiltration facilities.

It is recommended that the Town review water balance requirements for all municipal roads as part of their ongoing Midtown study.

2.1.2.3 South Service Road Stormwater Quality Control

Catch basins on the realigned South Service Road may be fitted with CB Shields. This provides (conservatively) 50% removal of long term TSS. As part of a treatment train approach, the conceptual design is CB Shields combined with a downstream Stormceptor EFO6 providing 60% removal of long term TSS.

This 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:

$$R = A + B - [(A \times B) / 100]$$
$$= 50\% + 60\% - [(50\% \times 60\%) / 100]$$
$$= 110\% - 30\%$$
$$= 80\%$$

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.

2.2 Argus Road

Argus Road is proposed to be widened from a 20 m cross-section to a 27 m cross-section generally along the same centreline. The proposed widening is shared equally, 3.5 m to both the north and south properties.

At this time, no changes to the alignment of the existing municipal services are proposed. The municipal servicing design will be progressed and may be modified through the Area Servicing Plan, currently being undertaken through the Town.

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. 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

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*.

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 2835 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 68 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	*554*
Minimum Hourly Demand	*554*
Maximum Hourly Demand	*2195*
Maximum Daily Demand	*1247*
Estimated Fire Demand (FUS 1999)	7000
Maximum Daily Plus Fire Demand	*8247*

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.*

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.

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 300 mm diameter PVC sanitary laterals, *one for each tower, are* proposed to service the development. *The laterals will be connected to 1200 mm 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 and drains south to Cross Avenue.

4.2.2 Proposed Wastewater Demands

The proposed wastewater demands were also estimated using a residential population of 2835 persons and a retail population of 68 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	*9.24*
Modified Harmon Peaking Factor	*3.46*
Infiltration Allowance (0.286 L/s-ha)	*0.29*
Peak Flow	*31.82*

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

A 375 mm diameter PVC storm connection along with property line inspection manhole will connect to the proposed storm sewer in South Service Road. This storm sewer connects to the existing 375mm diameter storm sewer which services the site under pre-development conditions. The existing property line manhole and 300 mm diameter storm connection will be removed.

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).

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=0.5, and a development area of 1.21 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 tank during the preliminary design stage.

Runoff from the entire site will outlet to the minor system on South Service Road. Therefore, post-development peak flows must be controlled to the 5-year pre-development peak flow to respect capacity of the minor system.

To control stormwater runoff from the site, an underground stormwater tank system is proposed. The proposed stormwater management tank system will pump stormwater to the storm connection to South Service Road.

The groundwater flow from the site will by-pass the stormwater tank and be directed to the property line storm manhole (treated if required) and flow uncontrolled to the storm sewer in South Service Road. The long-term sub-drain flow (groundwater flow) of 48,000 L/day (0.56 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 5-year flow rate of 191 L/s. Due to mechanical constraints, the achievable release rate is limited to 65 L/s.

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

Table 7: Stormwater Flows

Return	Pre-Dev Total (L/s)	Site Post-Dev Release (L/s)	Groundwater Flow (L/s)	Total Release Rate to Municipal Sewer (L/s)	Storage Required (m^3)
5-yr	192	191	*0.56*	*65*	*241.0*
10-yr	226	191	*0.56*	*65*	*302.2*
25-yr	300	191	*0.56*	*65*	*435.2*
50-yr	367	191	*056*	*65*	*507.9*
100-yr	421	191	*0.56*	*65*	*573.0*

The minimum storage requirement per the Midtown Oakville EA is 69.6 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. Plumbing interior to the building and underground parking structure (designed by the mechanical engineer) will direct runoff to the stormwater tank located in the underground parking structure and must be sized to capture 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 302.2 m^3 which must be re-used on site.

The stormwater management tank has been sized to store this volume in addition to the volume required for peak flow control. 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.

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.*

6.0 GROUNDWATER

A Hydrogeological Investigation was performed by B.I.G. Consulting Inc. (dated February 2023) in which the long-term peak groundwater flow rate into the parking garage sub drains after initial dewatering stages was estimated to be 48,000 L/day (0.*56* L/s). These flows may be treated and discharged uncontrolled using the proposed stormwater lateral.

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-554*D*) dated *May 2023* for details.

7.0 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.*

The proposed property line elevations adjacent to South Service Road have been set considering the preliminary future road centerline elevations as set out in the Midtown Oakville EA.

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.

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

8.0 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.

An Erosion and Sediment Control plan (E1) is provided *in Appendix 'G' and should be read in conjunction with this report.*

9.0 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 and can meet the Town of Oakville stormwater management criteria.

The following is a summary of the report findings:

- Separate stormwater controls are proposed for runoff from South Service Road.
- 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 *554* L/min with an estimated maximum daily plus fire demand of *8247* 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*, 300 mm diameter sanitary laterals*, one for each tower*. The estimated peak wastewater flow is *31.82* L/s for the entire site.
- Stormwater quantity controls will be provided by controlling post development peak flows to the 5-year pre-development peak flow. Storage will be provided in a stormwater tank located in the underground parking structure. Stormwater will be pumped to a maximum release rate of *65* L/s to South Service Road by way of a 375 mm diameter storm sewer connection. The required storage volume is *573.0* m^3.
- *Groundwater will be collected, treated if required, and discharged uncontrolled to the municipal storm sewer using the 375 mm diameter storm sewer connection. The allowable stormwater release rate has been reduced by 0.56 L/s to account for the uncontrolled groundwater flows.*
- The water balance criteria of 25 mm is equivalent to 302.2 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.
- The stormwater tank will have a minimum capacity of *875.2* m^3, to store the required quantity and water balance requirements.
- 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.

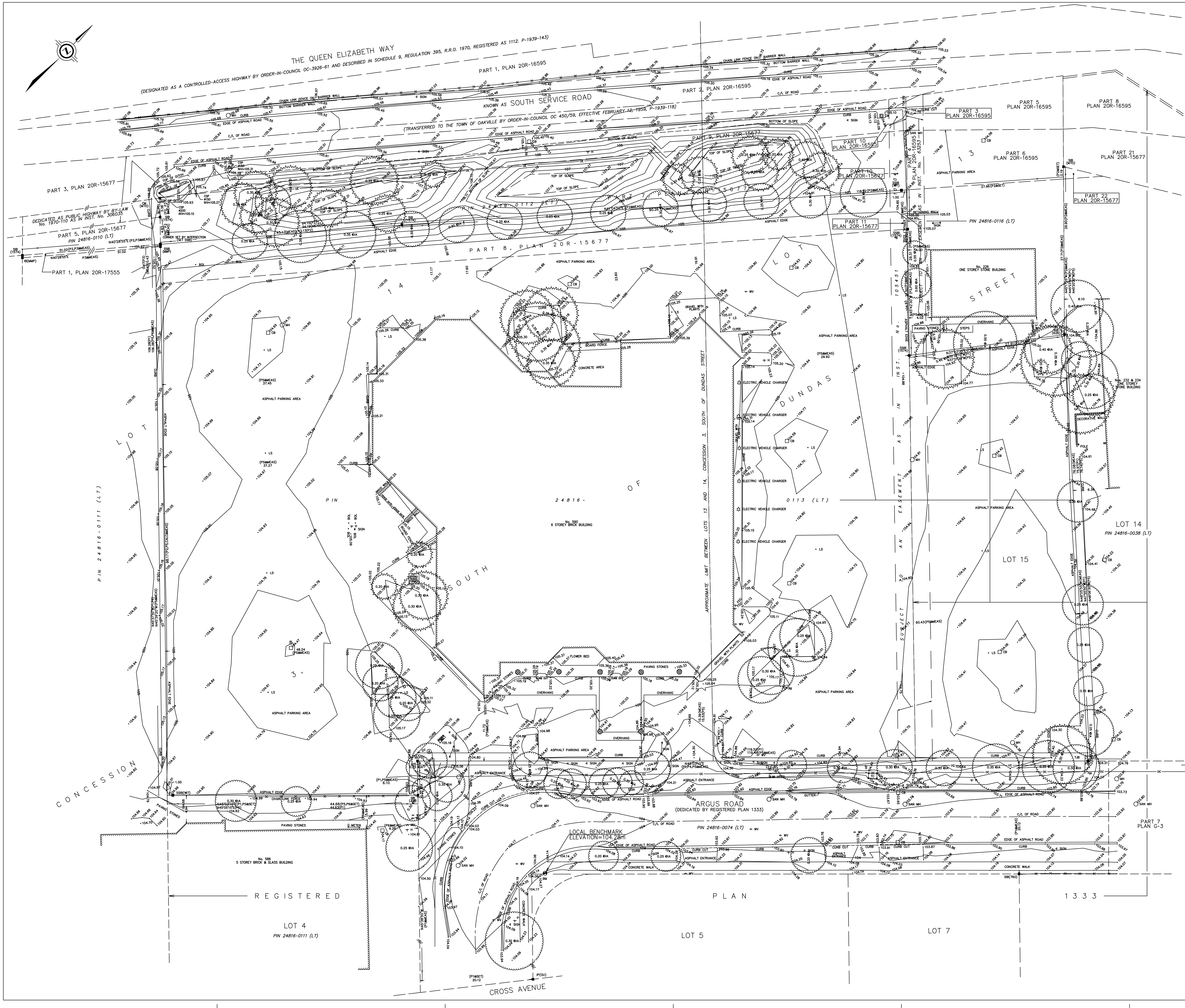
Based on the above, we support the proposed development from a civil engineering perspective for rezoning and Official Plan Amendment.

PREPARED BY TRAFALGAR ENGINEERING LTD.

Malcolm Wallace, EIT
Intermediate Designer

Nicole Sylvester, P.Eng.
Project Manager

APPENDIX ‘A’



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 5 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 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, APPROXMATELY 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 0.999728.

FOR BEARING COMPARISONS, A ROTATION OF 0°52'50" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P1 AND P6.

FOR BEARING COMPARISONS, A ROTATION OF 1°1'50" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P2 AND P3.

FOR BEARING COMPARISONS, A ROTATION OF 1°1'40" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON P4.

FOR BEARING COMPARISONS, A ROTATION OF 1°8'10" 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 (A)	606 340.48	4 812 463.44
ORP (B)	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 TIE BETWEEN ORP (A) AND ORP (B) 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 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 (REF. No. F-1984)
P6	DENOTES	SURVEYORS 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
626	DENOTES	H.D. SEWELL, O.L.S.
760	DENOTES	McCONNELL, MAUGHAN LTD., O.L.S.
923	DENOTES	TARASICK McMILLAN KUBICKI LIMITED, O.L.S.
1574	DENOTES	DELPH & JENKINS LIMITED, O.L.S.
MMP	DENOTES	MACKEY, MACKEY & PETERS LIMITED, O.L.S.
OU	DENOTES	ORIGIN UNKNOWN

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

ALL SET SSIB 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. 525/91.

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
——UE——	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 RESPONSIBILTITY 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.

JUNE 2, 2022
DATE

R.S. QUERUBIN
ONTARIO LAND SURVEYOR

J.D. BARNES LIMITED
SURVEYING MAPPING GIS
LAND INFORMATION SPECIALISTS
401 WHEELABRATOR WAY, SUITE A, MILTON, ON L9T 3C1
T: (905) 875-9955 F: (905) 875-9956 www.jdbarnes.com

DRAWN BY: MB/MD	CHECKED BY: RSQ	REFERENCE NO.: 22-30-886-00-A
FILE: $FILE$		DATED: 05/31/2022
		PLOTTED: $DATE$

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	102	5.5%
1B	40.24 m²	433 SF	63.53 m²	684 SF	450	24.4%
1B+D	45.03 m²	485 SF	67.55 m²	727 SF	580	31.5%
2B	50.72 m²	546 SF	73.32 m²	789 SF	585	31.8%
3B	70.00 m²	753 SF	88.34 m²	951 SF	125	6.8%

UNIT MIX TOWER A

NAME	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
STUDIO	340 SF	490 SF	43	8%
1B	476 SF	593 SF	89	16%
1B+D	505 SF	682 SF	188	35%
2B	633 SF	773 SF	172	32%
3B	769 SF	903 SF	52	10%
			544	100%

UNIT MIX TOWER B

NAME	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
STUDIO	340 SF	423 SF	46	8%
1B	483 SF	684 SF	99	16%
1B+D	485 SF	727 SF	255	42%
2B	629 SF	789 SF	149	25%
3B	762 SF	920 SF	58	10%
			607	100%

UNIT MIX TOWER C

UNIT TYPE	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
1B	433 SF	637 SF	262	38%
1B+D	488 SF	644 SF	137	20%
2B	546 SF	783 SF	264	38%
3B	753 SF	951 SF	15	2%
STUDIO	335 SF	437 SF	13	2%
			691	100%

UNIT SUMMARY (PER LEVEL) TOWER A

LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	423 SF	423 SF	1
LEVEL 02	1B	517 SF	524 SF	2
LEVEL 02	1B+D	572 SF	650 SF	5
LEVEL 02	2B	650 SF	703 SF	3
				11
LEVEL 03	STUDIO	407 SF	407 SF	1
LEVEL 03	1B	518 SF	518 SF	2
LEVEL 03	1B+D	574 SF	642 SF	4
LEVEL 03	2B	649 SF	694 SF	3
				10
LEVEL 04	STUDIO	406 SF	406 SF	1
LEVEL 04	1B	518 SF	518 SF	2
LEVEL 04	1B+D	574 SF	642 SF	5
LEVEL 04	2B	649 SF	694 SF	4
				12
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	384 SF	437 SF	2
LEVEL 07	1B	510 SF	517 SF	2
LEVEL 07	1B+D	551 SF	677 SF	8
LEVEL 07	2B	650 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	650 SF	675 SF	3
LEVEL 08	3B	830 SF	864 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	681 SF	4
LEVEL 09	3B	830 SF	876 SF	2
				14
LEVEL 10	STUDIO	346 SF	370 SF	2
LEVEL 10	1B	492 SF	535 SF	3
LEVEL 10	1B+D	551 SF	641 SF	3
LEVEL 10	2B	649 SF	675 SF	4
LEVEL 10	3B	769 SF	830 SF	2
				14
LEVEL 11	1B	483 SF	510 SF	2
LEVEL 11	1B+D	551 SF	636 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	STUDIO	340 SF	340 SF	28
LEVEL 14,17 to 43	1B	510 SF	512 SF	56
LEVEL 14,17 to 43	1B+D	551 SF	637 SF	112
LEVEL 14,17 to 43	2B	643 SF	672 SF	112
LEVEL 14,17 to 43	3B	830 SF	830 SF	28
,17 to 43				336
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 45	STUDIO	352 SF	352 SF	2
LEVEL 45,44	1B	509 SF	509 SF	2
LEVEL 45,44	1B+D	588 SF	588 SF	2
LEVEL 45,44	2B	666 SF	773 SF	8
LEVEL 45,44	3B	831 SF	903 SF	6
,44				20
TOTAL				544

UNIT SUMMARY (PER LEVEL) TOWER B

LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	423 SF	423 SF	1
LEVEL 02	1B	515 SF	523 SF	2
LEVEL 02	1B+D	575 SF	651 SF	5
LEVEL 02	2B	649 SF	703 SF	3
				11
LEVEL 03	STUDIO	407 SF	407 SF	1
LEVEL 03	1B	517 SF	517 SF	2
LEVEL 03	1B+D	574 SF	642 SF	5
LEVEL 03	2B	644 SF	694 SF	4
				12
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	673 SF	10
LEVEL 06	2B	641 SF	666 SF	3
LEVEL 06	3B	823 SF	823 SF	1
				19
LEVEL 07	STUDIO	386 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	864 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	686 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	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
,17 to 48				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	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
,49				16
TOTAL				607

UNIT SUMMARY (PER LEVEL) TOWER C

LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 03	STUDIO	399 SF	437 SF	2
LEVEL 03	1B	515 SF	574 SF	5
LEVEL 03	1B+D	548 SF	630 SF	6
LEVEL 03	2B	646 SF	659 SF	2
				15
LEVEL 04	STUDIO	399 SF	437 SF	2
LEVEL 04	1B	512 SF	516 SF	3
LEVEL 04	1B+D	518 SF	630 SF	8
LEVEL 04	2B	551 SF	660 SF	3
				16
LEVEL 05	STUDIO	399 SF	437 SF	2
LEVEL 05	1B	492 SF	637 SF	4
LEVEL 05	1B+D	517 SF	630 SF	8
LEVEL 05	2B	546 SF	783 SF	5
LEVEL 05	3B	825 SF	836 SF	2
				21
LEVEL 06	STUDIO	387 SF	387 SF	1
LEVEL 06	1B	504 SF	566 SF	5
LEVEL 06	1B+D	517 SF	616 SF	5
LEVEL 06	2B	616 SF	764 SF	7
LEVEL 06	3B	828 SF	828 SF	1
				19
LEVEL 07	STUDIO	403 SF	403 SF	2
LEVEL 07	1B	487 SF	564 SF	5
LEVEL 07	1B+D	547 SF	644 SF	4
LEVEL 07	2B	601 SF	718 SF	5
LEVEL 07	3B	797 SF	797 SF	1
				17
LEVEL 08	STUDIO	397 SF	397 SF	1
LEVEL 08	1B	487 SF	532 SF	5
LEVEL 08	1B+D	554 SF	603 SF	4
LEVEL 08	2B	611 SF	689 SF	4
LEVEL 08	3B	783 SF	891 SF	2
				16
LEVEL 09	STUDIO	396 SF	396 SF	1
LEVEL 09	1B	433 SF	530 SF	5
LEVEL 09	1B+D	554 SF	606 SF	3
LEVEL 09	2B	617 SF	690 SF	5
LEVEL 09	3B	842 SF	842 SF	1
				15
LEVEL 10	STUDIO	335 SF	335 SF	1
LEVEL 10	1B	463 SF	533 SF	5
LEVEL 10	1B+D	488 SF	589 SF	2
LEVEL 10	2B	599 SF	704 SF	5
LEVEL 10	3B	768 SF	768 SF	1
				14
LEVEL 11	STUDIO	370 SF	370 SF	1
LEVEL 11	1B	487 SF	533 SF	5
LEVEL 11	1B+D	570 SF	616 SF	4
LEVEL 11	2B	651 SF	687 SF	4
				14
LEVEL 12	1B	518 SF	533 SF	3
LEVEL 12 ,17 to 55	1B+D	488 SF	612 SF	3
LEVEL 12 ,17 to 55	2B	652 SF	748 SF	5
LEVEL 12 ,17 to 55	3B	753 SF	753 SF	1
				12
LEVEL 13	1B	488 SF	533 SF	5
LEVEL 13	1B+D	575 SF	616 SF	3
LEVEL 13	2B	613 SF	690 SF	4
				12
LEVEL 14	1B	488 SF	533 SF	200
LEVEL 14	1B+D	575 SF	589 SF	80
LEVEL 14	2B	613 SF	689 SF	200
				480
LEVEL 15,56	1B	520 SF	533 SF	3
LEVEL 15,56	1B+D	575 SF	616 SF	3
LEVEL 15,56	2B	613 SF	689 SF	4
,56				10
LEVEL 16	1B	520 SF	533 SF	3
LEVEL 16	1B+D	575 SF	589 SF	2
LEVEL 16	2B	613 SF	690 SF	5
				10
LEVEL 57	1B	513 SF	524 SF	6
LEVEL 57	1B+D	547 SF	547 SF	2
LEVEL 57	2B	702 SF	710 SF	6
LEVEL 57	3B	913 SF	951 SF	6
				20
TOTAL				691

DEVELOPMENT UNIT SUMMARY (PER LEVEL)

LEVEL	UNIT CATEGORY	MIN(SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	423 SF	423 SF	2
LEVEL 02	1B	515 SF	524 SF	4
LEVEL 02	1B+D	572 SF	651 SF	10
LEVEL 02	2B	649 SF	703 SF	6
LEVEL 03	STUDIO	399 SF	437 SF	4
LEVEL 03	1B	515 SF	574 SF	9
LEVEL 03	1B+D	548 SF	642 SF	15
LEVEL 03	2B	644 SF	694 SF	9
LEVEL 04	STUDIO	399 SF	437 SF	4
LEVEL 04	1B	512 SF	518 SF	7
LEVEL 04	1B+D	518 SF	727 SF	23
LEVEL 04	2B	551 SF	694 SF	11
LEVEL 04	3B	823 SF	823 SF	1
LEVEL 05	STUDIO	399 SF	437 SF	4
LEVEL 05	1B	492 SF	637 SF	10
LEVEL 05	1B+D	517 SF	641 SF	27
LEVEL 05	2B	546 SF	783 SF	14
LEVEL 05	3B	823 SF	836 SF	4
LEVEL 06	STUDIO	387 SF	490 SF	3
LEVEL 06	1B	476 SF	566 SF	13
LEVEL 06	1B+D	517 SF	680 SF	24
LEVEL 06	2B	616 SF	764 SF	14
LEVEL 06	3B	823 SF	830 SF	3
LEVEL 07	STUDIO	384 SF	437 SF	6
LEVEL 07	1B	487 SF	566 SF	9
LEVEL 07	1B+D	547 SF	679 SF	21
LEVEL 07	2B	601 SF	733 SF	10
LEVEL 07	3B	797 SF	830 SF	5
LEVEL 08	STUDIO	397 SF	397 SF	1
LEVEL 08	1B	487 SF	532 SF	7
LEVEL 08	1B+D	551 SF	679 SF	21
LEVEL 08	2B	611 SF	689 SF	9
LEVEL 08	3B	783 SF	891 SF	8
LEVEL 09	STUDIO	396 SF	396 SF	1
LEVEL 09	1B	433 SF	530 SF	7
LEVEL 09	1B+D	551 SF	682 SF	18
LEVEL 09	2B	617 SF	690 SF	12
LEVEL 09	3B	823 SF	876 SF	5
LEVEL 10	STUDIO	335 SF	378 SF	5
LEVEL 10	1B	463 SF	535 SF	11
LEVEL 10	1B+D	488 SF	641 SF	9
LEVEL 10	2B	599 SF	704 SF	12
LEVEL 10	3B	762 SF	830 SF	5
LEVEL 11	STUDIO	370 SF	370 SF	1
LEVEL 11	1B	483 SF	533 SF	9
LEVEL 11	1B+D	551 SF	636 SF	15
LEVEL 11	2B	637 SF	730 SF	13
LEVEL 11	3B	823 SF	830 SF	2
LEVEL 12	STUDIO	340 SF	344 SF	2
LEVEL 12	1B	510 SF	533 SF	5
LEVEL 12	1B+D	488 SF	639 SF	9
LEVEL 12	2B	629 SF	748 SF	12
LEVEL 12	3B	753 SF	830 SF	7
LEVEL 13	STUDIO	340 SF	344 SF	2
LEVEL 13	1B	488 SF	533 SF	9
LEVEL 13	1B+D	551 SF	637 SF	12
LEVEL 13	2B	613 SF	690 SF	11
LEVEL 13	3B	830 SF	830 SF	2
LEVEL 14,17 TO 43	STUDIO	340 SF	340 SF	28
LEVEL 14,17 TO 43	1B	510 SF	512 SF	56
LEVEL 14,17 TO 43	1B+D	551 SF	637 SF	112
LEVEL 14,17 TO 43	2B	643 SF	672 SF	112
LEVEL 14,17 TO 43	3B	830 SF	830 SF	28
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	1B	488 SF	533 SF	200
LEVEL 14,17 TO 55	1B+D	575 SF	589 SF	80
LEVEL 14,17 TO 55	2B	613 SF	689 SF	200
LEVEL 15	STUDIO	340 SF	345 SF	2
LEVEL 15	1B	511 SF	684 SF	9
LEVEL 15	1B+D	485 SF	616 SF	7
LEVEL 15	2B	613 SF	689 SF	10
LEVEL 15	3B	794 SF	829 SF	2
LEVEL 16	STUDIO	340 SF	345 SF	2
LEVEL 16	1B	509 SF	680 SF	9
LEVEL 16	1B+D	485 SF	591 SF	6
LEVEL 16	2B	613 SF	690 SF	11
LEVEL 16	3B	794 SF	828 SF	2
LEVEL 44 & 45	STUDIO	352 SF	352 SF	2
LEVEL 44 & 45	1B	509 SF	509 SF	2
LEVEL 44 & 45	1B+D	588 SF	588 SF	2
LEVEL 44 & 45	2B	666 SF	773 SF	8
LEVEL 44 & 45	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 56 & 57	1B	513 SF	524 SF	6
LEVEL 56 & 57	1B+D	547 SF	547 SF	2
LEVEL 56 & 57	2B	702 SF	710 SF	6
LEVEL 56 & 57	3B	913 SF	951 SF	6
TOTAL				1842

TOWN OF OAKVILLE ZONING BY-LAW 2014-014

SITE AREA	TOTAL = **15,378 m²** (AREA WITHIN PROPERTY LINES)	
	AREA OF ROAD CONVEYANCES = **3,288.73 m²**	
	NET SITE AREA = **12,089.27 m²** (SITE AREA-AREA OF ROAD CONVEYANCES)	
	PRIVATELY OWNED PUBLIC ACCESSIBLE SPACES = **2,415.26 m²** (WEST **1,171.12 m²**; EAST **1,244.14 m²**)	
	MTO SETBACK (SETBACK NOT TO BE CONVEYED) = **1,324.90 m²**	
SITE INFORMATION	SITE AREA PROVIDED BY: **J. D. BARNES LTD**	
PROGRAM	MULTI-TOWER RESIDENTIAL DEVELOPMENT WITH 6-STY PODIUM; TOWER A @ 45 STY + MPH; TOWER B @ 50 STY + MPH; TOWER C @ 57 STY + MPH WITH A TOTAL OF ***1842*** RESIDENTIAL UNITS	
	REQUIRED / PERMITTED	PROVIDED
MAXIMUM BUILDING HEIGHT	--	TOWER A @ 45 STY + MPH; TOWER B @ 50 STY + MPH; TOWER C @ 57 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 149,907.91 m² RESIDENTIAL GFA **147,012.47 m²** NON-RESIDENTIAL 1 GFA (RETAIL) **1,043.34 m²** NON-RESIDENTIAL 2 GFA (DAYCARE) **450.24 m²** NON-RESIDENTIAL 3 GFA (OFFICE) **1,059.50 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*."
FLOOR SPACE INDEX**	149,907.91 m² (TOTAL GFA) / **15,378 m²** (GROSS LOT AREA) = **9.73**	** 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*."
NUMBER OF UNITS	***1842*** RESIDENTIAL UNITS	

AMENITY AREA PROVISIONS	REQUIRED / PERMITTED	PROVIDED	
INDOOR AMENITY SPACE	0	***1842*** UNITS @ 2.0 PER = **3684**	**3,851.41 m²**
OUTDOOR AMENITY SPACE	0	***1842*** UNITS @ 1.4 PER = **2578.8**	**2,579.94 m²**

PARKING PROVISIONS

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

		PROPOSED	PROVIDED
VEHICULAR PARKING	RESIDENT (R)	1842 x (0.472) = **870**	**892**
	RES. VISITOR (V)	***1842*** x (0.15) = **277**	**261** + 36 SHARED NON-RESIDENTIAL SPACES AS PER BELOW = 298 TOTAL RES. VISITOR SPACE PROVIDED
	NON-RESIDENTIAL (C1) (RETAIL)	**1,043.34 m²** (1.08/100 m²) = **12**	**12**
	NON-RESIDENTIAL (C2) (DAYCARE)	**450.24 m²** (1.08/100 m²) = **5**	**12**
	NON-RESIDENTIAL (C3) (OFFICE)	**1,059.50 m²** (1.08/100 m²) = **11**	**12** **36**
TOTAL REQUIRED		**1175**	**1189**
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 **1842**	RESIDENTIAL *(75% OF TOTAL)* **1382** VISITOR* *(25% OF TOTAL)* **461**	**1382** BICYCLE STACKER - LONG-TERM RESIDENTIAL (450x1800) **462** BICYCLE STACKER - LONG-TERM RESIDENTIAL (450x1800) VISITOR
	NON-RESIDENTIAL 1** (RETAIL)	**1,043.34 m²** (1.00/1,000 m²) = **2**	
	NON-RESIDENTIAL 2** (DAYCARE)	**450.24 m²** (1.00/1,000 m²) = **2**	
	NON-RESIDENTIAL 3** (OFFICE)	**1,059.50 m²** (1.00/1,000 m²) = **2**	
TOTAL REQUIRED		**1849**	**1844**

STORAGE LOCKERS PROVIDED

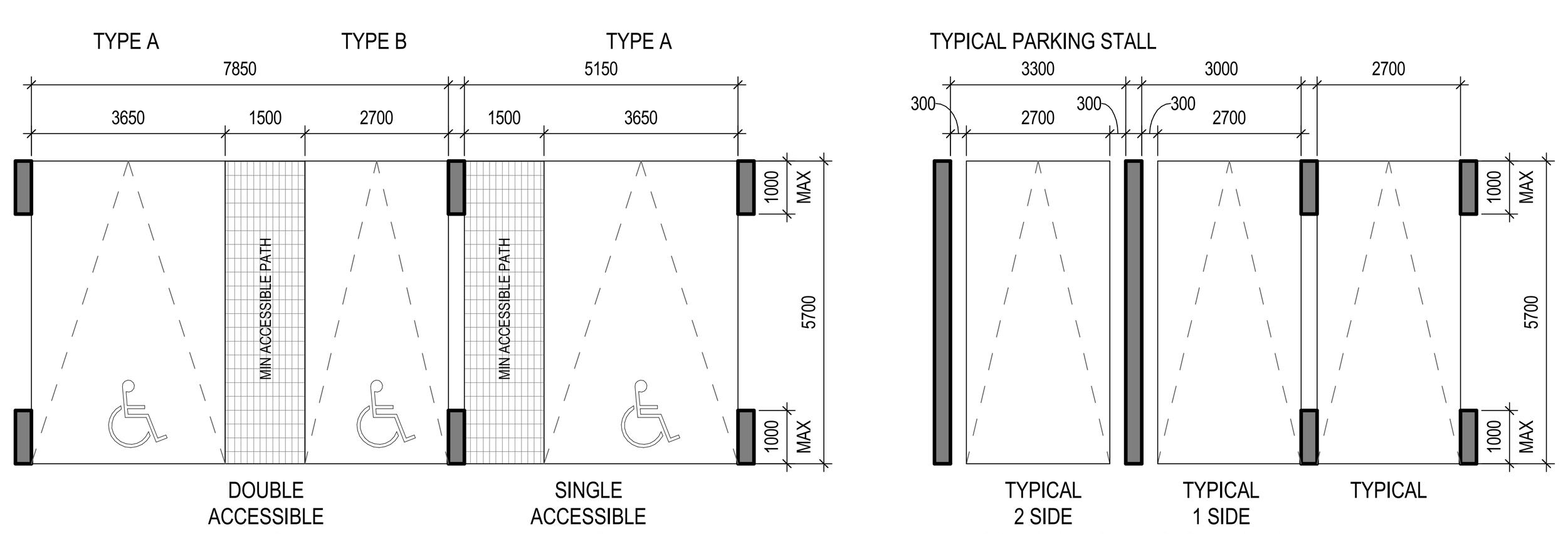
LEVEL P6	140
LEVEL P5	165
LEVEL P4	184
LEVEL P3	182
LEVEL P2	190
LEVEL P1W	163
TOTAL	1024

VEHICULAR PARKING PROVISION BREAKDOWN BY FLOOR LEVEL

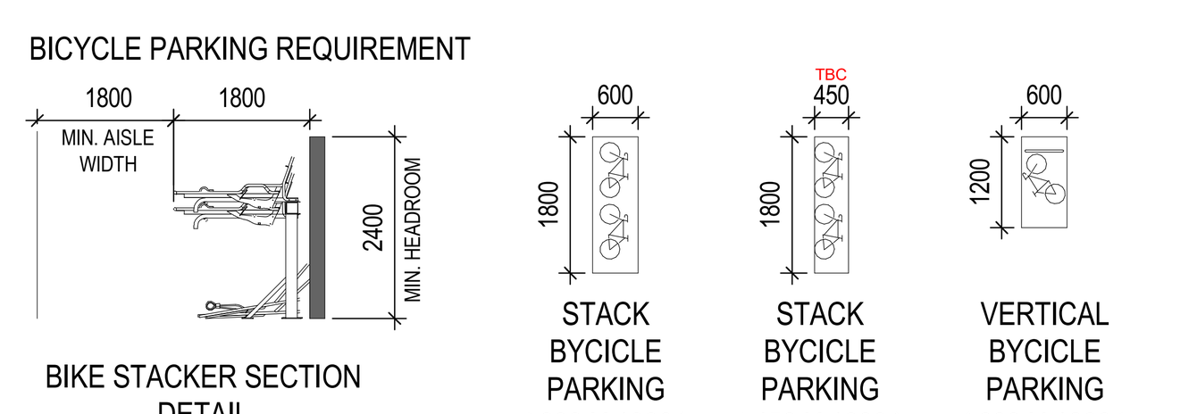
LEVEL	RESIDENTIAL	VISITOR	NON-RES. 1, 2, 3	TOTAL
P6	226	0	0	226
P5	220	0	0	220
P4	223	0	0	223
P3	223	0	0	223
P2	0	195	12	207
P1	0	66	24	90
TOTAL	892	261	36	1189

BICYCLE PARKING PROVISION BREAKDOWN BY FLOOR LEVEL

LEVEL	RESIDENTIAL	VISITOR	NON-RES. 1, 2, 3	TOTAL
P1	1382	462	0	1844
L01	0	0	0	0
L02	0	0	0	0
TOTAL	1382	462	0	1844



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	2024-02-xx	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

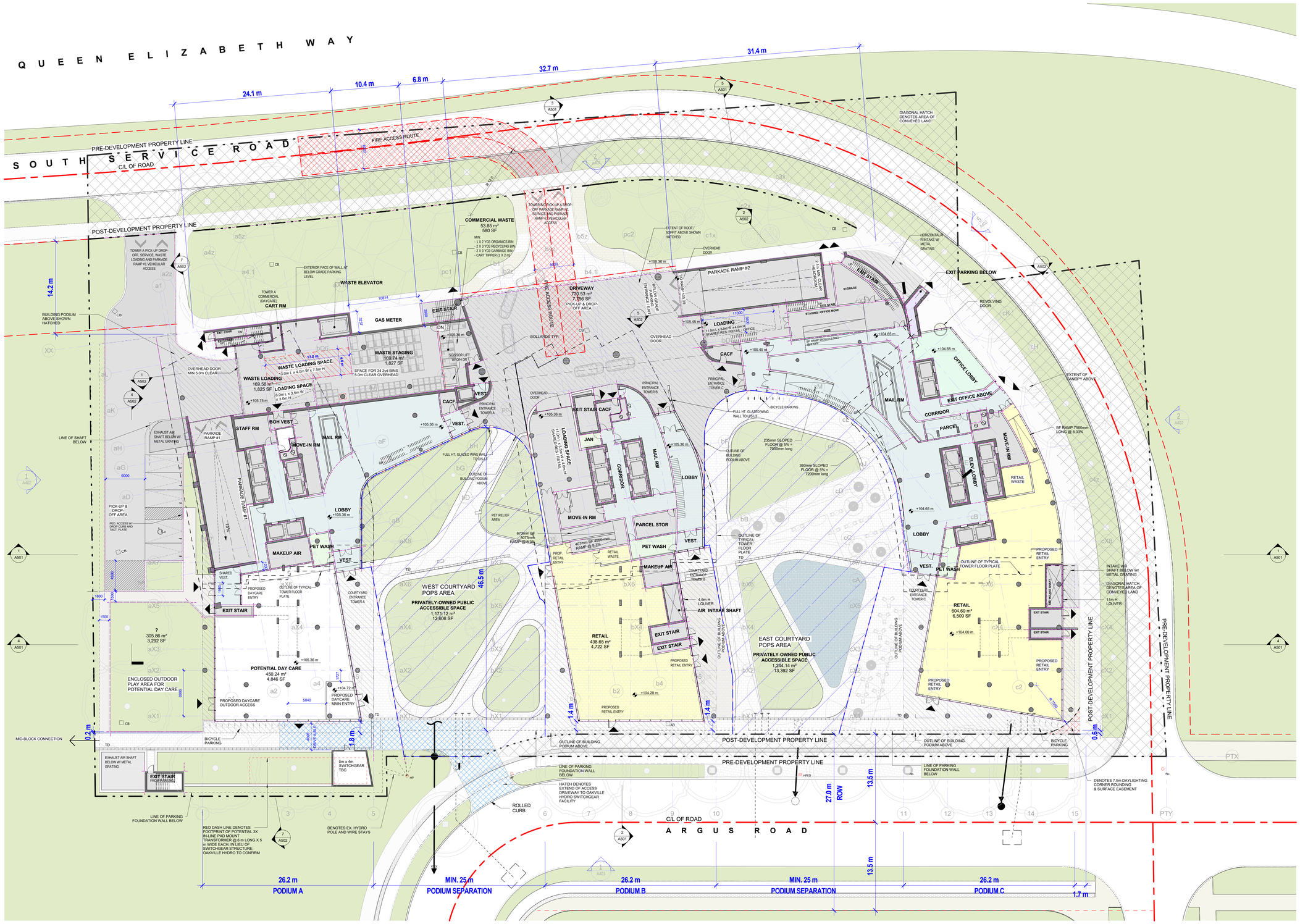
PROJECT NORTH
TRUE NORTH

SEAL

SHEET LIST, ZONING REQUIREMENTS

Author	Checker		
DRAWN BY	CHECKED BY		
22-106	As indicated	ARCH E	2024-02-XX
PROJ NO	SCALE	FORMAT	PLOT DATE

A001



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NO.	DATE:	ISSUED FOR:
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3	2024-02-xx	ISSUED FOR OPA/ZBA - 2nd SUBMISSION

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

DISTRIKT

OAKVILLE

590 Argus Road, Oakville, ON, Canada

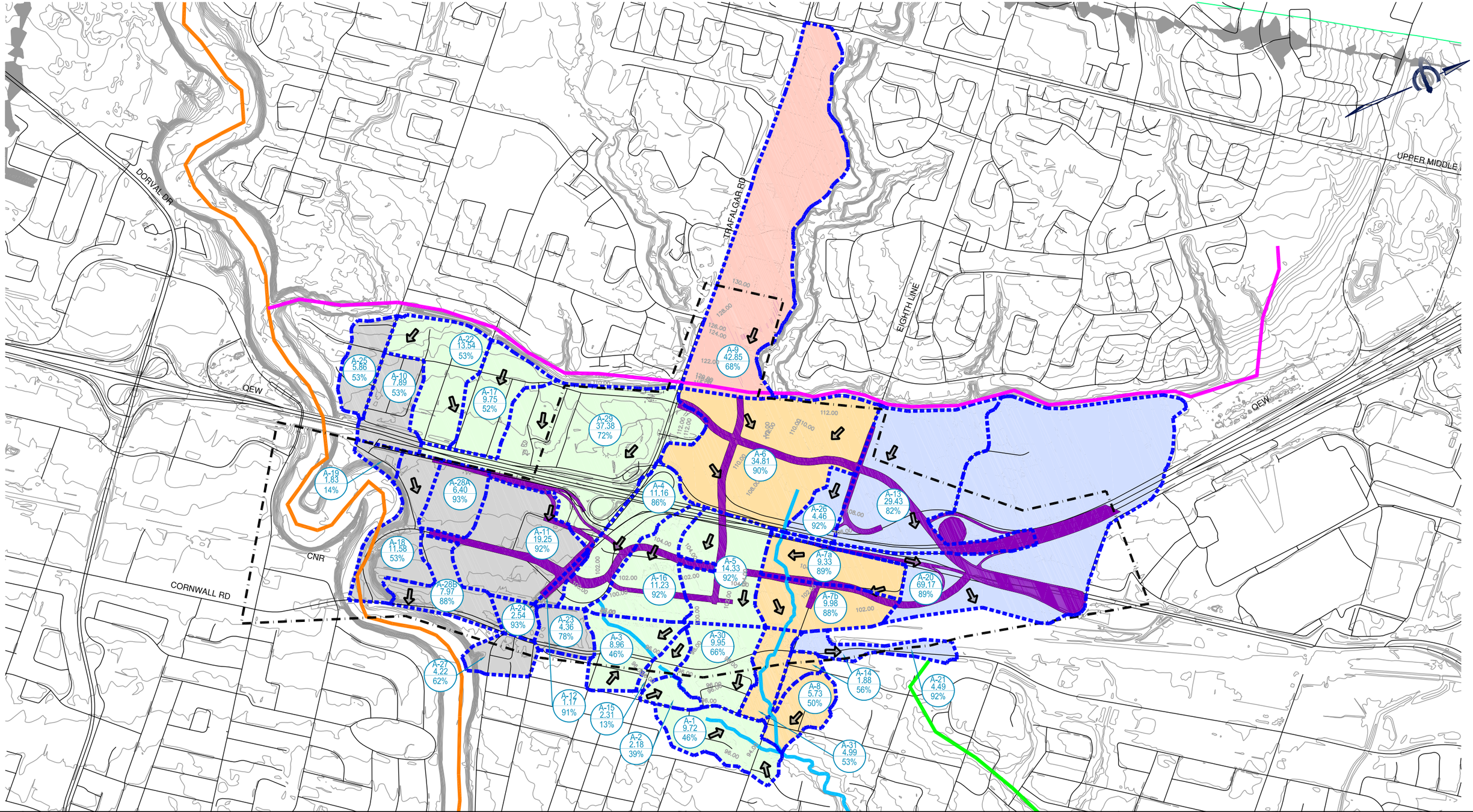
SEAL

LEVEL 1 PLAN

Author	Checker		
DRAWN BY	CHECKED BY		
22-106	1 : 200	ARCH E	2024-02-XX
PROJ NO	SCALE	FORMAT	PLOT DATE

A206

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

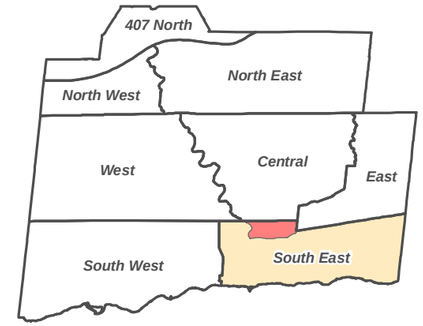
PROPOSED ROAD

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

SCHEDULE L3
MIDTOWN OAKVILLE TRANSPORTATION NETWORK



- Growth Area Boundary
- Existing Road Network
- Future 32 m Multi-Purpose Arterial Road (North-South Crossing)
- Future 28 m Minor Arterial Road (Cross Avenue)
- Future 26 m Local Road (Station Road)
- Future 24 m Minor Arterial Road (Chartwell Road)
- Future 22 m Local Road
- Future 20 m Local Road
- Future 19 m Local Road
- Future 18 m Local Road
- Future Ramp
- Future Cul-de-sac
- Future Railway Grade Separation
- Railway
- Major Transit Station

Refer to Part E, Midtown Oakville, for Growth Area Policies

Refer to Part E, Midtown Oakville Exceptions

1:9,000

August 31, 2021

S:\DEPARTME\PLANNING\GIS DATA DEVELOPMENT\OFFICIAL PLAN\OP2008\ LIVABLE OAKVILLE MXD...SCHEDULE L3.MXD

Information outside of the growth area boundary is shown for context.

APPENDIX 'C'

TRAFALGAR ENGINEERING LTD.

ESTIMATED EXISTING WATER DEMAND

Project: 590 Argus Road
Desc: Rezoning/OPA

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

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.	1132	1.356	1535	275	293	1.00	4.00	2.25	293	1173	660
Apartments - Two or More Bedroom	710	1.831	1300	275	248	1.00	4.00	2.25	248	993	559
Non-residential (sq ft)	27491	403.0	68	275	13	1.00	2.25	2.25	13	29	29
TOTAL	**29333**		**2903**		**554**				**554**	**2195**	**1247**

Average Daily Demand: **554 (L/min)**
Minimum Hourly Demand: **554 (L/min)**
Maximum Hourly Demand: **2195 (L/min)**
Maximum Daily Demand: **1247 (L/min)**
Max. Daily Plus Fire: **8247 (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

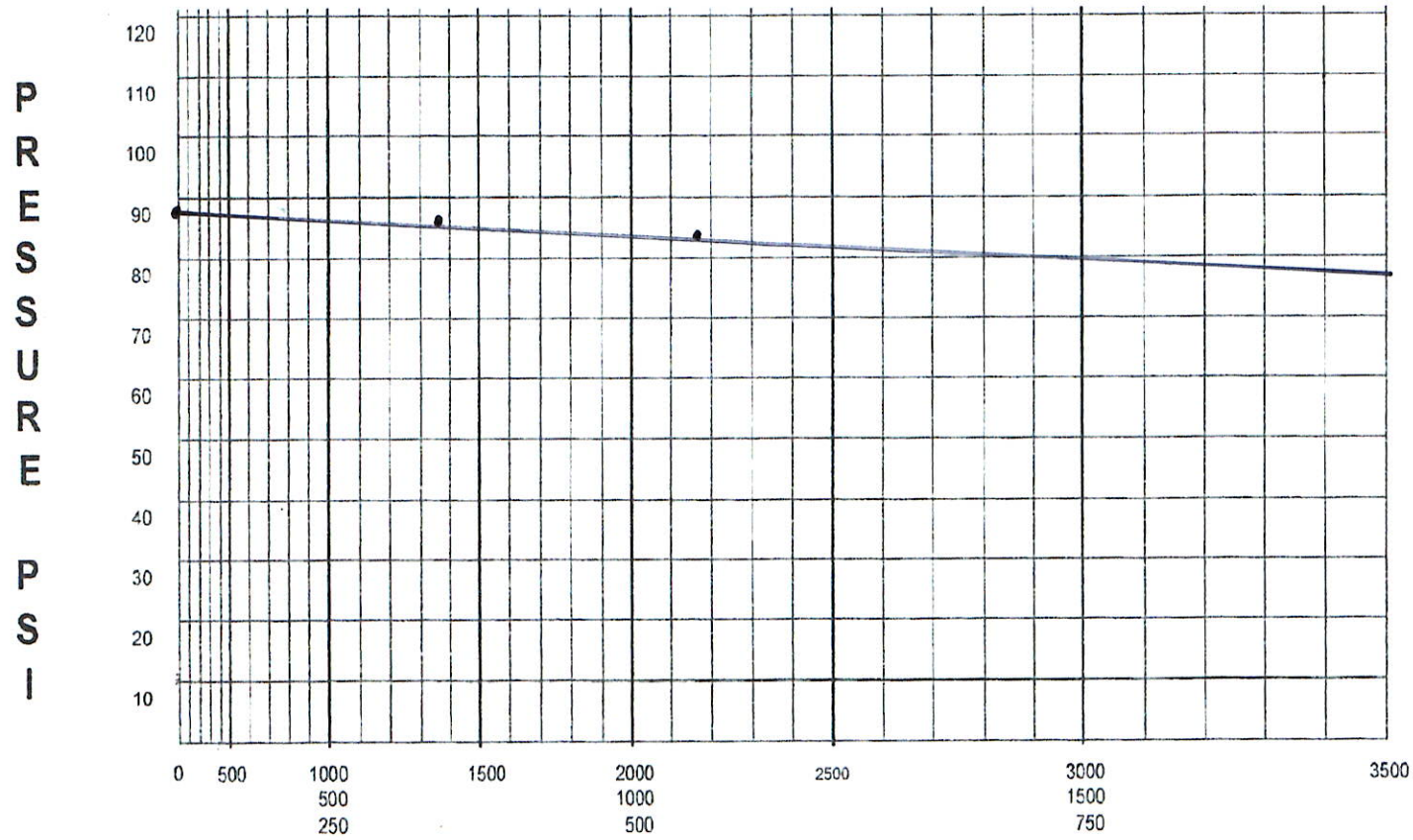
LOCATION OF FLOW HYDRANT

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

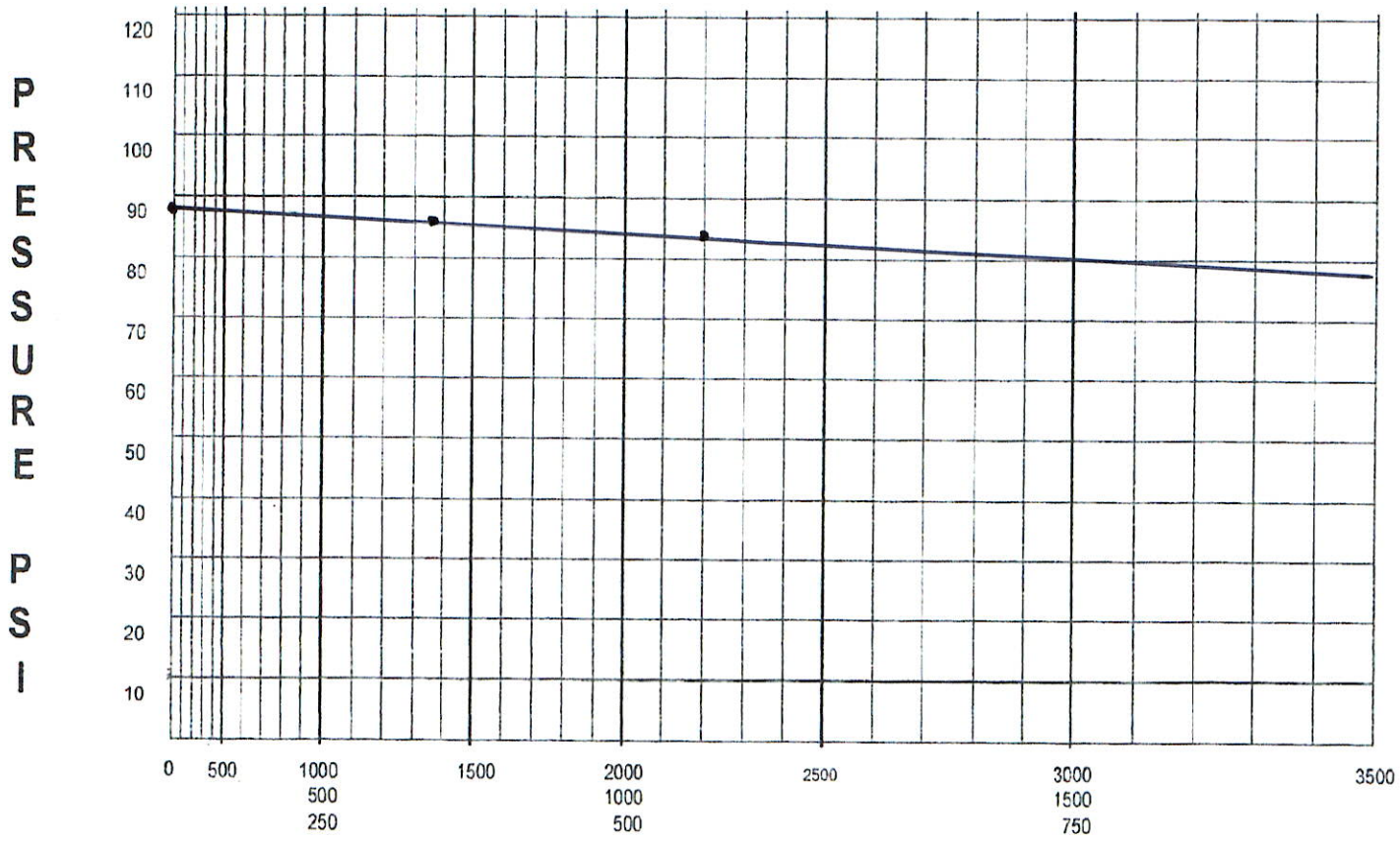
LOCATION OF FLOW HYDRANT

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

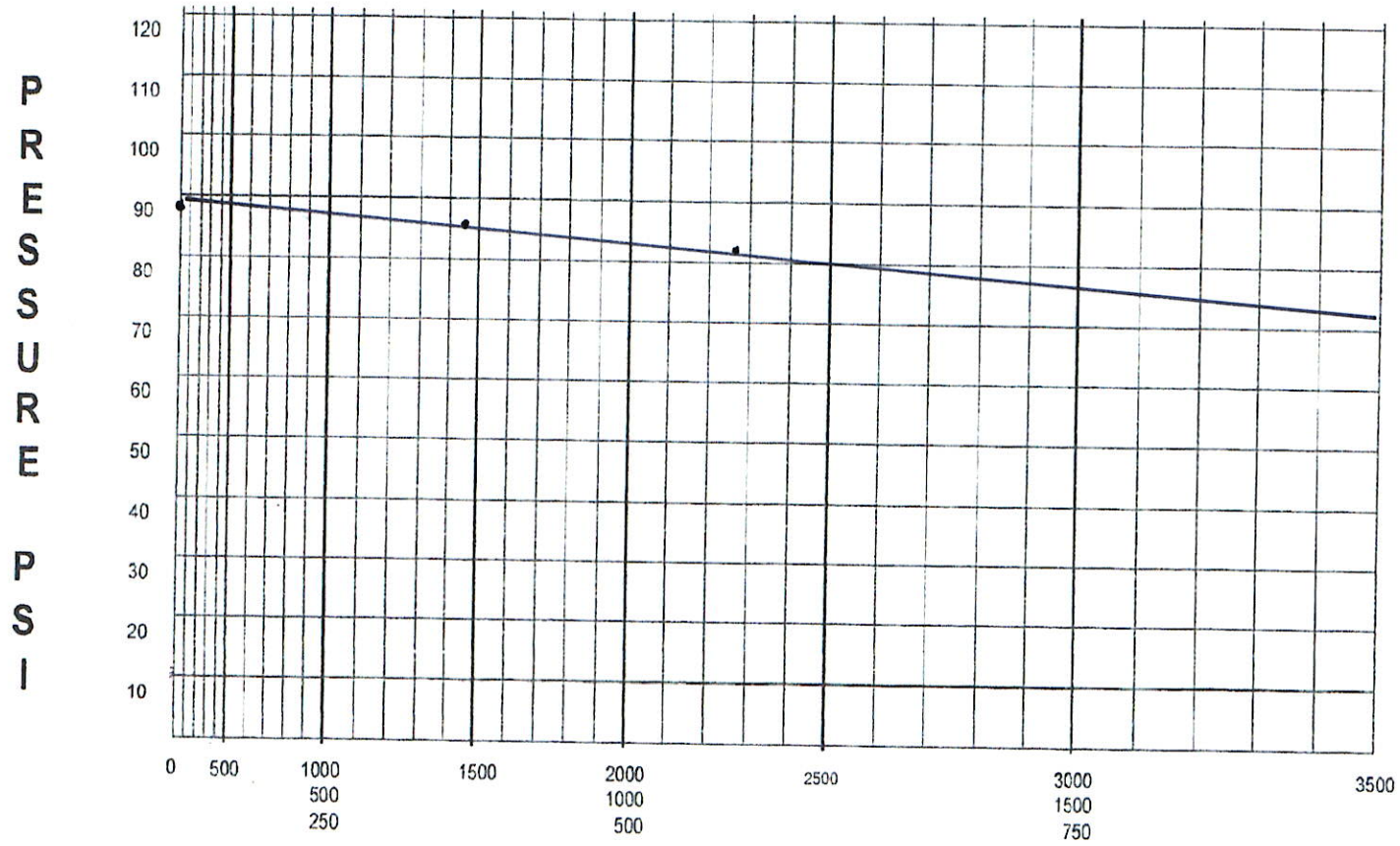
LOCATION OF FLOW HYDRANT

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

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

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

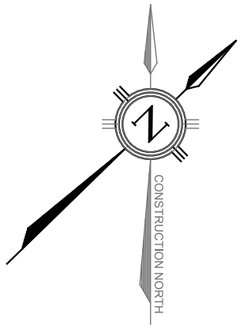
Residential

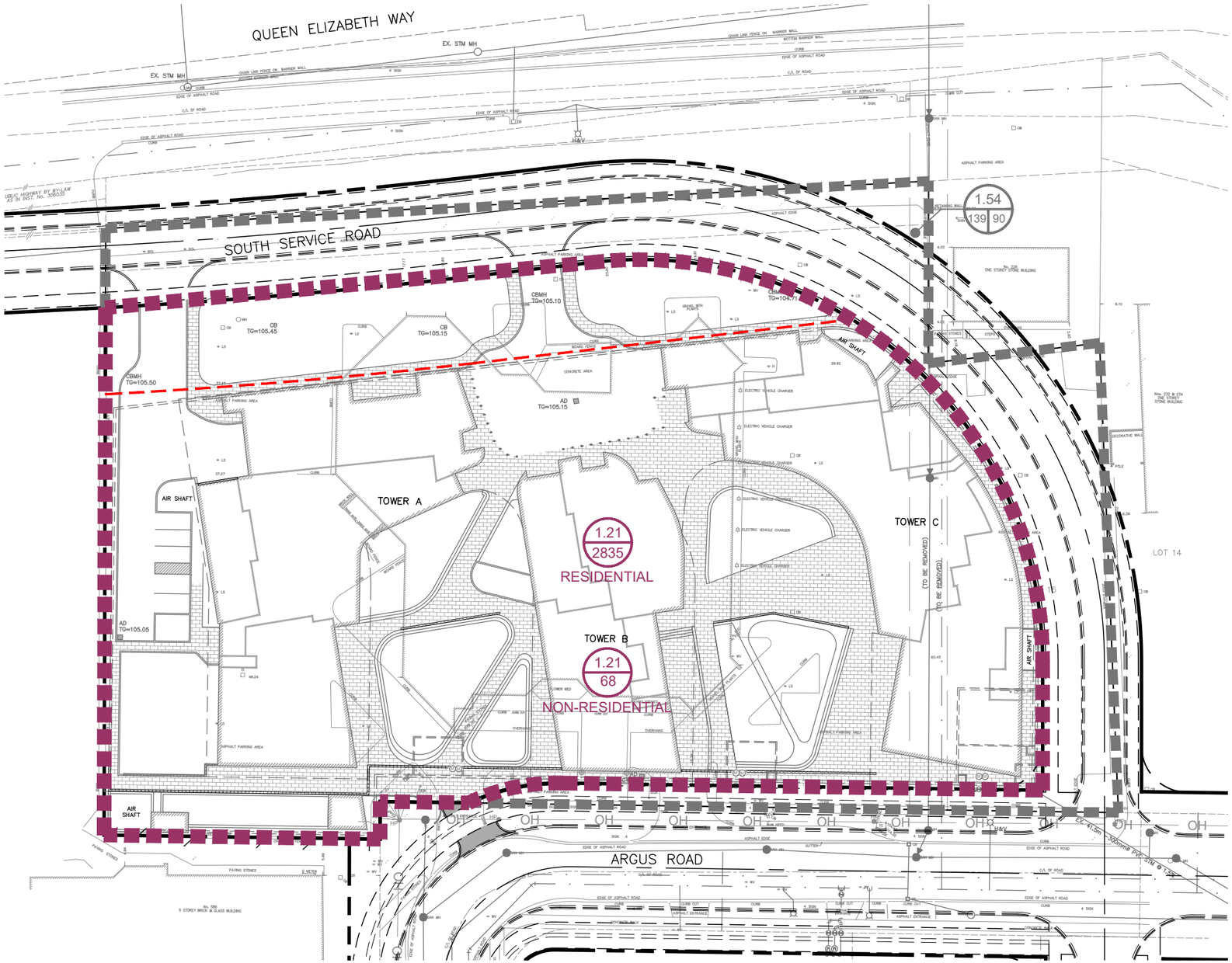
Land Use / Occupancy Type	Unit Count / GFA	Population Density (pers/unit)	Eq. Population (cap.)	Per Cap. Demand (L/cap. Day)	Average Daily Dry Weather Flow (L/s)
Apartments Less than two bedrooms	1132	1.356	1535	275	4.89
Apartments more than two bedrooms	710	1.831	1300	275	4.14
TOTAL	**1842**	**3.19**	**2835**		**9.02**

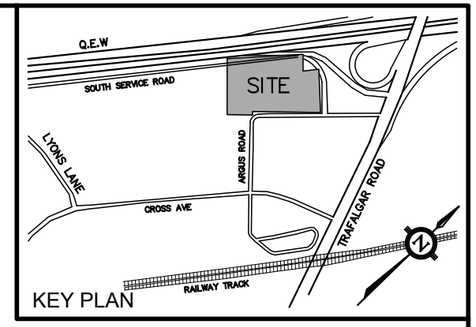
Industrial / Commercial / Institutional

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	2554	37.4	68	275	0.2
TOTAL	**2554.00**		**68**		**0.22**

Residential Peaking Factor:	3.46	
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:	9.4	(L/s)
ICI Average Flow:	0.2	(L/s)
Groundwater Discharge:		(L/s)
Total Average Flow:	**9.59**	**(L/s)**
Residential Peak Flow:	31.6	(L/s)
ICI Peak Flow:	0.2	(L/s)
Groundwater Discharge:		(L/s)
Total Peak Flow:	**31.82**	**(L/s)**







LEGEND

- 1.54 / 107 / 90 — PRE DEVELOPMENT SANITARY AREA IN HECTARES; EQUIVALENT POPULATION; POPULATION DENSITY
- 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: Mar 18, 2024 - 11:34am

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	6A	0.14	61			259.28	9		15748	275		0.03	50.1	1.0	2.76	138.2	74.2	212.3	41.0	600	0.6	0.013	496.2	1.70	1.67	274	0.45	PVC	DR-36
	5A	4A	0.00	0			259.28	0		15748	275		0.0	50.1	1.0	2.76	138.2	74.2	212.3	29.0	675	0.9	0.013	832.0	2.25	1.92	233	0.34	PVC	DR-37
	4A	3A	0.00	0			259.28	0		15748	275		0.0	50.1	1.0	2.76	138.2	74.2	212.3	20.5	675	0.4	0.013	554.6	1.50	1.44	288	0.42	PVC	DR-38
	3A	2A	1.80	90			261.08	2835	68	18651	275	275	9.2	59.4	1.0	2.68	159.3	74.7	233.9	38.0	675	0.4	0.013	554.6	1.50	1.45	309	0.45	PVC	DR-39
	2A	7A	1.15				262.23	104		18755	275		0.3	59.7	1.0	4.00	160.6	75.0	235.6	20.7	750	0.6	0.013	899.7	1.97	1.72	259.08	0.34	PVC	DR-40
Tying back into existing sewer	7A	29684A	0.00	0			262.23	0		18755	275		0.0	59.7	1.0	2.68	160.0	75.0	235.0	10.3	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.

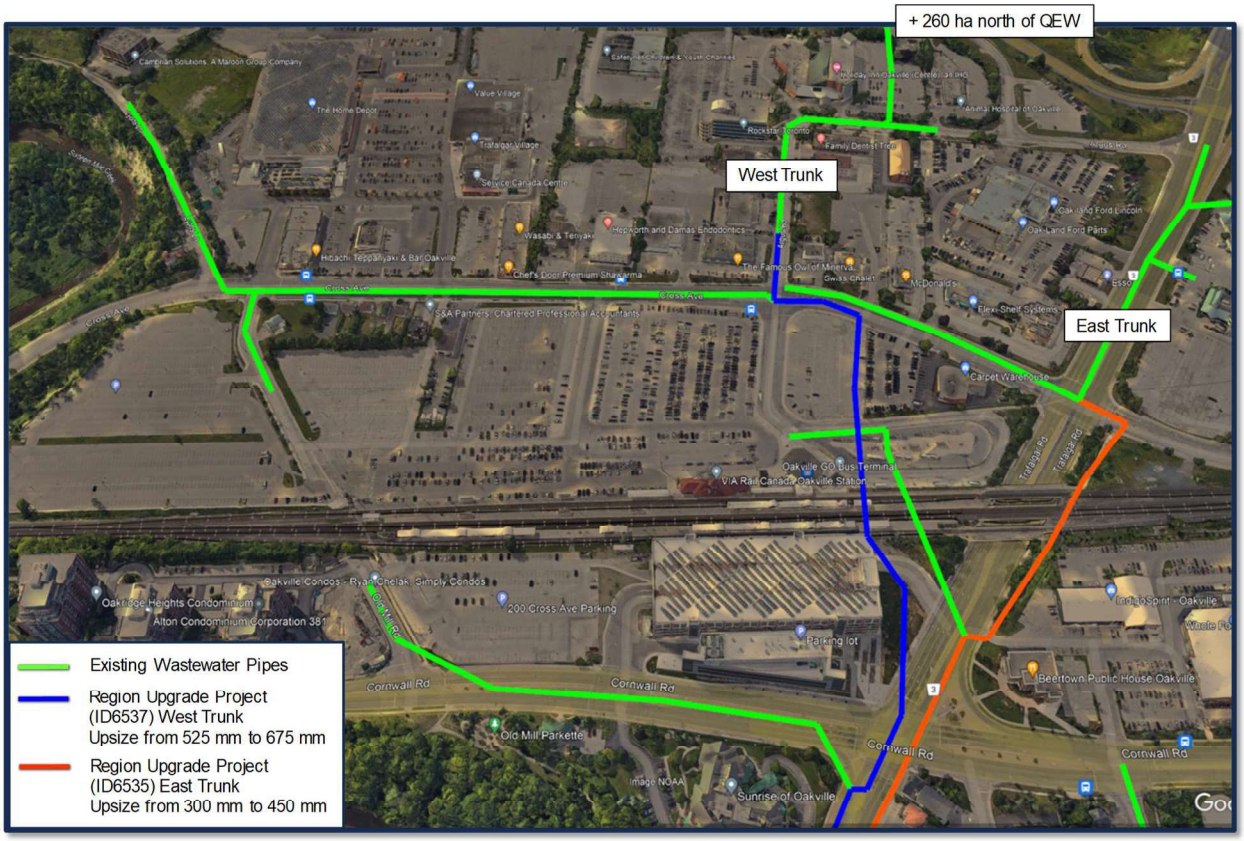


Figure 1: Midtown Oakville Wastewater Network (Existing)

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).

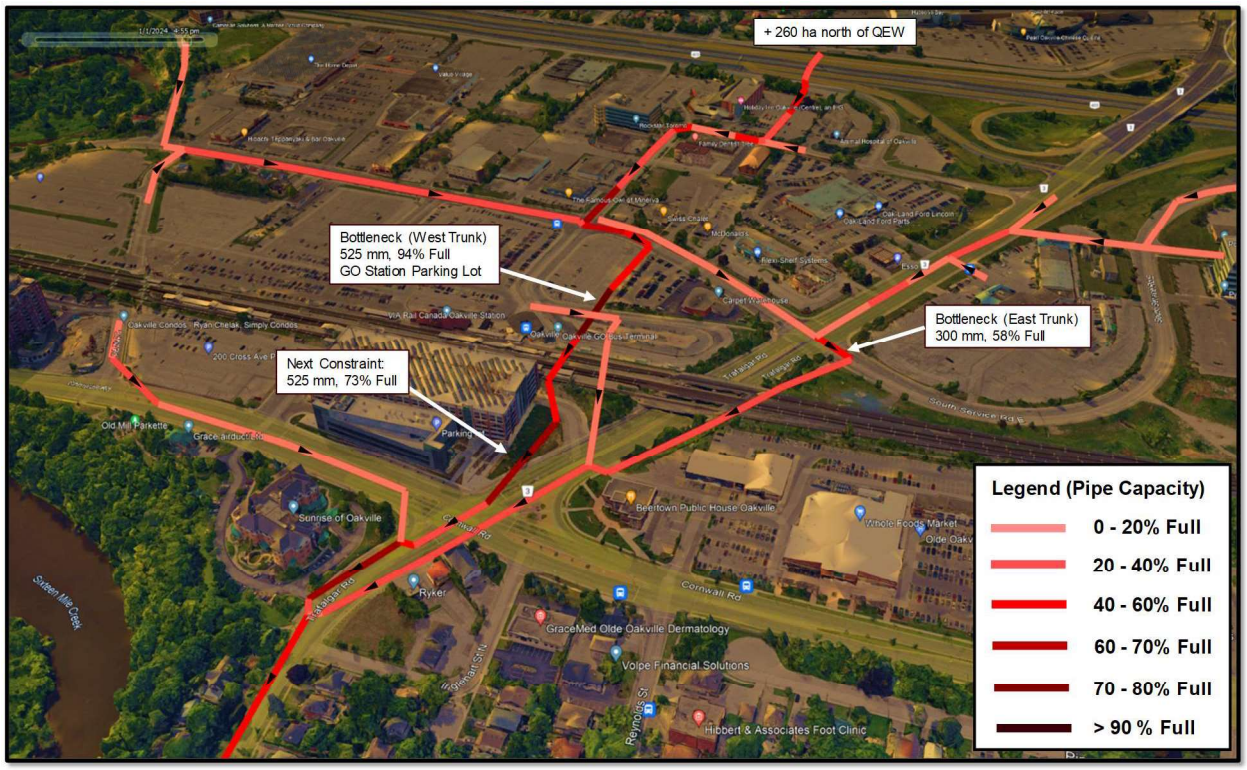


Figure 2: Midtown Oakville Existing Conditions – Pipe Capacity Analysis Results

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

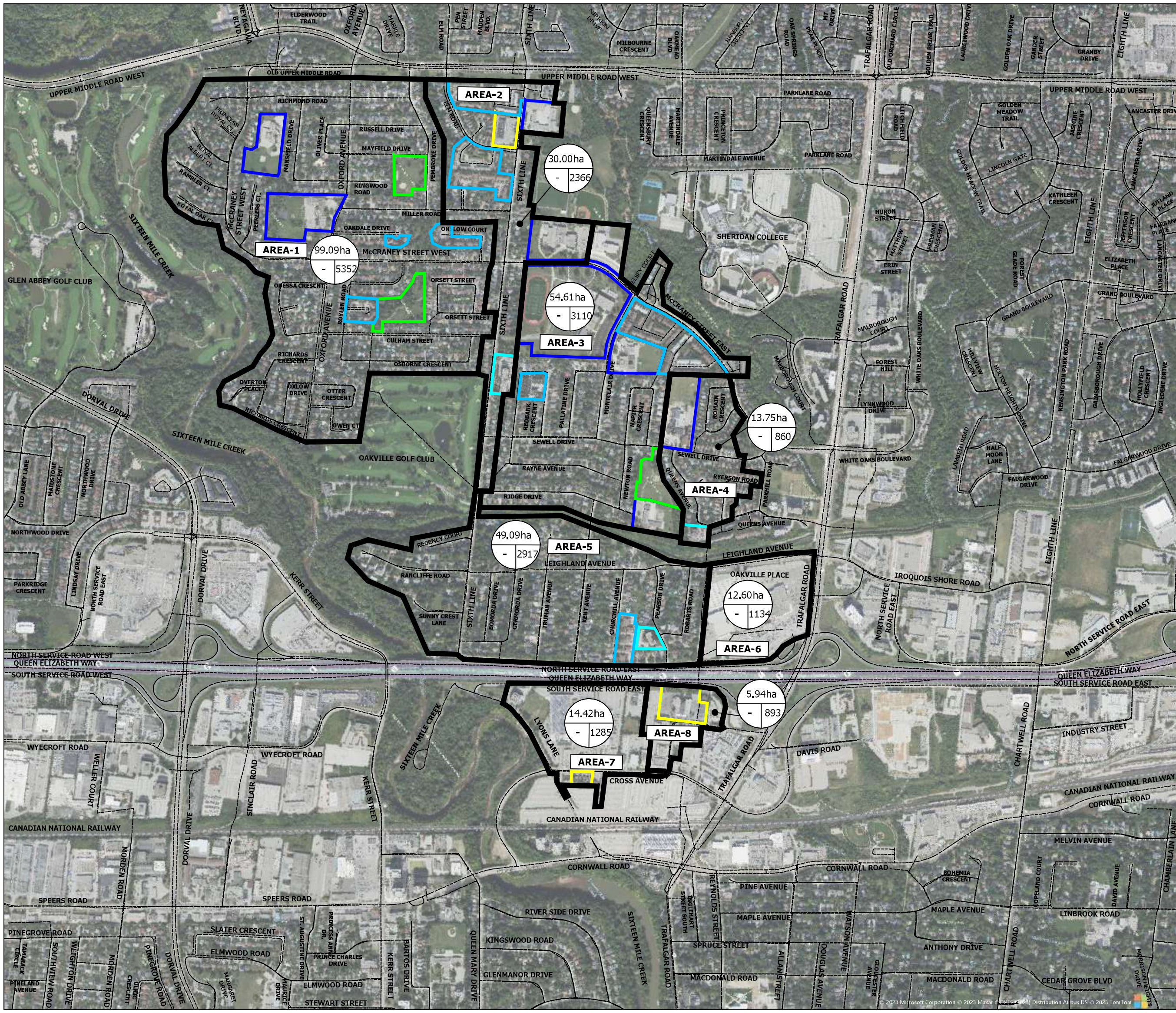
The wastewater system in Midtown Oakville provides opportunities for near-term development. The first-principles analysis of system capacity shows that:

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

No.	REVISION	DATE	BY

OAKVILLE MID-TOWN (DISTRIKT OAKVILLE)

OAKVILLE

Halton REGION

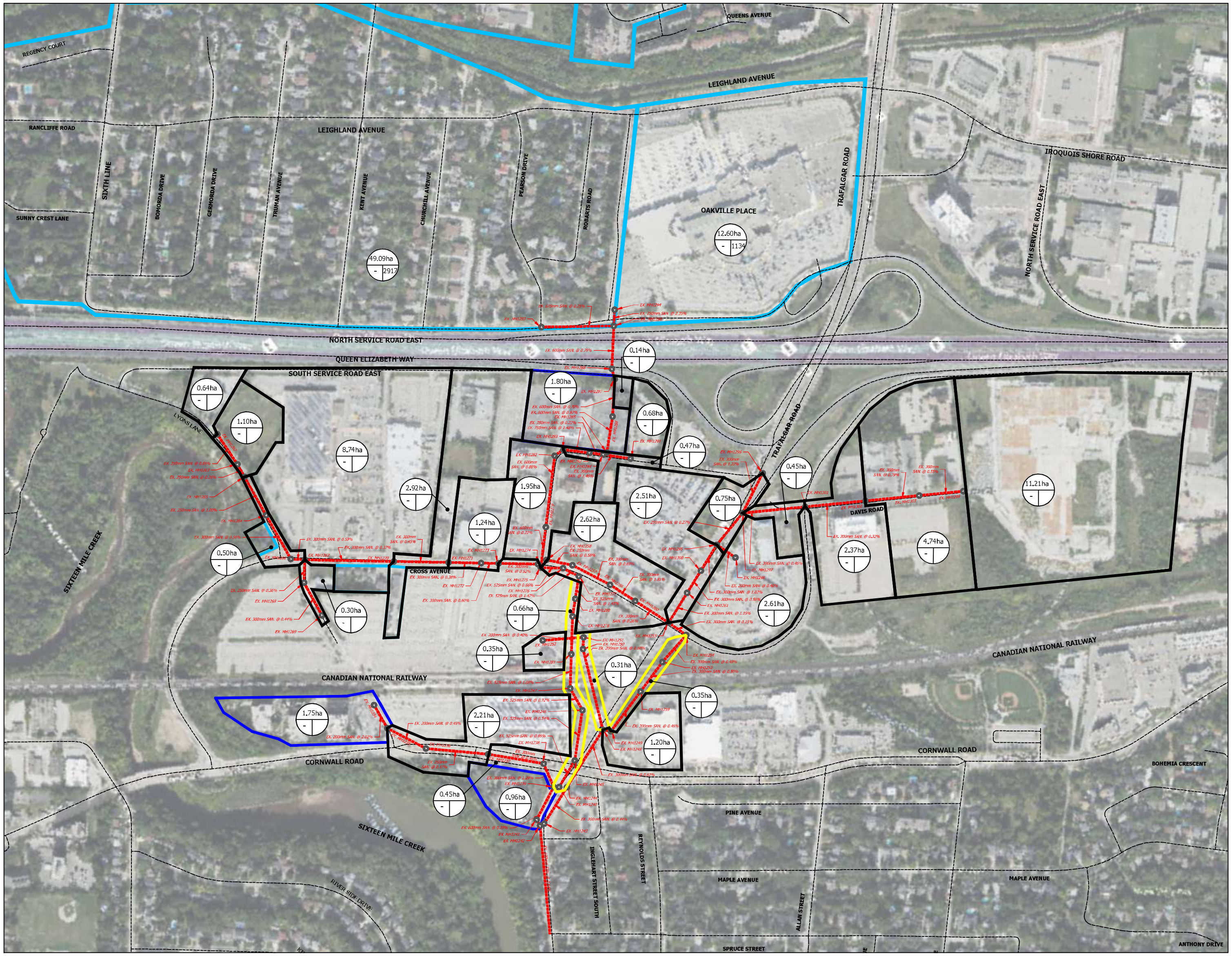
TOWN FILE No. XXXX

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.:

FILE: F:\PROJECTS\22-282W -OAKVILLE MID-TOWN (DISTRIKT-OAKVILLE)\DRAWINGS\PRELIMINARY ENGINEERING & FIGURES\22-282_EXISTING SAN DRA.DWG REVISED BY [XSHU] ON December 8, 2023 AT 4:59 PM



	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 — EXISTING DRAINAGE AREA (ha)
- 0 — EXISTING POPULATION
- 0 — 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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2030 Bristol Circle, Suite 105
Oakville, ON, L6H 0H2
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DESIGNED:	CHECKED: B.M.	PROJECT No.: 22-282	
DRAWN: X.S.	DATE: DECEMBER 2023	SHEET No.:	
SCALE: 1:3000		DRAWING No.:	

SIGN SHEET (EXISTING)

sting Conditions

F OAKVILLE

IPALITY 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	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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
ea-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		20
ea-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		20
ea-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		20
293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		20
290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	67
290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	25
288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	60
287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	60
286			259.14					15739	1.80	1.94	90		162	175	74.7	15914	2.75	139.4			214.1	0.70	60
285			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.87	60
284			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.85	60
284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	30
292			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	0.22	75
283			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	1.48	75
282			259.14					15739	1.95	5.04	90		176	455	75.6	16194	2.74	141.5			217.0	0.77	60
279			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.88	60
275			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.22	60
263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	25
265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	25
264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	25
266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	30
267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	30
268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	30
267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	25
270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	30
271									2.92	14.20	90		263	1279	4.1	1279	3.73	15.2			19.2	0.45	30
272									1.24	15.44	90		112	1391	4.4	1391	3.70	16.4			20.8	0.38	30
273										15.44				1391	4.4	1391	3.70	16.4			20.8	0.60	30
274										15.44				1391	4.4	1391	3.70	16.4			20.8	0.52	30
275										15.44				1391	4.4	1391	3.70	16.4			20.8	0.85	30
276			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	0.66	52
277			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	1.47	52
280			259.14					15739	0.66	21.14	90		60	1906	80.2	17645	2.71	152.0			232.2	1.45	52
278			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.67	52
281			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.33	52
247			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.08	52
246			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.92	52
245			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.54	52
240			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	6.53	52
239			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.89	52
235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	20
236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	20
237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	25
238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	30
239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	30
241			259.14					15739	0.96	26.51	90		87	2391	81.7	18130	2.70	155.5			237.2	0.29	60

SIGN SHEET (EXISTING)

sting Conditions

F OAKVILLE

IPALITY OF HALTON

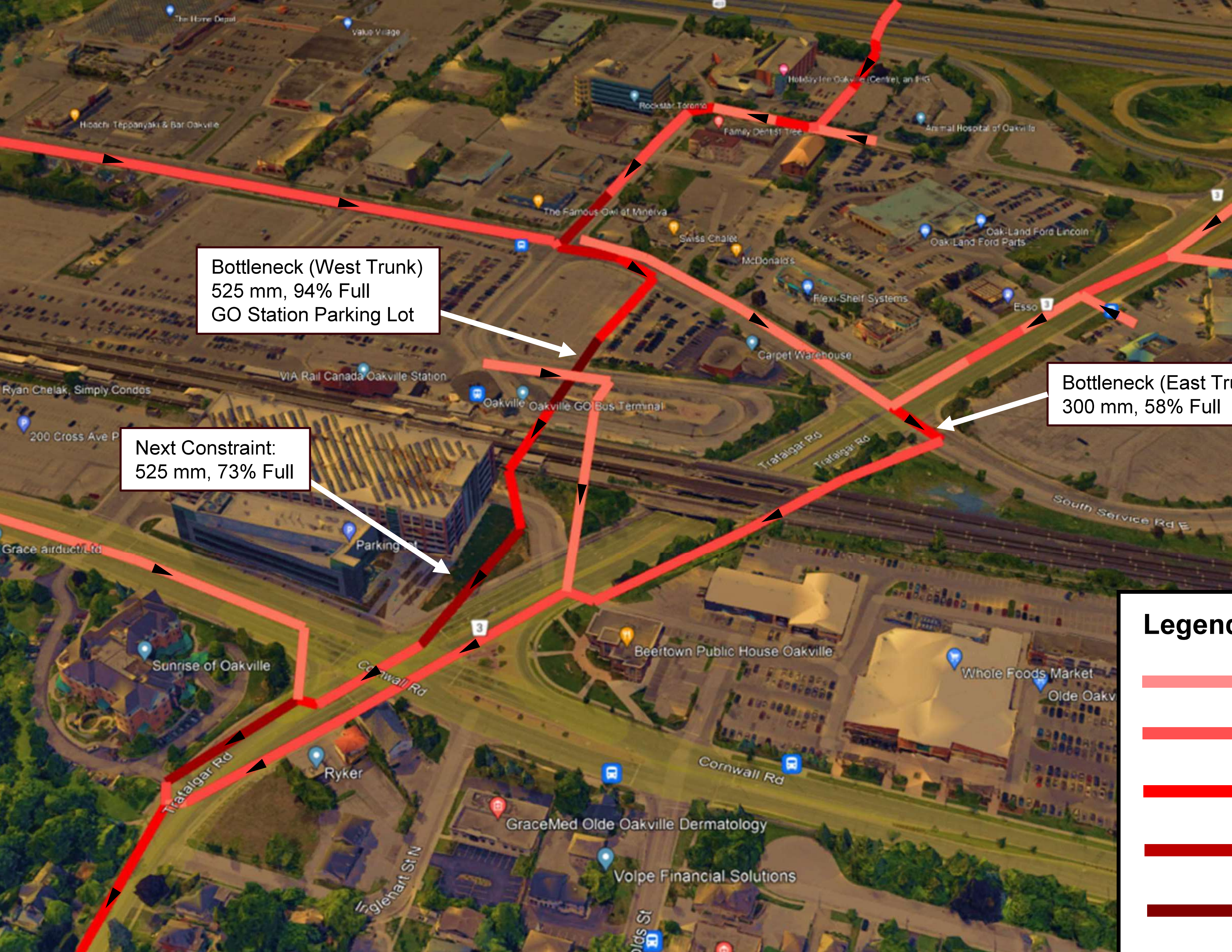
PROJECT DETAILS

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

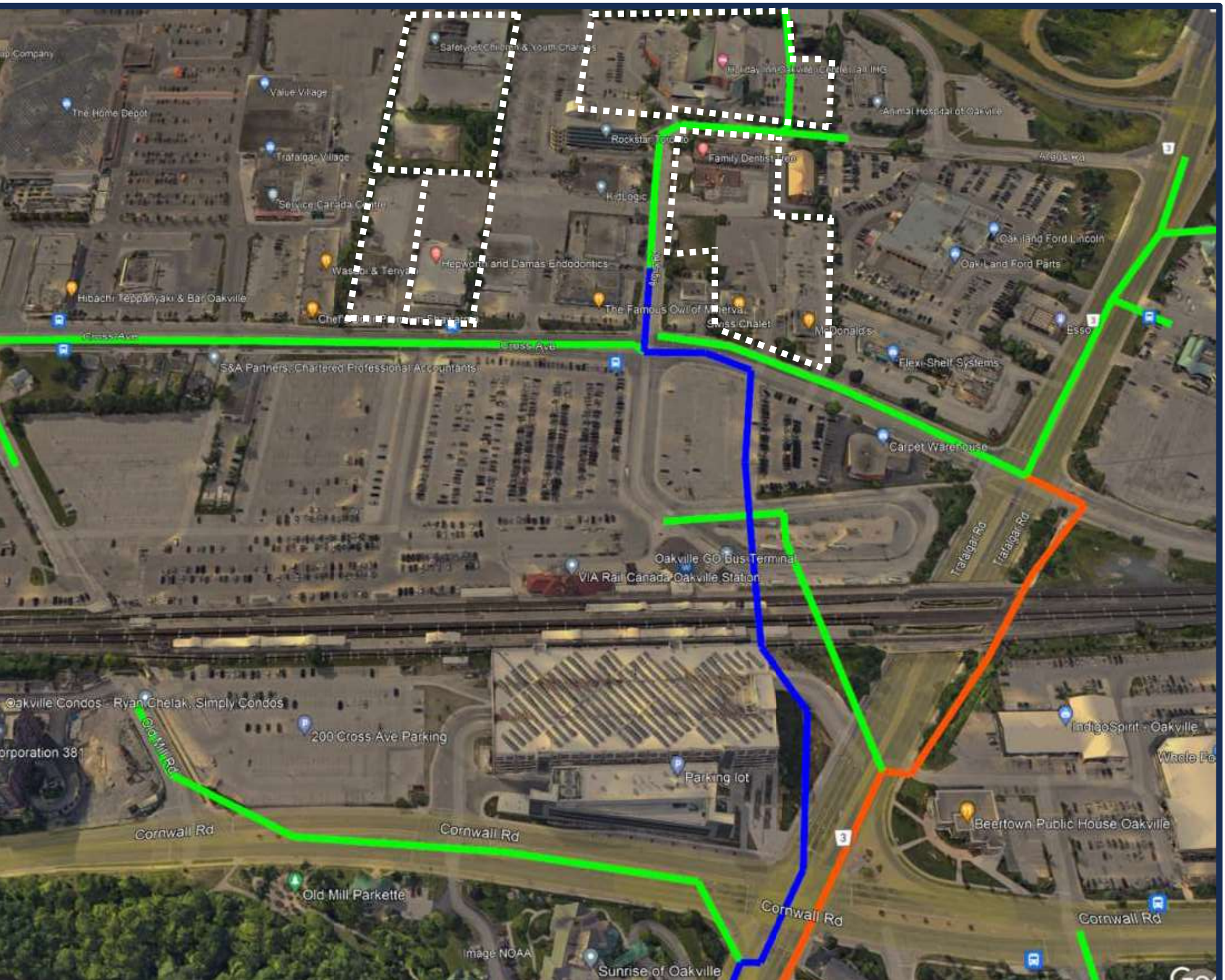
DESIGN CRITERIA

Min Diameter =	200	mm	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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
1242			259.14					15739		26.51				2391	81.7	18130	2.70	155.5			237.2	1.02	60
1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	30
1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	30
1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	30
1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	30
1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	30
1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	25
1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	20
1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	30
1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	30
1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	30
1257									2.62	2.62	90		236	236	0.7	236	4.00	3.0			3.8	0.58	25
1256										2.62				236	0.7	236	4.00	3.0			3.8	0.69	30
1260										2.62				236	0.7	236	4.00	3.0			3.8	1.81	30
1255										2.62				236	0.7	236	4.00	3.0			3.8	0.26	30
1254										16.05				1447	4.6	1447	3.69	17.0			21.6	0.15	30
1253									0.35	16.40	90		32	1479	4.7	1479	3.68	17.3			22.0	0.48	30
1259										16.40				1479	4.7	1479	3.68	17.3			22.0	0.50	30
1249									1.20	17.60	90		108	1587	5.0	1587	3.66	18.5			23.5	0.46	30
1248										17.60				1587	5.0	1587	3.66	18.5			23.5	0.53	30
1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	20
1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	20
1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	20
1244										18.26				1647	5.2	1647	3.65	19.1			24.4	0.62	30
1243										18.26				1647	5.2	1647	3.65	19.1			24.4	0.44	30
1242										18.26				1647	5.2	1647	3.65	19.1			24.4	2.39	30
HX			259.14					15739		44.77				4038	86.9	19777	2.66	167.3			254.2	0.64	60


Bottleneck (West Trunk)
525 mm, 94% Full
GO Station Parking Lot
Bottleneck (East Tru
300 mm, 58% Full
Next Constraint:
525 mm, 73% Full
Legend
Trafalgar Rd
Cornwall Rd
South Service Rd E
VIA Rail Canada Oakville Station
Oakville GO Bus Terminal
Beertown Public House Oakville
Whole Foods Market
GraceMed Olde Oakville Dermatology
Volpe Financial Solutions
Sunrise of Oakville
Ryker
Carpet Warehouse
Flexi-Shelf Systems
McDonald's
Swiss Chalet
The Famous Owl of Minerva
Oak-Land Ford Lincoln
Oak-Land Ford Parts
Esso
Ryan Chelak, Simply Condos
Parking lot

ATTACHMENT 2:
Future System Capacity Analysis



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SIGN SHEET (Midtown)

ARIO 1

F OAKVILLE

IPALITY 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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
ea-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		20
ea-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		20
ea-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		20
293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		20
290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	67
290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	25
288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	60
287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	60
286			259.14					15739	1.80	1.94	90		162	175	74.7	15914	2.75	139.4			214.1	0.70	60
285			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.87	60
284			259.14					15739		1.94				175	74.7	15914	2.75	139.4			214.1	0.85	60
284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	30
292			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	0.22	75
283			259.14					15739		3.09				279	75.0	16018	2.75	140.2			215.2	1.48	75
282			259.14					15739	1.95	5.04	90		176	455	75.6	16194	2.74	141.5			217.0	0.77	60
279			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.88	60
275			259.14					15739		5.04				455	75.6	16194	2.74	141.5			217.0	0.22	67
263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	25
265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	25
264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	25
266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	30
267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	30
268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	30
267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	25
270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	30
271									2.92	14.20	90		263	1279	4.1	1279	3.73	15.2			19.2	0.45	30
272									1.24	15.44	90		112	1391	4.4	1391	3.70	16.4			20.8	0.38	30
273										15.44				1391	4.4	1391	3.70	16.4			20.8	0.60	30
274										15.44				1391	4.4	1391	3.70	16.4			20.8	0.52	30
275										15.44				1391	4.4	1391	3.70	16.4			20.8	0.85	30
276			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	0.66	67
277			259.14					15739		20.48				1846	80.0	17585	2.71	151.6			231.6	1.47	67
280			259.14					15739	0.66	21.14	90		60	1906	80.2	17645	2.71	152.0			232.2	1.45	67
278			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.67	67
281			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.33	67
247			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	1.08	67
246			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.92	67
245			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.54	67
240			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	6.53	67
239			259.14					15739		21.14				1906	80.2	17645	2.71	152.0			232.2	0.89	67
235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	20
236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	20
237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	25
238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	30
239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	30
241			259.14					15739	0.96	26.51	90		87	2391	81.7	18130	2.70	155.5			237.2	0.29	67

SIGN SHEET (Midtown)

ARIO 1

F OAKVILLE

IPALITY OF HALTON

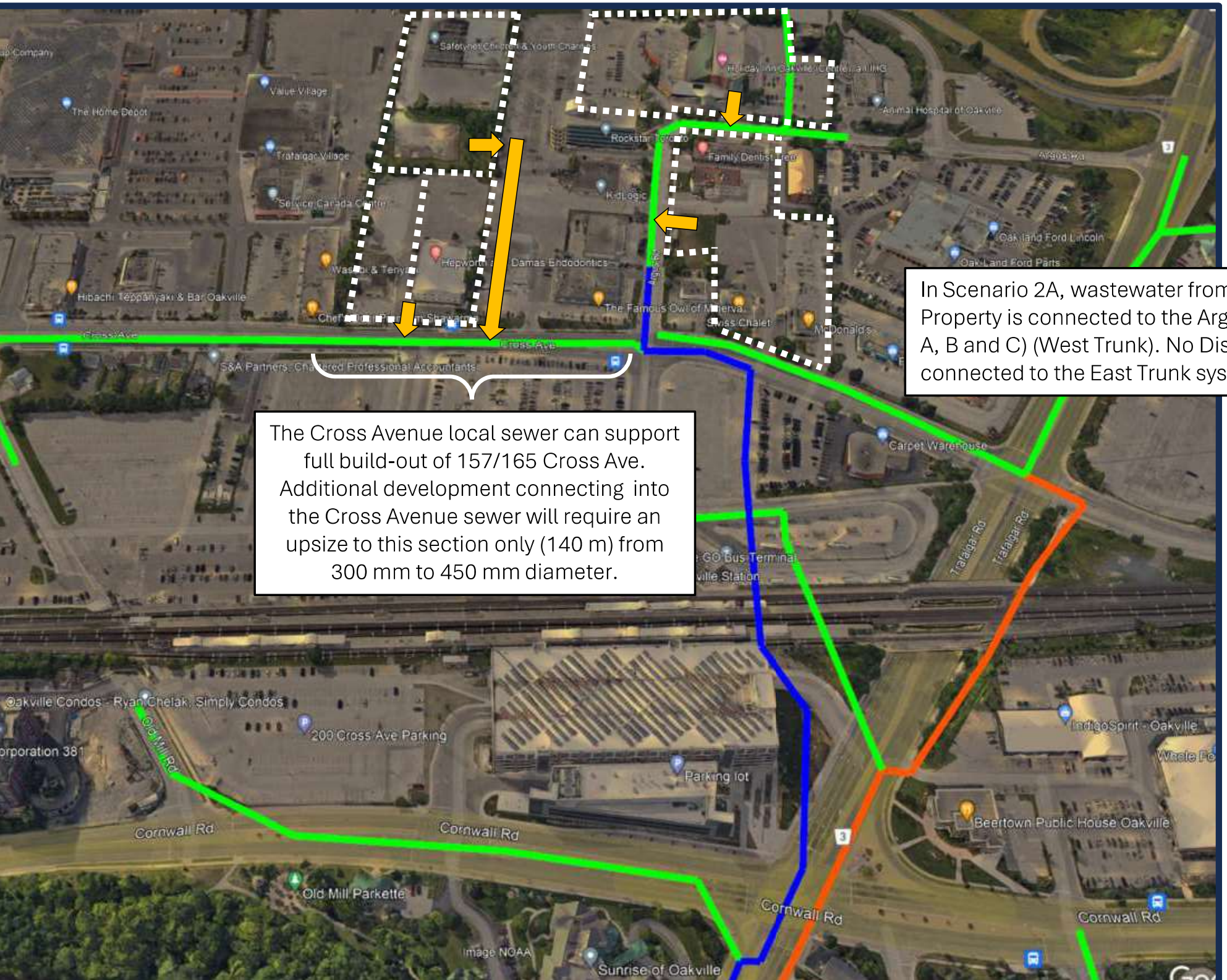
PROJECT DETAILS

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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
1242			259.14					15739		26.51				2391	81.7	18130	2.70	155.5			237.2	1.02	67
1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	30
1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	30
1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	30
1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	30
1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	30
1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	25
1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	20
1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	30
1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	30
1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	30
1257									2.62	2.62	90		236	236	0.7	236	4.00	3.0			3.8	0.58	25
1256										2.62				236	0.7	236	4.00	3.0			3.8	0.69	30
1260										2.62				236	0.7	236	4.00	3.0			3.8	1.81	30
1255										2.62				236	0.7	236	4.00	3.0			3.8	0.26	30
1254										16.05				1447	4.6	1447	3.69	17.0			21.6	0.15	45
1253									0.35	16.40	90		32	1479	4.7	1479	3.68	17.3			22.0	0.48	45
1259										16.40				1479	4.7	1479	3.68	17.3			22.0	0.50	45
1249									1.20	17.60	90		108	1587	5.0	1587	3.66	18.5			23.5	0.46	45
1248										17.60				1587	5.0	1587	3.66	18.5			23.5	0.53	45
1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	20
1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	20
1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	20
1244										18.26				1647	5.2	1647	3.65	19.1			24.4	0.62	45
1243										18.26				1647	5.2	1647	3.65	19.1			24.4	0.44	45
1242										18.26				1647	5.2	1647	3.65	19.1			24.4	2.39	45
HX			259.14					15739		44.77				4038	86.9	19777	2.66	167.3			254.2	0.64	67



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SIGN SHEET (Midtown)

ARIO 2A

F OAKVILLE

IPALITY 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**	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
ea-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		20
ea-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		20
ea-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		20
293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		20
290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	67
290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	25
288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	60
287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	60
286			259.14				**3439**	19178	1.80	1.94	90		162	175	74.7	19353	2.67	164.3			238.9	0.70	60
285			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.87	60
284			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.85	60
284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	30
292			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	0.22	75
283			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	1.48	75
282			259.14				**3657**	22835	1.95	5.04	90		176	455	75.6	23290	2.59	191.7			267.3	0.77	60
279			259.14					22835		5.04				455	75.6	23290	2.59	191.7			267.3	0.88	60
275			259.14					22835		5.04				455	75.6	23290	2.59	191.7			267.3	0.22	**67**
263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	25
265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	25
264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	25
266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	30
267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	30
268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	30
267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	25
270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	30
271							**3540**	3540	2.92	14.20	90		263	1279	4.1	4819	3.26	50.0			54.1	0.45	30
272							**2716**	6256	1.24	15.44	90		112	1391	4.4	7647	3.07	74.7			79.1	0.38	30
273								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.60	30
274								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.52	30
275								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.85	30
276			259.14					29091		20.48				1846	80.0	30937	2.46	242.6			322.6	0.66	**67**
277			259.14					29091		20.48				1846	80.0	30937	2.46	242.6			322.6	1.47	**67**
280			259.14					29091	0.66	21.14	90		60	1906	80.2	30997	2.46	243.0			323.2	1.45	**67**
278			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	1.67	**67**
281			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.33	**67**
247			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	1.08	**67**
246			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.92	**67**
245			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.54	**67**
240			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	6.53	**67**
239			259.14					29091		21.14				1906	80.2	30997	2.46	243.0			323.2	0.89	**67**
235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	20
236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	20
237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	25
238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	30
239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	30
241			259.14					29091	0.96	26.51	90		87	2391	81.7	31482	2.46	246.2			327.9	0.29	**67**

SIGN SHEET (Midtown)

ARIO 2A

F OAKVILLE

IPALITY OF HALTON

PROJECT DETAILS

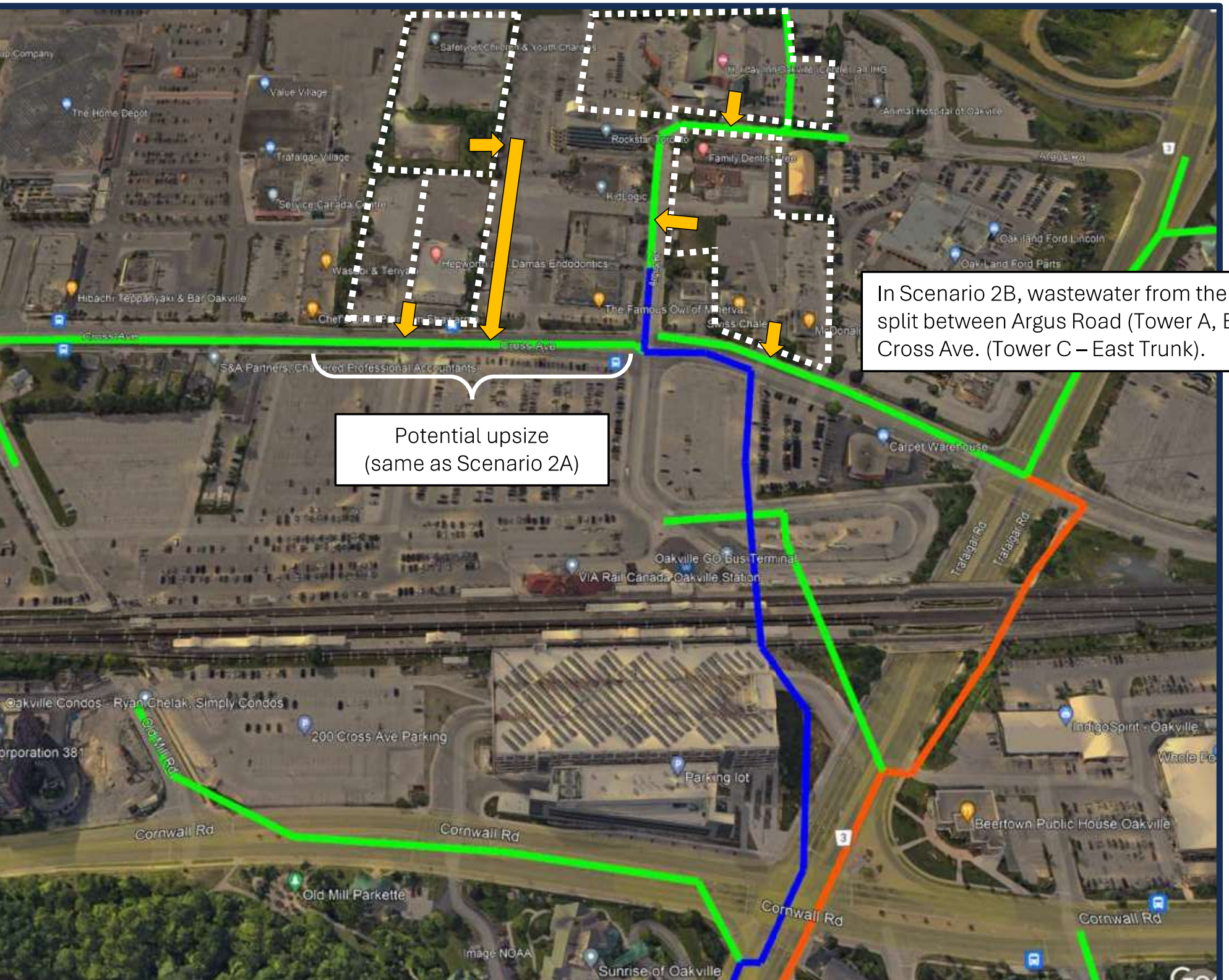
Project No: 22-282
Date: 25-Feb-24
Designed by: J.P.O
Checked by: K.C

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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
1242			259.14					29091		26.51				2391	81.7	31482	2.46	246.2			327.9	1.02	67
1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	30
1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	30
1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	30
1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	30
1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	30
1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	25
1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	20
1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	30
1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	30
1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	30
1257									2.62	2.62	90		236	236	0.7	236	4.00	3.0			3.8	0.58	25
1256										2.62				236	0.7	236	4.00	3.0			3.8	0.69	30
1260										2.62				236	0.7	236	4.00	3.0			3.8	1.81	30
1255										2.62				236	0.7	236	4.00	3.0			3.8	0.26	30
1254										16.05				1447	4.6	1447	3.69	17.0			21.6	0.15	45
1253									0.35	16.40	90		32	1479	4.7	1479	3.68	17.3			22.0	0.48	45
1259										16.40				1479	4.7	1479	3.68	17.3			22.0	0.50	45
1249									1.20	17.60	90		108	1587	5.0	1587	3.66	18.5			23.5	0.46	45
1248										17.60				1587	5.0	1587	3.66	18.5			23.5	0.53	45
1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	20
1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	20
1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	20
1244										18.26				1647	5.2	1647	3.65	19.1			24.4	0.62	45
1243										18.26				1647	5.2	1647	3.65	19.1			24.4	0.44	45
1242										18.26				1647	5.2	1647	3.65	19.1			24.4	2.39	45
HX			259.14					29091		44.77				4038	86.9	33129	2.44	256.8			343.7	0.64	67

Sewer Upgrades Complete, All District Developments Connected (Option 2)



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SIGN SHEET (Midtown)

ARIO 2B

F OAKVILLE

IPALITY 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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mm
ea-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		20
ea-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		20
ea-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		20
293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		20
290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	67
290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	25
288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	60
287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	60
286			259.14				**3439**	19178	1.80	1.94	90		162	175	74.7	19353	2.67	164.3			238.9	0.70	60
285			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.87	60
284			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.85	60
284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	30
292			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	0.22	75
283			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	1.48	75
282			259.14				**1989**	21167	1.95	5.04	90		176	455	75.6	21622	2.62	180.2			255.8	0.77	60
279			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.88	60
275			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.22	**67**
263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	25
265										1.74				157	0.5	157	4.00	2.0			2.5	0.26	25
264									0.50	2.24	90		45	202	0.6	202	4.00	2.6			3.2	1.00	25
266										2.24				202	0.6	202	4.00	2.6			3.2	0.56	30
267										2.24				202	0.6	202	4.00	2.6			3.2	0.58	30
268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	30
267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	25
270									8.74	11.28	90		787	1016	3.2	1016	3.80	12.3			15.5	0.37	30
271							**3540**	3540	2.92	14.20	90		263	1279	4.1	4819	3.26	50.0			54.1	0.45	30
272							**2716**	6256	1.24	15.44	90		112	1391	4.4	7647	3.07	74.7			79.1	0.38	30
273								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.60	30
274								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.52	30
275								6256		15.44				1391	4.4	7647	3.07	74.7			79.1	0.85	30
276			259.14					27423		20.48				1846	80.0	29269	2.49	231.8			311.7	0.66	**67**
277			259.14					27423		20.48				1846	80.0	29269	2.49	231.8			311.7	1.47	**67**
280			259.14					27423	0.66	21.14	90		60	1906	80.2	29329	2.49	232.2			312.3	1.45	**67**
278			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	1.67	**67**
281			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.33	**67**
247			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	1.08	**67**
246			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.92	**67**
245			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.54	**67**
240			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	6.53	**67**
239			259.14					27423		21.14				1906	80.2	29329	2.49	232.2			312.3	0.89	**67**
235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	20
236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	20
237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	25
238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	30
239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	30
241			259.14					27423	0.96	26.51	90		87	2391	81.7	29814	2.48	235.3			317.0	0.29	**67**

SIGN SHEET (Midtown)

ARIO 2B

F OAKVILLE

IPALITY OF HALTON

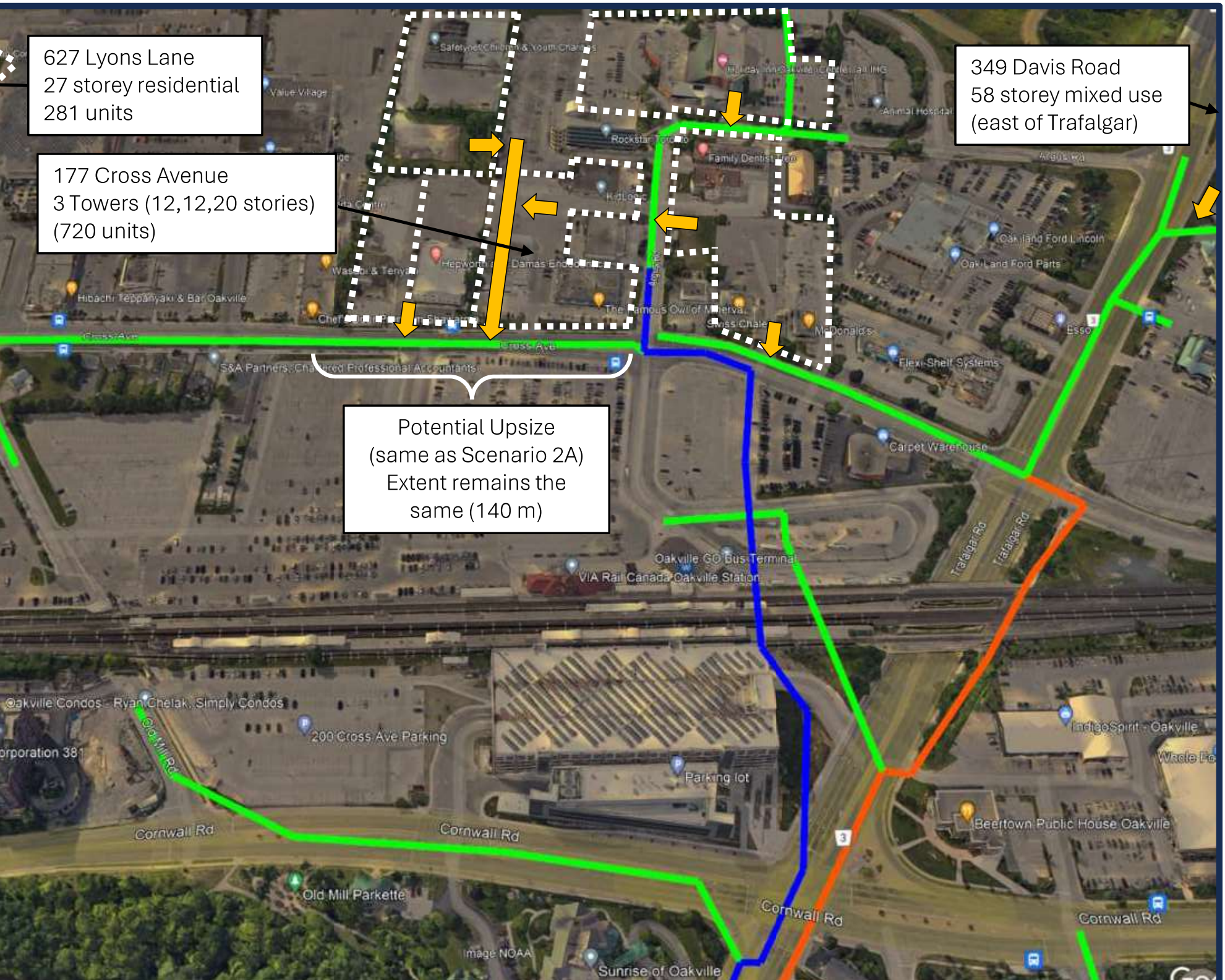
PROJECT DETAILS

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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
1242			259.14					27423		26.51				2391	81.7	29814	2.48	235.3			317.0	1.02	67
1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	30
1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	30
1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	30
1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	30
1297									0.45	7.56	90		41	682	2.2	682	3.90	8.5			10.6	0.46	30
1295										8.31				750	2.4	750	3.88	9.3			11.6	0.27	25
1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	20
1300									2.51	13.43	90		226	1211	3.8	1211	3.74	14.4			18.3	1.02	30
1261										13.43				1211	3.8	1211	3.74	14.4			18.3	0.56	30
1255										13.43				1211	3.8	1211	3.74	14.4			18.3	1.15	30
1257							1668	1668	2.62	2.62	90		236	236	0.7	1904	3.60	21.8			22.6	0.58	25
1256								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.69	30
1260								1668		2.62				236	0.7	1904	3.60	21.8			22.6	1.81	30
1255								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.26	30
1254								1668		16.05				1447	4.6	3115	3.43	34.0			38.6	0.15	45
1253								1668	0.35	16.40	90		32	1479	4.7	3147	3.42	34.3			39.0	0.48	45
1259								1668		16.40				1479	4.7	3147	3.42	34.3			39.0	0.50	45
1249								1668	1.20	17.60	90		108	1587	5.0	3255	3.41	35.3			40.4	0.46	45
1248								1668		17.60				1587	5.0	3255	3.41	35.3			40.4	0.53	45
1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	20
1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	20
1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	20
1244								1668		18.26				1647	5.2	3315	3.41	35.9			41.2	0.62	45
1243								1668		18.26				1647	5.2	3315	3.41	35.9			41.2	0.44	45
1242								1668		18.26				1647	5.2	3315	3.41	35.9			41.2	2.39	45
HX			259.14					29091		44.77				4038	86.9	33129	2.44	256.8			343.7	0.64	67



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SIGN SHEET (Midtown)

ARIO 3

F OAKVILLE

IPALITY 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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mm
ea-2		99.09	99.09				5352	5352							28.3	5352	3.22	54.8			83.1		20
ea-3		30.00	129.09				2366	7718							36.9	7718	3.07	75.3			112.2		20
ea-3		13.75	13.75				860	860							3.9	860	3.84	10.5			14.4		20
293		54.61	197.45				3110	11688							56.5	11688	2.89	107.4			163.9		20
290		49.09	246.54				2917	14605							70.5	14605	2.79	129.7			200.2	0.25	67
290		12.60	12.60				1134	1134							3.6	1134	3.76	13.6			17.2	2.35	25
288			259.14					15739							74.1	15739	2.76	138.1			212.2	0.78	60
287			259.14					15739	0.14	0.14	90		13	13	74.2	15752	2.76	138.2			212.4	0.58	60
286			259.14				**3439**	19178	1.80	1.94	90		162	175	74.7	19353	2.67	164.3			238.9	0.70	60
285			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.87	60
284			259.14					19178		1.94				175	74.7	19353	2.67	164.3			238.9	0.85	60
284									1.15	1.15	90		104	104	0.3	104	4.00	1.3			1.7	1.46	30
292			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	0.22	75
283			259.14					19178		3.09				279	75.0	19457	2.66	165.0			240.0	1.48	75
282			259.14				**1989**	21167	1.95	5.04	90		176	455	75.6	21622	2.62	180.2			255.8	0.77	60
279			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.88	60
275			259.14					21167		5.04				455	75.6	21622	2.62	180.2			255.8	0.22	**67**
263									1.74	1.74	90		157	157	0.5	157	4.00	2.0			2.5	0.85	25
265							**515**	515		1.74				157	0.5	672	3.90	8.4			8.8	0.26	25
264								515	0.50	2.24	90		45	202	0.6	717	3.89	8.9			9.5	1.00	25
266								515		2.24				202	0.6	717	3.89	8.9			9.5	0.56	30
267								515		2.24				202	0.6	717	3.89	8.9			9.5	0.58	30
268									0.30	0.30	90		27	27	0.1	27	4.00	0.3			0.4	0.44	30
267										0.30				27	0.1	27	4.00	0.3			0.4	0.36	25
270								515	8.74	11.28	90		787	1016	3.2	1531	3.67	17.9			21.1	0.37	30
271							**3540**	4055	2.92	14.20	90		263	1279	4.1	5334	3.22	54.6			58.7	0.45	30
272							**2716**	6771	1.24	15.44	90		112	1391	4.4	8162	3.04	79.0			83.4	0.38	30
273								6771		15.44				1391	4.4	8162	3.04	79.0			83.4	0.60	30
274							**1300**	8071		15.44				1391	4.4	9462	2.98	89.7			94.1	0.52	30
275								8071		15.44				1391	4.4	9462	2.98	89.7			94.1	0.85	30
276			259.14					29238		20.48				1846	80.0	31084	2.46	243.6			323.6	0.66	**67**
277			259.14					29238		20.48				1846	80.0	31084	2.46	243.6			323.6	1.47	**67**
280			259.14					29238	0.66	21.14	90		60	1906	80.2	31144	2.46	244.0			324.1	1.45	**67**
278			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	1.67	**67**
281			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.33	**67**
247			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	1.08	**67**
246			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.92	**67**
245			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.54	**67**
240			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	6.53	**67**
239			259.14					29238		21.14				1906	80.2	31144	2.46	244.0			324.1	0.89	**67**
235									1.75	1.75	90		158	158	0.5	158	4.00	2.0			2.5	2.02	20
236									2.21	3.96	90		199	357	1.1	357	4.00	4.5			5.7	0.49	20
237										3.96				357	1.1	357	4.00	4.5			5.7	0.47	25
238									0.45	4.41	90		41	398	1.3	398	4.00	5.1			6.3	0.46	30
239										4.41				398	1.3	398	4.00	5.1			6.3	1.29	30
241			259.14					29238	0.96	26.51	90		87	2391	81.7	31629	2.45	247.1			328.8	0.29	**67**

SIGN SHEET (Midtown)

ARIO 3

F OAKVILLE

IPALITY 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	

O H	LENGTH (m)	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS								
		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 (%)	PIP DIAME (mn
1242			259.14					29238		26.51				2391	81.7	31629	2.45	247.1			328.8	1.02	67
1297									0.75	0.75	90		68	68	0.2	68	4.00	0.9			1.1	1.22	30
1303									4.74	4.74	90		427	427	1.4	427	4.00	5.4			6.8	0.55	30
1302										4.74				427	1.4	427	4.00	5.4			6.8	0.79	30
1301									2.37	7.11	90		214	641	2.0	641	3.92	8.0			10.0	0.32	30
1297							720	720	0.45	7.56	90		41	682	2.2	1402	3.70	16.5			18.7	0.46	30
1295								720		8.31				750	2.4	1470	3.69	17.2			19.6	0.27	25
1295									2.61	2.61	90		235	235	0.7	235	4.00	3.0			3.7	0.40	20
1300								720	2.51	13.43	90		226	1211	3.8	1931	3.60	22.1			26.0	1.02	30
1261								720		13.43				1211	3.8	1931	3.60	22.1			26.0	0.56	30
1255								720		13.43				1211	3.8	1931	3.60	22.1			26.0	1.15	30
1257							1668	1668	2.62	2.62	90		236	236	0.7	1904	3.60	21.8			22.6	0.58	25
1256								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.69	30
1260								1668		2.62				236	0.7	1904	3.60	21.8			22.6	1.81	30
1255								1668		2.62				236	0.7	1904	3.60	21.8			22.6	0.26	30
1254								2388		16.05				1447	4.6	3835	3.35	40.9			45.5	0.15	45
1253								2388	0.35	16.40	90		32	1479	4.7	3867	3.35	41.2			45.9	0.48	45
1259								2388		16.40				1479	4.7	3867	3.35	41.2			45.9	0.50	45
1249								2388	1.20	17.60	90		108	1587	5.0	3975	3.34	42.2			47.2	0.46	45
1248								2388		17.60				1587	5.0	3975	3.34	42.2			47.2	0.53	45
1251									0.35	0.35	90		32	32	0.1	32	4.00	0.4			0.5	0.40	20
1250									0.31	0.66	90		28	60	0.2	60	4.00	0.8			1.0	2.56	20
1248										0.66				60	0.2	60	4.00	0.8			1.0	0.60	20
1244								2388		18.26				1647	5.2	4035	3.33	42.8			48.0	0.62	45
1243								2388		18.26				1647	5.2	4035	3.33	42.8			48.0	0.44	45
1242								2388		18.26				1647	5.2	4035	3.33	42.8			48.0	2.39	45
HX			259.14					31626		44.77				4038	86.9	35664	2.40	272.9			359.8	0.64	67

APPENDIX ‘F’

TRAFALGAR ENGINEERING LTD.

COMPOSITE RUNOFF COEFFICIENT

Project: 590 Argus Road
Desc: First Submission OPA/RZA

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	12089	0.50	6045	100%	12089
Existing landscaping	0	0.25	-	0%	-
			-	100%	-
			-	100%	-
			-		-
Totals	**12089**		**6045**		**12089**
		C = 'AC'/'A'= 0.50		**%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	12089	0.90	10880	100%	12089
			-		-
Totals	**12089**		**10880**		**12089**
		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
Desc: First Submission OPA/RZA

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

Pre-Development Parameters

	Site	External	Total
'C'	0.500	0.000	0.500
'A' (ha)	1.209	0.000	1.209
'AC'	0.604	0.000	0.604

Pre-Development Flow

Return	Intensity (mm/hr)	Site Flow (L/s)	External Flow (L/s)	Total Flow (L/s)
5-yr	114.2	192	0	192
10-yr	134.8	226	0	226
25-yr	162.2	300	0	300
50-yr	182.1	367	0	367
100-yr	200.8	421	0	421

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)	1.209	0.000	0.000	1.209
'AC'	1.088	0.000	0.000	1.088

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)
5-yr	114.2	345	0	0	0	345
10-yr	134.8	407	0	0	0	407
25-yr	162.2	539	0	0	0	539
50-yr	182.1	611	0	0	0	611
100-yr	200.8	674	0	0	0	674

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	192	345	80%
10-yr	226	407	80%
25-yr	300	539	80%
50-yr	367	611	66%
100-yr	421	674	60%

*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
Desc: First Submission OPA/RZA

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

Pre-Development

Catchment Area (ha)	1.2089
Runoff Coefficient	0.50
TC (min)	10
Control Level	5-Yr

Pre-Development Peak Intensity: 114.2 mm/hr
Pre-Development Peak Discharge: 0.192 (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)	1.2089	
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: 0.674 (cms)
Allowable Release Rate: 0.065 (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	0.674	0.000	0.065	404.6	39.0	365.6
15	158.27	0.531	0.000	0.065	478.3	48.8	429.6
20	131.37	0.441	0.000	0.065	529.4	58.5	470.9
25	112.72	0.379	0.000	0.065	567.8	68.3	499.5
30	98.99	0.332	0.000	0.065	598.3	78.0	520.3
35	88.43	0.297	0.000	0.065	623.6	87.8	535.8
40	80.03	0.269	0.000	0.065	645.0	97.5	547.5
45	73.19	0.246	0.000	0.065	663.6	107.3	556.3
50	67.49	0.227	0.000	0.065	679.9	117.0	562.9
55	62.68	0.210	0.000	0.065	694.6	126.8	567.8
60	58.55	0.197	0.000	0.065	707.8	136.5	571.3
90	42.35	0.142	0.000	0.065	768.0	195.0	573.0
120	33.49	0.112	0.000	0.065	809.7	253.5	556.2
240	18.81	0.063	0.000	0.065	909.4	487.5	421.9
270	17.03	0.057	0.000	0.065	926.5	546.0	380.5
360	13.35	0.045	0.000	0.065	968.6	721.5	247.1
720	7.40	0.025	0.000	0.065	1073.7	1423.5	0

TRAFALGAR ENGINEERING LTD.

WATER BALANCE AND WATER QUALITY

Project: 590 Argus Road
Desc: First Submission OPA/RZA

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

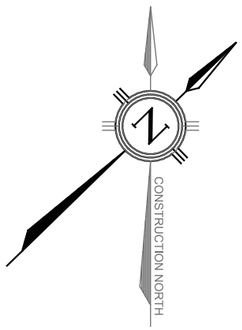
Water Balance

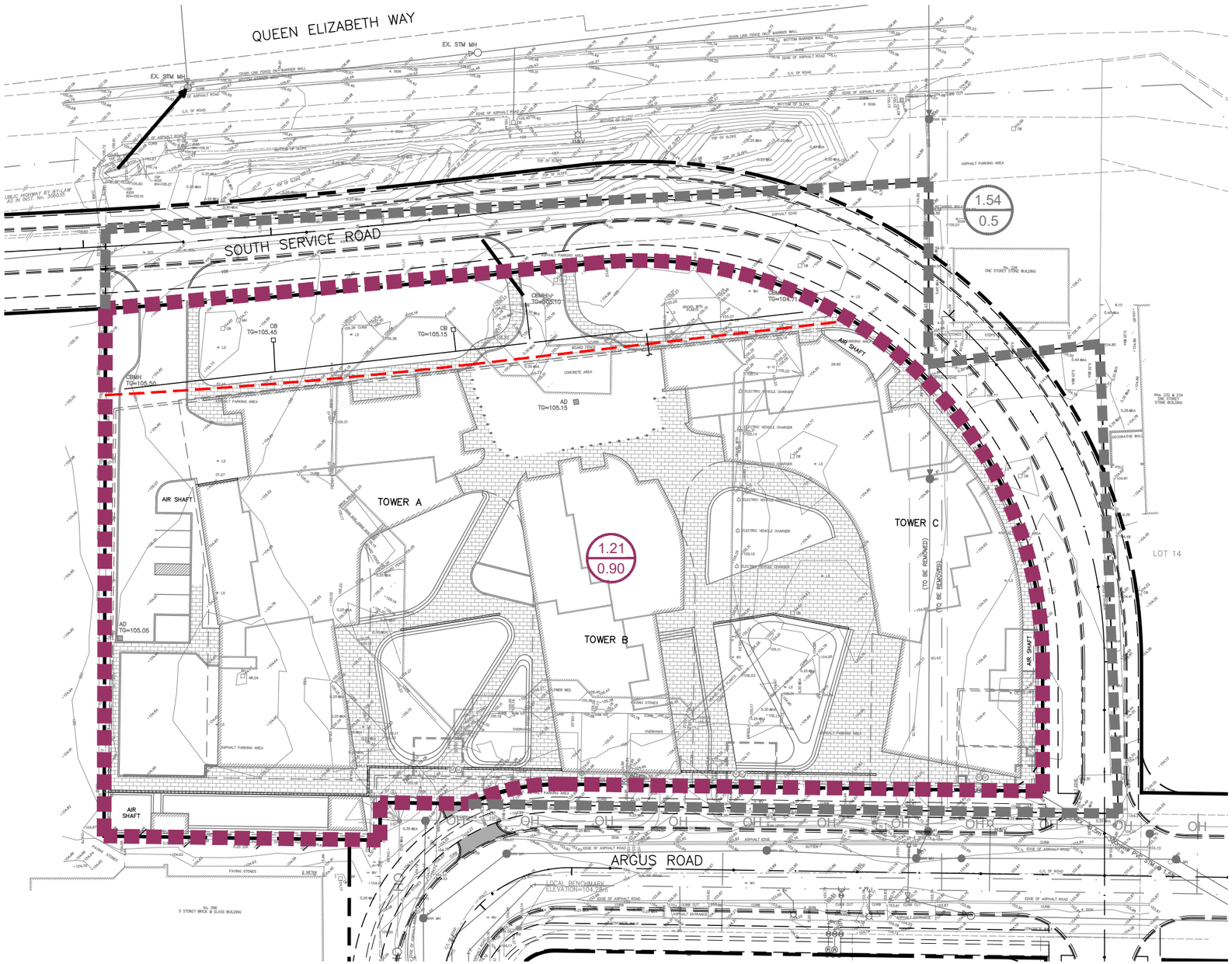
Surface	'A' (m^2)	%Total A	IA (mm)	%Total x IA
Site	12089	100%	0.0	0.0

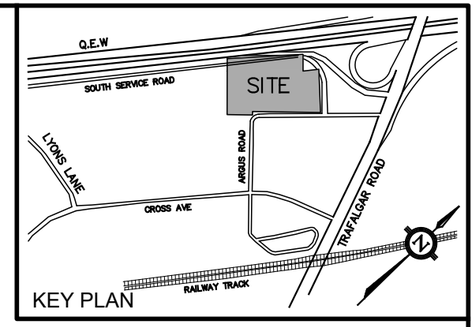
Totals	**12089**	**Total Retention:**	**0.0**	**(mm)**
		Target Retention:	25.0	(mm)
		Balance:	25.0	(mm)
		Volume Required:	**302.2**	**(m^3)**

Total Suspended Solids

Surface	'A' (m^2)	Removal Rate, 'R'	A x R
Jellyfish	12089	80%	9671
Totals	**12089**		**9671**
	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

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

DRAWING TITLE

STORM DRAINAGE PLAN

DESIGN BY	MW	SCALE	1:750	DRAWING No. FIG. 2
DRAWN BY	ZI	DATE	2023/03/28	

FILENAME: P:\1798 Distrikt 590 Argus\04-CAD\04-Rezoning_OPA\1798GS.dwg
PLOTDATE: Mar 04, 2024 - 9:50am

TRAFALGAR ENGINEERING

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

SOUTH SERVICE ROAD STORM SEWER DESIGN SHEET

Town of Oakville
5-Year Storm

Project Name : 590 ARGUS ROAD
Municipal Number:
Date: 2023-07-20
Sheet: 1 of 1

			DRAINAGE AREA				FLOW			SEWER DESIGN				PIPE HYDRAULICS					
LOCATION	FROM MH	TO MH	Area, A (ha)	Runoff Coeff., C	A x C (ha)	Accum. A x C (ha)	Time of Conc., T_c (min)	Intensity, I (mm/h)	Expected Flow, Q (L/s)	Length, L (m)	Gradient, s (%)	Pipe Dia., D (mm)	Manning's Coeff., n	Full Flow Capacity, Q_F (L/s)	Full Flow Velocity, V_F (m/s)	d/D	Actual Velocity, V (m/s)	Time of Flow (min)	Q/Q_F
South Service Road																			
Adjacent to Site	MH110	MH109	0.13	0.90	0.121	0.121	10.00	114.2	**38**	83.5	0.7	300	0.013	**84**	1.16	0.47	1.14	1.22	0.46
	MH109	MH108	0.04	0.90	0.034	0.155	11.22	107.3	**46**	26.0	0.7	300	0.013	**84**	1.16	0.52	1.21	0.36	0.55
	MH108	MH107	0.03	0.90	0.028	0.183	11.58	105.4	**54**	20.0	0.7	300	0.013	**84**	1.16	0.57	1.25	0.27	0.64
	MH107	MH106	0.03	0.90	0.026	0.209	11.85	104.0	**60**	19.0	0.7	300	0.013	**84**	1.16	0.62	1.27	0.25	0.72
	MH106	MH105	0.03	0.90	0.025	0.234	12.10	102.8	**67**	19.5	0.6	300	0.013	**78**	1.07	0.71	1.21	0.27	0.86
	MH105	MH104	0.02	0.90	0.022	0.256	12.37	101.5	**72**	14.0	0.6	300	0.013	**78**	1.07	0.75	1.23	0.19	0.93
	MH104	MH103	0.02	0.90	0.022	0.278	12.55	100.7	**78**	16.5	0.7	300	0.013	**84**	1.16	0.75	1.32	0.21	0.92
	MH103	MH102	0.04	0.90	0.039	0.317	12.76	99.7	**88**	19.0	0.6	375	0.013	**142**	1.24	0.56	1.34	0.24	0.62
Subject Lands SWM Tank	MH1B	MH102	1.21	0.50	0.605	0.605	10.00	114.2	**65**	10.0	1.0	375	0.013	**183**	1.60	0.41	1.48	0.11	0.36
	MH102	OGS	0.00	0.90	0.001	0.923	13.00	98.6	**153**	7.0	0.7	375	0.013	**153**	1.34	0.81	1.54	0.08	1.00
	OGS	MH101	0.00	0.90	0.000	0.923	13.08	98.3	**153**	20.0	0.7	375	0.013	**153**	1.34	0.81	1.54	0.22	1.00
			1.563	0.59	0.923														

Notes:
1) Pipe diameter is nominal
2) Capacity and velocity are based on Imperial I.D. (Nom. Dia x 25.4/25)
3) Time of Flow is based on Actual Velocity
4) Catchment Area's based on a 16m Right-of-Way

Intensity, $I = A / (T_c + B)^C$ where:
- A= 1170
- B= 5.8
- C= 0.843
- t_c= Time of Concentration in minutes

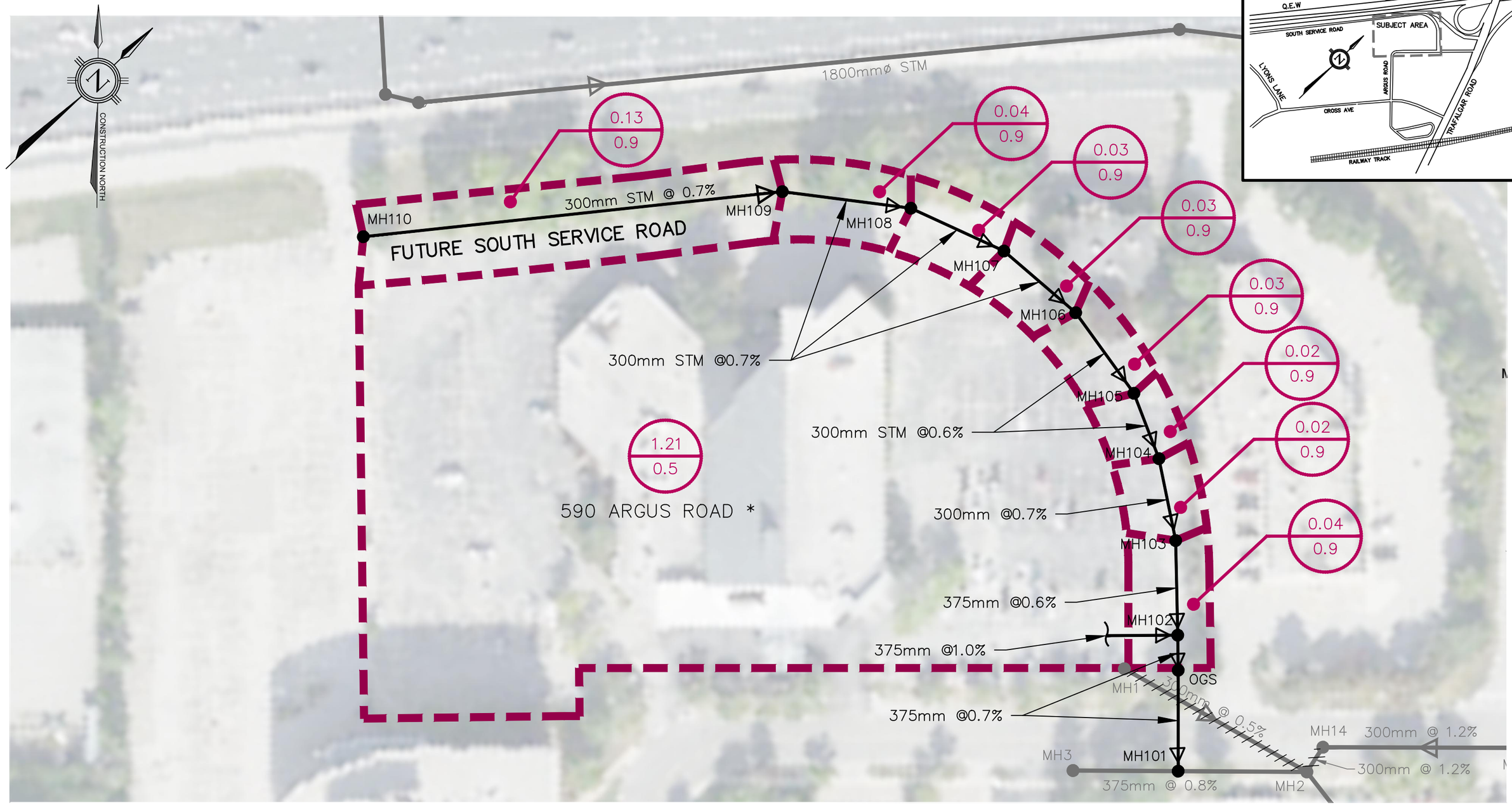
Expected Flow, $Q = 2.778 \times C \times I \times A / 1000$

Full Flow Capacity (Manning's Equation), Q_F

$Q_F = (1/n) \times A \times R^{2/3} \times s^{1/2}$

$= (1/n) \times 311.7 \times D^{8/3} \times s^{1/2}$

P:\1798 Distrikt 590 Argus\01-Calculations\01-SWM\SSDS\Superceeded\[Storm Sewer Design Sheet SSR.xlsx]SSR Upstream to 590 Argus



LEGEND

- PROPOSED STORM SEWER + MH
- EXISTING STORM SEWER + MH
- DRAINAGE AREA BOUNDARY
- 1.21 / 0.5 DRAINAGE AREA (ha) RUNOFF COEFFICIENT
- * INDICATES CONTROLLED SITE RUNOFF

DRAWING TITLE
FUTURE SOUTH SERVICE ROAD STORM DRAINAGE AREA PLAN

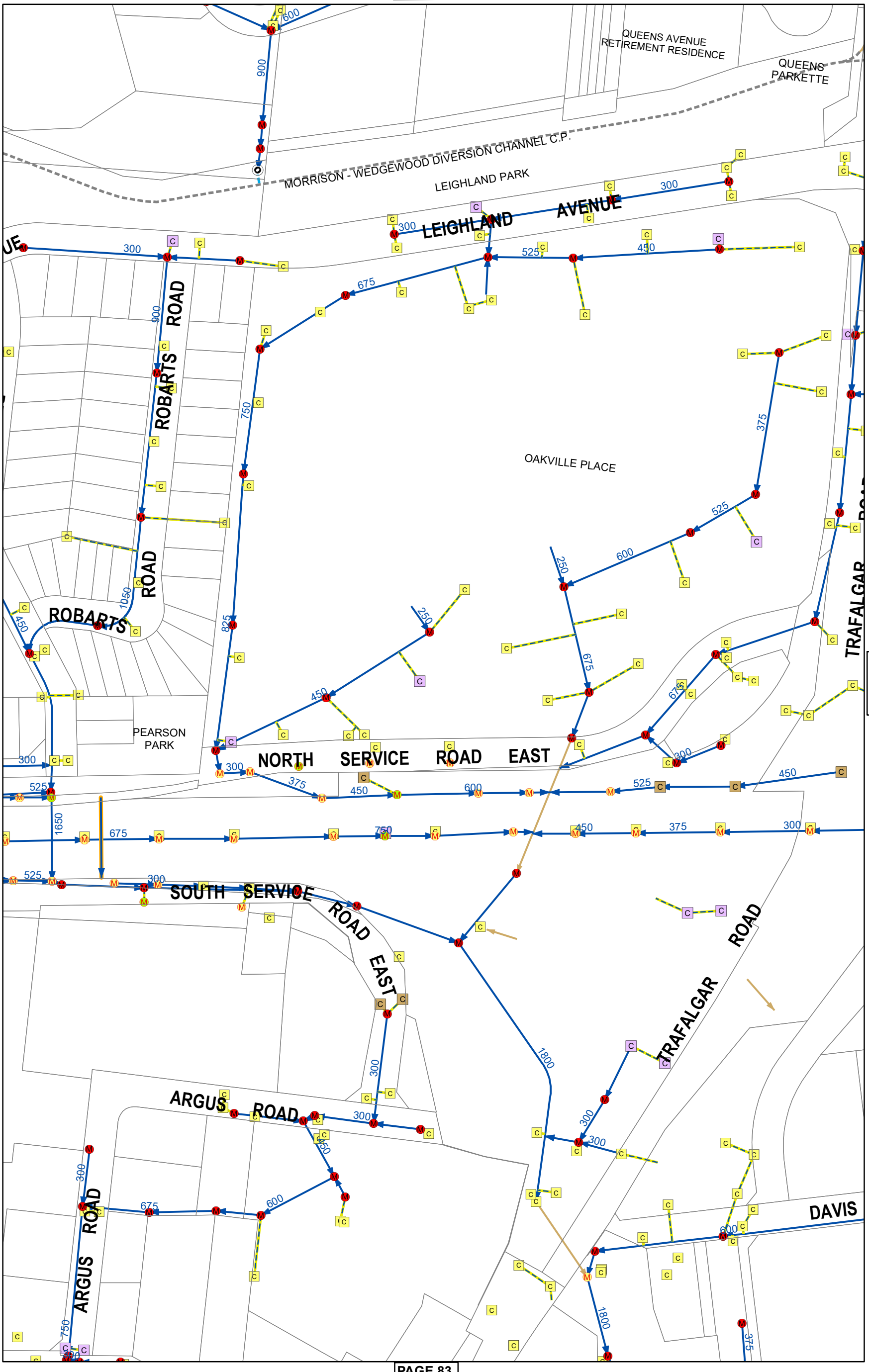
PROJECT TITLE
590 ARGUS ROAD

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

DESIGN BY	NAS	SCALE	1:750	DRAWING No.	FIG. 3
DRAWN BY	MW	DATE	2024/03/06		

FILENAME: P:\1798 Distrikt 590 Argus\01-Calculations\01-SWM\SSDS\1798 DRAINAGE AREA PLAN.dwg
PLOTDATE: Mar 06, 2024 - 3:42pm

APPENDIX ‘G’



PAGE 109

PAGE 111

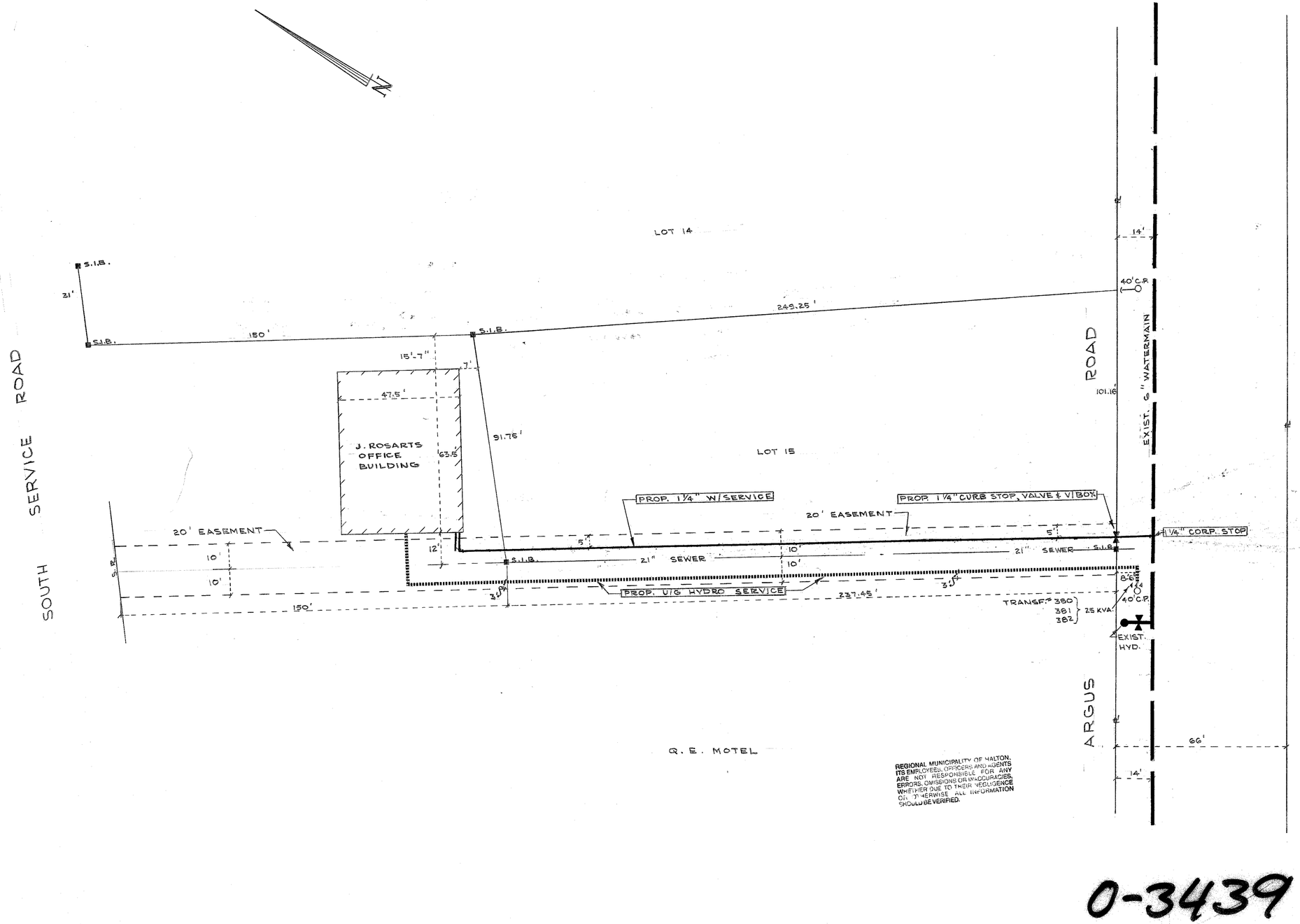
Town of Oakville
Engineering &
Construction
1225 Trafalgar Road
Oakville, Ontario

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



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.

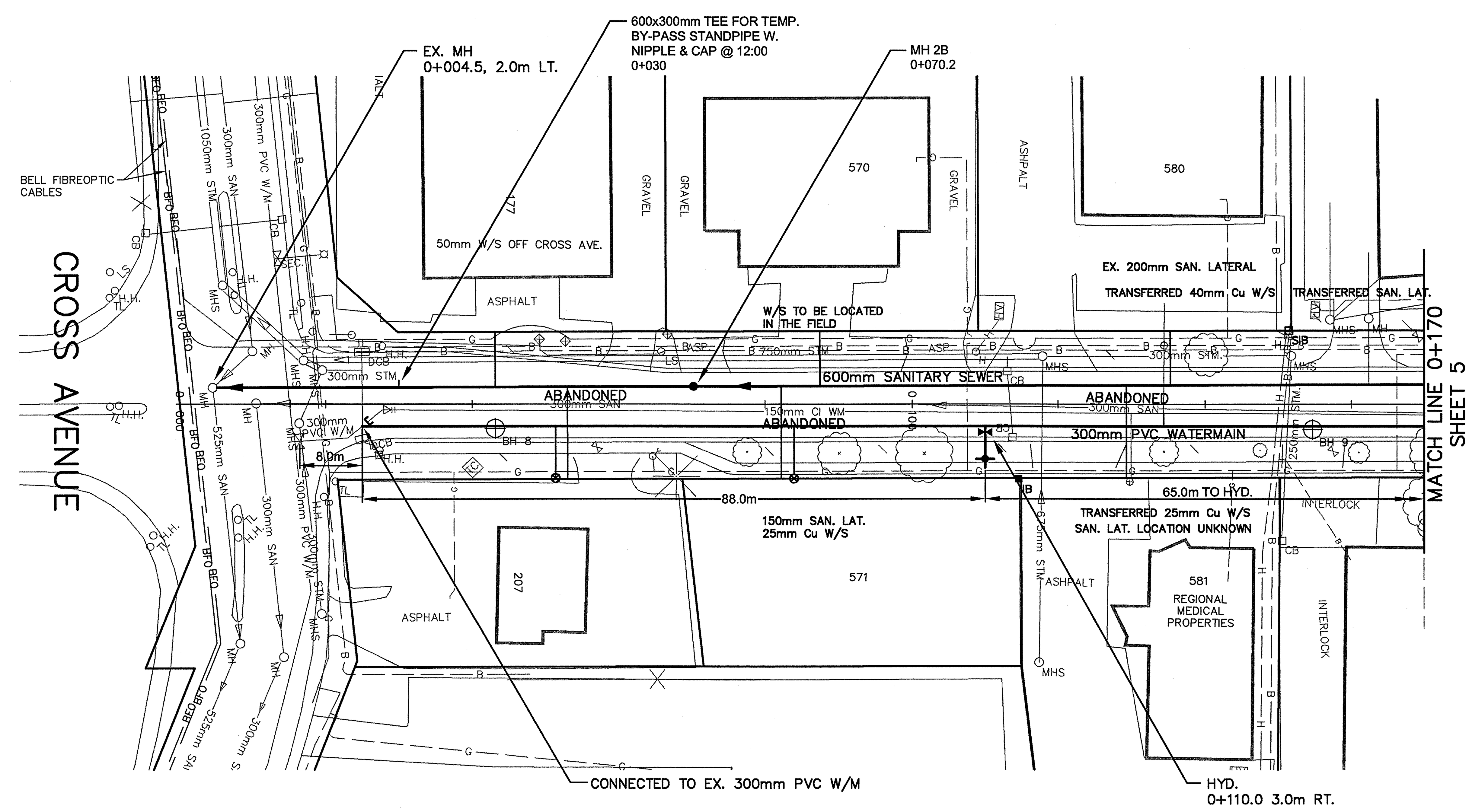
1" = 20'

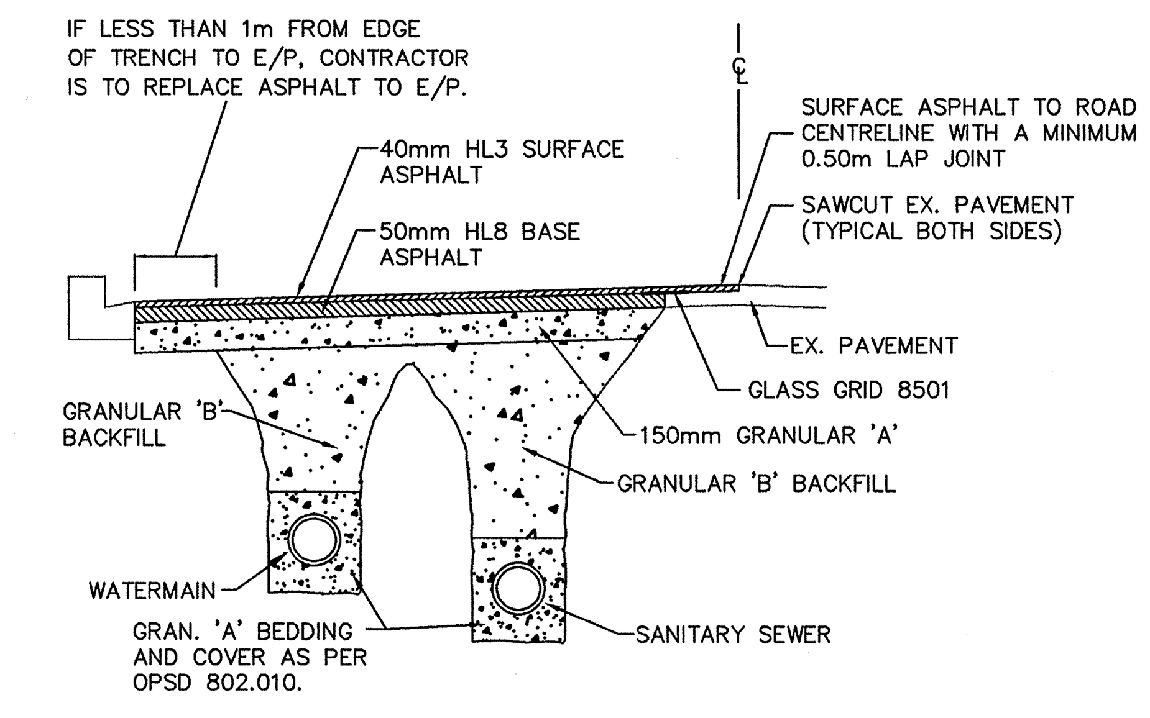
G.M.N. NOV. 19/69

W - 718

0-3439

0-3439

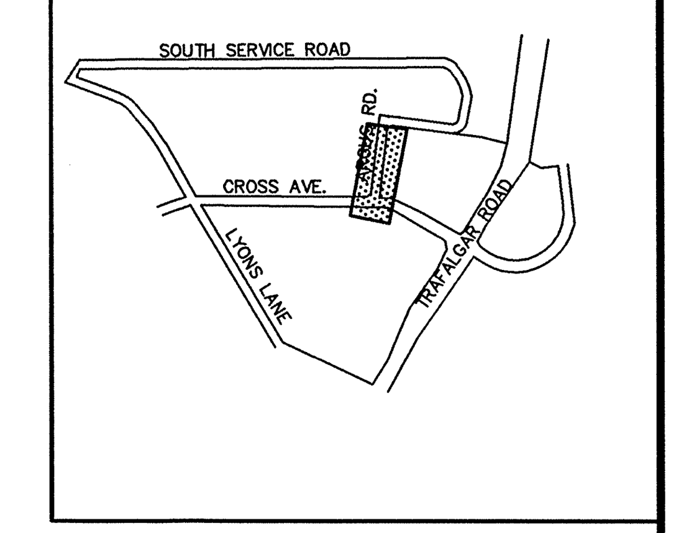


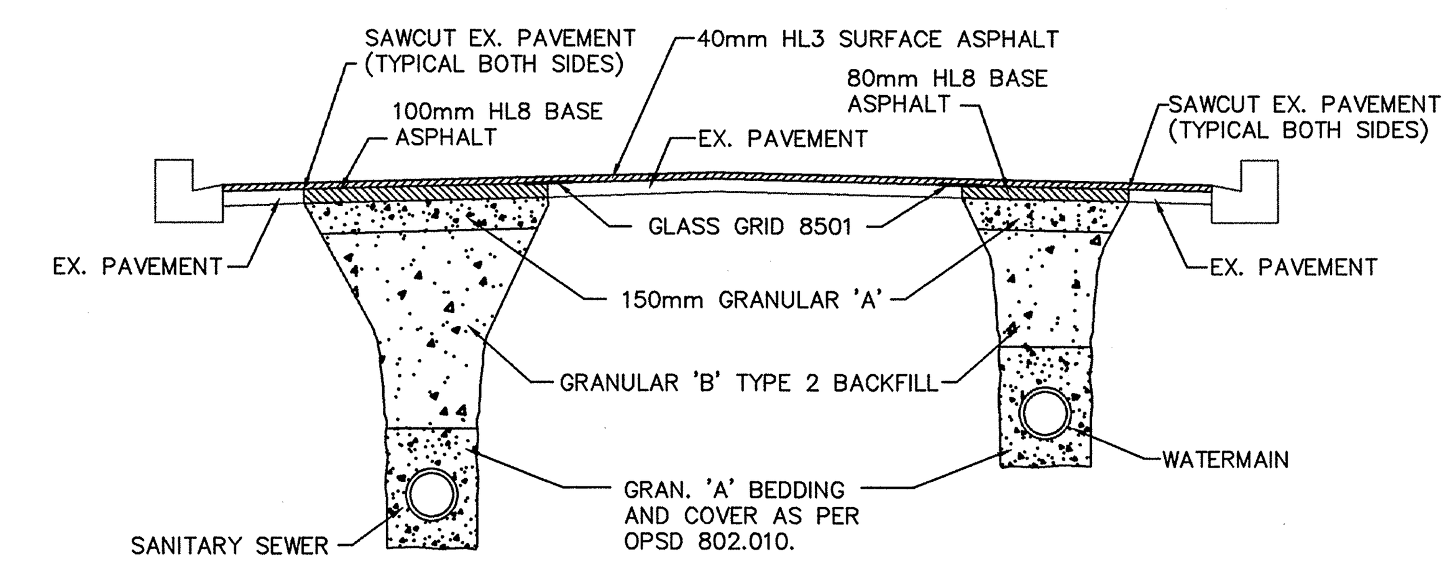


LYONS LANE (SOUTH OF CROSS AVE.) ROAD RESTORATION DETAIL

N.T.S.

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

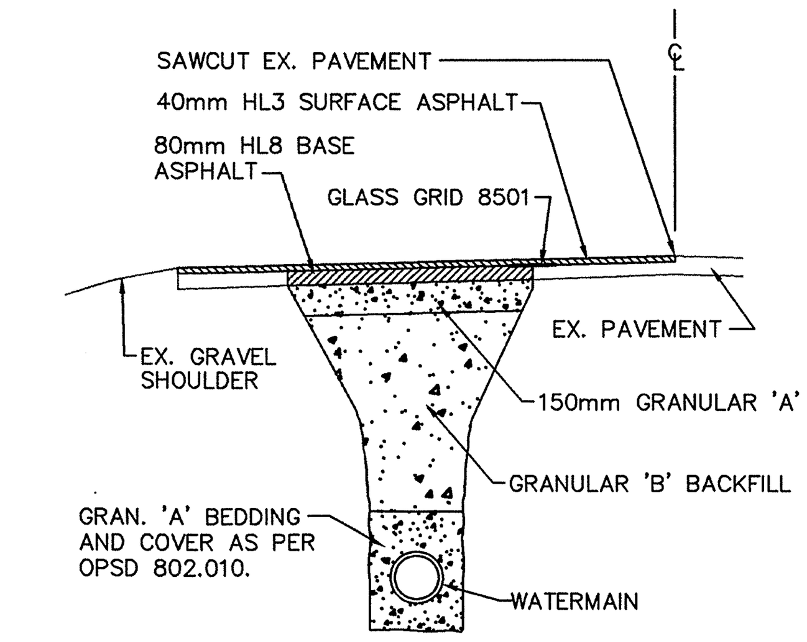




ARGUS ROAD AND SOUTH SERVICE ROAD ROAD RESTORATION DETAIL

N.T.S.

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



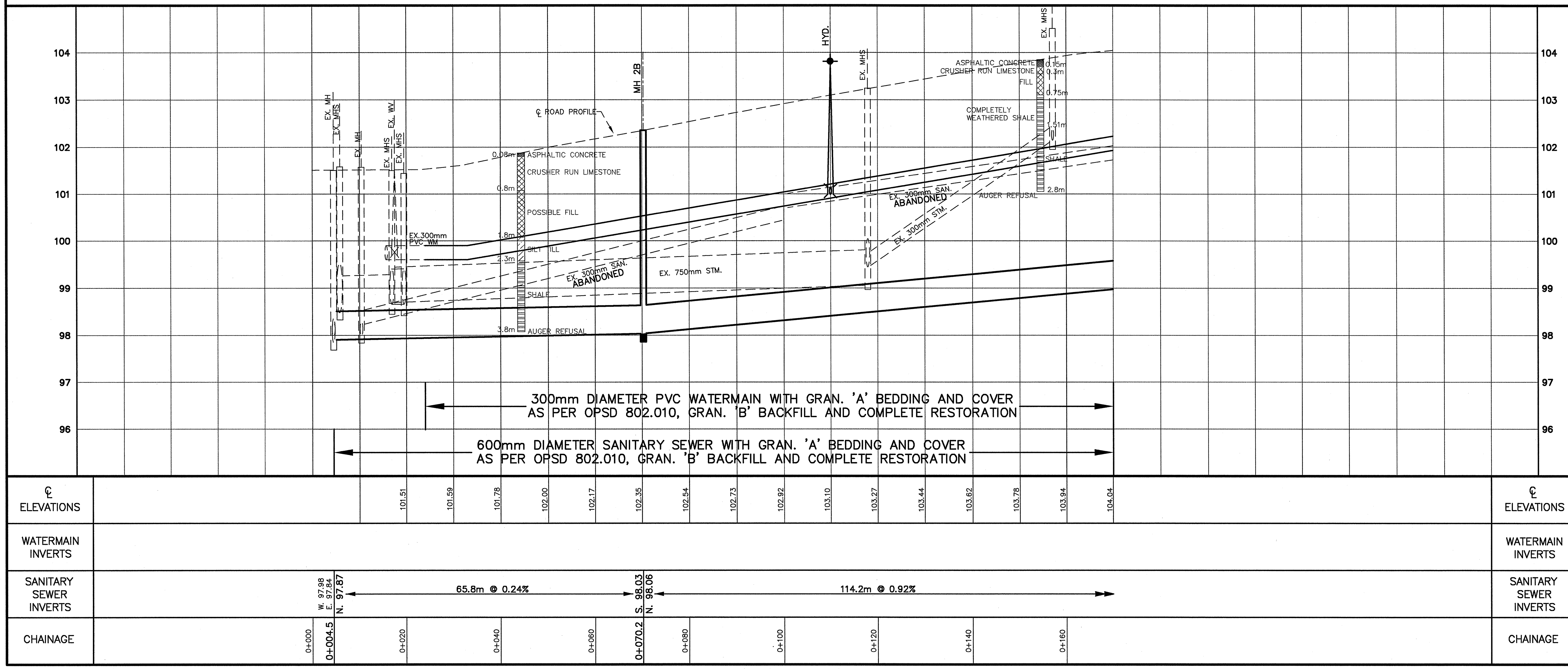
LYONS LANE (NORTH OF CROSS AVE.) ROAD RESTORATION DETAIL

N.T.S.

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

ARGUS ROAD

SEE SHEET 1 FOR GENERAL NOTES.



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	
Drawn	EWS	Ch'kd	

Date: JANUARY 2003

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

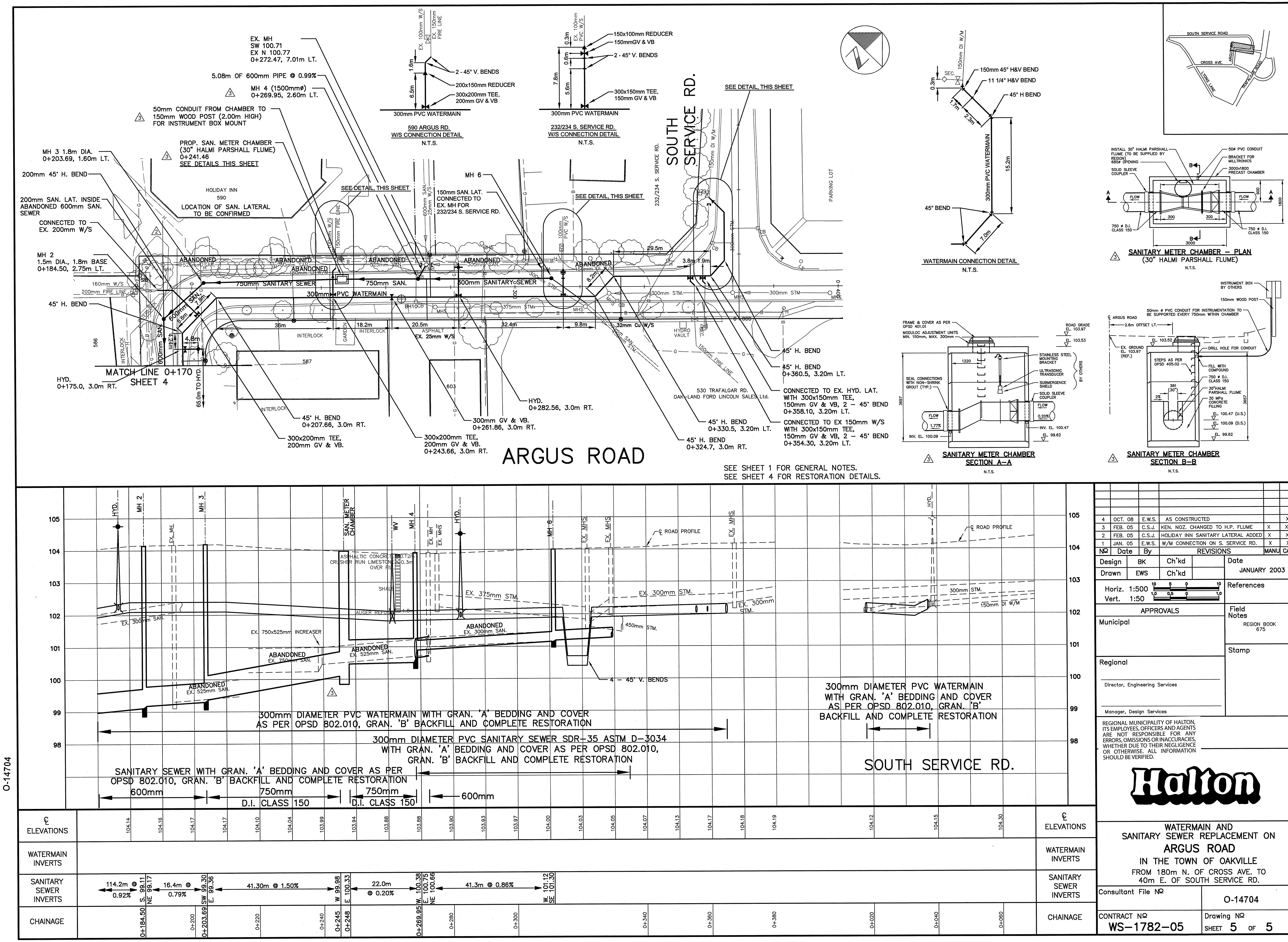
Drawing Nº: SHEET 4 OF 5

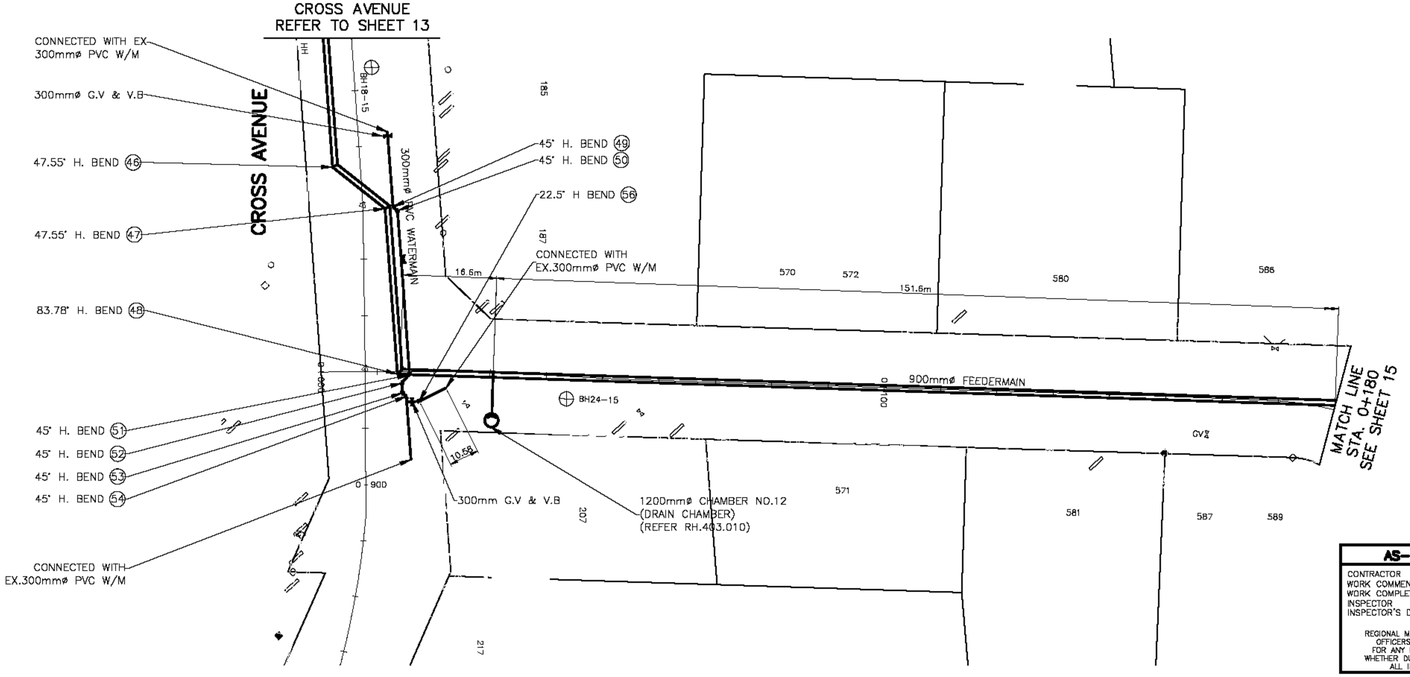
O-14703

PR-1782-05 4 of 5

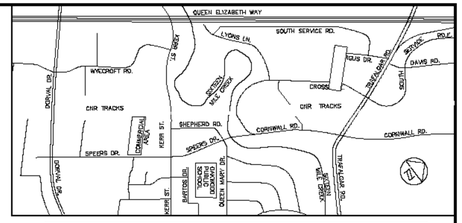
O-14704

PR-1782-05 5 of 5





ARGUS ROAD



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

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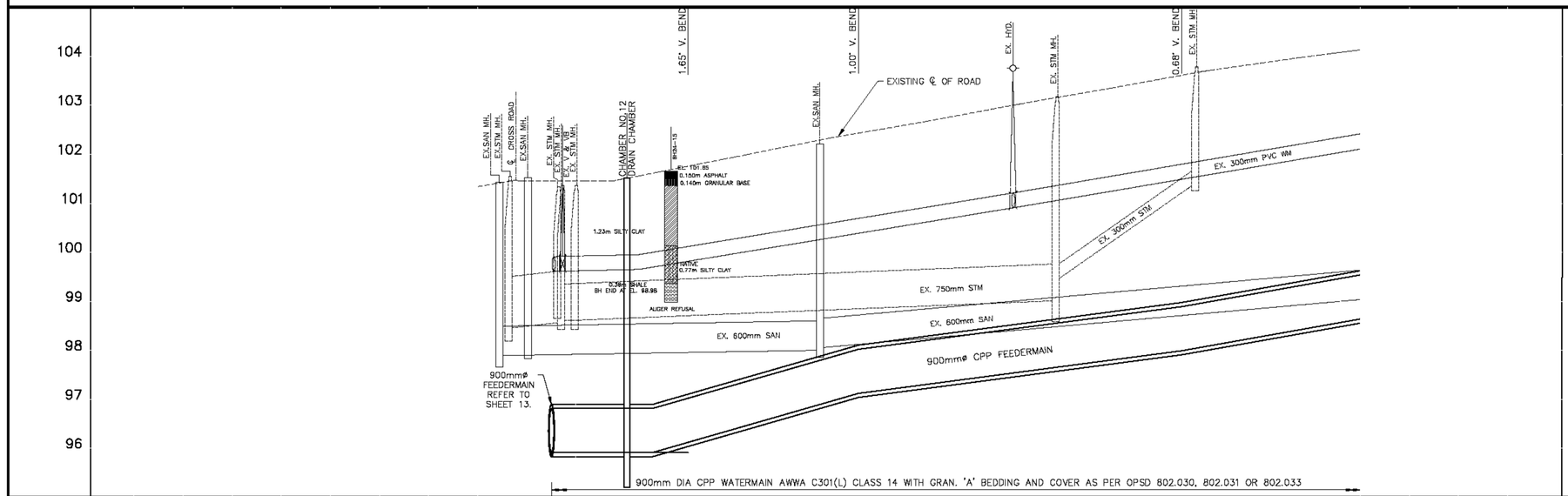

℄ ELEVATIONS	101.33	101.45	101.70	102.09	102.47	102.83	103.19	103.54	103.86	104.11
FEEDERMAIN INVERTS										
CHAINAGE	0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+180

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
Drawn	BS	Ch'kd	JLP	NOV 2014

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
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

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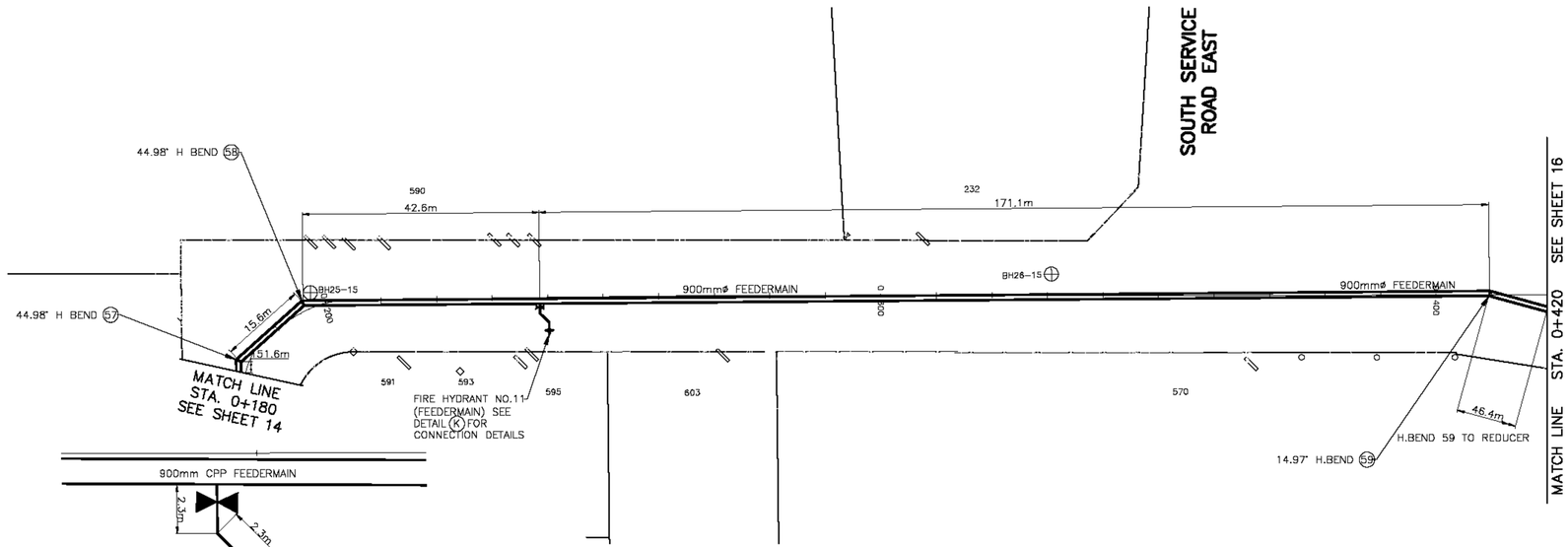
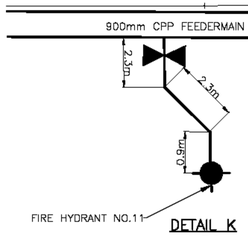
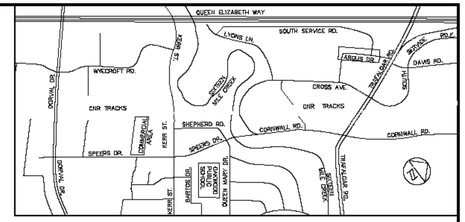
O-23165





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

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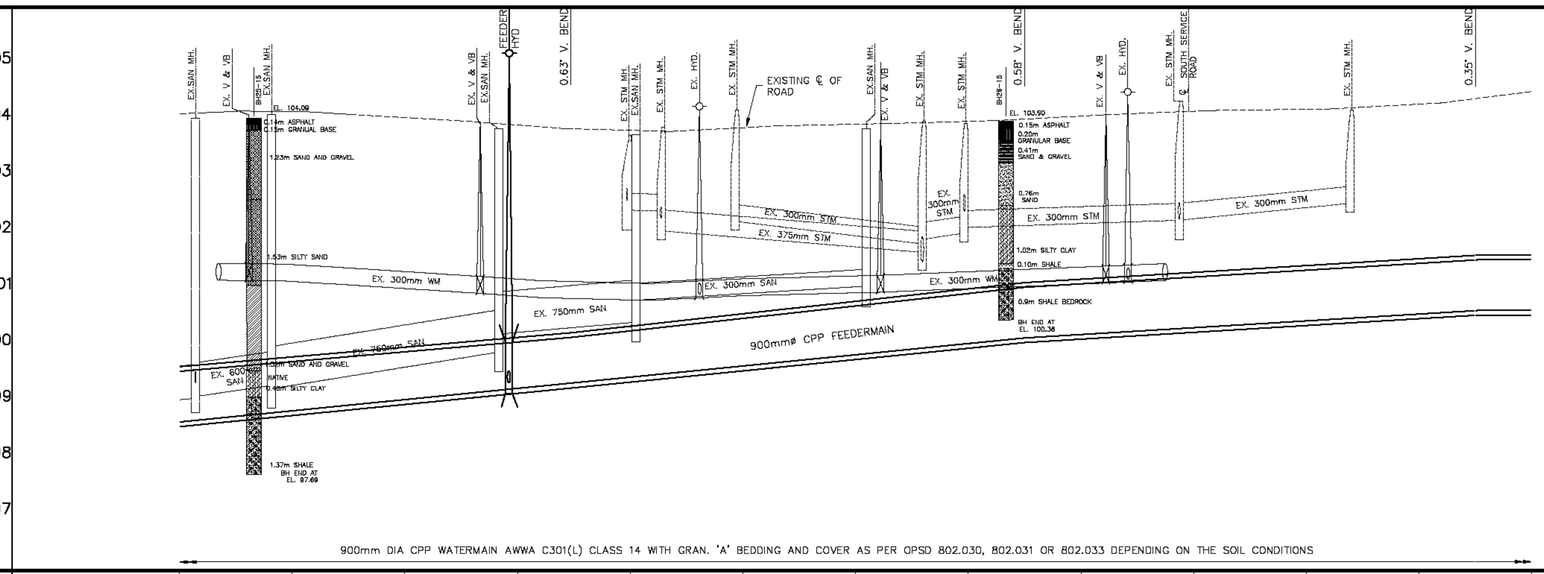

900mm DIA CPP WATERMAIN AWWA C301(L) CLASS 14 WITH GRAN. 'A' BEDDING AND COVER AS PER OPSD 802.030, 802.031 OR 802.033 DEPENDING ON THE SOIL CONDITIONS

℄ 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
Drawn	BS	Ch'kd	JLP	NOV 2014

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

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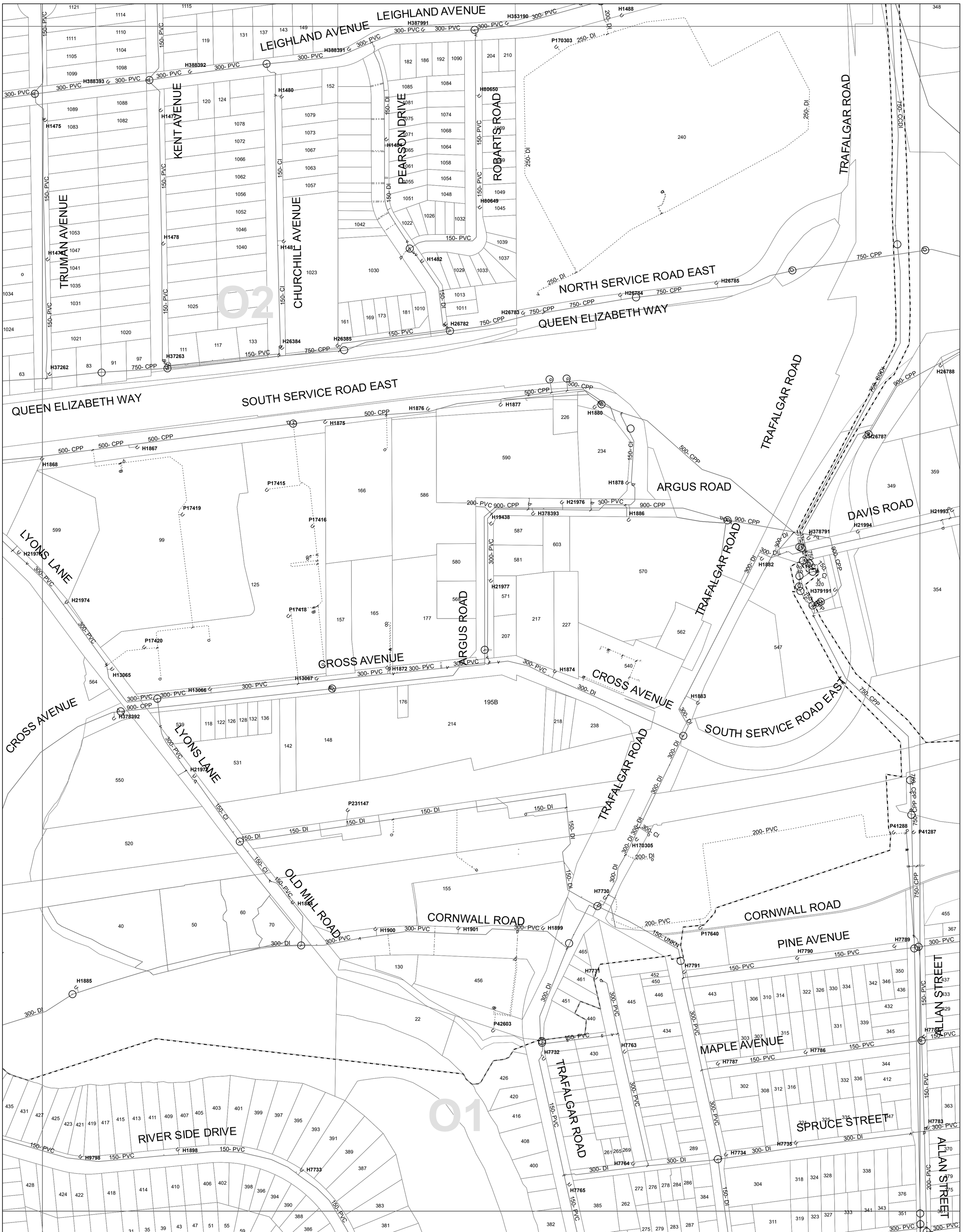


Halton REGION

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

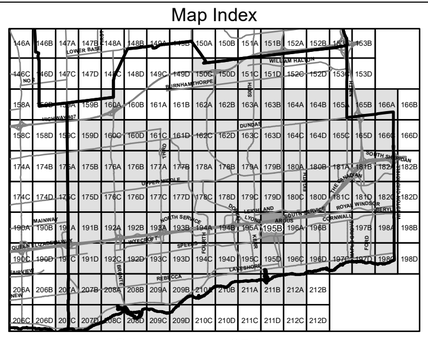
- K Booster Station
- L Intake
- J Municipal Well
- I Reservoir
- H Tank
- G Water Purification Plant

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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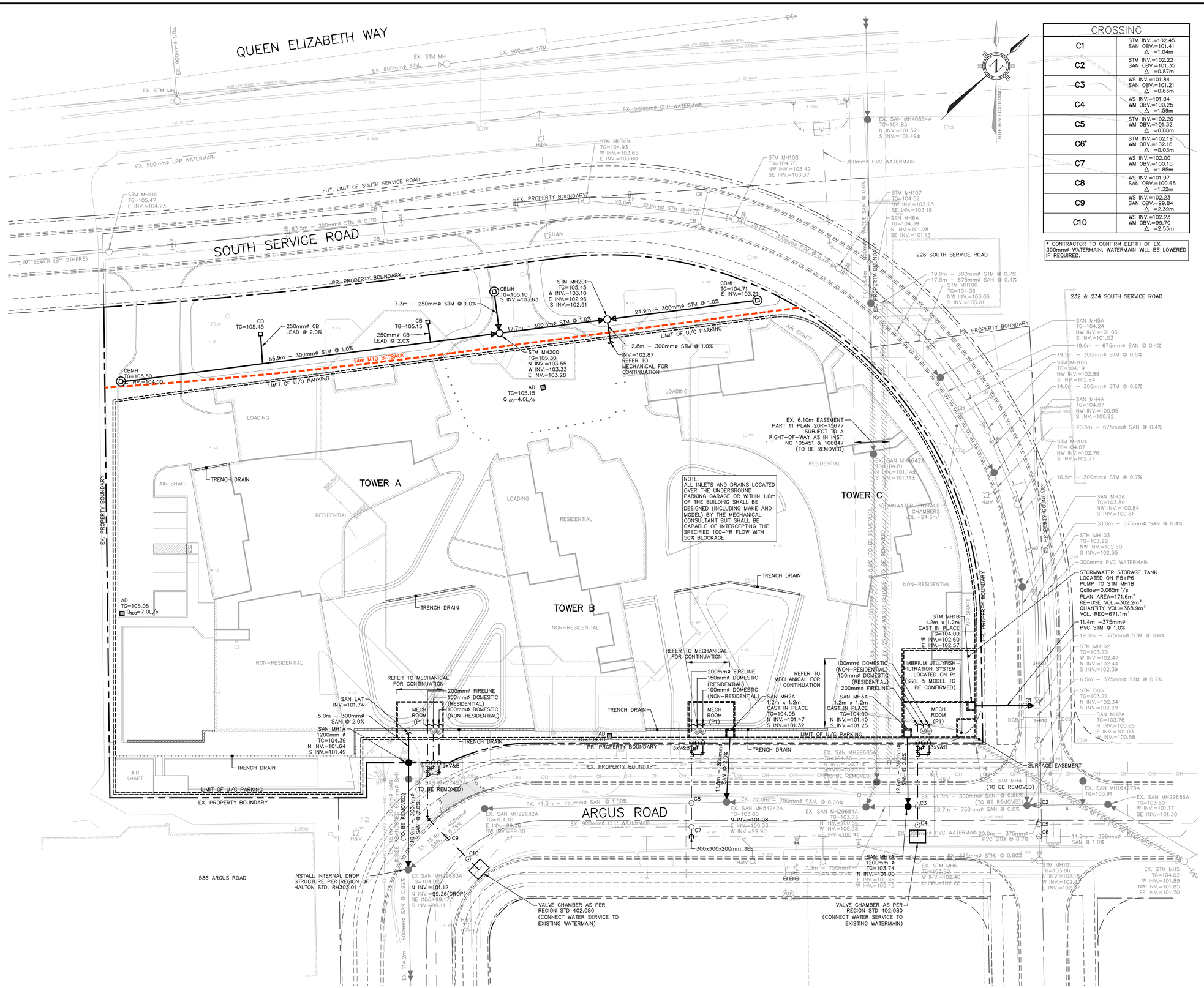
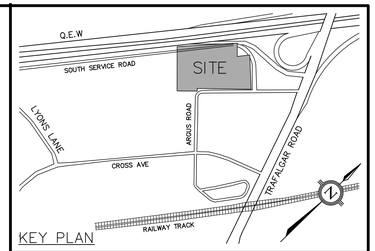
Print Date: Jan 31, 2022

APPENDIX 'H'



CROSSING	
C1	STM INV.=102.45 SAN OBV.=101.41 △ =1.04m
C2	STM INV.=102.22 SAN OBV.=101.35 △ =0.87m
C3	WS INV.=101.84 SAN OBV.=101.21 △ =0.63m
C4	WS INV.=101.84 WM OBV.=100.25 △ =1.59m
C5	STM INV.=102.20 WM OBV.=101.32 △ =0.88m
C6*	STM INV.=102.19 WM OBV.=102.16 △ =0.03m
C7	WS INV.=102.00 WM OBV.=100.15 △ =1.85m
C8	WS INV.=101.97 SAN OBV.=100.65 △ =1.32m
C9	WS INV.=102.23 SAN OBV.=99.84 △ =2.39m
C10	WS INV.=102.23 WM OBV.=99.70 △ =2.53m

* CONTRACTOR TO CONFIRM DEPTH OF EX. 300mmø WATERMAIN. WATERMAIN WILL BE LOWERED IF REQUIRED.



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
- 153.46 EXISTING ELEVATION
- 153.46 EXISTING ELEVATION TO REMAIN
- EXISTING CATCHBASIN
- BH BOREHOLE
- PROPOSED AREA DRAIN
- PROPOSED RETAINING WALL
- PROPOSED TRENCH DRAIN

NO.	DATE	BY/DRAWN	REVISIONS
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 24, 2023	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 17986S.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 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

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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
PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT

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

PROJECT TITLE

DISTRIKT 590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION

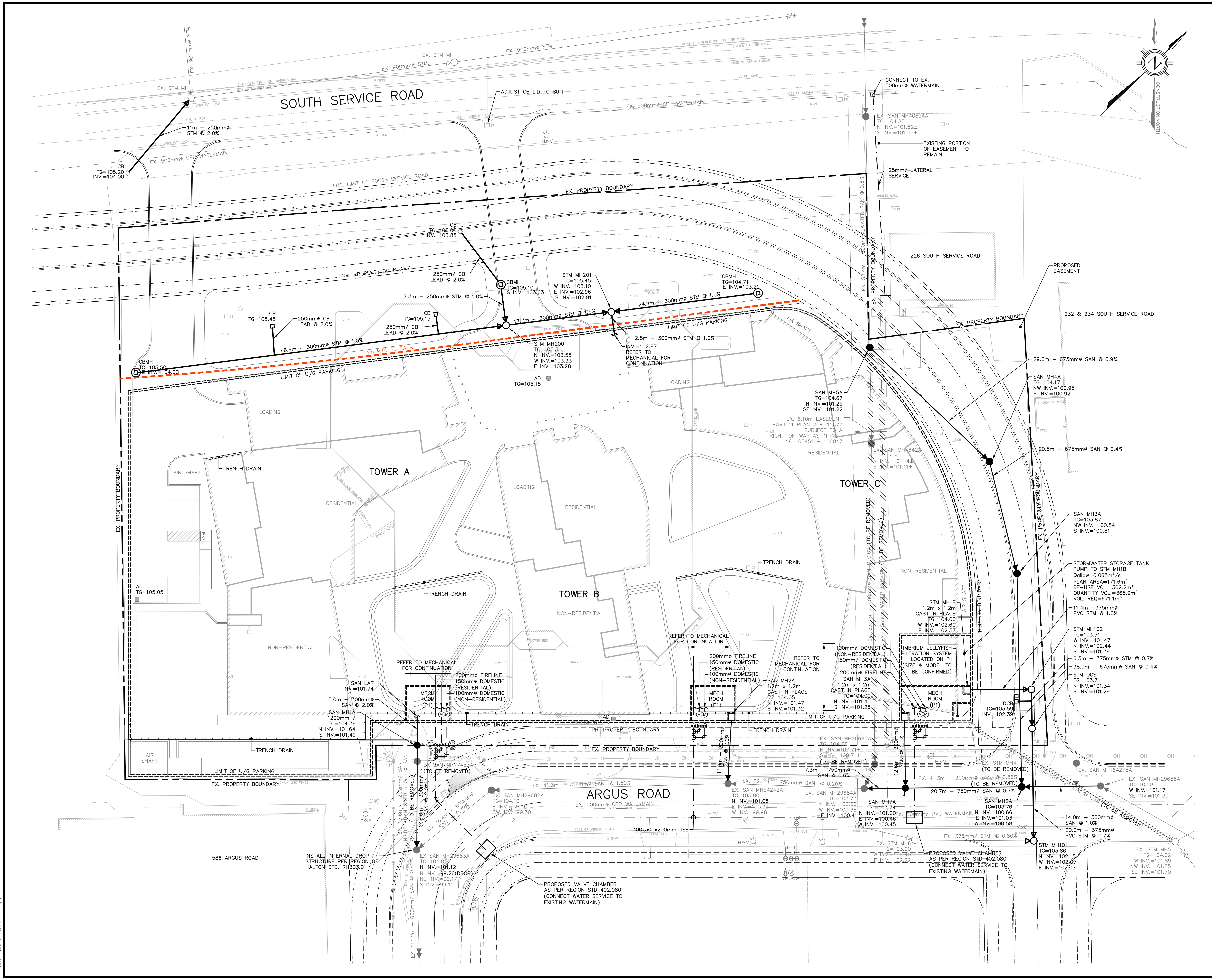
590 ARGUS RD.
OAKVILLE, ONTARIO

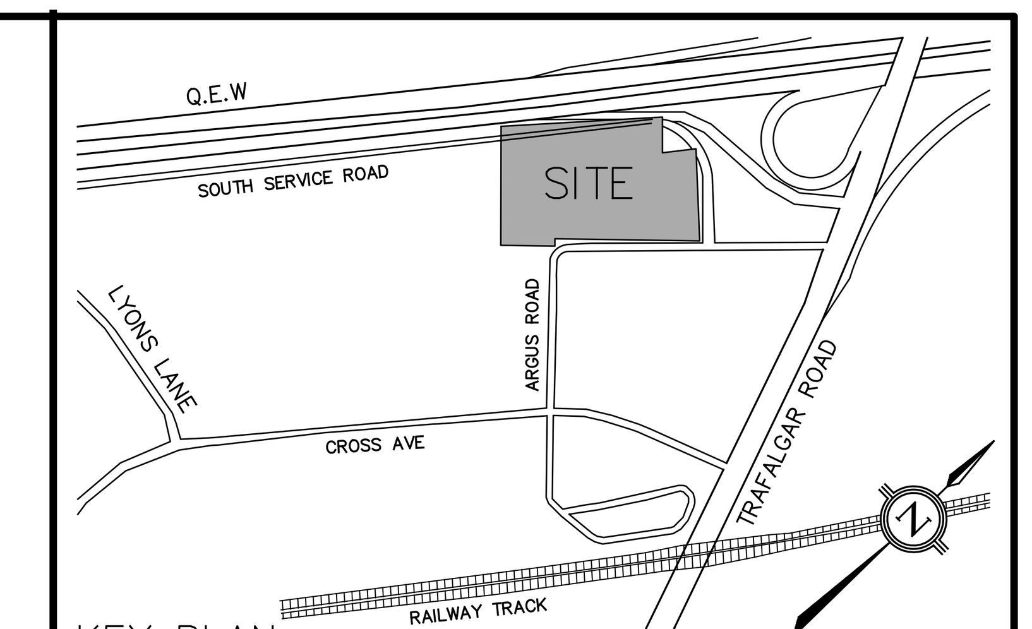
DRAWING TITLE

PRELIMINARY SITE SERVICING PLAN (ULTIMATE)

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	1 OF 3
PROJECT No.	1798	PLAN No.	S1

FILENAME: P:\1798 Distrikt 590 Argus\04-CAD\04-Rezoning_OPA\17986S.dwg
PLOTDATE: Mar 18, 2024 - 3:45pm





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
- EXISTING ELEVATION
- EXISTING ELEVATION TO REMAIN
- EXISTING CATCHBASIN
- BOREHOLE
- PROPOSED AREA DRAIN
- PROPOSED RETAINING WALL
- PROPOSED TRENCH DRAIN

NO.	DATE	BY/DRAWN	REVISIONS
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 24, 2023	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 1798GS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 2024

ELEVATION NOTE

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LOCAL BENCHMARK

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LICENSED PROFESSIONAL ENGINEER N. A. SYLVESTER 100199487 MARCH 18-2024 PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

CONSULTANT

TRAFALGAR ENGINEERING
#1-481 MORDEN ROAD, OAKVILLE, ON, L6K 3W6
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PROJECT TITLE

DISTRIKT 590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION

590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE

PRELIMINARY SERVICING PLAN (INTERIM)

SCALE	1:300	DESIGN BY	MW	PROJECT No.	1798
DRAWN BY	ZI	CHECKED BY	NAS	PLAN No.	S2
DATE	2022/10/26	SHEET	2 OF 3		

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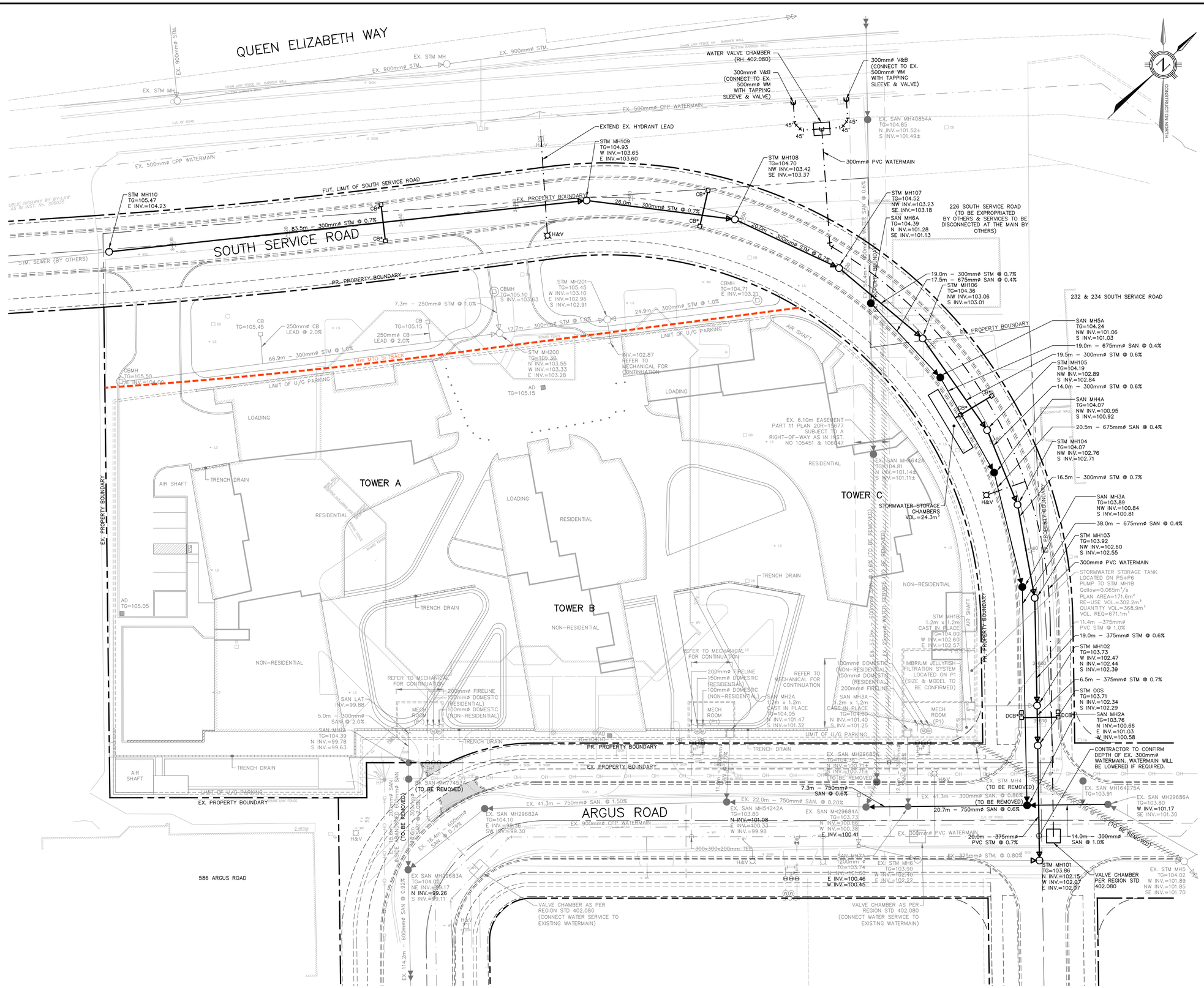
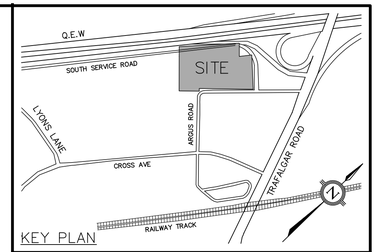
PLOTDATE: Mar 18, 2024 – 11:19pm





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
- 153.46 EXISTING ELEVATION
- 153.46 EXISTING ELEVATION TO REMAIN
- EXISTING CATCHBASIN
- BH BOREHOLE
- PROPOSED AREA DRAIN
- PROPOSED RETAINING WALL
- PROPOSED TRENCH DRAIN

NO.	DATE	BY/DRAWN	REVISIONS
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CAD FILE: 1798SS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 2024

ELEVATION NOTE

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LOCAL BENCHMARK

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LICENSED PROFESSIONAL ENGINEER N. A. SYLVESTER 100199487 MARCH 18, 2024 PROVINCE OF ONTARIO

DESIGNED BY

APPROVED BY

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

PROJECT TITLE
DISTRIKT 590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
PRELIMINARY SOUTH SERVICE ROAD SERVICING PLAN

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	3 OF 3
PROJECT No.	1798		
PLAN No.	S3		

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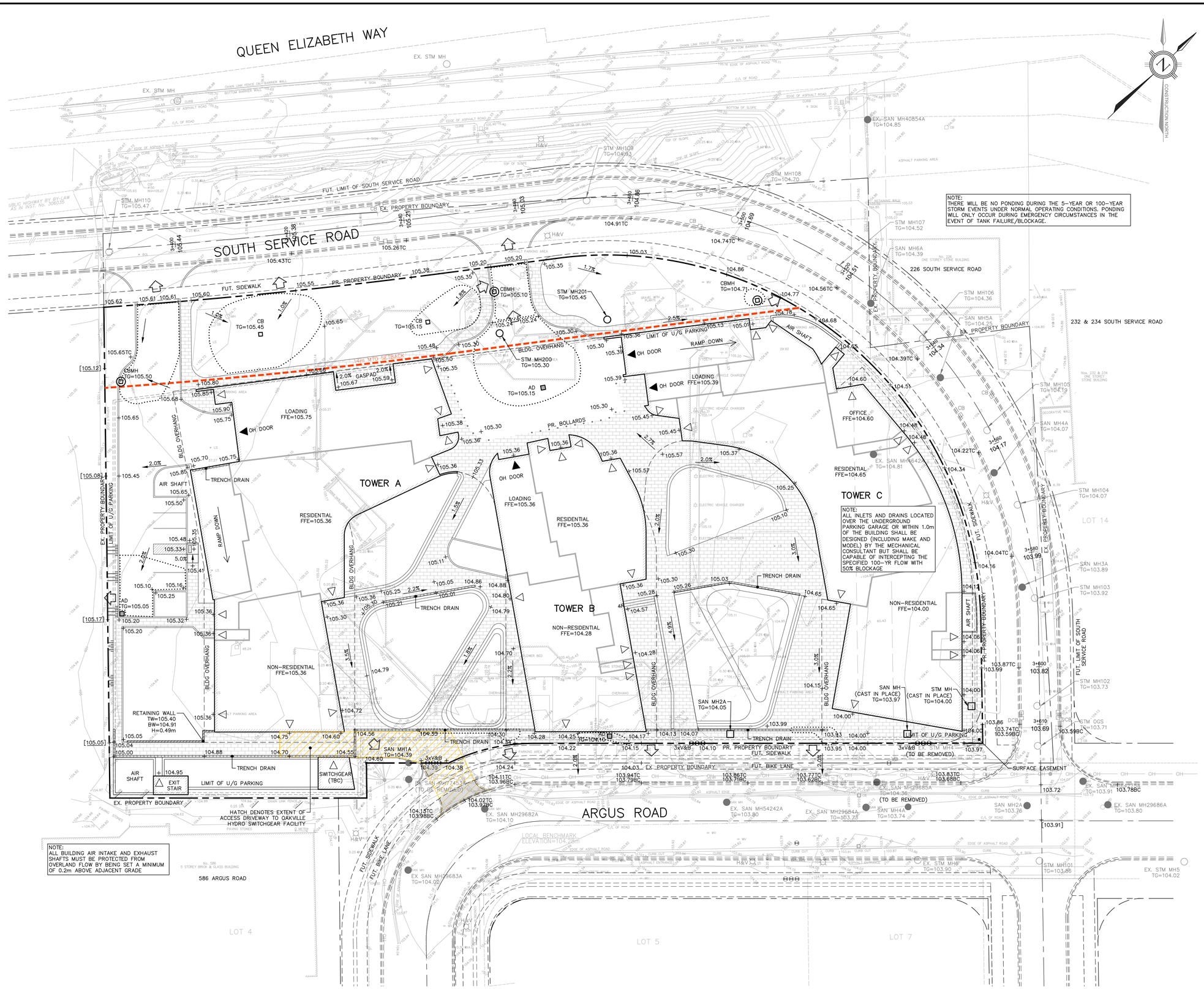
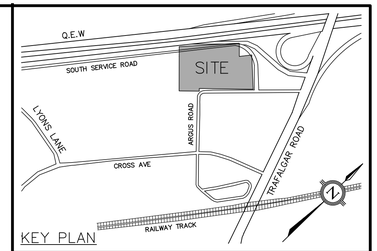
PLOTDATE: Mar 18, 2024 - 1:20pm





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
- OVERLAND FLOW
- [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
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CAD FILE: 17986S.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 2024

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PROJECT TITLE
590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
PRELIMINARY GRADING PLAN (ULTIMATE)

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	1 OF 2
PROJECT No.	1798	PLAN No.	G1

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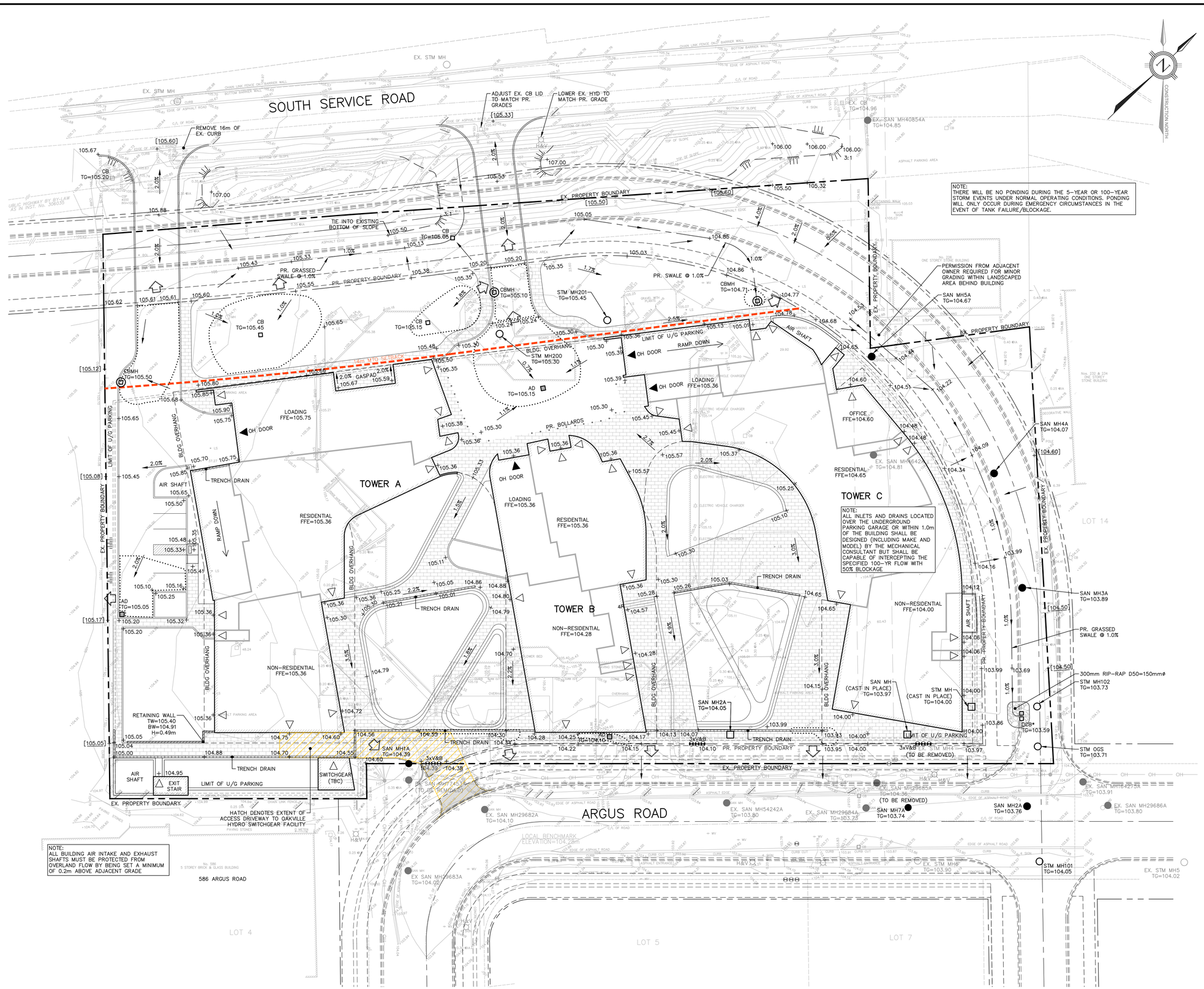
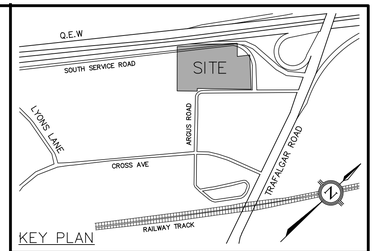
PLOTDATE: Mar 18, 2024 - 3:57pm





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
- OVERLAND FLOW
- [153.78] INTERPOLATED EXISTING GRADE
- PROPOSED TRENCH DRAIN
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- 103.00TC 102.85BC PROPOSED TOP & BOTTOM CURB ELEVATION
- PROPERTY BOUNDARY
- EMERGENCY PONDING AREA

NO.	DATE	BY/DRAWN	REVISIONS
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1	MAR 17, 2022	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 17980S.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 19, 2024

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PROJECT TITLE

590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION

590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE

PRELIMINARY GRADING PLAN (INTERIM)

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	2 OF 2
PROJECT No.	1798		
PLAN No.	G2		

FILENAME: P:\1798 District 590 Argus\04-CAD\04-Rezoning_OPA\17980S.dwg
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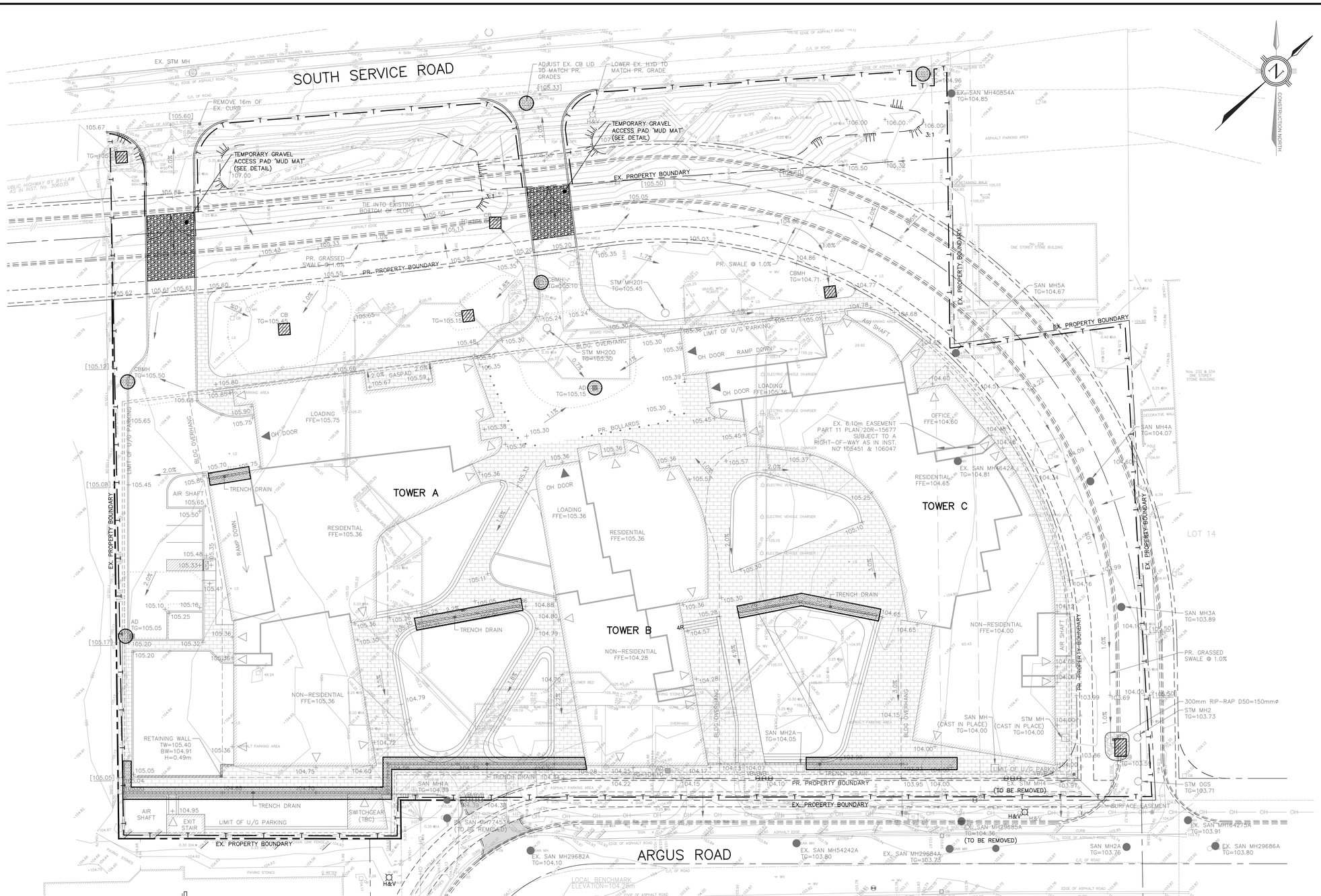
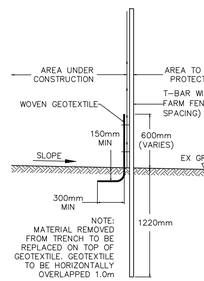
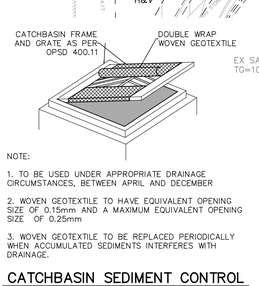




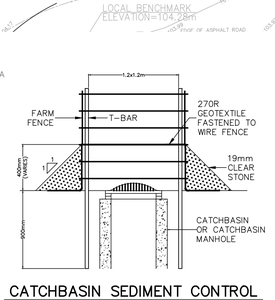
SEDIMENTATION CONTROL FENCE

NTS



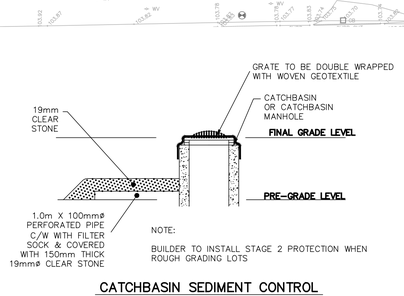
CATCHBASIN SEDIMENT CONTROL IN PAVED AREAS

NTS



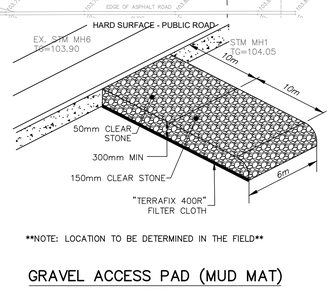
CATCHBASIN SEDIMENT CONTROL OFF ROAD AREAS

NTS



CATCHBASIN SEDIMENT CONTROL OFF ROAD AREAS

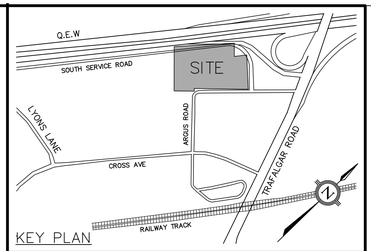
N.T.S.



NOTE: LOCATION TO BE DETERMINED IN THE FIELD

GRAVEL ACCESS PAD (MUD MAT)

NTS



KEY PLAN

LEGEND

+ 111.80	PROPOSED ELEVATION
+ 113.96	EXISTING ELEVATION
+ 113.96	EXISTING ELEVATION TO REMAIN
	PROPOSED SWALE DIRECTION
	PROPOSED DRAINAGE DIRECTION
	PROPOSED SLOPE
	PROPOSED CATCHBASIN
	PROPOSED DOUBLE CATCHBASIN
	PROPOSED STORM MANHOLE
	PROPOSED STORM CATCHBASIN MANHOLE
	PROPOSED SANITARY MANHOLE
H&V	PROPOSED FIRE HYDRANT AND VALVE

EROSION AND SEDIMENT CONTROL LEGEND

	SEDIMENT CONTROL CB IN PAVED AREAS
	SEDIMENT CONTROL CB IN LANDSCAPED AREA
	SEDIMENT CONTROL TRENCH DRAIN
T	SEDIMENT CONTROL FENCE
	MUD MAT

NO.	DATE	BY/DRAWN	REVISIONS
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
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CAD FILE: 17986S.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 2024

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DESIGNED BY | APPROVED BY

CONSULTANT
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#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 EROSION AND SEDIMENT CONTROL PLAN

SCALE	1:300	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	2 OF 2
PROJECT No.	1798	PLAN No.	E1

FILENAME: P:\1798 Distrikt 590 Argus\04-CAD\04-Rezoning_OPA\17986S.dwg
PLOTDATE: Mar 18, 2024 - 3:57pm

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.

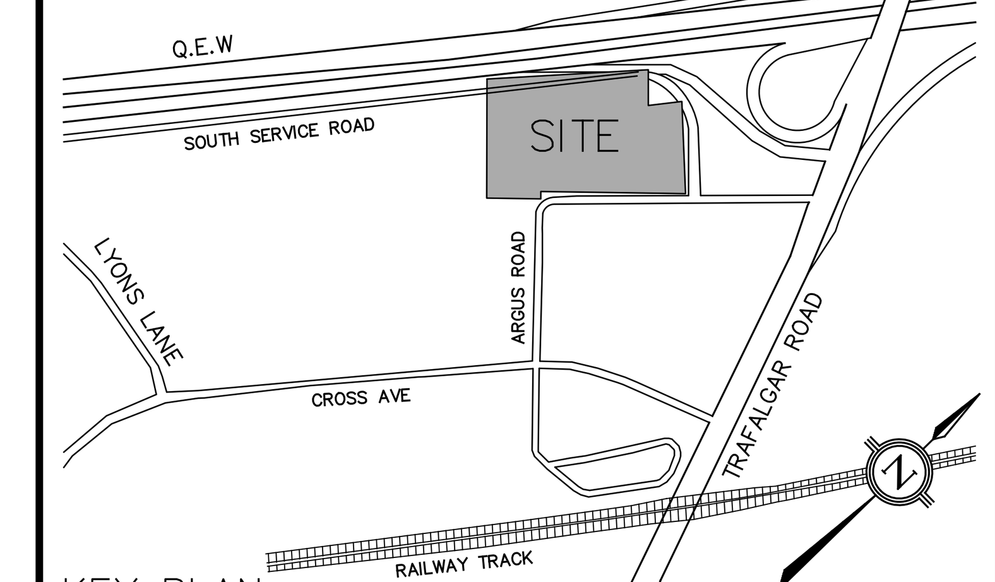
4. CONTRACTOR SHALL PROVIDE THIRD-PARTY DIGITAL AS-BUILTS IN CAD, TO INCLUDE ALL NEW SITE SERVICING INCLUDING TOPS AND INVERTS, AND FINISHED GRADES, INCLUDING PAVED AREAS, SWALES, CURBS, SIDEWALKS AND RETAINING WALLS, TO THE SATISFACTION OF THE ENGINEER.

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.



KEY PLAN

LEGEND

NO.	DATE	BY/DRAWN	REVISIONS
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 24, 2023	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 1798GS.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 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
MARCH 18-2024
PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

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

PROJECT TITLE
DISTRIKT 590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
GENERAL NOTES

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

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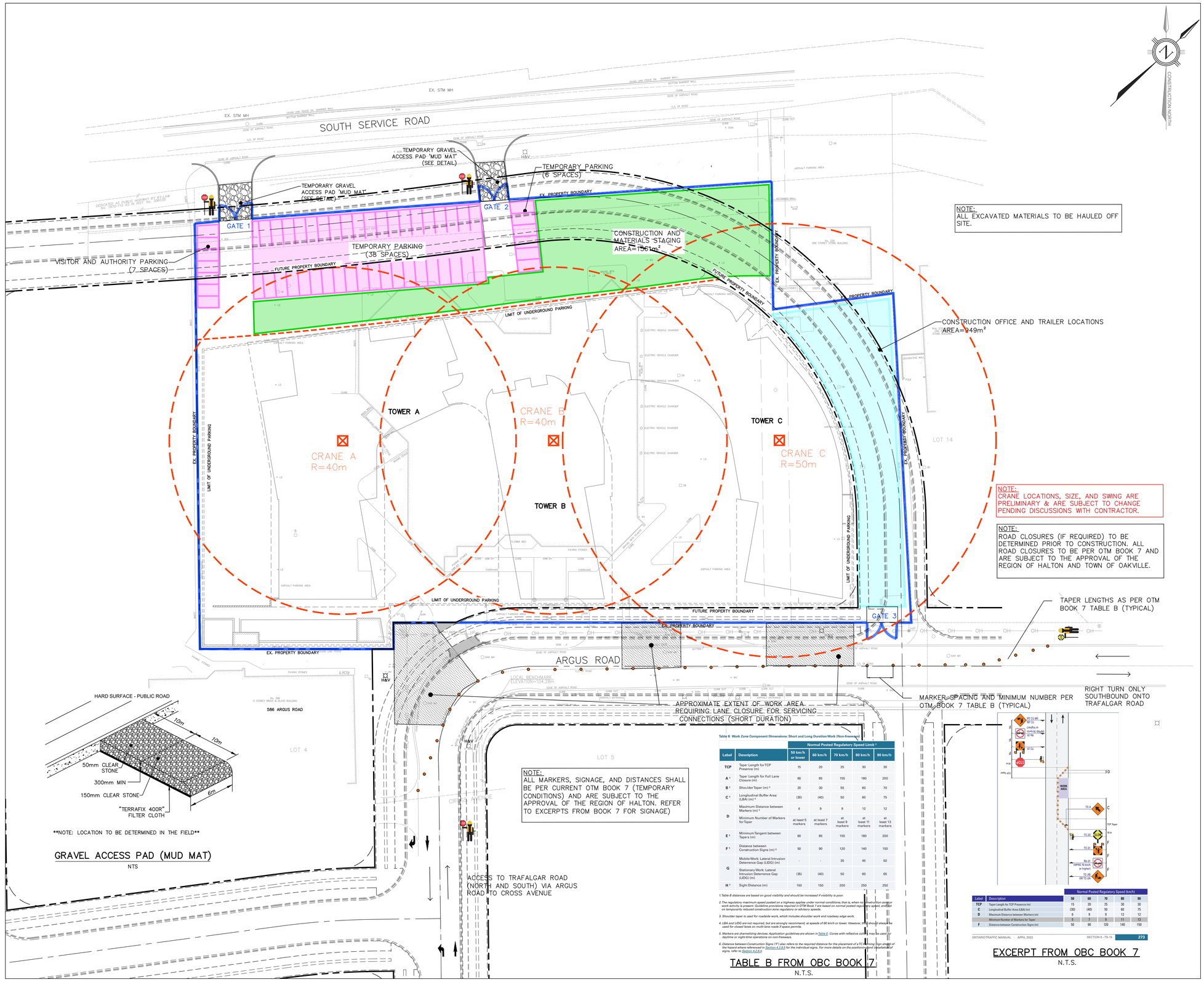


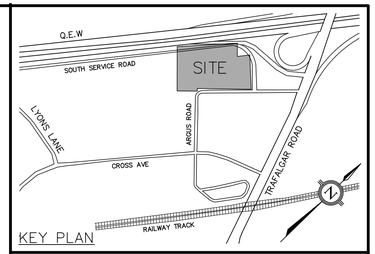
Table B Work Zone Component Dimensions: Short and Long Duration Work (Non-freeway) [1]

Label	Description	Normal Posted Regulatory Speed Limit [2]				
		50 km/h or lower	60 km/h	70 km/h	80 km/h	90 km/h
TCP	Taper Length for TCP Presence (m)	15	20	25	30	30
A [3]	Taper Length for Full Lane Closure (m)	60	85	155	180	200
B [3]	Shoulder Taper (m) [3]	20	30	55	60	70
C [3]	Longitudinal Buffer Area (LBA) (m) [4]	(30)	(40)	50	60	75
D	Maximum Distance between Markers (m) [5]	6	9	9	12	12
	Minimum Number of Markers for Taper	at least 5 markers	at least 7 markers	at least 9 markers	at least 11 markers	at least 13 markers
E [3]	Minimum Tangent between Tapers (m)	60	85	155	180	200
F [3]	Distance between Construction Signs (m) [6]	50	90	120	140	150
G	Mobile Work: Lateral Intrusion Deterrence Gap (LIDG) (m)	-	-	35	45	50
	Stationary Work: Lateral Intrusion Deterrence Gap (LIDG) (m)	(35)	(40)	50	60	65
H [3]	Sight Distance (m)	150	150	200	250	250

1. *Table B distances are based on good visibility and should be increased if visibility is poor.*
2. *The regulatory maximum speed posted on a highway applies under normal conditions; that is, when no construction, emergency work activity is present. Guideline provisions required in OTM Book 7 are based on normal posted regulatory speed, and not on temporarily reduced construction zone regulatory or advisory speeds.*
3. *Shoulder taper is used for roadside work, which includes shoulder work and roadway edge work.*
4. *LBA and LIDG are not required, but are strongly recommend, at speeds of 60 km/h or lower; However, LBA should always be used for closed lane on multi-lane roads if space permits.*
5. *Markers are channelizing devices. Application guidelines are shown in Table 6. Cones with reflective collars may be used for daytime or night-time operations on non-freeways.*
6. *Distance between Construction Signs (“F”) also refers to the required distance for the placement of a TCP Warning Sign ahead of the hazard where referenced in Section 4.3.8.5 for the individual signs. For more details on the positioning and installation of signs, refer to Section 4.3.8.5.*

Label	Description	Normal Posted Regulatory Speed (km/h)				
		50	60	70	80	90
TCP	Taper Length for TCP Presence (m)	15	20	25	30	30
C	Longitudinal Buffer Area (LBA) (m)	(30)	(40)	50	60	75
D	Maximum Distance between Markers (m)	6	9	9	12	12
	Minimum Number of Markers for Taper	5	7	9	11	13
F	Distance between Construction Signs (m)	50	90	120	140	150

ONTARIO TRAFFIC MANUAL – APRIL 2022 SECTION 6–TS-15 273



KEY PLAN

LEGEND

- STAGING AREA
- TEMPORARY PARKING AREA
- CONSTRUCTION OFFICE AND TRAILER AREA
- SITE FENCING

NO.	DATE	BY/DRAWN	REVISIONS
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA

CAD FILE: 17986S.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 2024

ELEVATION NOTE

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928:78), AND ARE DERIVED FROM GNSS OBSERVATIONS AND NATURAL RESOURCES CANADA'S GEOID MODEL HTZ.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 MAR 18-2024 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 CONSTRUCTION & TRAFFIC MANAGEMENT PLAN

SCALE	1:400	DESIGN BY	MW
DRAWN BY	ZI	CHECKED BY	NAS
DATE	2022/10/26	SHEET	2 OF 2
PROJECT No.	1798	PLAN No.	CTMP

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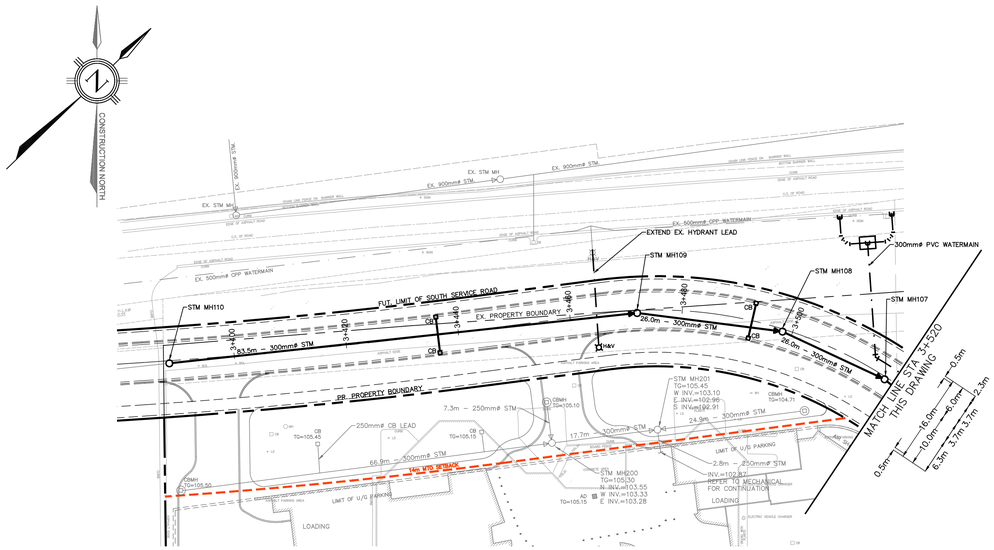
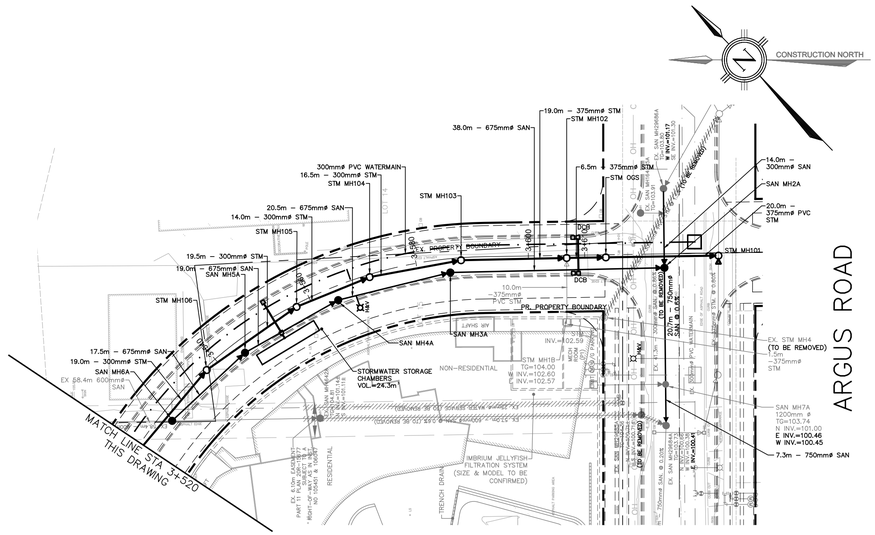
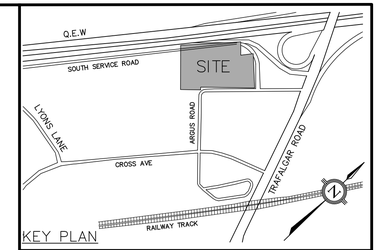


SOUTH SERVICE ROAD



SOUTH SERVICE ROAD



KEY PLAN

LEGEND

- PROPOSED STORM MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SANITARY MANHOLE
- EX. SANITARY SEWER
- PROPOSED WATER SERVICE
- PROPOSED WATER SERVICE
- EX. SANITARY MANHOLE
- EX. SANITARY SEWER
- EX. STORM MANHOLE
- EX. STORM SEWER
- EX. CATCHBASIN
- EX. HYDRANT & VALVE
- EX. WATER VALVE
- EX. WATERMAIN
- EX. GASMAIN
- EX. OVERHEAD WIRE
- EX. HYDRO SERVICE
- PROPERTY LINE

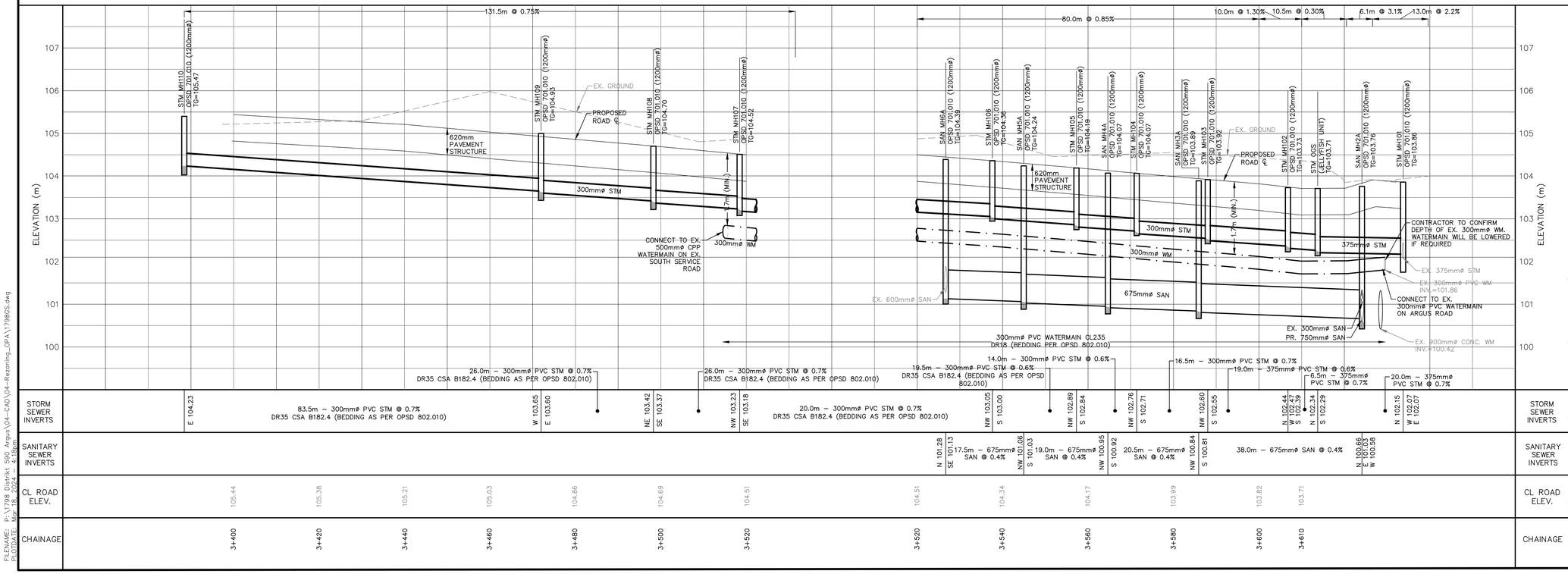
BENCHMARK

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.

PAVEMENT STRUCTURE:
40mm HL3
80mm HL8
150mm GRANULAR 'A'
350mm GRANULAR 'B'



No	DD/MM/YY	By/DRN	REVISIONS
1	MAR 18, 2024	MW/ZI	RE–ISSUED FOR OPA/ZBA

Design	-	Chk'd	-
Drawn	-	Chk'd	-
Scale	0 5 10 15 20 25 1:500		

Cad File: 1798GS.dwg
Plot Date: 03/18/24
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
100199481
MAR 18 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
PLAN AND PROFILE
STA 3+388.5 TO 3+633.75

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

20M-

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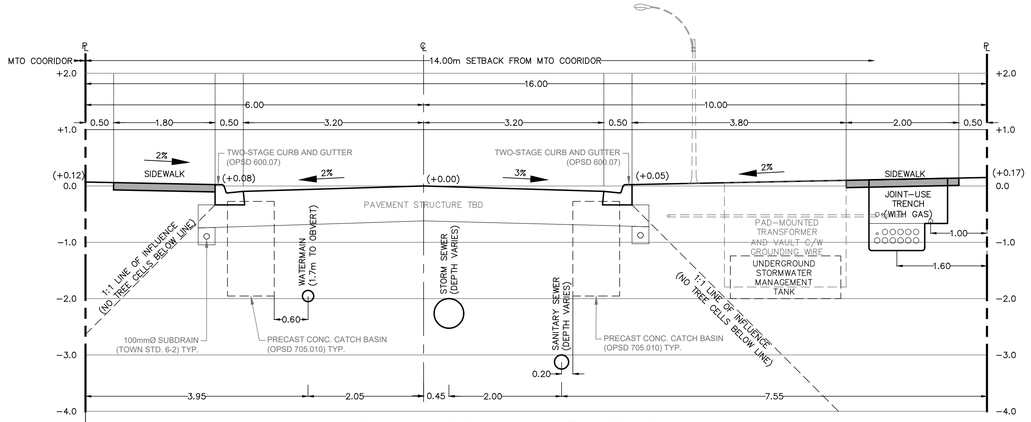
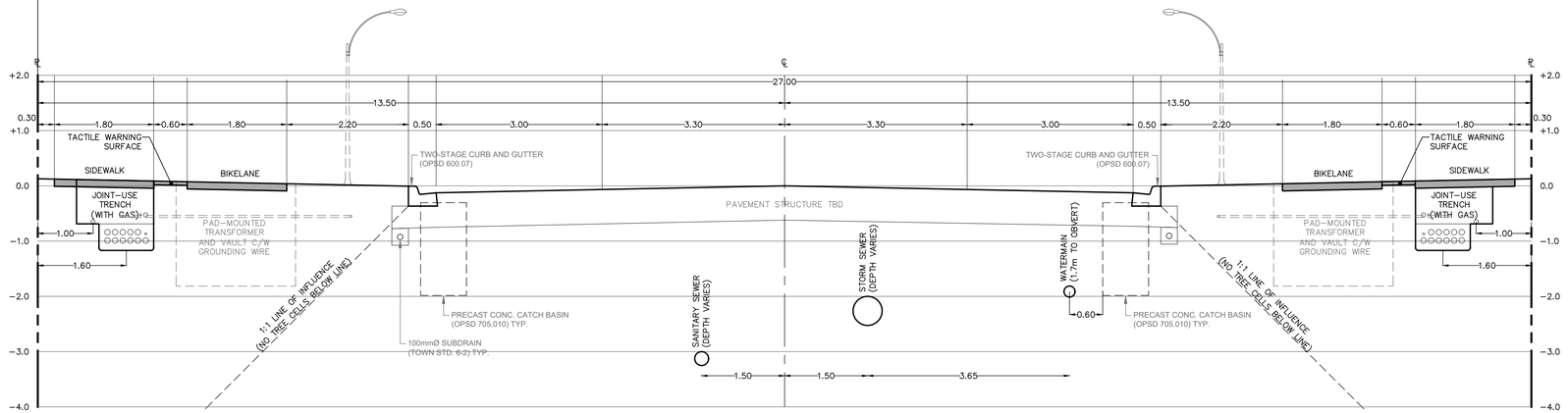


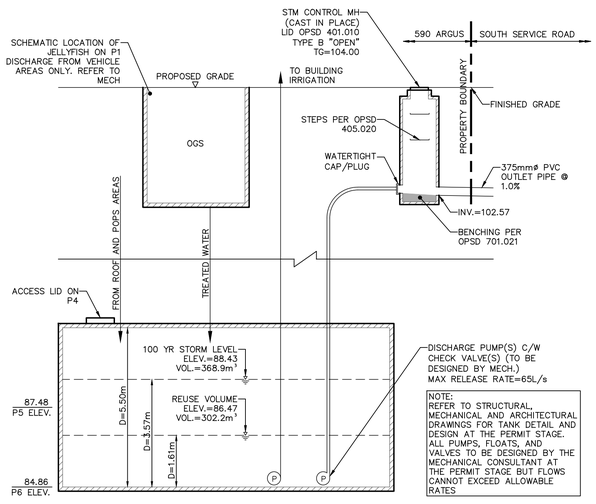
TYPICAL SECTION – SOUTH SERVICE ROAD (16.0m ROW)

SCALE 1:50



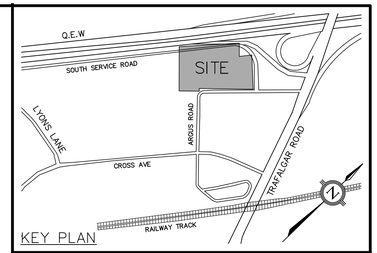
TYPICAL SECTION – ARGUS ROAD (27.0m ROW)

SCALE 1:50



CONCEPTUAL STORMWATER MANAGEMENT TANK SECTION

SCALE N.T.S.



KEY PLAN

LEGEND

NO.	DATE	BY/DRAWN	REVISIONS
3	MAR 18, 2024	MW/ZI	RE-ISSUED FOR OPA/ZBA
2	APR 06, 2023	MW/ZI	ISSUED FOR OPA/ZBA
1	MAR 24, 2023	MW/ZI	ISSUED FOR COORDINATION

CAD FILE: 17980S.dwg | PLOT SCALE: 1:1 | PLOT DATE: Mar 18, 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 MARCH 18, 2024 PROVINCE OF ONTARIO

DESIGNED BY | APPROVED BY

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

PROJECT TITLE
DISTRIKT 590 ARGUS
PROPOSED RESIDENTIAL CONDOMINIUM DEVELOPMENT
DISTRIKT DEVELOPMENTS

LOCATION
590 ARGUS RD.
OAKVILLE, ONTARIO

DRAWING TITLE
TYPICAL SECTIONS

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

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