

**FUNCTIONAL SERVICING & STORMWATER
MANAGEMENT REPORT**

**725 WESTNEY ROAD SOUTH
TOWN OF AJAX
REGIONAL MUNICIPALITY OF DURHAM**

**PREPARED FOR:
FIREARMS OUTLETS CANADA INC.**

**PREPARED BY:
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APRIL 2025

CFCA FILE NO. 2542-6840

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Revision Number	Date	Comments
Rev. 0	December 19, 2023	Issued for First Submission (OPA/ZBA)
Rev.1	June 21, 2024	Issued for Second Submission (OPA/ZBA)
Rev.2	April 22, 2025	Issued for Third Submission (SPA)

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1.0 Introduction

Crozier Consulting Engineers (Crozier) was retained by Firearms Outlets Canada Inc. to prepare a Functional Servicing & Stormwater Management Report in support of a Site Plan Application (SPA) for a proposed mixed-use commercial re-development of the site located at 725 Westney Road South in the Town of Ajax, Durham Region.

This report demonstrates how the proposed development's functional servicing and stormwater management will integrate with the existing water, sanitary, and stormwater infrastructure.

1.1 Reference Materials

The following documents, design standards, report and record drawings were reference and utilized in preparation of the Functional Servicing and Stormwater Management Report:

- Site Plan prepared by Wang Architects Inc (March 2025)
- Topographic Survey prepared by J.D. Barnes Limited (October 2023)
- Subsurface Utility Investigation Report and Figure prepared by J.D. Barnes Limited (April 2025)
- Town of Ajax Design Criteria – Stormwater Management and Storm Drainage (November 2016)
- Regional Municipality of Durham's Design Specifications for Sanitary Sewers (April 2020)
- Regional Municipality of Durham's Design Specifications for Watermains (April 2020)
- Drawing 5-74-IC for existing water servicing in Finley Avenue (Dated January 1974)
- Drawing AI-80623-P3 for existing water servicing in Westney Road South (Dated January 1981)
- Drawing P-253-2B-1 for existing sanitary and storm servicing in Finley Avenue (Dated March 1978)
- Drawing B-71300-P2 for existing sanitary servicing in Westney Road South (Dated August 1972)
- Drawing AI-79634-P10 for existing storm servicing in Westney Road South (Dated March 1980)

2.0 Site Description

The subject property covers an area of approximately 0.66 ha and currently consists of an existing firearms warehouse building. The property is located in an employment area and is bounded by Finley Avenue to the east, Westney Road South to the south, and commercial properties to the north and west.

As per the Architectural Plans prepared by Wang Architects Inc and dated March 19, 2025, the proposed development involves the demolition of a portion of the existing building and the construction of a 2-storey addition. The proposed floor area is comprised of the area of the existing building that is to remain (854 m²) and the area of the newly constructed 2-storey addition (2,521m²), which will result in a total building floor area of 3,375 m².

3.0 Water Servicing

The Regional Municipality of Durham is responsible for the operation and maintenance of the public water supply and treatment system in the Town of Ajax. Any local water supply system will connect to the Region's water network.

3.1 Existing Water Servicing

A Subsurface Utility Investigation (SUE), prepared by J.D. Barnes Limited dated April 14, 2025, and as-constructed drawings (5-74-IC dated January 1974 & AI-80623-P3 dated January 1981) obtained from the Region of Durham show the following water infrastructure within proximity of the site:

- An existing 300 mm diameter watermain on the east side of Finley Avenue.
- An existing 300 mm diameter watermain on the north side of Westney Road South.
- An existing 150 mm diameter fire service and 50 mm diameter domestic service off the existing 300 mm diameter watermain on Westney Road South currently servicing the existing building on Site.

Refer to **Drawing C102** for the specific locations of the existing water infrastructure.

3.2 Design Water Demand

As the demands provided by the Durham Design Specification for Watermains (2023) are not applicable for the proposed development's land use, the water demand is assumed to be equivalent to the design sanitary flow unit rates. As per Durham Design Specification for Sanitary Sewers (April 2023) the design sanitary flow rate for commercial developments is 180 m³/ha/day, which include the peaking factor. Table 1 summarizes the estimated design water demand. Appendix A contains detailed calculations.

Table 1: Proposed Domestic Water Demand

	Commercial GFA (ha)	Average Daily Demand (L/s)
Existing Flow	0.15	0.30
Proposed Flow	0.33	0.69 ¹

¹ The proposed average daily demand includes the flow for the portion of the existing building to remain and the flow for the proposed 2-storey addition.

As shown in Table 1 above, the average daily demand for the site under proposed conditions was estimated to be 0.69 L/s.

3.3 Fire Flow Demand

The Fire Underwriters Survey (FUS) method was used to estimate the fire flow demand for the proposed development. The Architect confirmed the proposed building will use non-combustible construction and that all vertical openings are to be properly protected. Refer to email correspondence in Appendix A. Therefore, a construction coefficient of 0.8 and the area of the largest floor plus 25% of each of the two immediately adjoining floors was applied to the fire flow calculations (Water Supply for Public Fire Protection by Fire Underwriters Survey, 2020).

It was also confirmed the proposed building will be equipped with an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards which reduces the initial fire flow demand of the building by up to 30%. The automated sprinkler system is to be designed by the Mechanical Engineer; therefore, the detailed design of the system is not included in this report.

Table 2 summarizes the required fire flow demand and duration of flow required for the building.

Table 2: Estimated Fire Flow Demand

Standard	Demand Flow (L/s)	Duration (h)
Water Supply for Public Fire Protection by Fire Underwriters Survey (2020)	133.3	2

Note: Floor area was determined by the largest floor plus 25% of each immediately adjoining floors.

As shown in Table 2, the proposed fire line is required to accommodate a fire flow demand of 133.3 L/s for a duration of 2.0 hours. Refer to Appendix A for detailed calculations of the proposed fire flows.

3.4 Proposed Water Servicing

The proposed development will be serviced by the existing 150 mm fire service which connects to the existing 300 mm watermain on Westney Road South currently servicing the existing development. The existing fire service will be rerouted around the loading ramp inside the property limit to avoid conflict with the proposed building addition. A 100 mm domestic service has been proposed to connect the existing 300 mm watermain on Westney Road South to accommodate the proposed building addition. The existing 50 mm domestic service will be abandoned and capped at the 300mm watermain. The portion of existing building and proposed 2-storey addition will be serviced by the same connections.

Refer to **Drawing C102** for the specific locations of the proposed water infrastructure.

4.0 Sanitary Servicing

The Regional Municipality of Durham is responsible for the operation and maintenance of the public sanitary supply and treatment system in the Town of Ajax. Any local sanitary supply system will connect to the Region's sewer network.

4.1 Existing Sanitary Servicing

A Subsurface Utility Investigation (SUE), prepared by J.D. Barnes Limited dated April 14, 2025, and as-constructed drawings (drawing P-253-2B-1 dated March 1978, and drawing B-71300-P2 dated August 1972) obtained from the Region of Durham show the following water infrastructure within proximity of the site:

- An existing 250 mm diameter sanitary sewer flowing south along Finley Avenue.
- An existing 675 mm diameter sanitary sewer flowing west along Westney Road South.
- An existing 150 mm diameter sanitary service off the existing 675 mm diameter sanitary sewer on Westney Road South currently servicing the existing building on Site.

Refer to **Drawing C102** for the specific locations of the existing sanitary infrastructure.

4.2 Sanitary Design Flow

The sanitary design flow for the subject property was calculated using the Regional Municipality of Durham's Design Specifications for Sanitary Sewers (April 2020). A design flow of 180 m³/ha/day which includes infiltration and peaking effect was applied to the unit sewage flows to obtain the total estimated design sewage flow.

A summary of the results is presented in Table 3, and detailed calculations are provided in Appendix B.

Table 3: Proposed Sanitary Design Flow

	Commercial GFA (ha)	Average Daily Demand (L/s)
Existing Flow	0.15	0.30
Proposed Flow	0.33	0.69 ¹

¹ The proposed average daily demand includes the flow for the portion of the existing building to remain and the flow for the proposed 2-storey addition.

As shown in Table 3 above, the sanitary design flow for the site under proposed conditions was estimated to be 0.69 L/s.

4.3 Proposed Sanitary Servicing

The proposed development will be serviced by the existing 150 mm sanitary service off the existing 675 mm sanitary sewer on Westney Road South currently servicing the existing development. No new connections to the municipal sanitary system are required as a result of the development. The portion of existing building to remain and proposed 2-storey addition will be serviced by the same connection via the internal mechanical system.

Refer to **Drawing C102** for the specific locations of the proposed sanitary servicing concept.

5.0 Stormwater Drainage Conditions

5.1 Existing Drainage Conditions

Based on a review of the existing topographic survey completed by J.D. Barnes Limited dated October 2023, the Site currently comprises of an asphalt parking lot, landscaped areas along the east and south property limits and an existing building. The Site slopes from the northeast to the southwest.

A Subsurface Utility Investigation (SUE), prepared by J.D. Barnes Limited dated November 6, 2023, and as-constructed drawings (AI-79634-P10 dated March 1980 & P-253-2B-1 dated March 1978) obtained from the Region of Durham show the following water infrastructure within proximity of the site:

- An existing 750 mm diameter storm sewer flowing south along Finley Avenue.
- An existing 750 mm diameter storm sewer flowing west along Westney Avenue South.
- An existing internal storm sewer system comprised of four (4) catchbasins and 300 mm diameter storm sewers to service the existing development. An existing 300 mm diameter storm connection from the existing building conveying runoff from the roof connects to the storm sewer system. The outlet is a 375 mm diameter sewer off the existing 750 mm storm sewer in Westney Avenue South.

Table 4 provides a breakdown of pre-development site area and associated runoff coefficients with the existing drainage conditions on the Pre-Development Drainage Plan (**Figure 1**).

Table 4: Pre-Development Land Areas and Runoff Coefficients

Catchment No.	Outlet Location	Pervious Area (m ²)	Impervious Area (m ²)	Weighted Runoff Coefficient (RC)
101	To Storm Sewer in Westney Ave S	646	5,292	0.83
UC1	Uncontrolled to Westney Ave S	607	18	0.27
Total Site		6,563		0.78

5.2 Proposed Drainage Condition

The existing drainage pattern of the Site will be maintained. The development area including the proposed 2-Storey addition will be graded to promote positive drainage away from the building and to continue conveying stormwater to the existing catchbasins on site which ultimately discharge to the existing 750 mm storm sewer in Westney Avenue South.

One (1) existing catchbasin (CB3) will be removed and disposed off site along with the connecting storm sewer to prevent conflict with the construction of the proposed loading ramp to the 2-Storey addition. Runoff originally directed to CB3 will be collected by CB2 and ultimately discharged to the existing storm sewer via the internal sewer system.

The runoff from the existing and proposed roofs will be collected and discharged to the existing 300 mm diameter connection from the building to the internal storm sewer system on site and ultimately to the existing 750 mm diameter storm sewer in Westney Road South.

Table 5 provides a breakdown of the post-development site areas and associated runoff coefficient shown on the Post-Development Drainage Plan (**Figure 2**).

Table 5: Post-Development Land Areas and Runoff Coefficients

Catchment No.	Outlet Location	Pervious (m ²)	Impervious Area (m ²)	Weighted Runoff Coefficient (RC)
201	Roof to Storm Sewer in Westney Road S	0	2,121	0.90
202	To Storm Sewer in Westney Road S	1,252	2,565	0.69
UC1	Uncontrolled to Westney Road S	599	26	0.28
Total Site		6,563		0.72

6.0 Stormwater Management

As the site is in the Town of Ajax, the proposed stormwater management design must comply with the following documents:

- Section C: Stormwater Management and Storm Drainage (Town of Ajax Design Criteria, Revised November 2016)

Table 6 provides a summary of the stormwater management criteria based on the stormwater management design guidelines.

Table 6: Summary of Stormwater Management Controls

Control Parameter	Catchment 201
Quantity Control	In areas where no Watershed or Sub-watershed Planning or Sub-watershed Impact Study has been completed, it is the policy of The Town to require that runoff peak flows are controlled to pre-development levels for the 2-year through 100-year events.
Quality Control	Achieve Ontario Ministry of the Environment, Conservation and Parks Enhanced Level of protection (80% total suspended solids (TSS) removal)
Water Balance	Retain at least the first 5 mm from each rainfall through rainwater reuse, on-site infiltration & evapotranspiration.
Erosion and Sediment Controls	Provided during construction and until the site is stabilized

The following sections describe how the stormwater management criteria are adhered to on the subject property.

6.1 Stormwater Quantity Control

The Modified Rational Method was used to determine the pre-development and post-development flow rates for the site using the Town of Ajax intensity-duration-frequency (IDF) rainfall data for the site area. The post development peak flow rates were compared to the pre-development peak flow rates for each of the storm events to determine if on-site storage will be required.

The development area for the construction of the 2-storey addition is currently comprised of asphalt pavement and a portion of the existing building to be demolished. The development area in proposed conditions will be comprised of the proposed building, a concrete walkway along the west edge of the 2-storey addition and a landscape strip wrapping around the north and west ends of the proposed 2-storey addition. In the proposed condition, the increase in landscape area results in a decrease in post-development peak flow rates from the pre-development conditions and no flow attenuation or storage is required to meet pre-development rates to satisfy the quantity control criteria.

Table 7 summarizes the calculated peak flow rates for each of the storm events in pre- and post-development conditions.

Table 7: Summary of Peak Flow and Storage Volume

Storm Event (year)	Ca ¹	Pre- Development		Post- Development		Post to Pre Peak Flow Rate Decrease (L/s)	Required Storage (m³)
		Peak Flow Rate (L/s)	Uncontrolled Flow Rate (L/s)	Peak Flow Rate (L/s)	Uncontrolled Flow Rate (L/s)		
2	1.00	107.0	3.7	104.4	3.8	2.5	0
5	1.00	147.3	5.0	143.7	5.2	3.4	0
10	1.00	173.9	5.9	169.6	6.1	4.1	0
25	1.10	228.8	7.8	223.3	8.0	5.3	0
50	1.20	280.0	9.6	273.1	9.8	6.5	0
100	1.25	322.6	11.0	314.7	11.3	7.5	0

¹ Ca is Antecedent Precipitation Factor (Town of Ajax Design Criteria – Stormwater Management and Storm Drainage)

Refer to Appendix C for detailed stormwater management calculations.

6.2 Stormwater Quality Control

The development results in an increase of the total roof. As well as an increase in landscape area due to the landscape strip proposed north and west of the 2-storey addition. The quality of stormwater runoff leaving the Site is therefore overall improved in proposed conditions due to the increase in roof area and landscaped area which inherently meets 80% TSS removal requirements. Therefore, no pre-treatment of the stormwater runoff is proposed prior to discharging to the existing storm sewer on Westney Road South.

6.3 Water Balance

The required retention volume for the 5 mm rainfall event for the 2-storey addition's roof area of 1,169 m² in the proposed conditions is 5.85 m³. Refer to Appendix C for detailed calculations.

Water balance will be achieved using a proposed infiltration tank. Runoff from the roof will be conveyed to the proposed infiltration tank prior to discharging to the Westney Road storm sewer, as shown on **Drawing C102**. A hydrogeological investigation (Technical Memorandum, SLR Consulting Ltd., March 2025) determined that the underlying soil consists of silty clay with permeability of approximately 1.2×10^{-7} m/s and infiltration rate of 5 mm/hr. A safety factor of 2.5 is applied to the measured infiltration rate to obtain the design infiltration rate of 2.0 mm/hr. The infiltration tank will provide a storage depth of 0.32 m to drain the total storage volume of 5.90 m³ within 63 hours. The bottom of the infiltration tank is approximately 6.5 m above the observed high groundwater level. Refer to **Appendix C** for the tank sizing calculations and the technical memorandum prepared by SLR Consulting Ltd.

7.0 Erosion and Sediment Controls During Construction

Erosion and sediment controls (ESC) will be installed prior to the start of any construction activities and will be maintained until the site is stabilized or as directed by the Site Engineer or the Town of Ajax. The Contractor will inspect the ESC after each significant rainfall event to ensure they are maintained in proper working condition. The ESC strategy and location of the recommended control features will be designed at detailed design and will include but not be limited to the below items:

Sediment Control Fencing

Sediment control fencing will be installed on the perimeter of the site to intercept sheet flow. Based on field decisions, the Site Engineer and the Owner may add additional sediment control fencing prior to, during, and following construction.

Rock Mud Mat

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

Filter Cloth in Catch Basins

Filter cloth will be installed in the existing nearby storm sewer catch basins on Westney Road South, Finley Avenue and on site. The filter cloth will provide sediment control to prevent silt and sediment from entering the stormwater system. Filter fabric for silt control should be Terra Fix 270R or approved equivalent.

8.0 Conclusions and Recommendations

The proposed development can be serviced for water, sanitary, and stormwater in accordance with the Town of Ajax and Region of Durham's requirements and standards. Our conclusions and recommendations include:

1. Water servicing for the proposed 2-storey addition will be provided using the existing 150 mm diameter fire line off the existing 300 mm diameter watermain on Westney Road South. The connection will be re-routed around the loading ramp inside the property limit to avoid conflict with the proposed building addition. A 100 mm domestic service has been proposed to connect the existing 300 mm watermain on Westney Road South to accommodate the demand of the proposed building addition.
2. Sanitary servicing for the proposed 2-storey addition will be provided by the existing 150 mm diameter sanitary connection, located at the south end of the existing building, which is ultimately connected to the existing 675 mm diameter sanitary sewer in Westney Road South. Sanitary flow from the proposed addition will be directed to the existing 150 mm diameter sanitary connection via the building's mechanical system. No new connections to municipal sanitary system are required as a result of the development.
3. Runoff peak flows from the 2-year to the 100-year storm events will be reduced in the post development conditions. No storage, flow control or attenuation is required as the existing development area is comprised of impervious roof and asphalt and the proposed development is comprised of proposed building, a concrete walkway and landscape area. The increase in landscaped area in proposed conditions results in a decrease of the in post-development peak flow rates from the pre-development conditions.
4. Storm servicing for the proposed 2-storey addition will be provided by the existing 150 mm diameter storm connection, located at the south end of the existing building, to the on-site storm sewer system. The runoff from the proposed roof will be connected to this service connection via the building's mechanical system.
5. The water quality of stormwater runoff leaving the Site is considered to be improved due to the increase in total rooftop and landscaped area on-site, therefore, no treatment is required as a result of the proposed development.

6. The required retention volume for the 5 mm rainfall event for the 2-storey addition's roof area of 1,169 m² in the proposed conditions is 5.85 m³. The water balance criteria will be achieved by the proposed infiltration tank.

Based on the conclusions, we recommend the approval of the development application for the site from the perspective of functional servicing and stormwater management.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.



Gamsa Sivanantham P.Eng.
Project Engineer

C.F. CROZIER & ASSOCIATES INC.



Mena Iskander P.Eng.
Project Manager

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APPENDIX A

Water Demand Calculations



Project: 725 Westney Road South
Project No.: 2542-6840

Created By: GS
Checked By: MI

Date: 2023.11.30
Updated: 2024.06.19

Existing Domestic Water Demand

Notes & References			
Note: Demands provided by the Durham Design Specification for Watermains (2023) are not applicable for the proposed development. As such, the design sanitary flow rate, as per Durham Design Specifications for Sanitary Sewers (2023), was used.			

Site Area:	0.66	ha	
Commercial:			
Commercial GFA:	1448.52	m ²	
	0.145	ha	
Design Parameters			
Commercial Average Demand (Including Peaking Factor)			
(m ³ /ha/day)			
180			
Water Demand:			
Average Daily Demand =	26,073	L/day	
Average Daily Demand =	0.30	L/s	



Project: 725 Westney Road South
Project No.: 2542-6840

Created By: GS
Checked By: MI

Date: 2023.11.30
Updated: 2024.06.19

Proposed Domestic Water Demand

<div>Site Area:0.66ha</div> <div>Commercial:<div>Commercial GFA:3334.2m² 0.33ha</div></div> <div>Design Parameters<div>Commercial Average Demand (Including Peaking Factor) (m³/ha/day)<div>180</div></div></div> <div>Water Demand:<div>Average Daily Demand =60,016L/day Average Daily Demand =0.69L/s</div></div>				<div>Notes & References</div> <div>As per Architectural Plan A1.1 dated July 2023. Existing Building to Remain GFA = 949.2 m2 Proposed Building GFA = 2,385 m2</div> <div>Note: Demands provided by the Durham Design Specification for Watermains (2023) are not applicable for the proposed development. As such, the design sanitary flow rate, as per Durham Design Specifications for Sanitary Sewers (2023), was used.</div>	
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Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey
Part II - Guide for Determination of Required Fire Flow

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

$$RFF = 220 * C * \sqrt{A}$$

where

RFF = the required fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for Type V Wood Frame Construction
=	0.8	for Type IV-A Mass Timber Construction
=	0.9	for Type IV-B Mass Timber Construction
=	1.0	for Type IV-C Mass Timber Construction
=	1.5	for Type IV-D Mass Timber Construction
=	1.0	for Type III Ordinary Construction
=	0.8	for Type II Non-combustible Construction
=	0.6	for Type I Fire-resistive Construction

Proposed Buildings

Floor 1	2,163.0	sq.m	100%
Floor 2	530.0	sq.m	25%

Area = 2,296 sq.m Area of the single largest floor plus 25% of each of the two immediately adjoining floors.

C = 0.8 Assumes Type II Non-combustible Construction

Therefore RFF = 8,433 L/min

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

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	0% (No Change)		

Rapid Burning 25% surcharge

2,108 L/min surcharge
10,542 L/min

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection. The initial credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.

As part of this analysis, it is assumed that the building will have an automatic sprinkler protection designed and installed in accordance with NFPA 13. 30%

3,163 L/min reduction

Water Supply for Public Fire Protection - 2020
Fire Underwriters Survey
Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 45 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Type II - Without Unprotected Openings

Exposed buildings

Name	Distance (m)	Length-Height Factor	Charge (%)	Surcharge (L/min)
E	> 30	-	0%	-
W	13.5	41-60	0%	-
N	9.8	81-100	3%	316
S	> 30	-	0%	-
316 L/min Surcharge				

Determine Required Fire Flow

No. 1	8,433	
No. 2	2,108 surcharge	
No. 3	-3,163 reduction	
No. 4	316 surcharge	
Required Flow:	7,695 L/min	
Rounded to nearest 1000 L/min:	8,000 L/min	or 133.3 L/s 2,113 USGPM

Gamsa Sivanantham

From: Jue Wang <jue@wangarchitects.ca>
Sent: November 16, 2023 3:19 PM
To: Gamsa Sivanantham
Cc: Mena Iskander; Henry Wang
Subject: Re: FW: Draft Survey / 725 Westney Road South

Hi Gamsa,

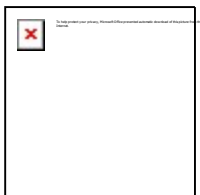
Please see below in red,

1. Is the existing building sprinklered? **Yes**
2. Will the proposed addition be sprinklered? **Yes**
3. Its my understanding a Mechanical consultant is not retained at this time, however, do you know if the addition will be serviced internally from the existing building? Or will it be serviced separately with new external sanitary and watermain connections? **Addition to be served by the existing system as much as possible.**

1. What is the construction type of the existing/proposed building as defined in the attached guideline? **Non-combustible steel framing construction**
2. Do vertical openings (i.e. walls of masonry or other limited or non-combustible construction) have a fire resistance rating of at least 1 hour? **Yes**
3. Do all vertical firewalls have a fire resistance rating of at least 2 hours and meet the requirements of the National Building Code? **Yes**
4. What is the occupancy fire hazard for the buildings? **Group F, division 1, high hazardous industrial occupancy**
5. Are there any sprinkler systems provided for the building? **Yes**
 - a. If so, is it an automatic sprinkler protection design and installed in accordance with NFPA 13? **Yes**
 - b. Is the water supply standard for both the system and Fire Department hose lines? **Yes**
 - c. Is it a fully supervised system? **Mechanical engineer to advise**

Best regards,

Jue Wang M. Arch
T: [905-604-6960](tel:905-604-6960)
E: jue@wangarchitects.ca




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On Thu, Nov 16, 2023 at 2:24 PM Gamsa Sivanantham <gsivanantham@cfcrozier.ca> wrote:

Hi Jue,

APPENDIX B

Sanitary Design Calculations

		Project: 725 Westney Road South Project No.: 2542-6840		Created By: GS Checked By: MI		Date: 2023.11.30 Updated: 2024.06.19	
Existing Domestic Sanitary Design Flow							
<div>Site Area:0.66ha</div> <div>Commercial:Commercial GFA:1448.52m² 0.145ha</div> <div>Design Parameters</div> <div>Commercial Average Flow (Including Peak Factor) (m³/ha/day)</div> <div>180</div> <div>Sanitary Design Flow:</div> <div>Average Daily Demand =26073.36L/d Average Daily Demand =0.30L/s</div>						Notes & References <div>The Regional Municipality of Durham Design Specifications for Sanitary Sewers (April 2020)</div> <div>Average Daily Demand = Average Flow (m²/ha/day) * GFA (ha) * 1000 / 86400</div>	

Proposed Domestic Sanitary Design Flow

Site Area: 0.66 ha				Notes & References As per Architectural Plan A1.1 dated July 2023. Existing Building to Remain GFA = 949.2 m2 Proposed Building GFA = 2385 m2 The Regional Municipality of Durham Design Specifications for Sanitary Sewers (April 2020) Average Daily Demand = Average Flow (m ² /ha/day) * GFA (ha) * 1000 / 86400	
Commercial:					
Commercial/Industrial GFA:		3334.20	m ²		
		0.33	ha		
Design Parameters					
Commercial Average Flow (Including Peaking Factor)					
(m ³ /ha/day)					
180					
Sanitary Design Flow:					
Average Daily Demand =		60015.6	L/d		
Average Daily Demand =		0.69	L/s		

APPENDIX C

Stormwater Management Design Calculations

Modified Rational Calculations - Input Parameters

Storm Data: Town of Ajax

Time of Concentration: $T_c = 10.00$ mins

Return Period	A	B	C	I (mm/hr)
2 yr	696.484	4.875	0.810	78.20
5 yr	1022.724	5.256	0.826	107.71
10 yr	1331.164	6.006	0.847	127.12
25 yr	1606.048	6.006	0.850	152.10
50 yr	1831.947	6.012	0.856	170.57
100 yr	2031.456	6.006	0.857	188.68

Pre-Development Conditions

Land Use	Area (ha)	Area (m ²)	C	Weighted Average C
Catchment 101 to Storm Sewer in Westney Road				
Pervious	0.07	646.00	0.25	0.03
Impervious	0.53	5292.15	0.90	0.79
Total Sub catchment	0.60	5938.15	-	0.82
Catchment UC1 Uncontrolled to Westney Road				
Pervious	0.06	607.00	0.25	0.24
Impervious	0.00	18.00	0.90	0.03
Total Sub catchment	0.06	625.00	-	0.27
Total Site	0.66	6563.15	-	0.77

Post-Development Conditions

Land Use	Area (ha)	Area (m ²)	C	Weighted Average C
Catchment 201 Roof to Storm Sewer in Westney Road via Ex. Storm Connection				
Roof	0.21	2121.23	0.90	0.90
Total Sub catchment	0.21	2121.23	-	0.90
Catchment 202 to Storm Sewer in Westney Road via Ex. Storm Connection				
Pervious	0.13	1252.19	0.25	0.08
Impervious	0.26	2564.73	0.90	0.60
Total Sub catchment	0.38	3816.92	-	0.69
Total	0.60	5938.15	-	0.76
Catchment UC1 Uncontrolled to Westney Road				
Pervious	0.06	599.17	0.25	0.24
Impervious	0.00	25.83	0.90	0.04
Total Sub catchment	0.06	625.00	-	0.28
Total Site	0.66	6563.15	-	0.72

Equations:

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

Intensity

References

Design Criteria for Town of Ajax (November 2016)



Project: 725 Westney Road S
Project No.: 2542-6840
Created By: GS
Checked By: MI
Date: 2023.12.19
Updated: 2024.06.18

Rational Calculations - Peak Flow Summary

Peak Flows

Pre-Development

Catchment 101 to Storm Sewer in Westney Road

Storm Event	C	i (mm/hr)	A (ha)	Q (m³/s)	Q (L/s)	Antecedent Precipitation Factor (Ca)	Q (L/s)
2 yr	0.82	78.20	0.60	0.107	106.962	1.00	106.96
5 yr	0.82	107.71		0.147	147.315	1.00	147.31
10 yr	0.82	127.12		0.174	173.866	1.00	173.87
25 yr	0.82	152.10		0.208	208.031	1.10	228.83
50 yr	0.82	170.57		0.233	233.301	1.20	279.96
100 yr	0.82	188.68		0.258	258.076	1.25	322.59

Catchment UC1 - Flow to Storm Sewers in Right-of-Ways

Storm Event	C	i (mm/hr)	A (ha)	Q (m³/s)	Q (L/s)	Antecedent Precipitation Factor (Ca)	Q (L/s)
2 yr	0.27	78.20	0.06	0.004	3.651	1.00	3.65
5 yr	0.27	107.71		0.005	5.029	1.00	5.03
10 yr	0.27	127.12		0.006	5.935	1.00	5.94
25 yr	0.27	152.10		0.007	7.101	1.10	7.81
50 yr	0.27	170.57		0.008	7.964	1.20	9.56
100 yr	0.27	188.68		0.009	8.810	1.25	11.01

Allowable Release Rate

Storm Event	Q _{target}
2 yr	110.61
5 yr	152.34
10 yr	179.80
25 yr	236.65
50 yr	289.52
100 yr	333.61

Post-Development

Catchment 201 & 202 - Flow to Storm Sewer in Westney Road

Storm Event	C	i (mm/hr)	A (ha)	Q (m³/s)	Q (L/s)	Antecedent Precipitation Factor (Ca)	Q (L/s)
2 yr	0.80	78.20	0.60	0.104	104.354	1.00	104.35
5 yr	0.80	107.71		0.144	143.722	1.00	143.72
10 yr	0.80	127.12		0.170	169.625	1.00	169.63
25 yr	0.80	152.10		0.203	202.957	1.10	223.25
50 yr	0.80	170.57		0.228	227.611	1.20	273.13
100 yr	0.80	188.68		0.252	251.781	1.25	314.73

Catchment UC1 - Flow to Storm Sewers in Right-of-Ways

Storm Event	C	i (mm/hr)	A (ha)	Q (m³/s)	Q (L/s)	Antecedent Precipitation Factor (Ca)	Q (L/s)
2 yr	0.28	78.20	0.06	0.004	3.762	1.00	3.76
5 yr	0.28	107.71		0.005	5.181	1.00	5.18
10 yr	0.28	127.12		0.006	6.115	1.00	6.11
25 yr	0.28	152.10		0.007	7.317	1.10	8.05
50 yr	0.28	170.57		0.008	8.205	1.20	9.85
100 yr	0.28	188.68		0.009	9.077	1.25	11.35

Storm Event (years)	Peak Flows (L/s)						Required Storage (m ³)
	Pre-Development			Post-Development			
	Q _{pre-101}	Q _{UC1}	Q _{total}	Q _{post-201+202}	Q _{UC1}	Q _{total}	
2 yr	107.0	3.7	110.6	104.4	3.8	108.1	0.00
5 yr	147.3	5.0	152.3	143.7	5.2	148.9	0.00
10 yr	173.9	5.9	179.8	169.6	6.1	175.7	0.00
25 yr	228.8	7.8	236.6	223.3	8.0	231.3	0.00
50 yr	280.0	9.6	289.5	273.1	9.8	283.0	0.00
100 yr	322.6	11.0	333.6	314.7	11.3	326.1	0.00

Equations:

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

$$i(T_d) = A / (T + B)^{AC}$$



Project: 725 Westney Road S
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Revised: 2024.06.18
Designed By: GS
Checked By: MI

MODIFIED RATIONAL METHOD CALCULATIONS - 2 YEAR STORM EVENT

Rainfall Intensity Equation:

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

Town of Ajax (2-Year)	
a=	696.484
b=	4.88
c=	0.81

Time (minutes)	Rainfall Intensity (mm/hr)	CONTROLLED AREA			UNCONTROLLED AREA	
		Q_{Runoff} (L/s)	$Q_{Release}$ (L/s)	Storage Volume Required (m ³)	Q_{Runoff} (L/s)	
10	78.2	36.9	36.9	0.0	3.8	
15	61.8	29.2	29.2	0.0	3.0	
20	51.6	24.3	24.3	0.0	2.5	
25	44.5	21.0	21.0	0.0	2.1	
30	39.2	18.5	18.5	0.0	1.9	
35	35.2	16.6	16.6	0.0	1.7	
40	32.0	15.1	15.1	0.0	1.5	
45	29.4	13.8	13.8	0.0	1.4	
50	27.2	12.8	12.8	0.0	1.3	
55	25.3	11.9	11.9	0.0	1.2	
60	23.7	11.2	11.2	0.0	1.1	
65	22.3	10.5	10.5	0.0	1.1	
70	21.1	10.0	10.0	0.0	1.0	
75	20.0	9.5	9.5	0.0	1.0	
80	19.1	9.0	9.0	0.0	0.9	
85	18.2	8.6	8.6	0.0	0.9	
90	17.4	8.2	8.2	0.0	0.8	
95	16.7	7.9	7.9	0.0	0.8	
100	16.1	7.6	7.6	0.0	0.8	
105	15.5	7.3	7.3	0.0	0.7	
110	14.9	7.0	7.0	0.0	0.7	
115	14.4	6.8	6.8	0.0	0.7	
120	14.0	6.6	6.6	0.0	0.7	
125	13.5	6.4	6.4	0.0	0.7	
130	13.1	6.2	6.2	0.0	0.6	
135	12.7	6.0	6.0	0.0	0.6	
140	12.4	5.8	5.8	0.0	0.6	
145	12.0	5.7	5.7	0.0	0.6	
150	11.7	5.5	5.5	0.0	0.6	
155	11.4	5.4	5.4	0.0	0.5	
160	11.1	5.3	5.3	0.0	0.5	



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MODIFIED RATIONAL METHOD CALCULATIONS - 5 YEAR STORM EVENT

Rainfall Intensity Equation:

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

Town of Ajax (5-Year)	
a=	1022.724
b=	5.26
c=	0.83

		CONTROLLED AREA			UNCONTROLLED AREA
		Drainage Area ID = 201 & 202 Drainage Area = 0.21 ha Runoff Coefficient = 0.90			Drainage Area ID = UC1 Drainage Area = 0.06 ha Runoff Coefficient = 0.28
		Release Rate = 143.72 L/s			Uncontrolled Release Rate = 5.18 L/s
		Max. Storage Volume Required = 0.00 m3 Storage Volume Provided = 0.00 m3			Release Rate = 143.7 L/s Uncontrolled Release Rate = 5.2 L/s Total Site Release Rate = 148.90 L/s
Time (minutes)	Rainfall Intensity (mm/hr)	Q _{Runoff} (L/s)	Q _{Release} (L/s)	Storage Volume Required (m ³)	Q _{Runoff} (L/s)
10	107.7	57.2	57.2	0.0	5.2
15	85.2	45.2	45.2	0.0	4.1
20	71.0	37.7	37.7	0.0	3.4
25	61.2	32.5	32.5	0.0	2.9
30	53.9	28.6	28.6	0.0	2.6
35	48.3	25.6	25.6	0.0	2.3
40	43.9	23.3	23.3	0.0	2.1
45	40.2	21.4	21.4	0.0	1.9
50	37.2	19.7	19.7	0.0	1.8
55	34.6	18.4	18.4	0.0	1.7
60	32.4	17.2	17.2	0.0	1.6
65	30.5	16.2	16.2	0.0	1.5
70	28.8	15.3	15.3	0.0	1.4
75	27.3	14.5	14.5	0.0	1.3
80	26.0	13.8	13.8	0.0	1.3
85	24.8	13.2	13.2	0.0	1.2
90	23.7	12.6	12.6	0.0	1.1
95	22.7	12.1	12.1	0.0	1.1
100	21.8	11.6	11.6	0.0	1.1
105	21.0	11.2	11.2	0.0	1.0
110	20.3	10.8	10.8	0.0	1.0
115	19.6	10.4	10.4	0.0	0.9
120	18.9	10.0	10.0	0.0	0.9
125	18.3	9.7	9.7	0.0	0.9
130	17.8	9.4	9.4	0.0	0.9
135	17.2	9.1	9.1	0.0	0.8
140	16.7	8.9	8.9	0.0	0.8
145	16.3	8.6	8.6	0.0	0.8
150	15.8	8.4	8.4	0.0	0.8
155	15.4	8.2	8.2	0.0	0.7
160	15.1	8.0	8.0	0.0	0.7



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MODIFIED RATIONAL METHOD CALCULATIONS - 10 YEAR STORM EVENT


Rainfall Intensity Equation:

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

Town of Ajax (10-Year)	
a=	1331.164
b=	6.01
c=	0.85

		CONTROLLED AREA			UNCONTROLLED AREA	
		Drainage Area ID = 201 & 202 Drainage Area = 0.21 ha Runoff Coefficient = 0.90			Drainage Area ID = UC1 Drainage Area = 0.06 ha Runoff Coefficient = 0.28	
		Release Rate = 169.63 L/s			Uncontrolled Release Rate = 6.11 L/s	
		Max. Storage Volume Required = 0.00 m3 Storage Volume Provided = 0.00 m3			Release Rate = 169.6 L/s Uncontrolled Release Rate = 6.1 L/s Total Site Release Rate = 175.74 L/s	
Time (minutes)	Rainfall Intensity (mm/hr)	Q _{Runoff} (L/s)	Q _{Release} (L/s)	Storage Volume Required (m ³)	Q _{Runoff} (L/s)	
10	127.1	67.5	67.5	0.0	6.1	
15	101.0	53.6	53.6	0.0	4.9	
20	84.3	44.7	44.7	0.0	4.1	
25	72.6	38.5	38.5	0.0	3.5	
30	64.0	34.0	34.0	0.0	3.1	
35	57.3	30.4	30.4	0.0	2.8	
40	52.0	27.6	27.6	0.0	2.5	
45	47.6	25.3	25.3	0.0	2.3	
50	44.0	23.4	23.4	0.0	2.1	
55	40.9	21.7	21.7	0.0	2.0	
60	38.3	20.3	20.3	0.0	1.8	
65	36.0	19.1	19.1	0.0	1.7	
70	34.0	18.0	18.0	0.0	1.6	
75	32.2	17.1	17.1	0.0	1.5	
80	30.6	16.2	16.2	0.0	1.5	
85	29.2	15.5	15.5	0.0	1.4	
90	27.9	14.8	14.8	0.0	1.3	
95	26.7	14.2	14.2	0.0	1.3	
100	25.6	13.6	13.6	0.0	1.2	
105	24.7	13.1	13.1	0.0	1.2	
110	23.7	12.6	12.6	0.0	1.1	
115	22.9	12.2	12.2	0.0	1.1	
120	22.1	11.8	11.8	0.0	1.1	
125	21.4	11.4	11.4	0.0	1.0	
130	20.8	11.0	11.0	0.0	1.0	
135	20.1	10.7	10.7	0.0	1.0	
140	19.5	10.4	10.4	0.0	0.9	
145	19.0	10.1	10.1	0.0	0.9	
150	18.5	9.8	9.8	0.0	0.9	
155	18.0	9.5	9.5	0.0	0.9	
160	17.5	9.3	9.3	0.0	0.8	

<div></div> <div>Project: 725 Westney Road S</div> <div>Project No.: 2542-6840</div> <tr><td colspan="2">Date: 2023.12.19</td></tr> <tr><td colspan="2">Revised: 2024.06.18</td></tr> <tr><td colspan="2">Designed By: GS</td></tr> <tr><td colspan="2">Checked By: MI</td></tr> <tr><td colspan="7">MODIFIED RATIONAL METHOD CALCULATIONS - 25 YEAR STORM EVENT</td></tr> <tr><td colspan="2" rowspan="5">Rainfall Intensity Equation: Intensity $i(Td) = A / (T + B)^{AC}$</td><td colspan="3">CONTROLLED AREA</td><td colspan="2">UNCONTROLLED AREA</td></tr> <tr><td colspan="3">Drainage Area ID = 201 & 202</td><td colspan="2">Drainage Area ID = UC1</td></tr> <tr><td colspan="3">Drainage Area = 0.21 ha</td><td colspan="2">Drainage Area = 0.06 ha</td></tr> <tr><td colspan="3">Runoff Coefficient = 0.90</td><td colspan="2">Runoff Coefficient = 0.28</td></tr> <tr><td colspan="3">Release Rate = 223.25 L/s</td><td colspan="2">Uncontrolled Release Rate = 8.05 L/s</td></tr> <tr><td colspan="2">Town of Ajax (25-Year)</td><td colspan="3">Max. Storage Volume Required = 0.00 m3</td><td colspan="2">Release Rate = 223.3 L/s</td></tr> <tr><td colspan="2">a= 1606.048</td><td colspan="3">Storage Volume Provided = 0.00 m3</td><td colspan="2">Uncontrolled Release Rate = 7.3 L/s</td></tr> <tr><td colspan="2">b= 6.01</td><td colspan="3"></td><td colspan="2">Total Site Release Rate = 230.57 L/s</td></tr> <tr><td colspan="2">c= 0.85</td><td colspan="3"></td><td colspan="2"></td></tr> <tr><td>Time (minutes)</td><td>Rainfall Intensity (mm/hr)</td><td>Q_{Runoff} (L/s)</td><td>Q_{Release} (L/s)</td><td>Storage Volume Required (m³)</td><td colspan="2">Q_{Runoff} (L/s)</td></tr> <tr><td>10</td><td>152.1</td><td>80.7</td><td>80.7</td><td>0.0</td><td colspan="2">7.3</td></tr> <tr><td>15</td><td>120.7</td><td>64.1</td><td>64.1</td><td>0.0</td><td colspan="2">5.8</td></tr> <tr><td>20</td><td>100.7</td><td>53.4</td><td>53.4</td><td>0.0</td><td colspan="2">4.8</td></tr> <tr><td>25</td><td>86.7</td><td>46.0</td><td>46.0</td><td>0.0</td><td colspan="2">4.2</td></tr> <tr><td>30</td><td>76.4</td><td>40.5</td><td>40.5</td><td>0.0</td><td colspan="2">3.7</td></tr> <tr><td>35</td><td>68.4</td><td>36.3</td><td>36.3</td><td>0.0</td><td colspan="2">3.3</td></tr> <tr><td>40</td><td>62.0</td><td>32.9</td><td>32.9</td><td>0.0</td><td colspan="2">3.0</td></tr> <tr><td>45</td><td>56.8</td><td>30.1</td><td>30.1</td><td>0.0</td><td colspan="2">2.7</td></tr> <tr><td>50</td><td>52.5</td><td>27.8</td><td>27.8</td><td>0.0</td><td colspan="2">2.5</td></tr> <tr><td>55</td><td>48.8</td><td>25.9</td><td>25.9</td><td>0.0</td><td colspan="2">2.3</td></tr> <tr><td>60</td><td>45.6</td><td>24.2</td><td>24.2</td><td>0.0</td><td colspan="2">2.2</td></tr> <tr><td>65</td><td>42.9</td><td>22.8</td><td>22.8</td><td>0.0</td><td colspan="2">2.1</td></tr> <tr><td>70</td><td>40.5</td><td>21.5</td><td>21.5</td><td>0.0</td><td colspan="2">1.9</td></tr> <tr><td>75</td><td>38.3</td><td>20.3</td><td>20.3</td><td>0.0</td><td colspan="2">1.8</td></tr> <tr><td>80</td><td>36.4</td><td>19.3</td><td>19.3</td><td>0.0</td><td colspan="2">1.8</td></tr> <tr><td>85</td><td>34.7</td><td>18.4</td><td>18.4</td><td>0.0</td><td colspan="2">1.7</td></tr> <tr><td>90</td><td>33.2</td><td>17.6</td><td>17.6</td><td>0.0</td><td colspan="2">1.6</td></tr> <tr><td>95</td><td>31.8</td><td>16.9</td><td>16.9</td><td>0.0</td><td colspan="2">1.5</td></tr> <tr><td>100</td><td>30.5</td><td>16.2</td><td>16.2</td><td>0.0</td><td colspan="2">1.5</td></tr> <tr><td>105</td><td>29.3</td><td>15.6</td><td>15.6</td><td>0.0</td><td colspan="2">1.4</td></tr> <tr><td>110</td><td>28.2</td><td>15.0</td><td>15.0</td><td>0.0</td><td colspan="2">1.4</td></tr> <tr><td>115</td><td>27.3</td><td>14.5</td><td>14.5</td><td>0.0</td><td colspan="2">1.3</td></tr> <tr><td>120</td><td>26.3</td><td>14.0</td><td>14.0</td><td>0.0</td><td colspan="2">1.3</td></tr> <tr><td>125</td><td>25.5</td><td>13.5</td><td>13.5</td><td>0.0</td><td colspan="2">1.2</td></tr> <tr><td>130</td><td>24.7</td><td>13.1</td><td>13.1</td><td>0.0</td><td colspan="2">1.2</td></tr> <tr><td>135</td><td>23.9</td><td>12.7</td><td>12.7</td><td>0.0</td><td colspan="2">1.2</td></tr> <tr><td>140</td><td>23.2</td><td>12.3</td><td>12.3</td><td>0.0</td><td colspan="2">1.1</td></tr> <tr><td>145</td><td>22.6</td><td>12.0</td><td>12.0</td><td>0.0</td><td colspan="2">1.1</td></tr> <tr><td>150</td><td>22.0</td><td>11.7</td><td>11.7</td><td>0.0</td><td colspan="2">1.1</td></tr> <tr><td>155</td><td>21.4</td><td>11.3</td><td>11.3</td><td>0.0</td><td colspan="2">1.0</td></tr> <tr><td>160</td><td>20.8</td><td>11.1</td><td>11.1</td><td>0.0</td><td colspan="2">1.0</td></tr>		Date: 2023.12.19		Revised: 2024.06.18		Designed By: GS		Checked By: MI		MODIFIED RATIONAL METHOD CALCULATIONS - 25 YEAR STORM EVENT							Rainfall Intensity Equation: Intensity $i(Td) = A / (T + B)^{AC}$		CONTROLLED AREA			UNCONTROLLED AREA		Drainage Area ID = 201 & 202			Drainage Area ID = UC1		Drainage Area = 0.21 ha			Drainage Area = 0.06 ha		Runoff Coefficient = 0.90			Runoff Coefficient = 0.28		Release Rate = 223.25 L/s			Uncontrolled Release Rate = 8.05 L/s		Town of Ajax (25-Year)		Max. Storage Volume Required = 0.00 m3			Release Rate = 223.3 L/s		a= 1606.048		Storage Volume Provided = 0.00 m3			Uncontrolled Release Rate = 7.3 L/s		b= 6.01					Total Site Release Rate = 230.57 L/s		c= 0.85							Time (minutes)	Rainfall Intensity (mm/hr)	Q _{Runoff} (L/s)	Q _{Release} (L/s)	Storage Volume Required (m ³)	Q _{Runoff} (L/s)		10	152.1	80.7	80.7	0.0	7.3		15	120.7	64.1	64.1	0.0	5.8		20	100.7	53.4	53.4	0.0	4.8		25	86.7	46.0	46.0	0.0	4.2		30	76.4	40.5	40.5	0.0	3.7		35	68.4	36.3	36.3	0.0	3.3		40	62.0	32.9	32.9	0.0	3.0		45	56.8	30.1	30.1	0.0	2.7		50	52.5	27.8	27.8	0.0	2.5		55	48.8	25.9	25.9	0.0	2.3		60	45.6	24.2	24.2	0.0	2.2		65	42.9	22.8	22.8	0.0	2.1		70	40.5	21.5	21.5	0.0	1.9		75	38.3	20.3	20.3	0.0	1.8		80	36.4	19.3	19.3	0.0	1.8		85	34.7	18.4	18.4	0.0	1.7		90	33.2	17.6	17.6	0.0	1.6		95	31.8	16.9	16.9	0.0	1.5		100	30.5	16.2	16.2	0.0	1.5		105	29.3	15.6	15.6	0.0	1.4		110	28.2	15.0	15.0	0.0	1.4		115	27.3	14.5	14.5	0.0	1.3		120	26.3	14.0	14.0	0.0	1.3		125	25.5	13.5	13.5	0.0	1.2		130	24.7	13.1	13.1	0.0	1.2		135	23.9	12.7	12.7	0.0	1.2		140	23.2	12.3	12.3	0.0	1.1		145	22.6	12.0	12.0	0.0	1.1		150	22.0	11.7	11.7	0.0	1.1		155	21.4	11.3	11.3	0.0	1.0		160	20.8	11.1	11.1	0.0	1.0	
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Storage Volume Required = 0.00 m3 Storage Volume Provided = 0.00 m3</td><td colspan="2">Release Rate= 273.1 L/s Uncontrolled Release Rate = 8.2 L/s Total Site Release Rate = 281.34 L/s</td></tr> <tr><td colspan="3"></td><td colspan="2"></td></tr> <tr><td>Town of Ajax (50-Year)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>a=</td><td>1831.947</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>b=</td><td>6.01</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>c=</td><td>0.86</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Time (minutes)</td><td>Rainfall Intensity (mm/hr)</td><td>Q_{Runoff} (L/s)</td><td>Q_{Release} (L/s)</td><td>Storage Volume Required (m³)</td><td colspan="2">Q_{Runoff} (L/s)</td></tr> <tr><td>10</td><td>170.6</td><td>90.5</td><td>90.5</td><td>0.0</td><td colspan="2">8.2</td></tr> <tr><td>15</td><td>135.2</td><td>71.7</td><td>71.7</td><td>0.0</td><td colspan="2">6.5</td></tr> <tr><td>20</td><td>112.6</td><td>59.8</td><td>59.8</td><td>0.0</td><td colspan="2">5.4</td></tr> <tr><td>25</td><td>96.9</td><td>51.4</td><td>51.4</td><td>0.0</td><td colspan="2">4.7</td></tr> <tr><td>30</td><td>85.2</td><td>45.2</td><td>45.2</td><td>0.0</td><td colspan="2">4.1</td></tr> <tr><td>35</td><td>76.3</td><td>40.5</td><td>40.5</td><td>0.0</td><td colspan="2">3.7</td></tr> <tr><td>40</td><td>69.1</td><td>36.7</td><td>36.7</td><td>0.0</td><td colspan="2">3.3</td></tr> <tr><td>45</td><td>63.3</td><td>33.6</td><td>33.6</td><td>0.0</td><td colspan="2">3.0</td></tr> <tr><td>50</td><td>58.4</td><td>31.0</td><td>31.0</td><td>0.0</td><td colspan="2">2.8</td></tr> <tr><td>55</td><td>54.3</td><td>28.8</td><td>28.8</td><td>0.0</td><td colspan="2">2.6</td></tr> <tr><td>60</td><td>50.7</td><td>26.9</td><td>26.9</td><td>0.0</td><td colspan="2">2.4</td></tr> <tr><td>65</td><td>47.7</td><td>25.3</td><td>25.3</td><td>0.0</td><td colspan="2">2.3</td></tr> <tr><td>70</td><td>45.0</td><td>23.9</td><td>23.9</td><td>0.0</td><td colspan="2">2.2</td></tr> <tr><td>75</td><td>42.6</td><td>22.6</td><td>22.6</td><td>0.0</td><td colspan="2">2.0</td></tr> <tr><td>80</td><td>40.5</td><td>21.5</td><td>21.5</td><td>0.0</td><td colspan="2">1.9</td></tr> <tr><td>85</td><td>38.5</td><td>20.5</td><td>20.5</td><td>0.0</td><td colspan="2">1.9</td></tr> <tr><td>90</td><td>36.8</td><td>19.5</td><td>19.5</td><td>0.0</td><td colspan="2">1.8</td></tr> <tr><td>95</td><td>35.3</td><td>18.7</td><td>18.7</td><td>0.0</td><td colspan="2">1.7</td></tr> <tr><td>100</td><td>33.8</td><td>18.0</td><td>18.0</td><td>0.0</td><td colspan="2">1.6</td></tr> <tr><td>105</td><td>32.5</td><td>17.3</td><td>17.3</td><td>0.0</td><td colspan="2">1.6</td></tr> <tr><td>110</td><td>31.3</td><td>16.6</td><td>16.6</td><td>0.0</td><td colspan="2">1.5</td></tr> <tr><td>115</td><td>30.2</td><td>16.0</td><td>16.0</td><td>0.0</td><td colspan="2">1.5</td></tr> <tr><td>120</td><td>29.2</td><td>15.5</td><td>15.5</td><td>0.0</td><td colspan="2">1.4</td></tr> <tr><td>125</td><td>28.2</td><td>15.0</td><td>15.0</td><td>0.0</td><td colspan="2">1.4</td></tr> <tr><td>130</td><td>27.3</td><td>14.5</td><td>14.5</td><td>0.0</td><td colspan="2">1.3</td></tr> <tr><td>135</td><td>26.5</td><td>14.1</td><td>14.1</td><td>0.0</td><td colspan="2">1.3</td></tr> <tr><td>140</td><td>25.7</td><td>13.6</td><td>13.6</td><td>0.0</td><td colspan="2">1.2</td></tr> <tr><td>145</td><td>25.0</td><td>13.3</td><td>13.3</td><td>0.0</td><td colspan="2">1.2</td></tr> <tr><td>150</td><td>24.3</td><td>12.9</td><td>12.9</td><td>0.0</td><td colspan="2">1.2</td></tr> <tr><td>155</td><td>23.7</td><td>12.6</td><td>12.6</td><td>0.0</td><td colspan="2">1.1</td></tr> <tr><td>160</td><td>23.0</td><td>12.2</td><td>12.2</td><td>0.0</td><td colspan="2">1.1</td></tr>		Date: 2023.12.19		Revised: 2024.06.18		Designed By: GS				Checked By: MI		MODIFIED RATIONAL METHOD CALCULATIONS - 50 YEAR STORM EVENT						Rainfall Intensity Equation: Intensity $i(T_d) = A / (T + B)^{AC}$		CONTROLLED AREA			UNCONTROLLED AREA		Drainage Area ID = 201 & 202 Drainage Area = 0.21 ha Runoff Coefficient = 0.90			Drainage Area ID = UC1 Drainage Area = 0.06 ha Runoff Coefficient = 0.28		Release Rate= 273.13 L/s			Uncontrolled Release Rate = 9.85 L/s		Max. Storage Volume Required = 0.00 m3 Storage Volume Provided = 0.00 m3			Release Rate= 273.1 L/s Uncontrolled Release Rate = 8.2 L/s Total Site Release Rate = 281.34 L/s							Town of Ajax (50-Year)							a=	1831.947						b=	6.01						c=	0.86						Time (minutes)	Rainfall Intensity (mm/hr)	Q _{Runoff} (L/s)	Q _{Release} (L/s)	Storage Volume Required (m ³)	Q _{Runoff} (L/s)		10	170.6	90.5	90.5	0.0	8.2		15	135.2	71.7	71.7	0.0	6.5		20	112.6	59.8	59.8	0.0	5.4		25	96.9	51.4	51.4	0.0	4.7		30	85.2	45.2	45.2	0.0	4.1		35	76.3	40.5	40.5	0.0	3.7		40	69.1	36.7	36.7	0.0	3.3		45	63.3	33.6	33.6	0.0	3.0		50	58.4	31.0	31.0	0.0	2.8		55	54.3	28.8	28.8	0.0	2.6		60	50.7	26.9	26.9	0.0	2.4		65	47.7	25.3	25.3	0.0	2.3		70	45.0	23.9	23.9	0.0	2.2		75	42.6	22.6	22.6	0.0	2.0		80	40.5	21.5	21.5	0.0	1.9		85	38.5	20.5	20.5	0.0	1.9		90	36.8	19.5	19.5	0.0	1.8		95	35.3	18.7	18.7	0.0	1.7		100	33.8	18.0	18.0	0.0	1.6		105	32.5	17.3	17.3	0.0	1.6		110	31.3	16.6	16.6	0.0	1.5		115	30.2	16.0	16.0	0.0	1.5		120	29.2	15.5	15.5	0.0	1.4		125	28.2	15.0	15.0	0.0	1.4		130	27.3	14.5	14.5	0.0	1.3		135	26.5	14.1	14.1	0.0	1.3		140	25.7	13.6	13.6	0.0	1.2		145	25.0	13.3	13.3	0.0	1.2		150	24.3	12.9	12.9	0.0	1.2		155	23.7	12.6	12.6	0.0	1.1		160	23.0	12.2	12.2	0.0	1.1	
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<div><div>C</div><div>CROZIER</div><div>CONSULTING ENGINEERS</div></div>		Project:	725 Westney Road S		Date:	2023.12.19	
		Project No.:	2542-6840		Revised:	2024.06.18	
					Designed By:	GS	
					Checked By:	MI	
MODIFIED RATIONAL METHOD CALCULATIONS - 100 YEAR STORM EVENT							
Rainfall Intensity Equation: Intensity $i(T_d) = A / (T + B)^C$		CONTROLLED AREA			UNCONTROLLED AREA		
		Drainage Area ID = 201 & 202			Drainage Area ID = UC1		
		Drainage Area = 0.21 ha			Drainage Area = 0.06 ha		
		Runoff Coefficient = 0.90			Runoff Coefficient = 0.28		
		Release Rate = 314.73 L/s			Uncontrolled Release Rate = 11.35 L/s		
Town of Ajax (100-Year)		Max. Storage Volume Required = 0.00 m3			Release Rate = 314.7 L/s		
a=	2031.456	Storage Volume Provided = 0.00 m3			Uncontrolled Release Rate = 9.1 L/s		
b=	6.01				Total Site Release Rate = 323.80 L/s		
c=	0.86						
Time (minutes)	Rainfall Intensity (mm/hr)	Q_{Runoff} (L/s)	$Q_{Release}$ (L/s)	Storage Volume Required (m ³)	Q_{Runoff} (L/s)		
10	188.7	100.1	100.1	0.0	9.1		
15	149.5	79.3	79.3	0.0	7.2		
20	124.5	66.1	66.1	0.0	6.0		
25	107.1	56.8	56.8	0.0	5.2		
30	94.2	50.0	50.0	0.0	4.5		
35	84.3	44.7	44.7	0.0	4.1		
40	76.3	40.5	40.5	0.0	3.7		
45	69.9	37.1	37.1	0.0	3.4		
50	64.5	34.2	34.2	0.0	3.1		
55	59.9	31.8	31.8	0.0	2.9		
60	56.0	29.7	29.7	0.0	2.7		
65	52.6	27.9	27.9	0.0	2.5		
70	49.7	26.4	26.4	0.0	2.4		
75	47.0	25.0	25.0	0.0	2.3		
80	44.7	23.7	23.7	0.0	2.1		
85	42.5	22.6	22.6	0.0	2.0		
90	40.6	21.6	21.6	0.0	2.0		
95	38.9	20.7	20.7	0.0	1.9		
100	37.3	19.8	19.8	0.0	1.8		
105	35.9	19.0	19.0	0.0	1.7		
110	34.6	18.3	18.3	0.0	1.7		
115	33.3	17.7	17.7	0.0	1.6		
120	32.2	17.1	17.1	0.0	1.5		
125	31.1	16.5	16.5	0.0	1.5		
130	30.2	16.0	16.0	0.0	1.5		
135	29.2	15.5	15.5	0.0	1.4		
140	28.4	15.1	15.1	0.0	1.4		
145	27.6	14.6	14.6	0.0	1.3		
150	26.8	14.2	14.2	0.0	1.3		
155	26.1	13.8	13.8	0.0	1.3		
160	25.4	13.5	13.5	0.0	1.2		



PROJECT: 725 Westney Road S
PROJECT No.: 2542-6840

Created By: GS
Checked By: MI

Date: 2023.12.19
Updated: 2024.06.18

WATER QUALITY CALCULATIONS

Catchment	Land Use	Area (m²)	Treatment Process	Water Quality Target (%)	% of Total Development Area	TSS Removal Credit (%)	Total TSS Removal (%)
Pre-Dev	Roof	1,414	No Treatment	80.0%	66.7%	80.0%	53.3%
	Impervious	707			33.3%	0.0%	0.0%
	TOTAL	2,121				100.0%	-
Post-Dev	Roof	2,121	No Treatment	80.0%	100.0%	80.0%	80.0%
	TOTAL	2,121			100.0%	-	80.0%



Project: 725 Westney Road S
Project No.: 2542-6840

Created By: GS
Checked By: MI

Date: 2023.12.19
Updated: 2024.06.18

WATER BALANCE CALCULATIONS

Proposed 2-Storey Roof Area = 1,169.00 m²

Rainfall Depth = 5 mm

Required Retention Voume = 5.85 m³

725 WESTNEY ROAD SOUTH AJAX, ON

DRAWING INDEX

TITLE	SHEET NO
COVER SHEET	1 OF 5
SYSTEM LAYOUT SHEET&SYSTEM CALCULATION SHEET	2-3 OF 5
SYSTEM OVERLAY SHEET	4 OF 5
DETAIL SHEET	5 OF 5

	PROJECT INFORMATION			
SITE CONTACT	PHIL ALLEN	416-286-5990	PHILALLEN@STORMCON.CA	
ENGINEER / TECHNICAL SPECIALIST	ERIC CUMISKEY	289-380-3742	ECUMISKEY@STORMCON.CA	
SALES REP:	GREG DZIEWIECKI	437-231-6080	GREGD@STORMCON.CA	
PROJECT NO:	2025-049			
COMMENTS:	REVISION	DATE	COMMENT	BY

GENERAL NOTES

- COORDINATE WITH MANUFACTURER'S REPRESENTATIVE/DISTRIBUTOR FOR PRE-CONSTRUCTION MEETING AND SITE INSPECTION DURING INSTALLATION.
- ENGINEERING DRAWINGS SUPERSEDE ALL PROVIDED DOCUMENTATION. REFER TO SITE ENGINEERS FOR ADDITIONAL INSTRUCTIONS.
- COORDINATE GREENSTORM INSTALLATION ACTIVITIES WITH OTHER SITE ACTIVITIES.
- ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE.
- THE SUB-GRADE AND SIDE BACKFILL TO BE COMPACTED TO 95% SPD OR AS DIRECTED BY THE QUALIFIED ENGINEER.
- PRESENCE OF GROUND WATER ABOVE THE BASE OF THE SYSTEM MUST BE IDENTIFIED TO STORMCON. ALL PUBLISHED MAXIMUM AND MINIMUM INSTALLATION DEPTHS ASSUME THE GROUND WATER IS AT OR BELOW THE BASE OF THE SYSTEM UNLESS OTHERWISE NOTED.
- CONFIRM GEOTECHNICAL SOIL EVALUATION BY A QUALIFIED ENGINEER TO DETERMINE SUITABILITY OF STRUCTURAL INSTALLATION.
- CONFIRM FOR BURIED UNDERGROUND UTILITIES INCLUDING GAS, ELECTRICAL, PIPELINES OR CONDUITS.
- ROOTS FROM SURROUNDING TREES MAY DAMAGE THE SYSTEM. PROJECT ENGINEER OF RECORD TO ENSURE ADEQUATE SEPARATION FROM ALL TREES.
- WHEN INSTALLED IN CONFORMANCE TO THE INSTALLATION GUIDELINES, GREENSTORM-ST CAN HANDLE STANDARD CL-625 TRUCK LOADING AFTER 0.80m COVER. FOR NON-STANDARD LOADS AND INSTALLATION WITHIN GROUNDWATER, CONTACT MANUFACTURER'S REPRESENTATIVE/DISTRIBUTOR.
- PROTECT THE INSTALLATION AGAINST DAMAGE WITH CONSTRUCTION TAPE, FENCING OR OTHER MEANS TILL THE CONSTRUCTION IS COMPLETE.
- ENSURE THAT CONSTRUCTION FOLLOWS APPLICABLE FEDERAL, PROVINCIAL, LOCAL, MUNICIPAL AND LOCAL LAWS, ORDINANCES, REGULATIONS AND SAFETY REQUIREMENTS.
- VEHICULAR LOADING IS PROHIBITED UNTIL BACKFILLED AS PER MANUFACTURER'S INSTALLATION GUIDELINES. THE USE OF EQUIPMENT OVER GREENSTORM CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE CONSTRUCTION GUIDE.
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE CONSTRUCTION GUIDE.

CHECK - REQUIRED MATERIALS AND EQUIPMENT

- ALL GREENSTORM CHAMBERS AND ACCESSORIES AS SPECIFIED IN THE ENGINEER'S PLANS INCLUDING NON-WOVEN GEOTEXTILE, CONNECTORS, QUADS, SIDEWALLS ADAPTER, RISER AND LINER WHERE APPLICABLE.
- RECIPROCATING SAW OR ROUTER.
- TRANSIT OR LASER LEVEL MEASURING DEVICE.
- COMPACTION EQUIPMENT WITH MAXIMUM GROSS VEHICLE WEIGHT OF 12,000 LBS (5,440 KGS).
- ACCEPTABLE FILL MATERIAL AS SHOWN IN INSTALLATION INSTRUCTIONS.
- QUANTITIES FOR GEOSYNTHETIC ARE APPROXIMATE AND MAY VARY BASED ON OVERLAP, WASTAGE.
- CHECK GREENSTORM CHAMBERS FOR DAMAGE PRIOR TO INSTALLATION. DO NOT USE DAMAGED CHAMBERS, CONTACT YOUR SUPPLIER IMMEDIATELY TO REPORT DAMAGE OR PACKING-LIST DISCREPANCIES.

NOTES FOR BIDDING AND INSTALLATIONS

- CONTRACTORS ARE EXPECTED TO COMPREHEND AND USE THE MOST CURRENT INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING A SYSTEM INSTALLATION. FOR THE MOST CURRENT INSTRUCTIONS, CONTACT STORMCON AT (289) 380-3742 OR VISIT WWW.STORMCON.CA.
- CONTACT STORMCON AT LEAST TWO WEEKS PRIOR TO SYSTEM INSTALLATION TO ARRANGE FOR A PRE-CONSTRUCTION MEETING.
- USE GREENSTORM INSTALLATION INSTRUCTIONS AS A GUIDELINE ONLY FOR MINIMUM/MAXIMUM REQUIREMENTS. ACTUAL DESIGN MAY VARY. REFER TO APPROVED CONSTRUCTION DRAWINGS FOR JOB-SPECIFIC DETAILS. ENGINEERING DRAWINGS SUPERSEDE ALL PROVIDED DOCUMENTATION.
- THE FOUNDATION STONE SHALL BE LEVEL AND COMPACTED PRIOR TO CHAMBER INSTALLATION.
- ANY DISCREPANCIES WITH THE SYSTEM SUB-GRADE SOIL'S BEARING CAPACITY MUST BE REPORTED TO THE GEOTECHNICAL ENGINEER.
- CONTRACTOR TO REFER TO GREENSTORM INSTALLATION INSTRUCTIONS CONCERNING VEHICULAR TRAFFIC. RESPONSIBILITY FOR PREVENTING VEHICLES THAT EXCEED REQUIREMENTS SPECIFIED FROM TRAVELING ACROSS OR PARKING OVER THE CHAMBER SYSTEM LIES SOLELY WITH THE CONTRACTOR THROUGHOUT THE ENTIRE SITE CONSTRUCTION PROCESS. THE PLACEMENT OF WARNING TAPE, TEMPORARY FENCING, AND/OR APPROPRIATELY LOCATED SIGNS IS HIGHLY RECOMMENDED.
- TRAFFIC OF INSTALLATION EQUIPMENT OR OTHER VEHICULAR TRAFFIC OVER TOP OF THE GREENSTORM STORMWATER SYSTEM IS STRICTLY RESTRICTED AND PROHIBITED UNTIL SATISFACTORY COVER AND COMPACTION IS ACHIEVED ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- EROSION AND SEDIMENT-CONTROL MEASURES MUST MEET LOCAL CODES AND THE DESIGN ENGINEER'S SPECIFICATIONS THROUGHOUT THE ENTIRE SITE CONSTRUCTION PROCESS.
- GREENSTORM SYSTEMS MUST BE DESIGNED AND INSTALLED IN ACCORDANCE WITH STORMCON'S MINIMUM REQUIREMENTS. FAILURE TO DO SO WILL VOID THE LIMITED WARRANTY.



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NOTE: THESE SHOP DRAWINGS MAY CONTAIN COMPONENTS INCLUDING BUT NOT LIMITED TO MANHOLES, CATCH BASINS, STORM PIPES AND FITTINGS, MANIFOLDS, CASTINGS AND OTHER NECESSARY APPURTENANCES THAT MAY NOT BE SUPPLIED BY STORMCON. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND/OR SUPPLIER TO CONFIRM THE MATERIALS PROVIDED.

THIS DRAWING WAS PREPARED TO SUPPORT THE PROJECT ENGINEER OF RECORD FOR THE PROPOSED SYSTEM. IT IS THE ULTIMATE RESPONSIBILITY OF THE PROJECT ENGINEER OF RECORD TO ENSURE THAT THE SYSTEM IS DESIGN IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. IT IS THE CONTRACTOR OF RECORD'S RESPONSIBILITY TO ENSURE THAT THE STORMCON PRODUCTS ARE INSTALLED IN ACCORDANCE WITH STORMCON'S MINIMUM REQUIREMENTS. STORMCON DOES NOT APPROVE PLANS, SIZING, OR SYSTEM DESIGNS.

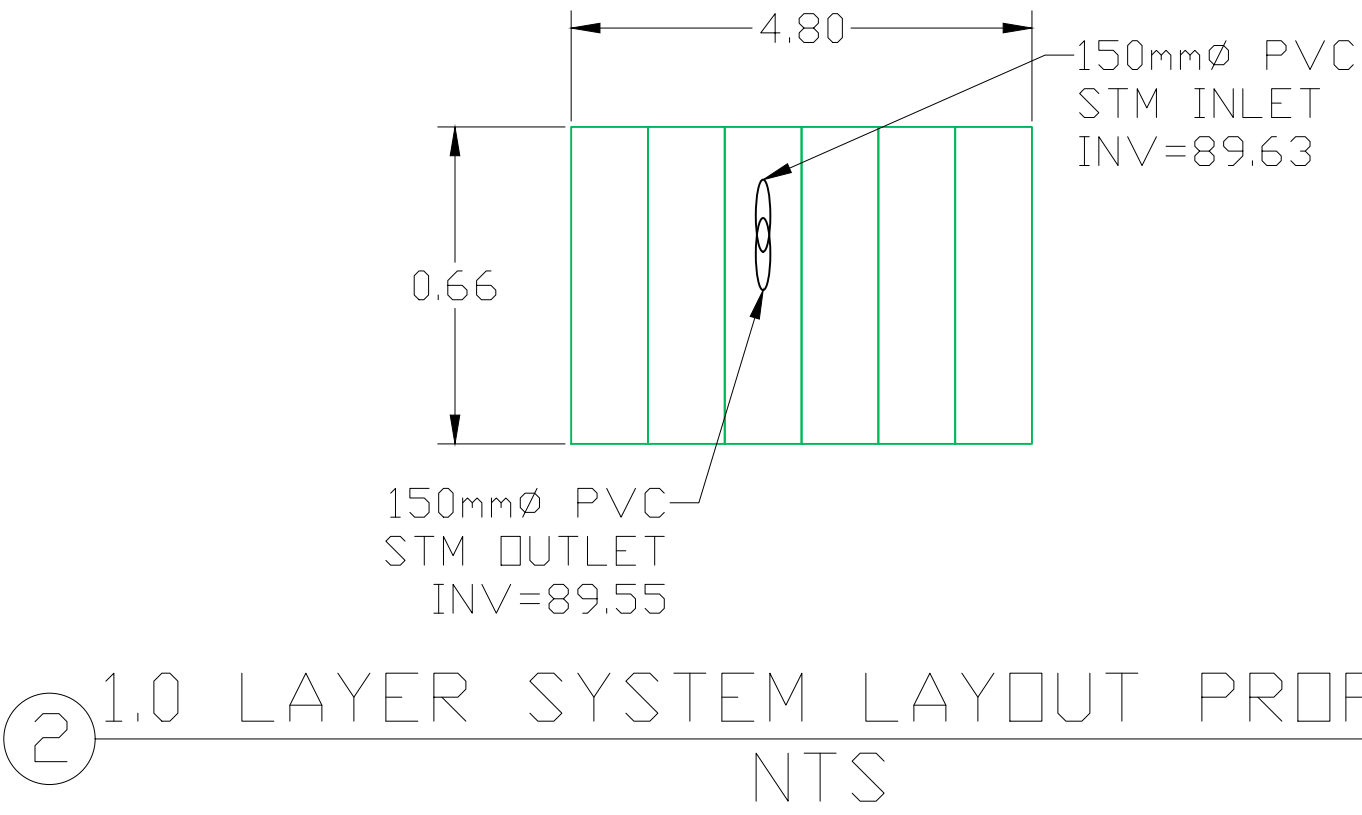
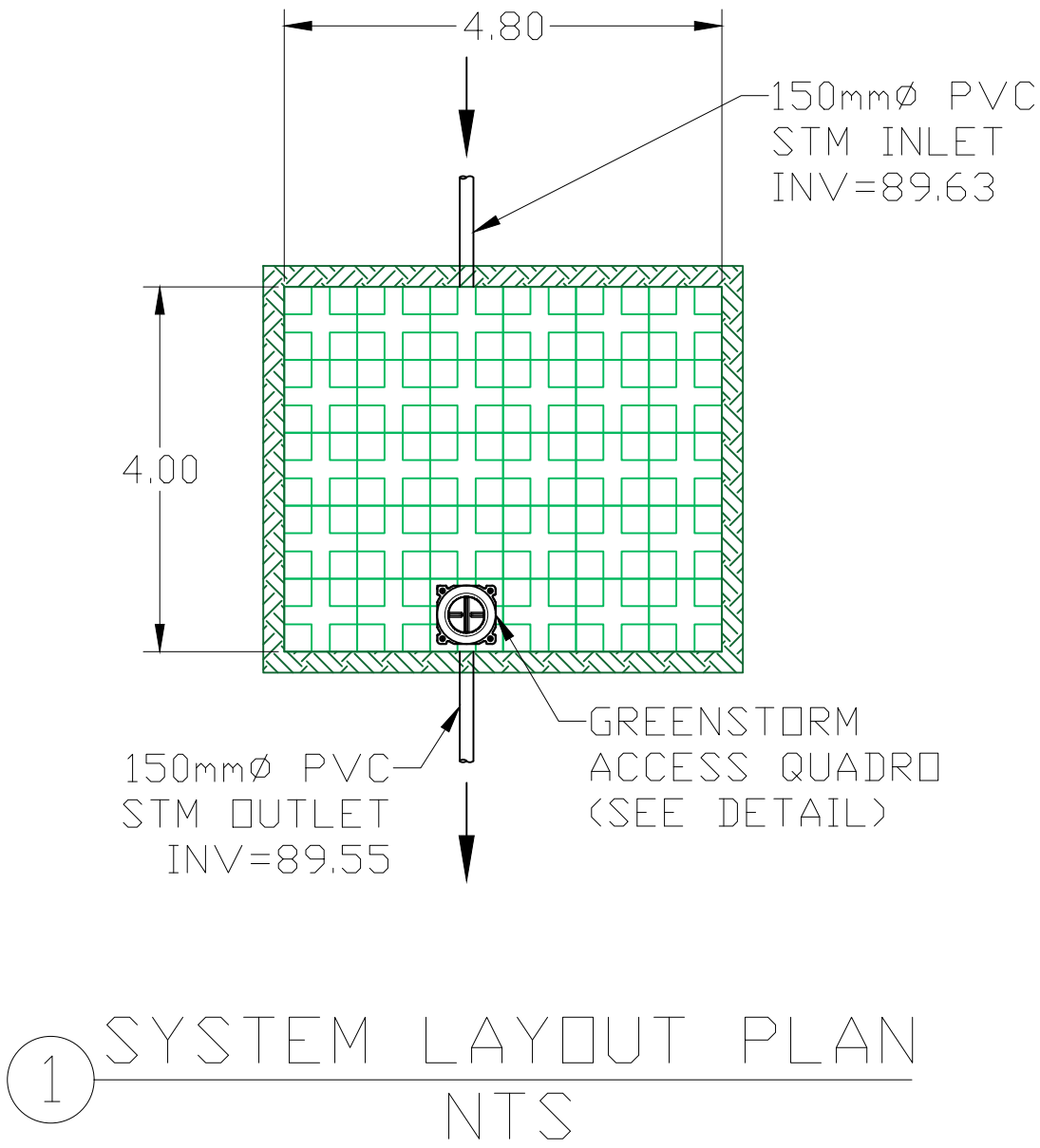
PROPOSED SYSTEM ELEVATIONS

(TO BE APPROVED BY ENGINEER)

*ENGINEER TO CONFIRM MINIMUM AND MAXIMUM BURIAL REQUIREMENTS ARE MET	
93.89	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
90.69	MINIMUM ALLOWABLE GRADE
89.89	GREENSTORM STORAGE TOP ELEVATION LEVEL 1
89.23	GREENSTORM BASE ELEVATION
89.08	BOTTOM OF EXCAVATION
<82.73	SEASONAL HIGH GROUNDWATER ELEVATION

GREENSTORM STORMWATER MANAGEMENT SYSTEM

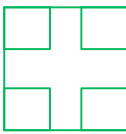
TOTAL STORAGE PROVIDED: 12.17 m³
DETENTION VOLUME ABOVE 89.55: 6.27 m³
RETENTION VOLUME BELOW 89.55: 5.90 m³
STORAGE VOID RATIO: 0.96
SYSTEM AREA: 19.20 m²
DEPTH OF EMBEDMENT STONE: 0.00 m
DEPTH OF BEDDING STONE: 0.00 m
STONE PERIMETER: 0.00 m




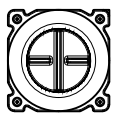
NOTE:*ALL EXTERNAL SYSTEM STRUCTURES, INLET/OUTLET PIPES, AND PROPOSED ELEVATIONS MUST BE DESIGNED AND APPROVED BY PROJECT ENGINEER OF RECORD. PROJECT ENGINEER OF RECORD MUST ENSURE CHAMBER BURIAL REQUIREMENTS ARE MET.

MATERIALS LIST SUPPLIED BY STORMCON (SYSTEM MATERIALS LIST - SEE COVER SHEET FOR COMBINED PROJECT MATERIALS LIST)		
GREENSTORM-ST	59	PIECES
SINGLE LAYER CONNECTOR	100	PIECES
MULTI LAYER CONNECTOR	0	PIECES
SIDEWALL GRID	22	PIECES
HALF BLOCK SIDEWALL GRID	0	PIECES
HALF BLOCK COVER PLATE	0	PIECES
HALF BLOCK COVER PLATE QUADRO CONTROL	0	PIECES
QUADRO CONTROL	1	PIECES
QUADRO ADAPTERS	1	PIECES
EXTENSION PIPE	2	METER
CAST IRON COVER	1	PIECES
NO. OF 525mmØ PIPE ADAPTER	0	PIECES
NO. OF 450mmØ PIPE ADAPTER	0	PIECES
MIDDLE GRID	0	PIECES
MIDDLE GRID QUADRO CONTROL	0	PIECES
8 OZ NON-WOVEN GEOTEXTILE	80	SQ. METER
30MIL PVC IMPERMEABLE LINER	0	SQ. METER
LINER TAPE	0	METER
GREENSTORM FULL TREATMENT ROW	0	PIECES
GREENSTORM HALF TREATMENT ROW	0	PIECES
100MM SUBDRAIN	0	METER

GREENSTORM
LEGEND

 GREENSTORM ST BLOCK

 GREENSTORM SIDEWALL GRID WITH
8 OZ NON-WOVEN GEOTEXTILE

 GREENSTORM ACCESS QUADRO

NOTE:*

1)USE OF VEHICLES WHEN APPLYING THE FIRST COVER LAYER :

THE FIRST COVER LAYER CAN BE APPLIED FOR EXAMPLE USING A WHEEL LOADER OR A FRONT-TYPE MOBILE EXCAVATOR. FOR A WHEEL LOADER OR MOBILE EXCAVATOR WITH A MAXIMUM TOTAL WEIGHT OF 15TONS(CHAIN,WHEELS,TWIN-TYRES), A COMPACTED COVER OF AT LEAST 30CM MUST BE PLACED OVER THE STORAGE/INFILTRATION SYSTEM. POSSIBLE FORMATION OF RUTS MUST BE TAKEN INTO ACCOUNT! AVOID STEERING MANOEUVRES AT THIS CONSTRUCTION STAGE

2) USE OF CONSTRUCTION VEHICLES:

DRIVING OVER THE COVER WITH HEAVY CONSTRUCTION VEHICLES WITH A WHEEL LOAD OF UP TO 50KN (E.G. HGV 30) IS POSSIBLE IF THE THICKNESS OF THE COMPACTED COVER IS NOT LESS THAN 60CM. POSSIBLE FORMATION OF RUTS MUST BE TAKEN INTO ACCOUNT! WHEN DUMPING THE EARTHQUAKE MATERIAL, THE WHEEL LOAD OF 140KN MUST NOT BE EXCEEDED;IF NECESSARY,LOAD DISTRIBUTION PLATES MUST BE USED.



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725 WESTNEY ROAD SOUTH
AJAX, ON

SYSTEM LAYOUT SHEET STORAGE TANK

GREENSTORM STORMWATER CHAMBER

PROJECT NO: 2025-049	DATE: 03/28/2025
DESIGNED BY: JD	CHECKED BY: EC
SCALE: N.T.S.	SHEET NO: 2 OF 5



GREENSTORM Stage Storage Calculations

Project Details

Project Name	725 Westney Road South
Address	
City	Ajax, ON
Country	Canada
Date	April 8, 2025

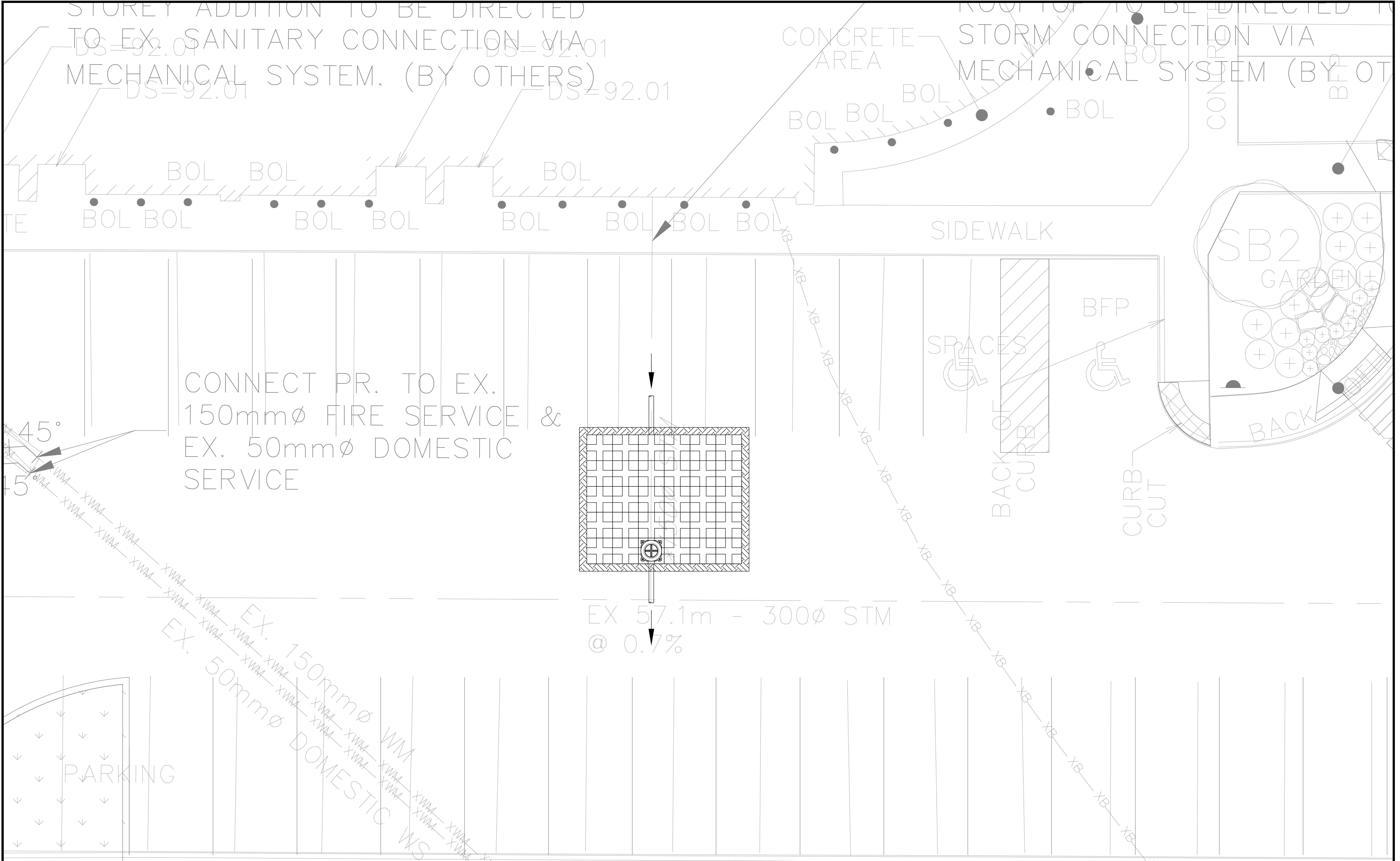
System Details

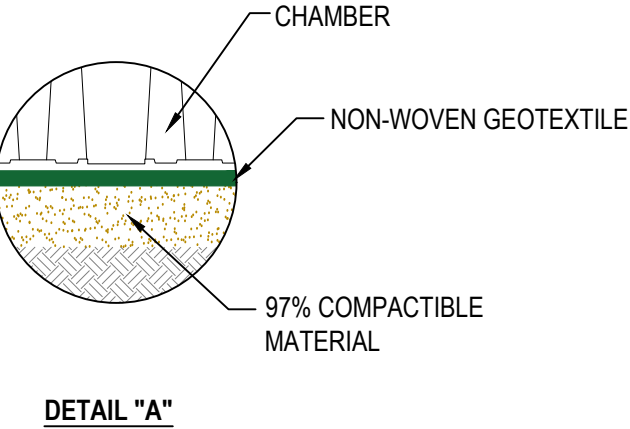
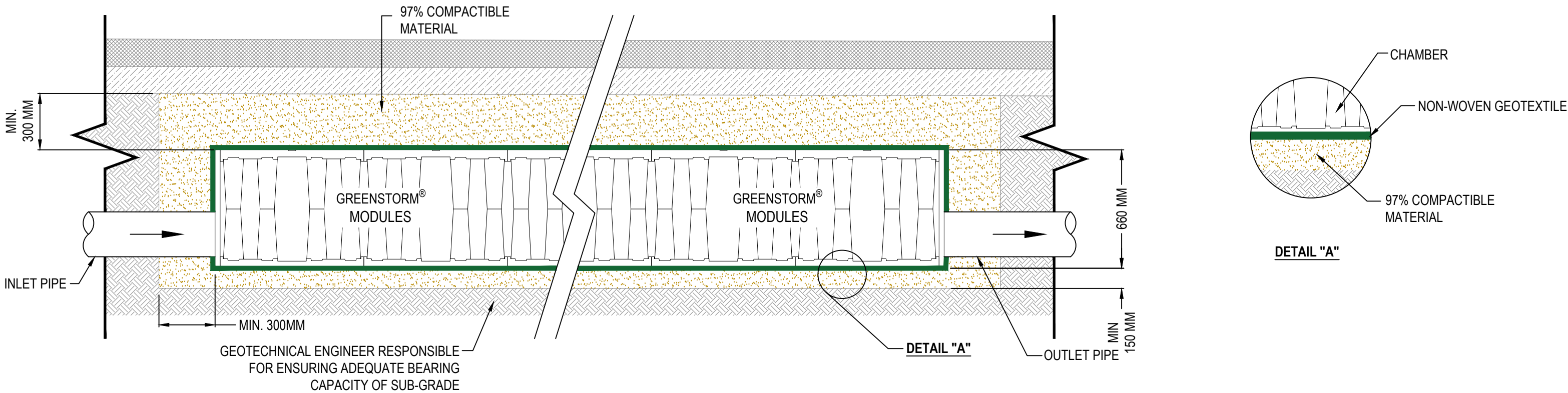
Chamber Model	GreenStorm-ST			
Number of Layers	1.0		Top Stone	0.00 m
Height of Chambers	0.66	m	Bottom Stone	0.00 m
Chamber Length	4.80	m	Perimeter Stone	0.00 m
Chamber Width	4.00	m	Stone Qty.	0.00 m ³
Storage Void Ratio	96%		Stone Void Ratio	40%
System Perimeter	17.60	m	Impermeable Liner	No
GreenStorm Area	19.20	m ²	Middle Grids	No
System Area	19.20	m ²	Highest Finished Grade	91.43 m
GreenStorm Base Elevation	89.23	m	Lowest Finished Grade	91.43 m

Stage Storage


Height of System	GreenStorm Volume	Top Stone Volume	Bottom Stone Volume	Perimeter Stone Volume	Cumulative Storage Volume	Elevation
mm	m ³	m ³	m ³	m ³	m ³	m
660	0.65	0.00	0.00	0.00	12.17	89.890
625	0.46	0.00	0.00	0.00	11.52	89.855
600	0.46	0.00	0.00	0.00	11.06	89.830
575	0.46	0.00	0.00	0.00	10.60	89.805
550	0.46	0.00	0.00	0.00	10.14	89.780
525	0.46	0.00	0.00	0.00	9.68	89.755
500	0.46	0.00	0.00	0.00	9.22	89.730
475	0.46	0.00	0.00	0.00	8.76	89.705
450	0.46	0.00	0.00	0.00	8.29	89.680
425	0.46	0.00	0.00	0.00	7.83	89.655
400	0.46	0.00	0.00	0.00	7.37	89.630
375	0.46	0.00	0.00	0.00	6.91	89.605
350	0.46	0.00	0.00	0.00	6.45	89.580
325	0.46	0.00	0.00	0.00	5.99	89.555
300	0.46	0.00	0.00	0.00	5.53	89.530
275	0.46	0.00	0.00	0.00	5.07	89.505
250	0.46	0.00	0.00	0.00	4.61	89.480
225	0.46	0.00	0.00	0.00	4.15	89.455
200	0.46	0.00	0.00	0.00	3.69	89.430
175	0.46	0.00	0.00	0.00	3.23	89.405
150	0.46	0.00	0.00	0.00	2.76	89.380
125	0.46	0.00	0.00	0.00	2.30	89.355
100	0.46	0.00	0.00	0.00	1.84	89.330
75	0.46	0.00	0.00	0.00	1.38	89.305
50	0.46	0.00	0.00	0.00	0.92	89.280
25	0.46	0.00	0.00	0.00	0.46	89.255
0	0.00	0.00	0.00	0.00	0.00	89.230

1.0-LAYER GREENSTORM CALCULATION SHEET (SYSTEM STAGE-STORAGE TABLE)



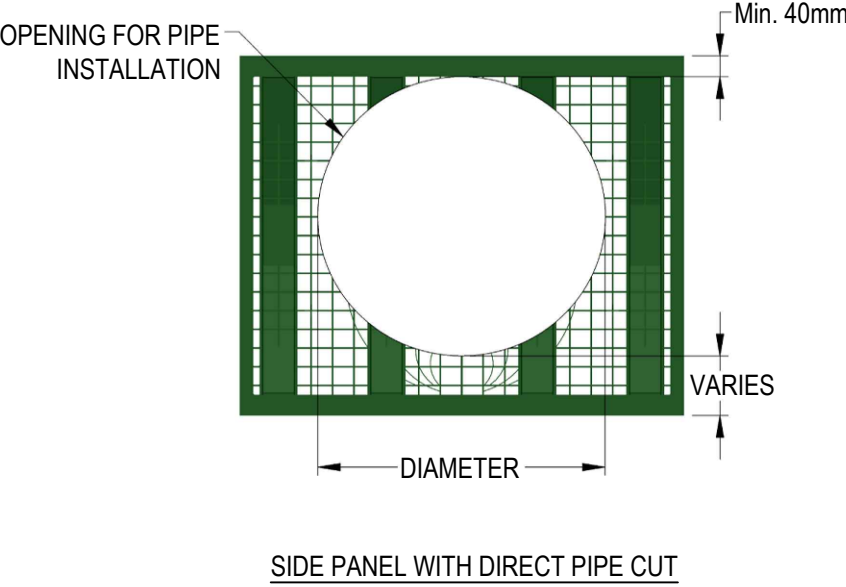


****Recommended bedding materials : HPB**

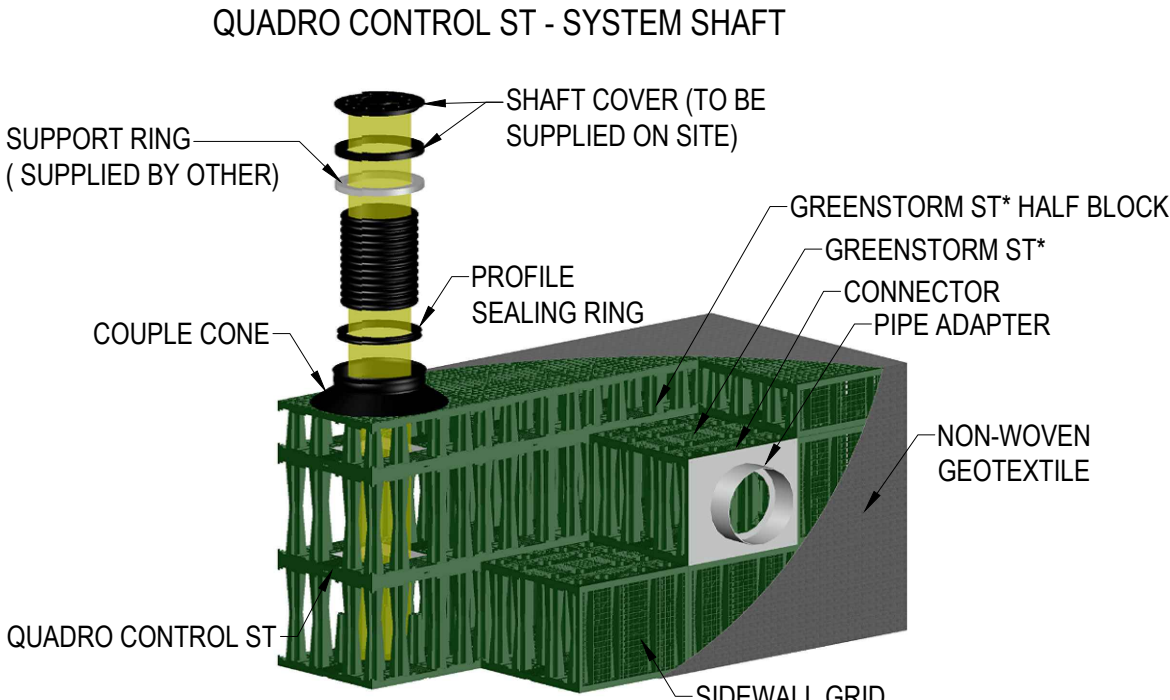
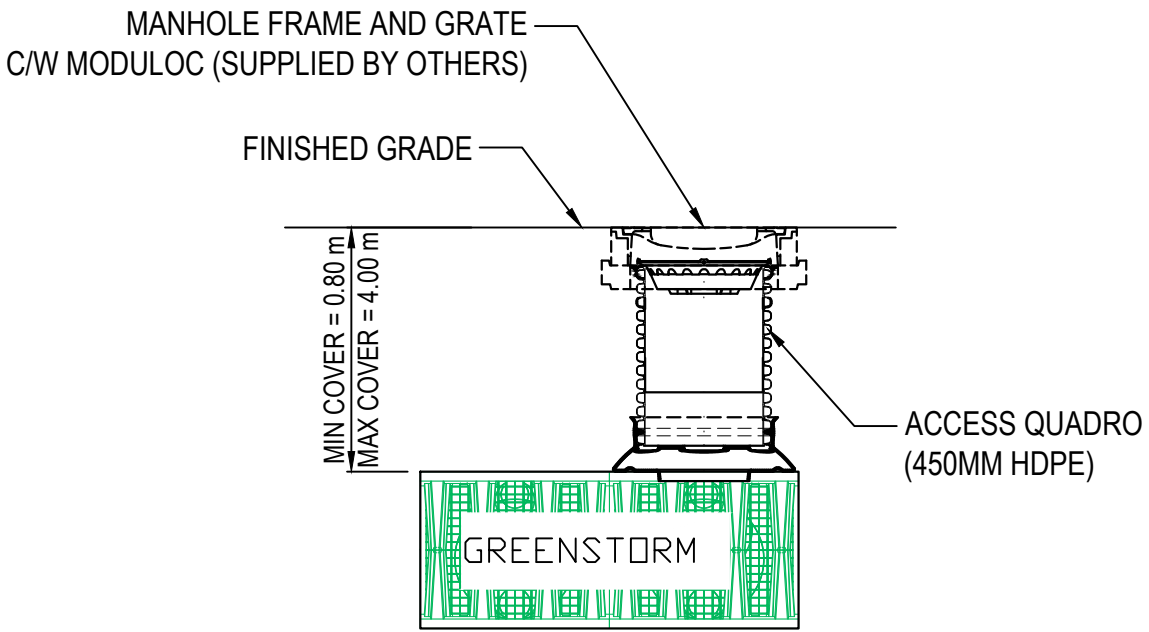
COMPACTIBLE MATERIAL LIST	LEGEND
<ul style="list-style-type: none">• GRANULAR A• GRANULAR B• 19mm CLEAR ANGULAR STONE• HIGH PERFORMANCE BEDDING (HPB)• HL6	 8 OZ NON-WOVEN GEOTEXTILE

TYPICAL ONE LAYER GREENSTORM CROSS SECTION

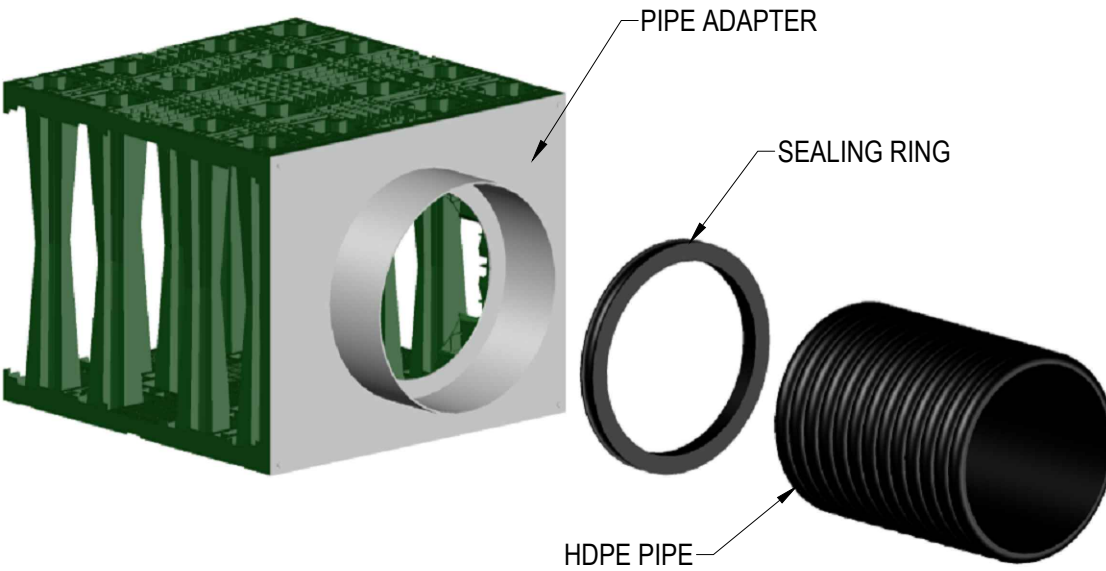
FULL CONNECTION OPTIONS
Dia 100mm, 150 mm, 200 mm, 250 mm, 300 mm AND 375 mm



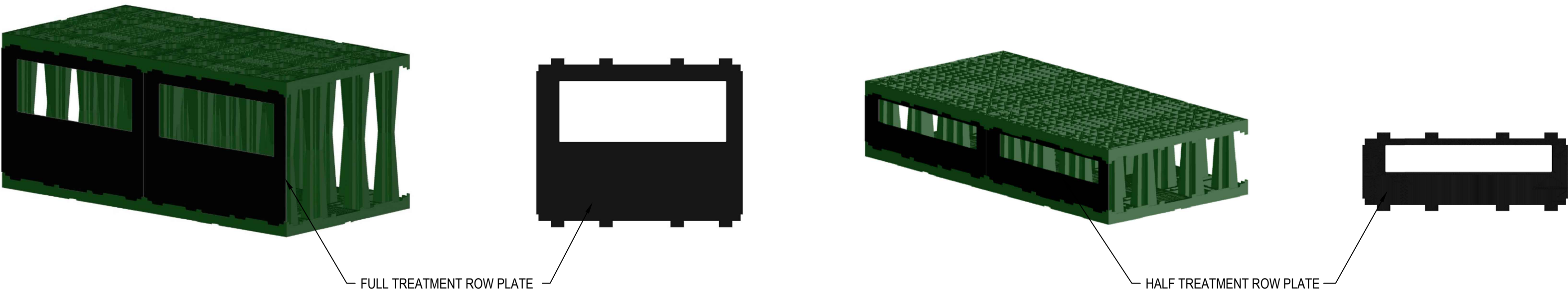
STANDARD SIDE PANEL WITH DIRECT PIPE CUT



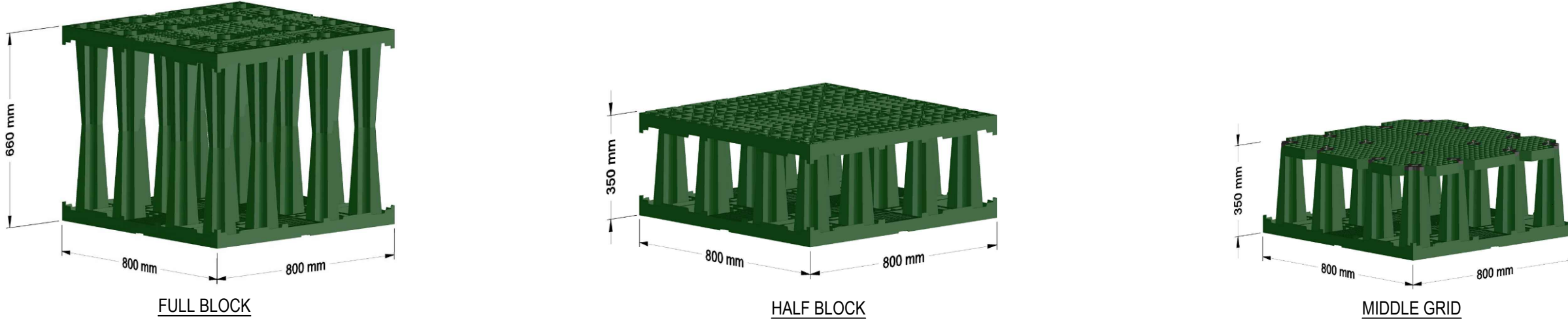
GREENSTORM ACCESS QUADRO DETAIL(WHERE APPLICABLE)



STANDARD ADAPTER PANEL WITH DIA 450 AND 525



STANDARD TREATMENT ROW DETAIL (WHERE APPLICABLE)



STANDARD GREENSTORM BLOCK DETAIL



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725 WESTNEY ROAD SOUTH
AJAX, ON

DETAILS SHEET

GREENSTORM STORMWATER CHAMBER

PROJECT NO: 2025-049	DATE: 03/28/2025
DESIGNED BY: JD	CHECKED BY: EC
SCALE: N.T.S.	SHEET NO: 5 OF 5



Project: 725 Westney Rd S
Project No.: 2542-6840
Description: Infiltration Gallery Sizing

Date: 2025.03.24
Revised:
Designed By: GS
Checked By: MI

Infiltration Gallery Sizing

Parameter	Value	Units	Note #
Volume =	5.85	m ³	1
Infiltration (Percolation) Rate =	2.0	mm/hr	2
Safety Correction Factor =	2.50		3
Infiltration Rate (Design) =	5.0	mm/hr	
Void Space Ratio =	0.99		
Time to Drain =	72	hr	
Maximum Trench Depth =	0.36	m	4
Trench Depth (Design) =	0.32	m	
Time to Drain =	63	hr	
Trench Footprint (Design) =	19	m ²	
Storage Volume =	6.08	m ³	

NOTES:

1. Per Water Balance calculations prepared by Crozier.
2. From SLR Consulting (March 2025)
3. From SLR Consulting (March 2025)
4. As per equation on page 4-57 (CVC LID Guide, 2010).

Table C2: Safety correction factors for calculating design infiltration rates

Ratio of Mean Measured Infiltration Rates ¹	Safety Correction Factor ²
≤ 1	2.5
1.1 to 4.0	3.5
4.1 to 8.0	4.5
8.1 to 16.0	6.5
16.1 or greater	8.5

Source: Wisconsin Department of Natural Resources. 2004. Conservation Practice Standards. Site Evaluation for Stormwater Infiltration (1002). Madison, WI.

March 14, 2025

c/o Gamsa Sivanantham
Fred Pellegrino
Firearms Outlet Canada Inc.
725 Westney Road South, Unit 2
Ajax, ON
L1S 7J7

SLR Project No.: 243.024611.00001

**RE: Technical Memorandum – Dry Borehole Infiltration Tests to Inform
Infiltration Gallery Design
725 Westney Road South, Ajax, Ontario**

1.0 Introduction

SLR Consulting (Canada) Ltd. (SLR) is pleased to provide Firearms Outlet Canada Inc. (the Client) with a Technical Memorandum detailing the results of the dry borehole infiltration testing (also referred to as deep borehole infiltration testing) completed at 725 Westney Road South, Ajax, Ontario. The purpose of this infiltration testing is to inform the design of the infiltration gallery by determining the infiltration rate of the soils on site at the invert depth of the proposed infiltration gallery. This memo is subject to the Statement of Limitations attached.

2.0 Hydrogeological Program

2.1 Infiltration Borehole Drilling

On February 25, 2025, SLR advanced two (2) boreholes at the site to a depth of approximately 3 meters below ground surface (mbgs) for borehole testing (BT1, BT2). This depth is below the expected frost line of approximately 1.5 mbgs. The location of the boreholes is presented on **Figure 1**. Each borehole was instrumented with approximately 3.0 m of PVC riser and a 0.3 m screen at the bottom of the borehole. No sand pack or bentonite was added to the borehole annulus. The details of the boreholes are presented in **Table 1**. The soil encountered was primarily compacted Fill made up of silt and clay, with trace sand and gravel. The soils were dry, unfrozen, and no seepage of groundwater was noted during or following drilling. This is consistent with the historical groundwater levels collected from the site during the Phase Two ESA (SLR, 2024). The groundwater levels are presented in **Attachment A**. Groundwater levels were found to range from 5.94 to 8.50 mbgs.

Table 1. Borehole Details

Borehole ID	Depth (mbgs)	Screened Depth Interval (mbgs)	Groundwater	Screened Geology
BT1	3.2	2.9 – 3.2	Dry	Silty Clay
BT2	3.0	2.7 – 3.0	Dry	Silty Clay

2.2 Deep Borehole Infiltration Testing

Due to the design depth of the proposed infiltration gallery LID and the existing pavement/building structure, deep or dry borehole infiltration testing was selected as the most appropriate method for determining in-situ percolation rates and to inform the design of the infiltration gallery. Based on the design of the proposed infiltration gallery, the bottom of the gallery is estimated to be approximately 3.2 mbgs.

To complete the borehole infiltration test, potable water was added into each PVC pipe to field saturate the soils surrounding the screen. A data logger was installed in both boreholes to record the water levels at a 1-second frequency. The data is presented in **Figure 2** and **Figure 3**. Water was added over an approximately 4-hour period until a constant drawdown rate was obtained. Once field saturated, and due to the slow drawdown rate, the data loggers were left in the boreholes overnight to record the drop in water levels over time. Data loggers were collected after 16 hours of recording.

The field saturated hydraulic conductivity (K_{fs}) value was calculated using displacement-time data analyzed using the Bouwer-Rice (1976) method for unconfined aquifers, modelled using Aqtesolv™ software (**Attachment B**). A K_{fs} value could not be calculated for BT2 as measurable drawdown was not achieved over the 16-hour monitoring period. It is likely that due to the low permeability soils encountered and/or the effects of air-filled porosity in clay soils, field saturation could take several days to occur reflective of the low permeability of the soils. Based on this, it is assumed that the infiltration rate at BT2 is <5 mm/hr.

For BT1, using the above-described method, the K_{fs} value was calculated to be 1.2×10^{-7} m/s. The measured infiltration rate was estimated from the K_{fs} value using the relationship provided by the “Low Impact Development Stormwater Management Planning and Design Guide, Appendix C (Figure C1)” (TRCA/CVC, 2010).

The design infiltration rate (mm/hr) was determined by applying a safety correction factor of 2.5. The infiltration rate was calculated to be 26 mm/hr. With a 2.5x factor of safety, the infiltration rate is 11 mm/hr. Assuming the infiltration rate at BT2 was approximately 5 mm/hr, the infiltration rates range from 5 to 11 mm/hr. This is due to the fine-textured soils and the variability in the composition of the soil. It is recommended that the infiltration gallery be focused around the BT1 area to maximize infiltration in an area where infiltration was measured to occur. Should more coarse-textured soils be encountered at depth during construction, infiltration may also be focused around these areas.

Table 2. Percolation Rate

Borehole ID	Depth (mbgs)	K_{fs} (m/s)	Infiltration Rate (mm/hr)	Infiltration Rate with 2.5x FOS (mm/hr)
BT1	3.2	1.2×10^{-7}	26	11
BT2	3.0	-	-	<5

2.3 Borehole Decommissioning

Both of the boreholes were decommissioned following the completion of the tests. The boreholes were decommissioned by backfilling the holes to 30 cm below surface with bentonite chips, followed by concrete and asphalt to surface.



3.0 Closure

We trust that this technical memorandum meets your needs at this time. This memo was prepared and reviewed by the undersigned. The Statement of Limitations is provided at the end of this report.

Regards,

SLR Consulting (Canada) Ltd.

DRAFT

DRAFT

Nolan Boyes, M.Sc., P.Geo.
Hydrogeologist

Jason Cole, M.Sc., P.Geo.
Technical Discipline Manager, Hydrogeology and
Hydrology

Statement of Limitations

This report has been prepared by SLR Consulting (Canada) Ltd. (SLR) for Firearms Outlet Canada Inc. (Client) in accordance with the scope of work and all other terms and conditions of the agreement between such parties. SLR acknowledges and agrees that the Client may provide this report to government agencies, interest holders, and/or Indigenous communities as part of project planning or regulatory approval processes. Copying or distribution of this report, in whole or in part, for any other purpose other than as aforementioned is not permitted without the prior written consent of SLR.

Any findings, conclusions, recommendations, or designs provided in this report are based on conditions and criteria that existed at the time work was completed and the assumptions and qualifications set forth herein.

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LEGEND

- Borehole/Monitoring Well Location
- Dry Borehole Test

0 4 8 16 24 32 40
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:750
Page Size: Letter (8.5 x 11 inches)

Drawn: CV
Checked: SG
Date: Feb 2, 2024

Source Notes:
Imagery (2022, Maxar) provided by Esri basemap service.

NORTH

CLIENT	Firearms Outlets Canada
PROJECT	725 Westney Rd S, Ajax
TITLE	Site Map
SLR	REF. NO. Figure 1

Figure 2. BT1 Dry Borehole Infiltration Test

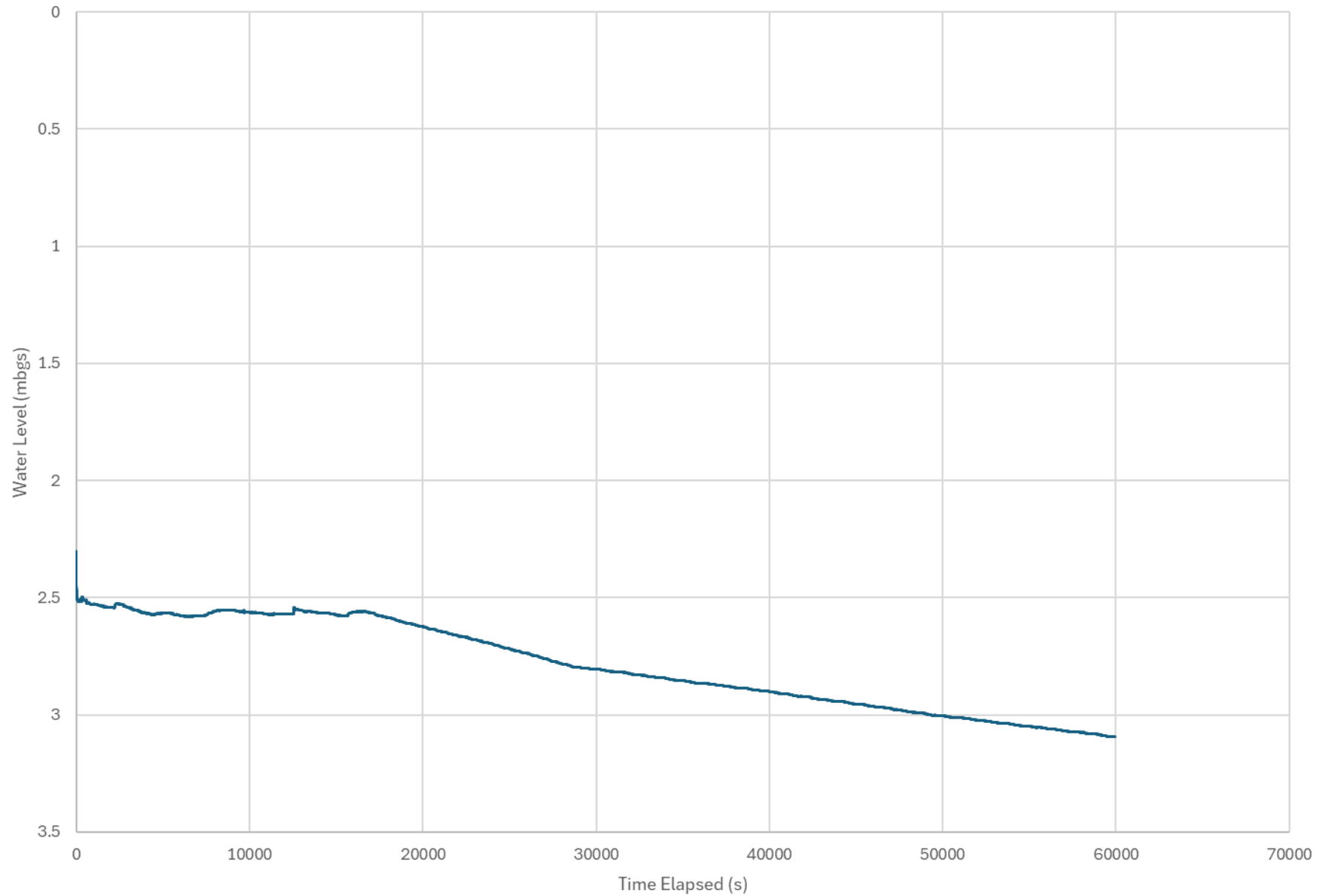
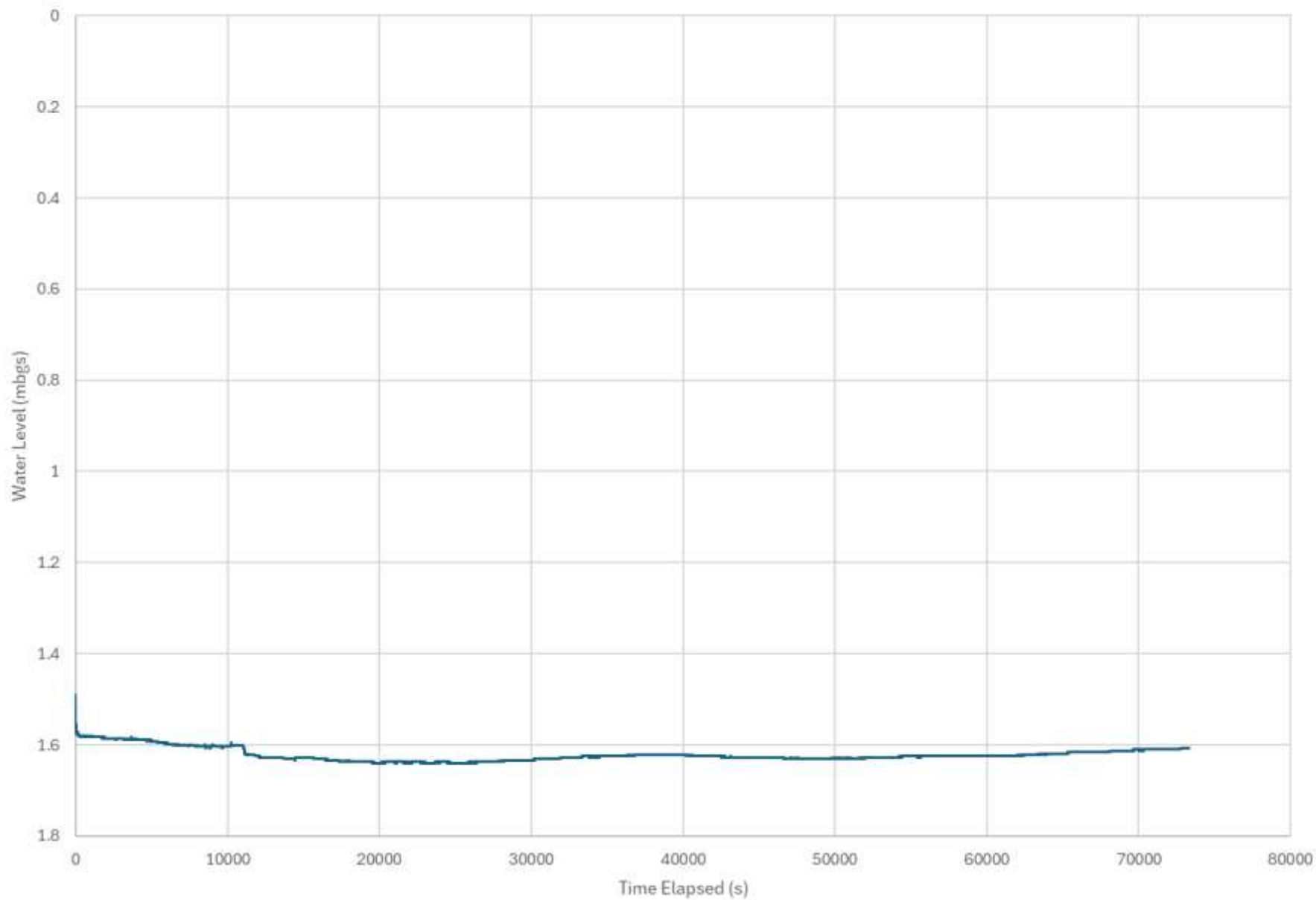


Figure 3. BT2 Dry Borehole Infiltration Test

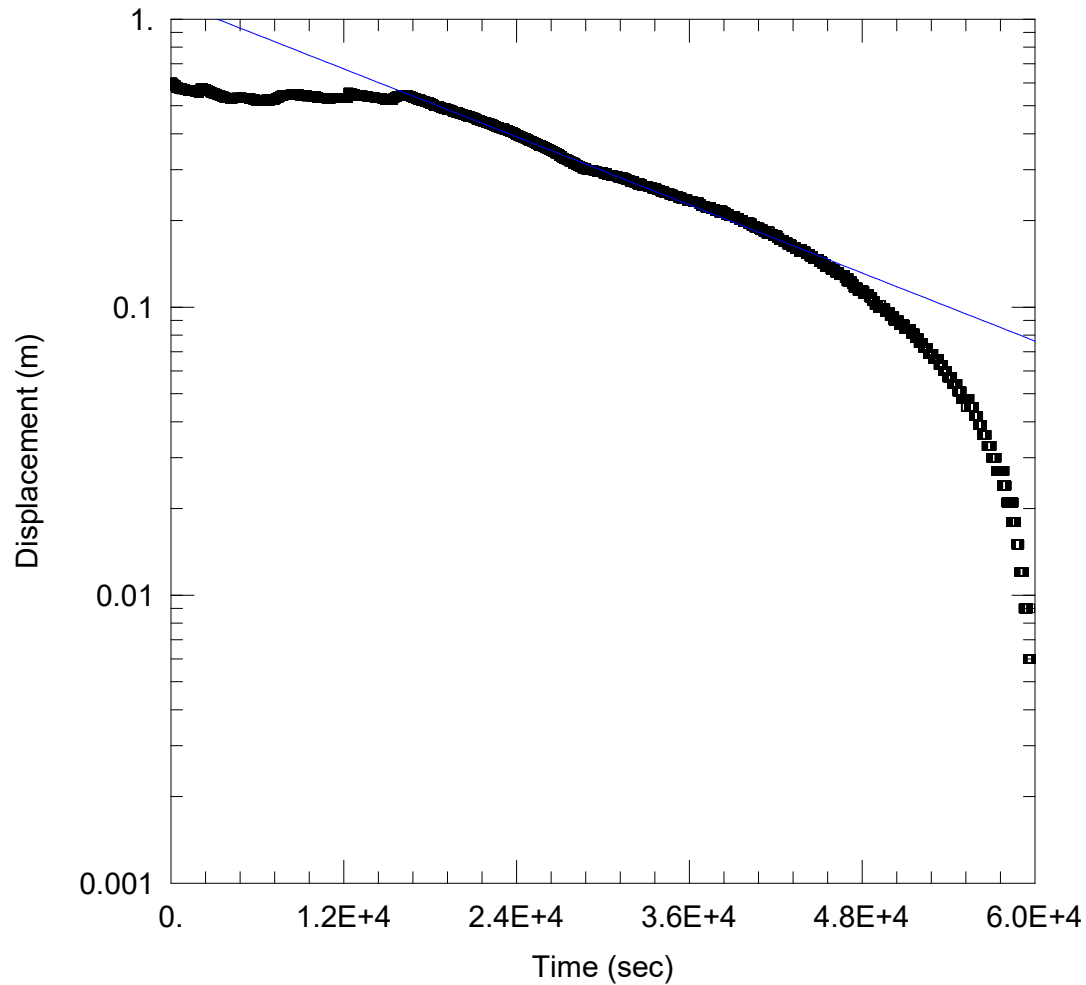


Attachment A – Groundwater Levels

Attachment A. 725 Westney Road Groundwater Levels

Monitoring Well ID	Depth (mbgs)	Date	Water Level (mbgs)
BH23-1	8.48	12/14/23	5.94
BH23-2	9.99	12/14/23	8.27
BH23-3	9.98	12/14/23	7.73
BH23-4	8.48	12/14/23	6.12
BH23-5	8.48	12/14/23	6.10
BH23-6	8.70	12/14/23	8.39
		02/25/25	8.26
BH23-7	8.70	12/14/23	Dry
		02/25/25	8.50

Attachment B – Aqtesolv™ Analysis



PROJECT INFORMATION

Company: SLR
Test Well: BT1

AQUIFER DATA

Saturated Thickness: 0.3 m

Anisotropy Ratio (K_z/K_r): 0.1

WELL DATA (New Well)

Initial Displacement: 0.6 m
Total Well Penetration Depth: 1.1 m
Casing Radius: 0.0254 m

Static Water Column Height: 1.1 m
Screen Length: 0.3 m
Well Radius: 0.0254 m

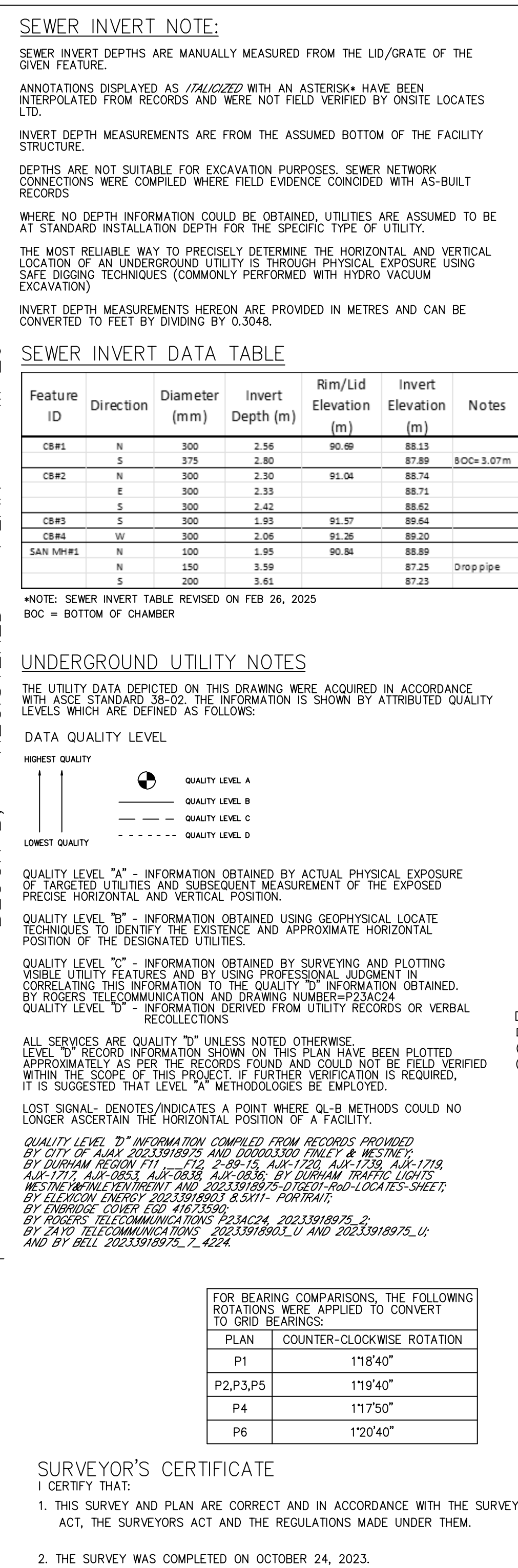
SOLUTION

Aquifer Model: Unconfined
 $K = 1.194E-7$ m/sec

Solution Method: Bouwer-Rice
 $y_0 = 1.157$ m

APPENDIX D

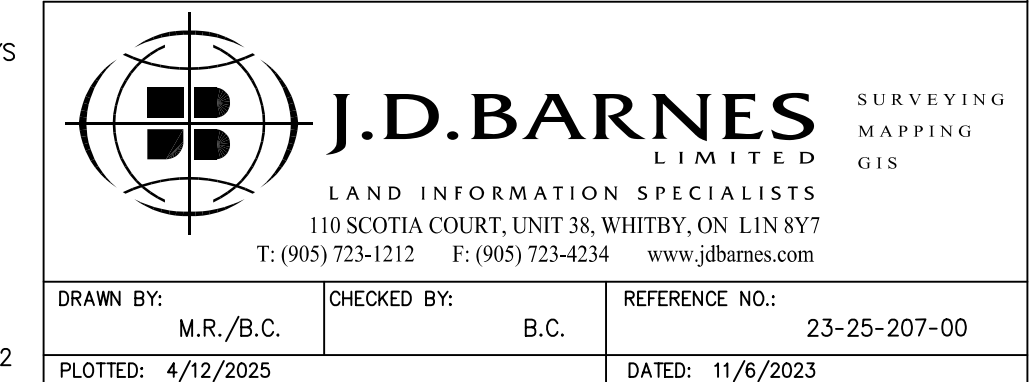
Record Drawings & SUE Investigation



FOR BEARING COMPARISONS, THE FOLLOWING ROTATIONS WERE APPLIED TO CONVERT TO GRID BEARINGS:	
PLAN	COUNTER-CLOCKWISE ROTATION
P1	1°18'40"
P2,P3,P5	1°19'40"
P4	1°17'50"
P6	1°20'40"

THIS PLAN OF SURVEY RELATES TO AOLS PLAN SUBMISSION FORM NUMBER V-61972

■	DENOTES	SURVEY MONUMENT FOUND	
□	DENOTES	SURVEY MONUMENT SET	
SIB	DENOTES	STANDARD IRON BAR	
IB	DENOTES	IRON BAR	
PB	DENOTES	PLASTIC BAR	
CC	DENOTES	CUT CROSS	
CP	DENOTES	CONCRETE PIN	
MEAS	DENOTES	MEASURED	
WT	DENOTES	WITNESS	
JDB	DENOTES	J.D. BARNES LIMITED	
1373	DENOTES	BENNETT & NORGROVE LIMITED, O.L.S.	
P1	DENOTES	PLAN 40R-9180	
P2	DENOTES	REGISTERED PLAN 40M-1308	
P3	DENOTES	PLAN 40R-6818	
P4	DENOTES	PLAN OF SURVEY BY BENNETT & NORGROVE LIMITED, O.L.S., DATED OCTOBER 2, 1986 (W.O. 86-209-02)	
P5	DENOTES	BUILDING LOCATION SURVEY BY BENNETT & NORGROVE LIMITED, O.L.S., DATED DECEMBER 14, 1981 (W.O. 81-130)	
P6	DENOTES	PLAN 40R-9339	
□	CB	DENOTES	CATCHBASIN
□	DCB	DENOTES	DOUBLE CATCHBASIN
⊙	TMH	DENOTES	TELEPHONE MANHOLE
○	STM MH	DENOTES	STORM MANHOLE
○	SAN MH	DENOTES	SANITARY MANHOLE
■	HW	DENOTES	HANDWELL
•	BOL	DENOTES	BOLLARD
TL	DENOTES	TRAFFIC SIGNAL	
* TM	DENOTES	TELEPHONE CABLE MARKER	
≡	PED	DENOTES	TELEPHONE PEDESTAL
⊥	H	DENOTES	FIRE HYDRANT
⊥	WV	DENOTES	WATER VALVE
* GM	DENOTES	GAS MARKER	
BFP	DENOTES	BARRIER-FREE PARKING SPACE	
HT	DENOTES	HYDRO TRANSFORMER	
DS	DENOTES	DOOR SILL ELEVATION	
GS	DENOTES	GARAGE SILL ELEVATION	
— SAN —	DENOTES	UNDERGROUND SANITARY SEWER	
— STM —	DENOTES	UNDERGROUND STORM SEWER	
— G —	DENOTES	UNDERGROUND GAS LINE	
— W —	DENOTES	UNDERGROUND WATER LINE	
— UE —	DENOTES	UNDERGROUND HYDRO LINE	
— UC —	DENOTES	UNDERGROUND CABLE LINE	
— UT —	DENOTES	UNDERGROUND TELEPHONE LINE	
— FO —	DENOTES	UNDERGROUND FIBRE OPTIC LINE	
•	DENOTES	CONIFEROUS TREE	
•	DENOTES	DECIDUOUS TREE	



SUBSURFACE UTILITY FIELD WORK WAS COMPLETED ON THE 3RD OF OCTOBER, 2023.



October 30, 2023

Brett Coons
Articling Student-Durham Region
J.D. Barnes Ltd.
T: (905)723-1212(ext.115)
F: (905)723-4234
www.jdbarnes.com
bcoons@jdbarnes.com

Re: **Subsurface Utility Mapping (SUM) – 725 Westney Rd., Ajax**
Project Ref#: 23-46-34703

Project Summary

OnSite Locates Inc. (OSL) was engaged to complete Subsurface Utility Mapping of the above noted property by Firearms Outlet Canada (the client) on September 5th, 2023.

The SUM Investigation was completed in accordance with *CI/ASCE Standard 38-02: Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*.

The work was conducted between September 28th, 2023 and October 3rd, 2023 was successful in designating the alignment of the underground utilities within the Project Area.

The following utilities were identified:

- Enbridge Gas
- Elexicon Energy
- Bell and Rogers Telecommunications
- Durham Region Ottawa Water
- Durham Region Sanitary and Storm

This Report was created to supplement the digital file(s) *23-46-34703-October30.dgn* that make up the final deliverable of the project.

OSL recommends the following additional investigations for consideration by the client.

- Test Holes to verify material, size, and depth of utilities.
- CCTV



ONSITE LOCATES INC.

UTILITY LOCATE SERVICES

A wholly owned subsidiary of J.D. Barnes Ltd.

Project Area



Subsurface Utility Mapping Investigation Standards

OnSite Locates Inc. performed the SUM Investigation in accordance with the *CI/ASCE Standard 38-02: Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*.



CI/ASCE Standard 38-02 Summary

Quality Level D (QL-D) - information derived from utility records or oral recollections.

Quality Level C (QL-C) - Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to quality level D information.

Quality Level B (QL-B) - Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities. Quality level B data should be reproducible by surface geophysics at any point of their depiction. This information is surveyed to applicable tolerances defined by the project and reduced onto plan documents.

Quality Level A (QL-A) - Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. A precise horizontal and vertical location, as well as other utility attributes, is shown on plan documents. Accuracy is typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy as defined or expected by the project owner.

Equipment and Techniques

JDB/OSL survey crews are trained to use the tools provided to them in accordance with the JDB/OSL Standard Operating Procedures, project scope, conditions, and the manufacturer's instructions to ensure the work is completed safely, accurately, and on time. Below is a description of the equipment and techniques used by JDB/OSL during the SUM Investigation.

Electromagnetic Designating Equipment

JDB/OSL uses industry standard electromagnetic cable and pipe locate kits. This equipment consists of a transmitter and receiver operating in a range of frequencies. In essence, the transmitter is used to induce a signal on a utility either through direct connection to the utility or electromagnetic induction and the signal is detected by the transmitter allowing the operator to mark on the ground the approximate horizontal location of the utility. The receiver also provides a depth estimation of the buried utility.

It is important to note that this type of equipment has its limitations, since it is the electromagnetic field that is detected, and not the utility itself. It will not locate non-metallic lines such as plastic pipes. Additionally, there are several factors that may distort the signal, causing the designation to be inaccurate, or making the utility impossible to detect. These factors are broken tracer wires, utility congestion, and change in utility material etc.

Invert Elevation Measurement

Sewer invert depths were manually measured using measuring tapes from the lid/grate of the given feature. Invert elevations were calculated from elevations provided in the topographic survey.

Survey Equipment

JDB/OSL employs the use of typical surveying instruments such as Total Stations and high accuracy Global Navigation Satellite Systems (GNSS). GNSS units are primarily used, with Total Stations being an alternative when there is no good satellite signal: under trees, near buildings etc.



Computer-Aided Design (CAD) Drafting

JDB/OSL employs the use of industry standard programs e.g. MicroStation and AutoCAD to manipulate and present data.

Subsurface Utility Mapping Investigation Summary

Utility Circulation Request

The record search process commenced on September 28th,2023, the final records were obtained on October 6th,2023. The results and status of the records search is provided below:

- Enbridge Gas –Received-September 29th,2023
- Bell Telecommunications– Received-October 6th,2023
- City of Ajax Streetlighting-Clear- October 6th,2023
- Beanfield Telecommunications-Clear-October 3rd,2023
- Durham Region-Received-September 28th,2023
- Durham Region Traffic Lights-Received-October 6th,2023
- Elexicon Energy-Received-September 29th,2023
- Rogers Telecommunications-Received- October 6th,2023
- GT Telecommunications-Clear-October 3rd,2023
- Telus Telecommunications-Clear-September 28th,2023
- Zayo Telecommunications-Received- September 28th,2023

Field Investigation

The field investigation was conducted using geophysical locate techniques. All above ground features related to underground utilities, such as pedestals, ground level boxes etc. were investigated.

All manholes and catch basins in the investigation area were inspected to obtain invert depth and diameters measurements for storm and sanitary sewers.

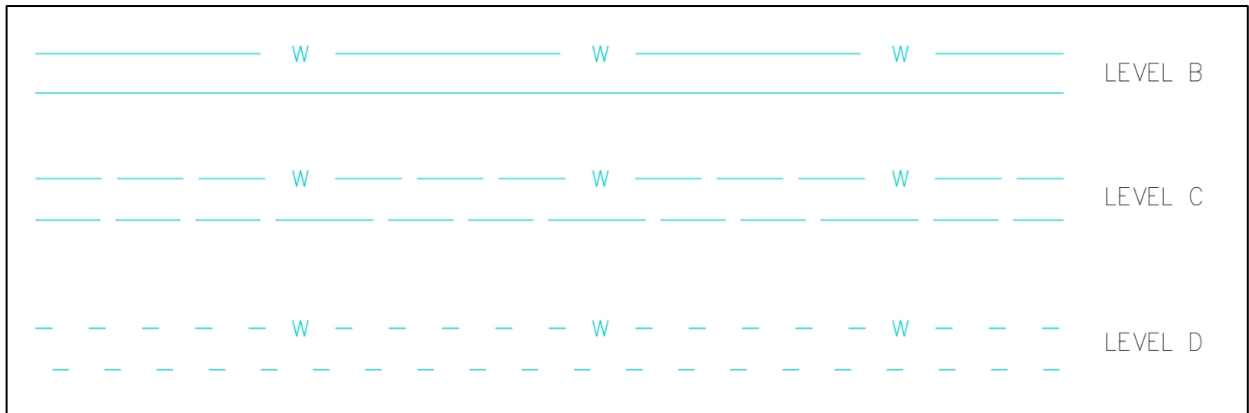
Data Analysis

Field and record data were analyzed using professional judgement to provide a comprehensive presentation of the utility plant and infrastructure within the workspace.



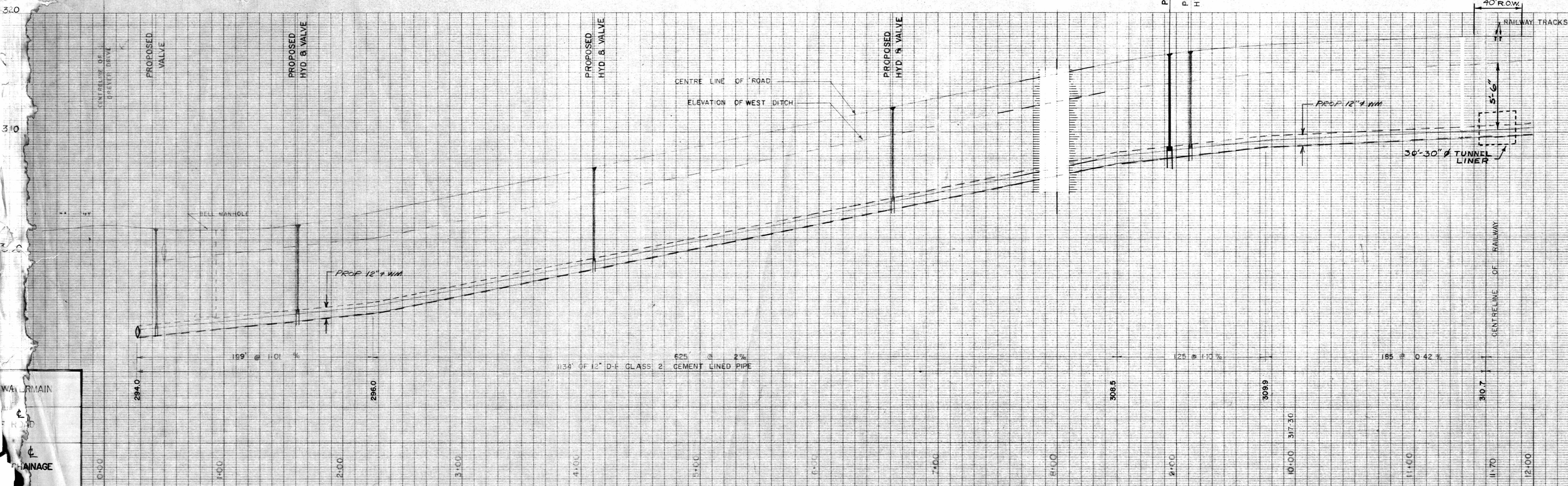
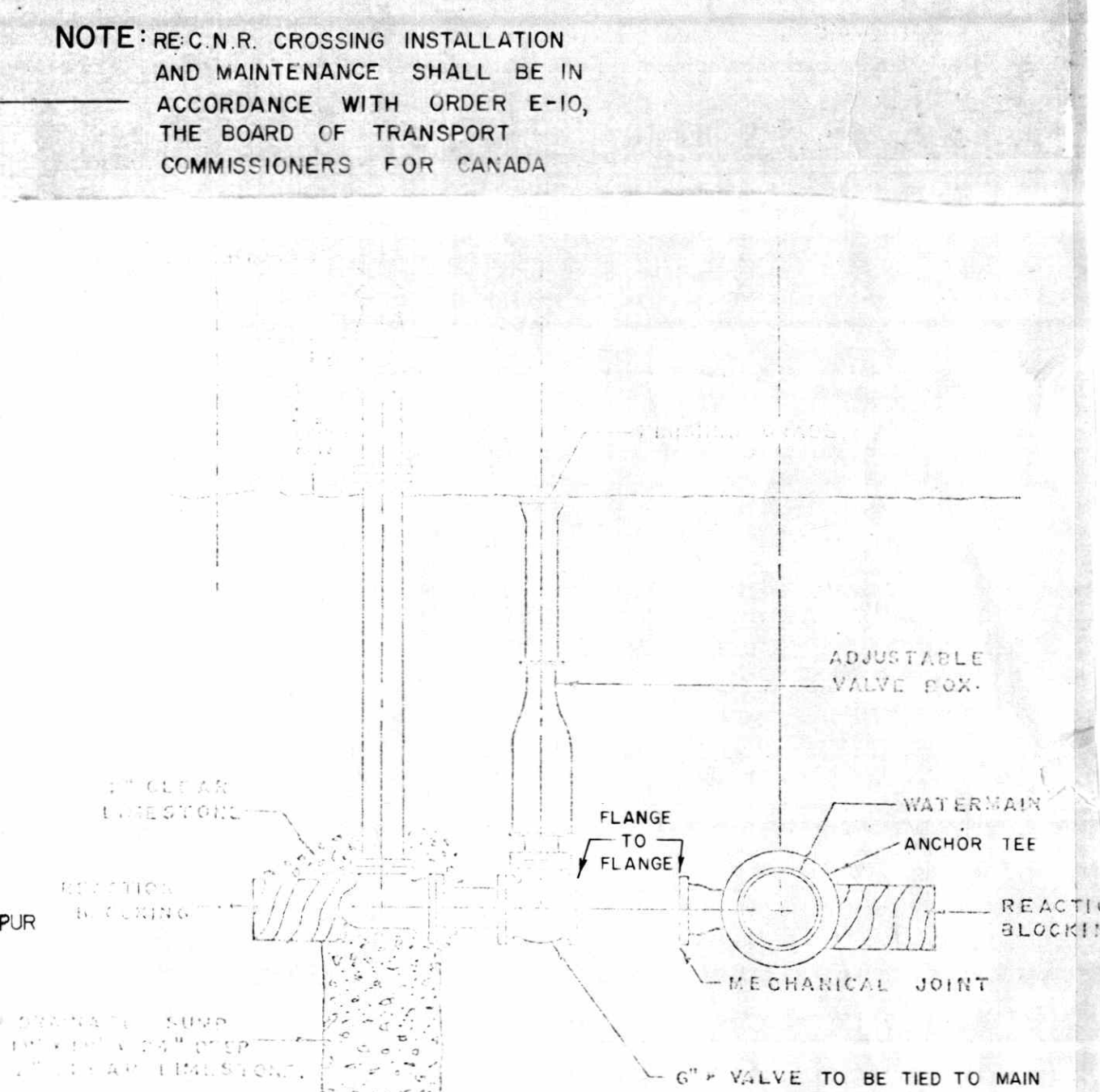
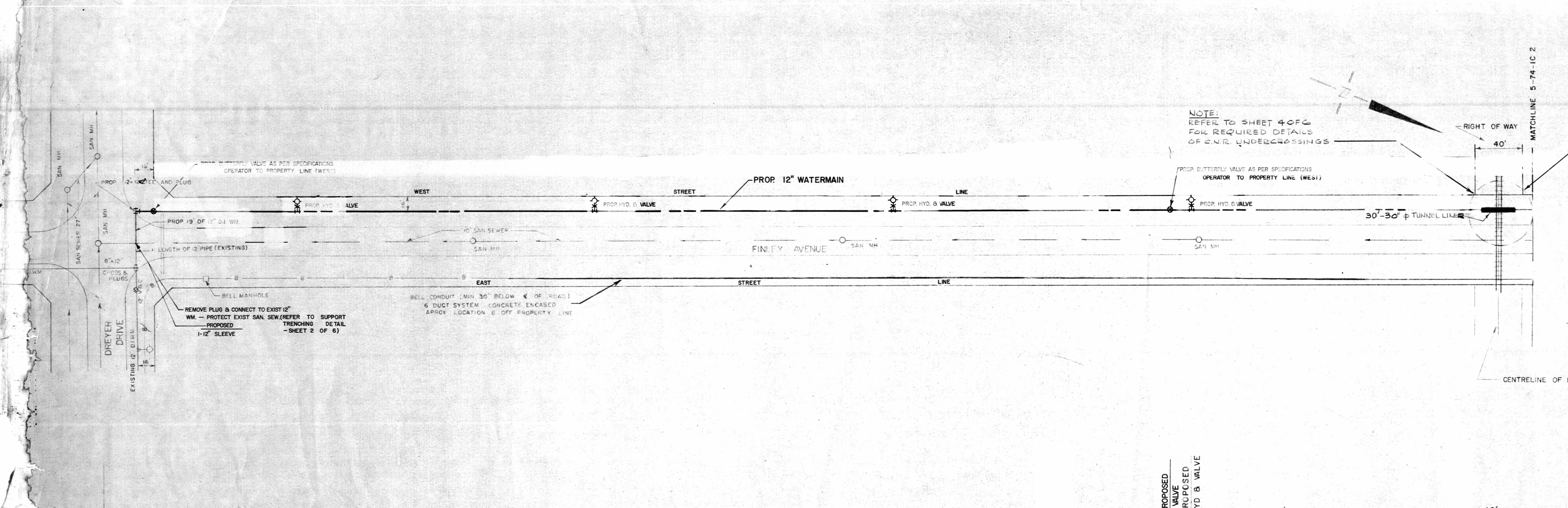
CAD Presentation

Line styles are designated as per the CI/ASCE Standard 38-02 and are depicted in the CAD deliverable as seen below.



Report Prepared by:

Shaira Castillon
Utility Surveys



STANDARD HYDRANT SETTING

NOTES
1. HYDRANT SETTING TO
BE DONE TO MATCH
THE FOLLOWING

- LEGEND
- WATER VALVE
 - HYDRANT
 - WATERMAIN
 - SANITARY SEWER

THE REGIONAL MUNICIPALITY
OF DURHAM
DEPARTMENT OF WORKS
WRITBY ONTARIO

CONTRACT NO. D74-12

TOWN OF AJAX

AJAX
FINLEY AVE
DREYER DRIVE TO STATION 12+00

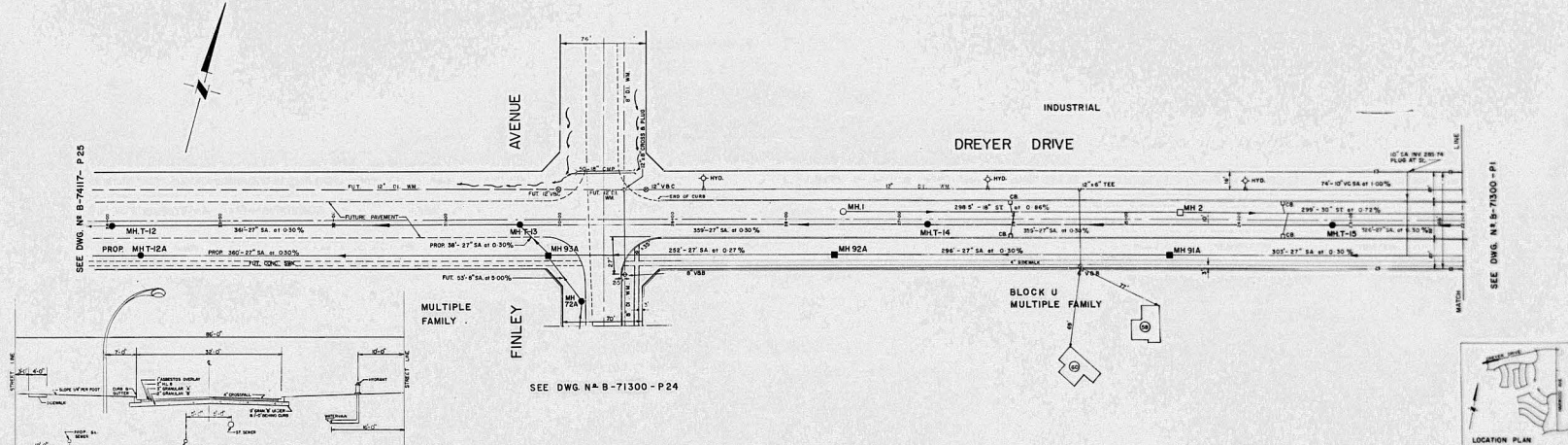
DATE: JAN 74
SCALE: 1" = 40' HORIZ.
1" = 4' VERT.

WALVIN LIMITED
CONSULTING ENGINEERS
132 MARKHAM AVE. S. AJAX, ONT.

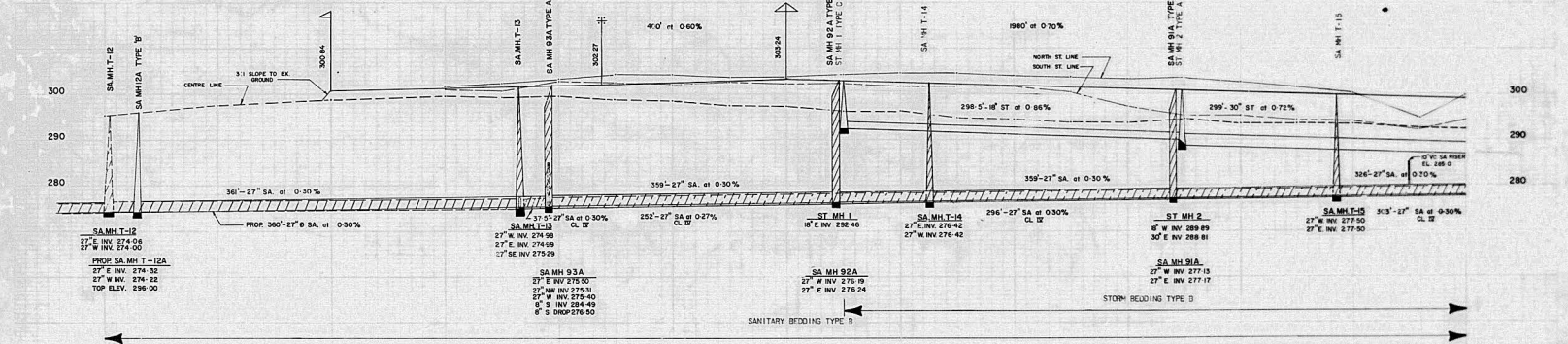


SEE DWG. N-B-7411-P-25

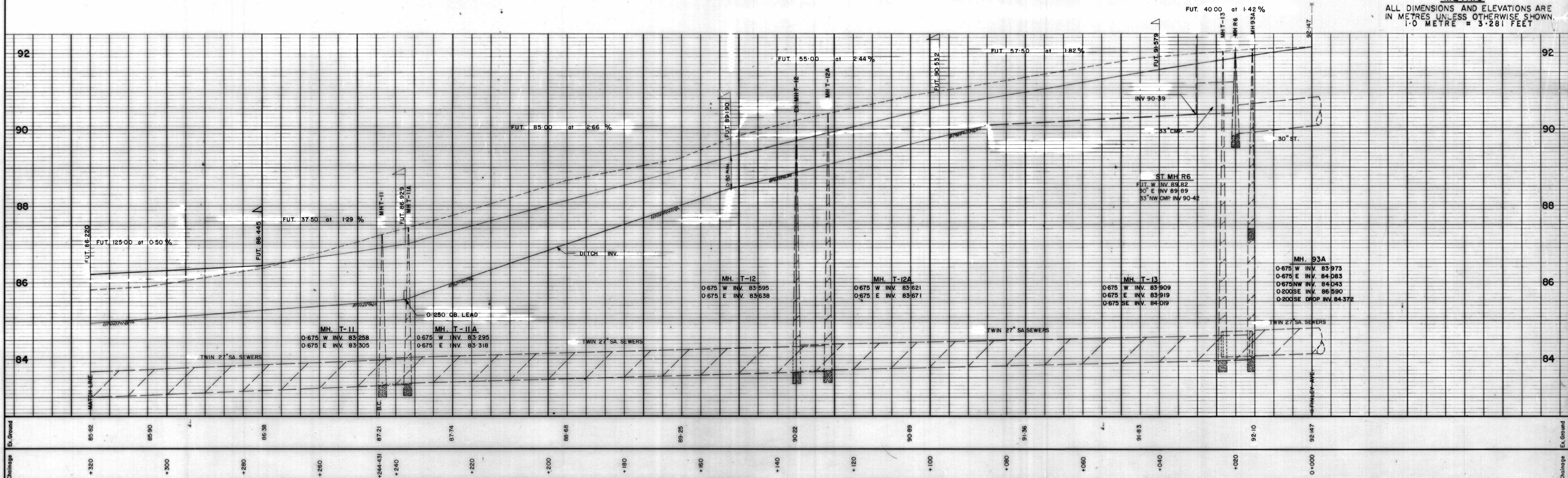
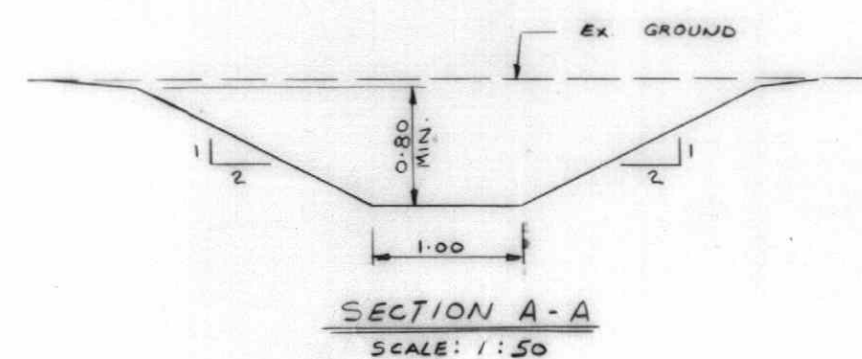
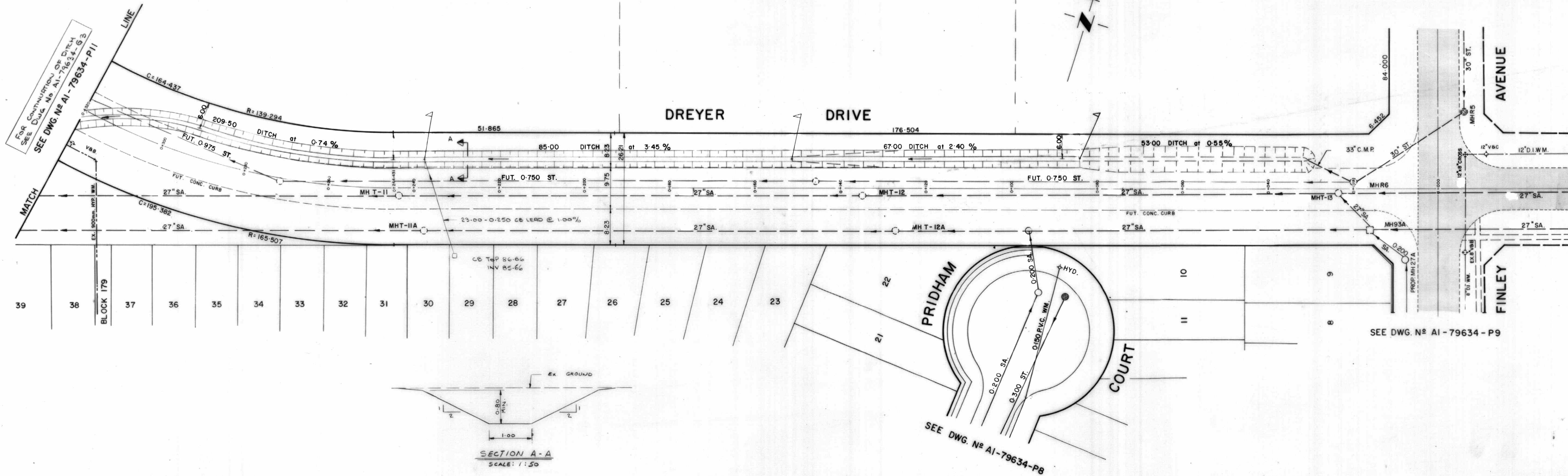
SEE DWG. N-B-74300-P-1



SEE DWG. N-B-71300-P-24

CROSS-SECTION OF DREYER DR. FROM MONARCH AVE. TO FINLEY AVE.
SCALE: 1" = 10'LOCATION PLAN
KTS

Station	2902	2907	2909	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000	3001	3002	3003	3004	3005	3006	3007	3008	3009	3010	3011	3012	3013	3014	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024	3025	3026	3027	3028	3029	3030	3031	3032	3033	3034	3035	3036	3037	3038	3039	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050	3051	3052	3053	3054	3055	3056	3057	3058	3059	3060	3061	3062	3063	3064	3065	3066	3067	3068	3069	3070	3071	3072	3073	3074	3075	3076	3077	3078	3079	3080	3081	3082	3083	3084	3085	3086	3087	3088	3089	3090	3091	3092	3093	3094	3095	3096	3097	3098	3099	3100	3101	3102	3103	3104	3105	3106	3107	3108	3109	3110	3111	3112	3113	3114	3115	3116	3117	3118	3119	3120	3121	3122	3123	3124	3125	3126	3127	3128	3129	3130	3131	3132	3133	3134	3135	3136	3137	3138	3139	3140	3141	3142	3143	3144	3145	3146	3147	3148	3149	3150	3151	3152	3153	3154	3155	3156	3157	3158	3159	3160	3161	3162	3163	3164	3165	3166	3167	3168	3169	3170	3171	3172	3173	3174	3175	3176	3177	3178	3179	3180	3181	3182	3183	3184	3185	3186	3187	3188	3189	3190	3191	3192	3193	3194	3195	3196	3197	3198	3199	3200	3201	3202	3203	3204	3205	3206	3207	3208	3209	3210	3211	3212	3213	3214	3215	3216	3217	3218	3219	3220	3221	3222	3223	3224	3225	3226	3227	3228	3229	3230	3231	3232	3233	3234	3235	3236	3237	3238	3239	3240	3241	3242	3243	3244	3245	3246	3247	3248	3249	3250	3251	3252	3253	3254	3255	3256	3257	3258	3259	3260	3261	3262	3263	3264	3265	3266	3267	3268	3269	3270	3271	3272	3273	3274	3275	3276	3277	3278	3279	3280	3281	3282	3283	3284	3285	3286	3287	3288	3289	3290	3291	3292	3293	3294	3295	3296	3297	3298	3299	3300	3301	3302	3303	3304	3305	3306	3307	3308	3309	3310	3311	3312	3313	3314	3315	3316	3317	3318	3319	3320	3321	3322	3323	3324	3325	3326	3327	3328	3329	3330	3331	3332	3333	3334	3335	3336	3337	3338	3339	3340	3341	3342	3343	3344	3345	3346	3347	3348	3349	3350	3351	3352	3353	3354	3355	3356	3357	3358	3359	3360	3361	3362	3363	3364	3365	3366	3367	3368	3369	3370	3371	3372	3373	3374	3375	3376	3377	3378	3379	3380	3381	3382	3383	3384	3385	3386	3387	3388	3389	3390	3391	3392	3393	3394	3395	3396	3397	3398	3399	3400	3401	3402	3403	3404	3405	3406	3407	3408	3409	3410	3411	3412	3413	3414	3415	3416	3417	3418	3419	3420	3421	3422	3423	3424	3425	3426	3427	3428	3429	3430	3431	3432	3433	3434	3435	3436	3437	3438	3439	3440	3441	3442	3443	3444	3445	3446	3447	3448	3449	3450	3451	3452	3453	3454	3455	3456	3457	3458	3459	3460	3461	3462	3463	3464	3465	3466	3467	3468	3469	3470	3471	3472	3473	3474	3475	3476	3477	3478	3479	3480	3481	3482	3483	3484	3485	3486	3487	3488	3489	3490	3491	3492	3493	3494	3495	3496	3497	3498	3499	3500	3501	3502	3503	3504	3505	3506	3507	3508	3509	3510	3511	3512	3513	3514	3515	3516	3517	3518	3519	3520	3521	3522	3523	3524	3525	3526	3527	3528	3529	3530	3531	3532	3533	3534	3535	3536	3537	3538	3539	3540	3541	3542	3543	3544	3545	3546	3547	3548	3549	3550	3551	3552	3553	3554	3555	3556	3557	3558	3559	3560	3561	3562	3563	3564	3565	3566	3567	3568	3569	3570	3571	3572	3573	3574	3575	3576	3577	3578	3579	3580	3581	3582	3583	3584	3585	3586	3587	3588	3589	3590	3591	3592	3593	3594	3595	3596	3597	3598	3599	3600	3601	3602	3603	3604	3605	3606	3607	3608	3609	3610	3611	3612	3613	3614	3615	3616	3617	3618	3619	3620	3621	3622	3623	3624	3625	3626	3627	3628	3629	3630	3631	3632	3633	3634	3635	3636	3637	3638	3639	3640	3641	3642	3643	3644	3645	3646	3647	3648	3649	3650	3651	3652	3653	3654	3655	3656	3657	3658	3659	3660	3661	3662	3663	3664	3665	3666	3667	3668	3669	3670	3671	3672	3673	3674	3675	3676	3677	3678	3679	3680	3681	3682	3683	3684	3685	3686	3687	3688	3689	3690	3691	3692	3693	3694	3695	3696	3697	3698	3699	3700	3701	3702	3703	3704	3705	3706	3707	3708	3709	3710	3711	3712	3713	3714	3715	3716	3717	3718	3719	3720	3721	3722	3723	3724	3725	3726	3727	3728	3729	3730	3731	3732	3733	3734	3735	3736	3737	3738	3739	3740	3741	3742	3743	3744	3745	3746	3747	3748	3749	3750	3751	3752	3753	3754	3755	3756	3757	3758	3759	3760	3761	3762	3763	3764	3765	3766	3767	3768	3769	3770	3771	3772	3773	3774	3775	3776	3777	3778	3779	3780	3781	3782	3783	3784	3785	3786	3787	3788	3789	3790	3791	3792	3793	3794	3795	3796	3797	3798	3799	3800	3801	3802	3803	3804	3805	3806	3807	3808	3809	3810	3811	3812	3813	3814	3815	3816	3817	3818	3819	3820	3821	3822	3823	3824	3825	3826	3827	3828	3829	3830	3831	3832	3833	3834	3835	3836	3837	3838	3839	3840	3841	3842	3843	3844	3845	3846	3847	3848	3849	3850	3851	3852	3853	3854	3855	3856	3857	3858	3859	3860	3861	3862	3863	3864	3865	3866	3867	3868	3869	3870	3871	3872	3873	3874	3875	3876	3877	3878	3879	3880	3881	3882	3883	3884	3885	3886	3887	3888	3889	3890	3891	3892	3893	3894	3895	3896	3897	3898	3899	3900	3901	3902	3903	3904	3905	3906	3907	3908	39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Notes: SEE GENERAL NOTES ON DWG. A1-79634-P1

REGIONAL MUNICIPALITY OF DURHAM					TOWN OF AJAX			TOWN OF AJAX	
APPROVED					DATE			DATE	
ENGINEERING SERVICES MGR.					DATE			DATE	
TOWN ENGINEER					DATE			DATE	
No.	Revision	Date	Initial						

TOWN OF AJAX REGION OF DURHAM GEORGE WIMPEY CANADA LIMITED DUFFINS BAY SUBDIVISION, N'HOOD 7, PHASE I		Proctor & Redfern Limited Consulting Engineers and Planners Toronto	
DREYER DRIVE (ROAD PROFILE ONLY) STA. 0+000 TO STA. 0+320		Date: MARCH, 1980	
Dwn. By: D.M.	Field Book: 12746	Drawing No: A1-79634-P10	Rev.

C378

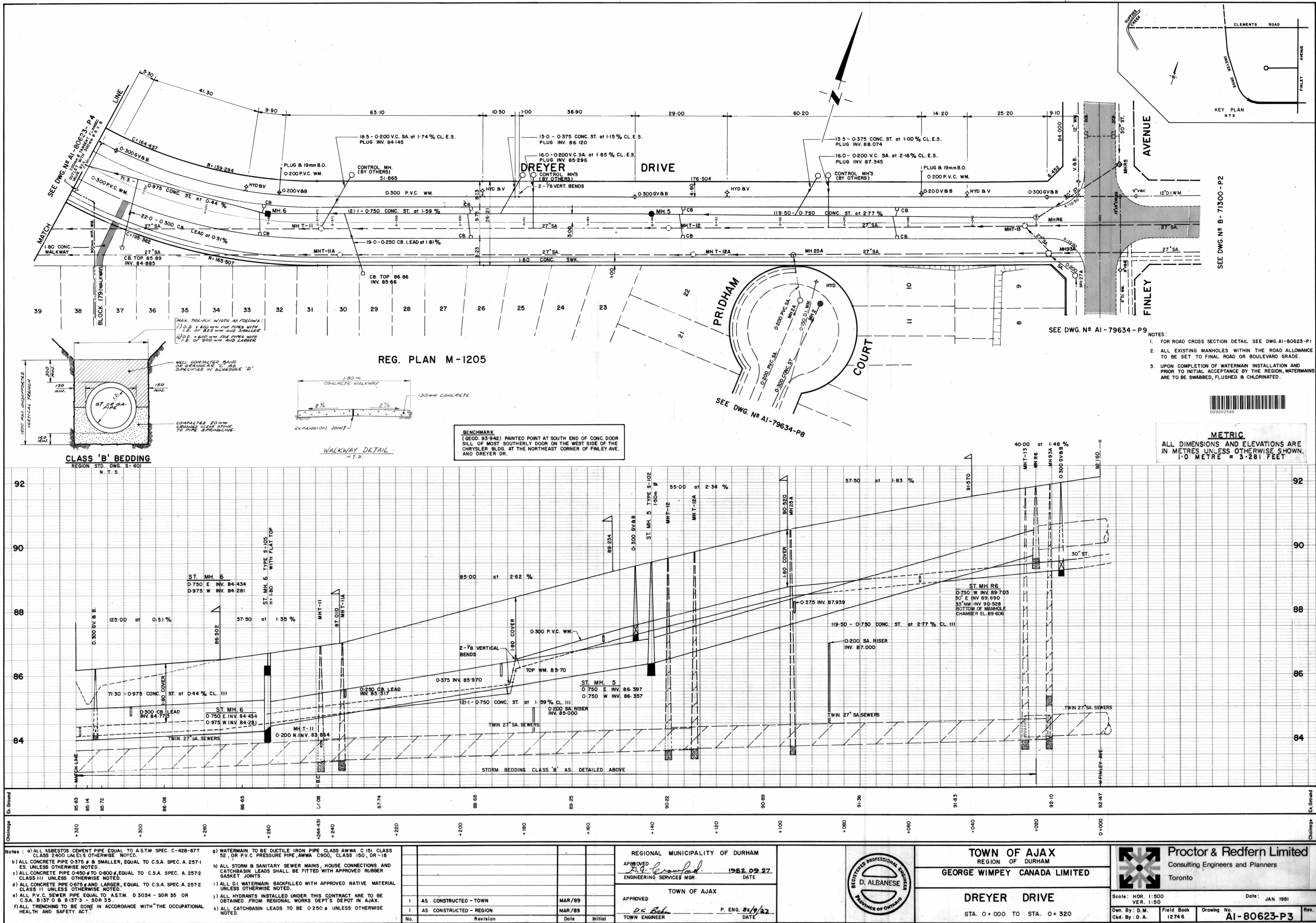
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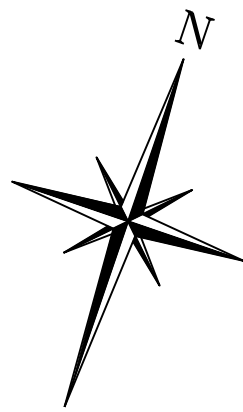
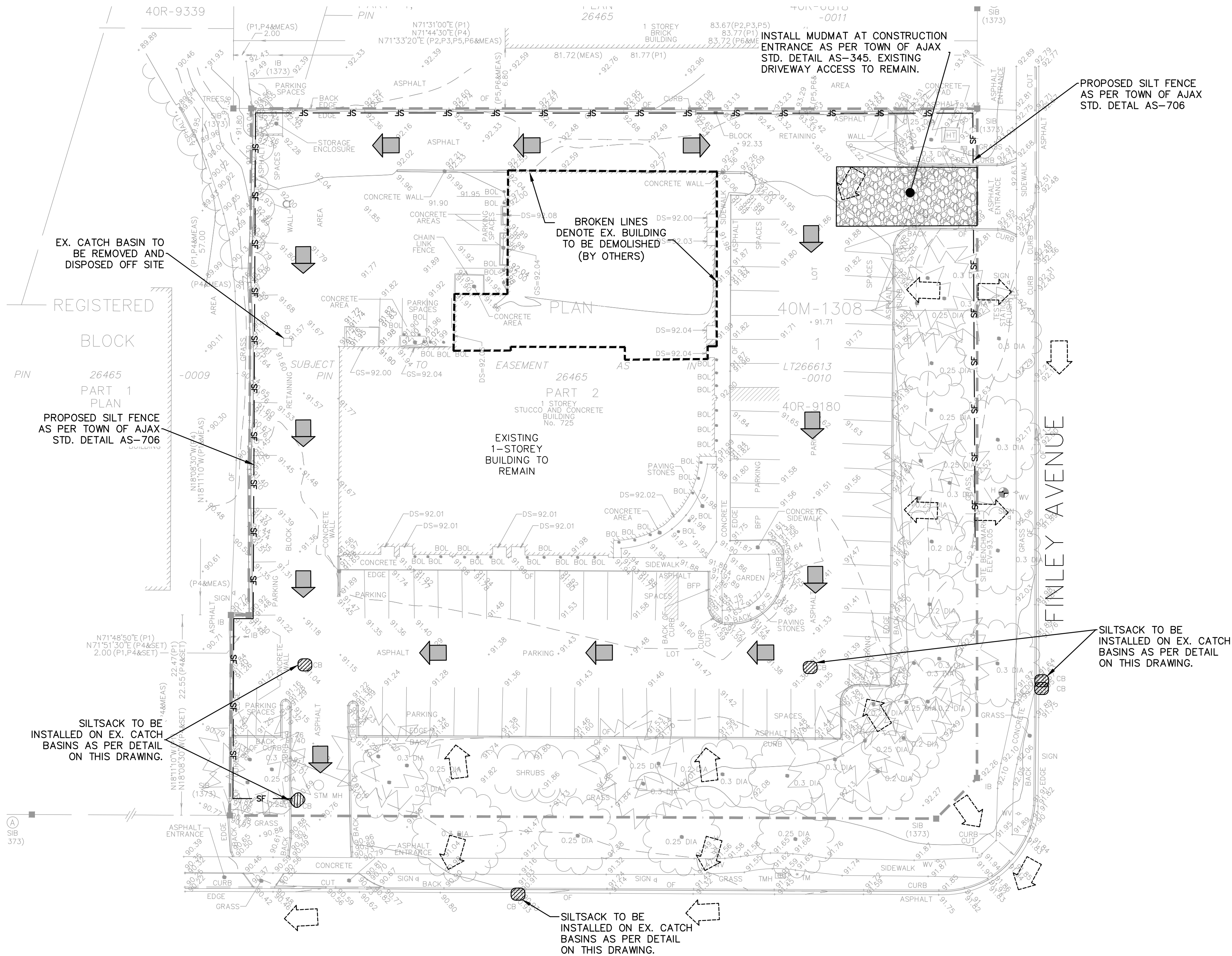
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DRAWINGS & FIGURES



LEGEND	
	PROPERTY LIMITS
	EX. ELEVATION
	PR. MUD MAT
	PR. SILT FENCE PER TOWN STANDARD AS-706
	EX. OVERLAND FLOW ROUTE
	PROPOSED SILT SACK

No.	ISSUE / REVISION	DATE
2	ISSUED FOR FIRST SPA SUBMISSION	2025/APR/22
1	ISSUED FOR SECOND SUBMISSION (OPA/ZBA)	2024/JUN/21
0	ISSUED FOR FIRST SUBMISSION (OPA/ZBA)	2023/DEC/19
No.	ISSUE / REVISION	YYYY/MM/DD

SURVEY NOTES:
SURVEY COMPLETED BY J.D.BARNES LIMITED (2023/OCT/13)
REFERENCE No.: 23-25-207-00.

BENCHMARK:
ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO TOWN OF AJAX BENCHMARK No. 712, HAVING A PUBLISHED ELEVATION OF 85.206m (CGVD-1928:1978).

SITE BENCHMARK:
TOP NUT OF HYDRANT LOCATED ON THE WEST SIDE ON FINLEY AVENUE, APPROXIMATELY 1.4m WEST OF THE EDGE OF CONCRETE SIDEWALK.
ELEVATION = 93.05m

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 0.999895.

SITE PLAN NOTES:
DESIGN ELEMENTS ARE BASED ON SITE PLAN BY WANG ARCHITECTS INC.
DRAWING No.: A1.1 (2025/MARCH/19)
PROJECT No.: 00026


DRAWING NOTES:
THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART OF IT WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
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ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

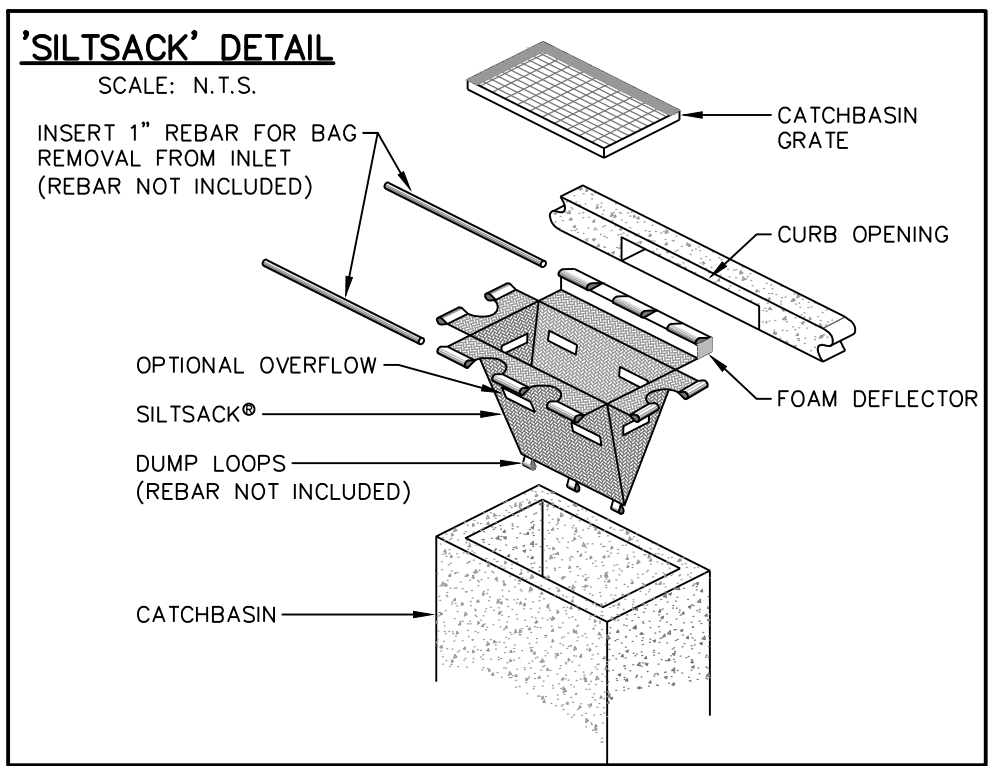
Project

725 WESTNEY ROAD SOUTH
TOWN OF AJAX

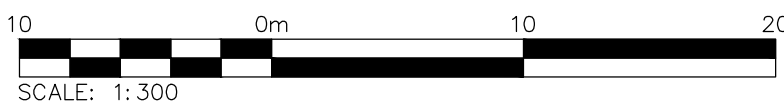
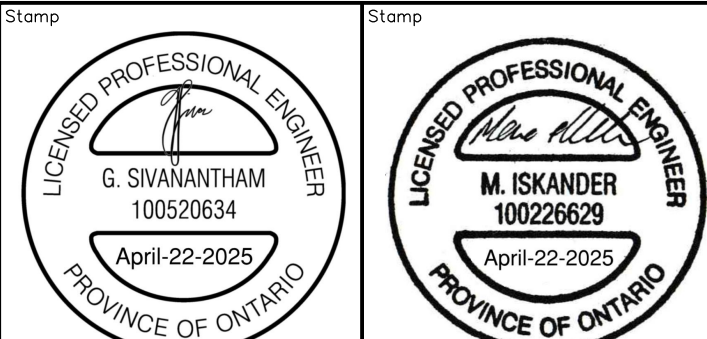
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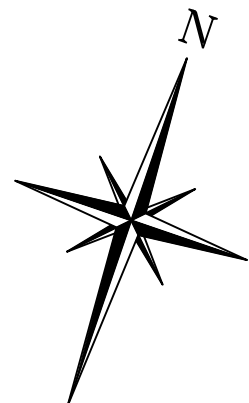
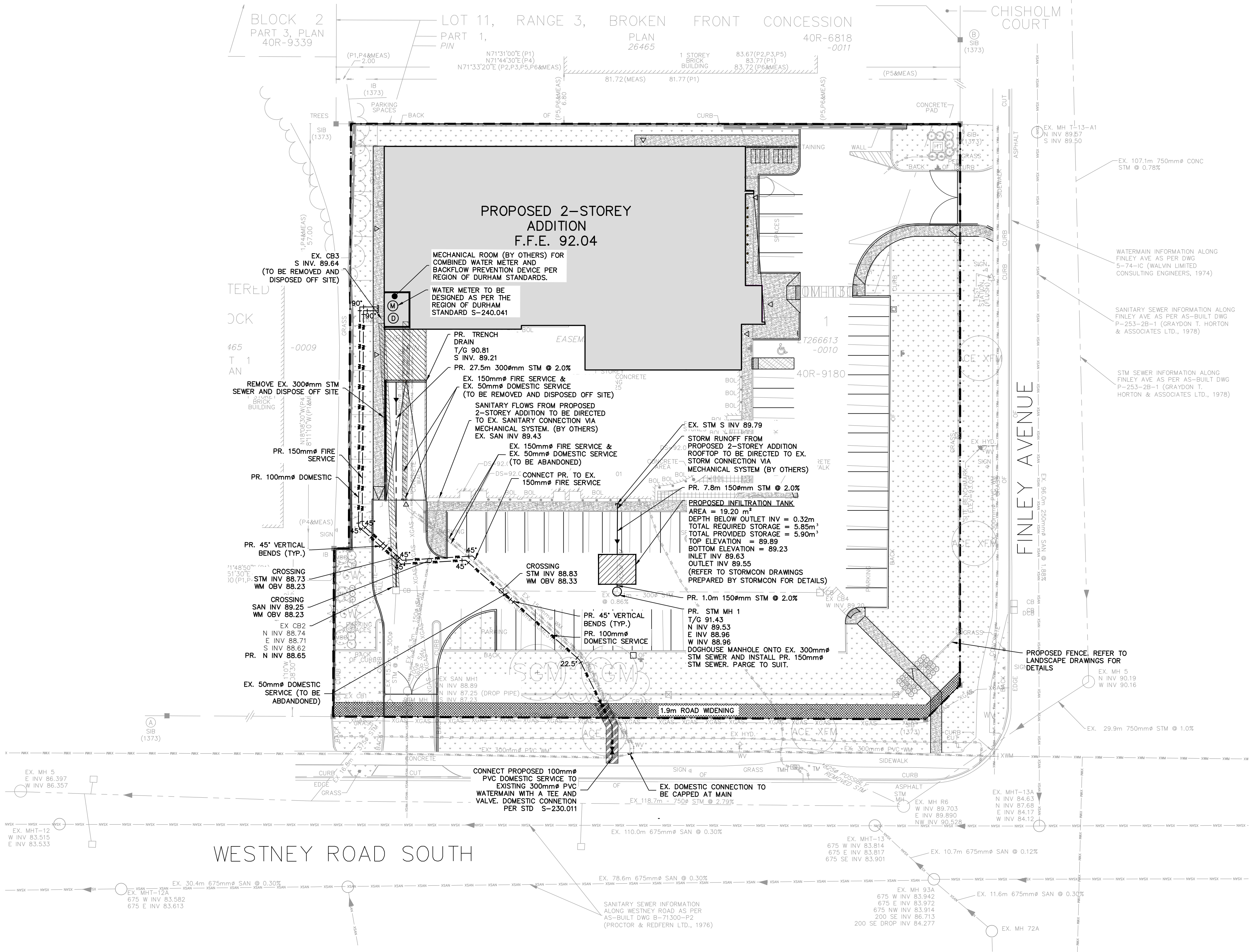
EROSION AND SEDIMENT CONTROL PLAN

				CROZIER CONSULTING ENGINEERS		211 YONGE STREET SUITE 600 TORONTO, ON M5B 1M4 416-477-3392 T WWW.CFCROZIER.CA	
Drawn By	D.B.	Design By	G.S.	Project	2542-6840		
Check By	M.I.	Check By	M.I.	Scale	1: 300	Dwg.	C101



NOT FOR CONSTRUCTION





LEGEND	
	PROPERTY LIMITS
	PR. DETECTOR CHECK VALVE IN CHAMBER
	PR. WATER METER PER MECHANICAL DESIGN AND SPECIFICATIONS
	EXISTING SINGLE / DOUBLE CATCHBASIN
	EXISTING GASMAIN
	EXISTING WATERMAIN & VALVE
	EXISTING FIBER OPTIC LINE
	EXISTING FIRE HYDRANT & GATE VALVE
	SURVEY BENCHMARK
	EXISTING SANITARY SEWER & MANHOLE
	EXISTING STORM SEWER & MANHOLE
	PROPOSED WATERMAIN & VALVE
	PROPOSED FIRE HYDRANT & GATE VALVE
	PROPOSED SIAMESE CONNECTION
	PROPOSED STORM SEWER & MANHOLE
	PROPOSED SINGLE / DOUBLE CATCHBASIN
	PROPOSED SANITARY SEWER & MANHOLE
	PROPOSED LIGHT POLE (REFER TO ARCH)
	REINSTATED AREA

SUBSURFACE UTILITY ENGINEERING COMPLETED BY
ONSITE LOCATES INC.
PROJECT NO. 23-46-34703

No.	ISSUE / REVISION	DATE
2	ISSUED FOR FIRST SPA SUBMISSION	2025/APR/22
1	ISSUED FOR SECOND SUBMISSION (OPA/ZBA)	2024/JUN/21
0	ISSUED FOR FIRST SUBMISSION (OPA/ZBA)	2023/DEC/19

SURVEY NOTES:
SURVEY COMPLETED BY J.D.BARNES LIMITED (2023/OCT/13)
REFERENCE No.: 23-25-207-00.

BENCHMARK:
ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO TOWN OF AJAX BENCHMARK No. 712, HAVING A PUBLISHED ELEVATION OF 85.206m (CGVD-1928:1978).

SITE BENCHMARK:
TOP NUT OF HYDRANT LOCATED ON THE WEST SIDE ON FINLEY AVENUE, APPROXIMATELY 1.4m WEST OF THE EDGE OF CONCRETE SIDEWALK.
ELEVATION = 93.05m

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 0.999895.

SITE PLAN NOTES:
DESIGN ELEMENTS ARE BASED ON SITE PLAN BY WANG ARCHITECTS INC.
DRAWING No.: A1.1 (2025/MARCH/19)
PROJECT No.: 00026

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725 WESTNEY ROAD SOUTH
TOWN OF AJAX

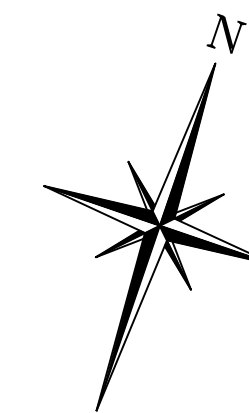
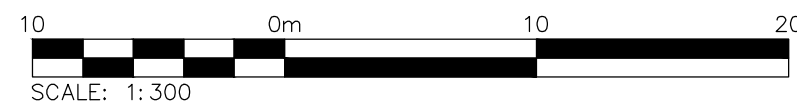
SITE SERVICING PLAN

NOT FOR CONSTRUCTION



2111 YONGE STREET
SUITE 600
TORONTO, ON M5B 1M4
416-477-3392 T
WWW.CFCROZIER.CA

Drawn By	D.B.	Design By	G.S.	Project	2542-6840
Check By	M.I.	Check By	M.I.	Scale	1:300
				Dwg.	C102



LEGEND

	PROPERTY LIMITS
	LIMIT OF CONSTRUCTION
	EXISTING CONTOUR (0.5m)
	EXISTING CONTOUR (1.0m)
	EXISTING GRADE
	EX. FIRE HYDRANT & VALVE
	MATCH EXISTING GRADE
	PROPOSED GRADE
	PROPOSED TOP OF WALL GRADE
	PROPOSED BOTTOM OF WALL GRADE
	PROPOSED TOP OF CURB ELEVATION
	PROPOSED BOTTOM OF CURB ELEVATION
	PROPOSED FLOW DIRECTION
	PROPOSED SLOPE (3:1 MAX)
	EXISTING OVERLAND FLOW
	PROPOSED OVERLAND FLOW
	SURVEY BENCHMARK
	PROPOSED LIGHT POLE (REFER TO ARCH)

2	ISSUED FOR FIRST SPA SUBMISSION	2025/APR/22
1	ISSUED FOR SECOND SUBMISSION (OPA/ZBA)	2024/JUN/21
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No.	ISSUE / REVISION	YYYY/MMM/DD

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ELEVATION = 93.05m

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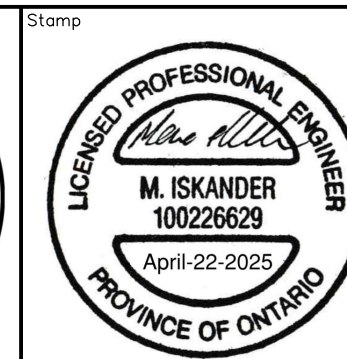
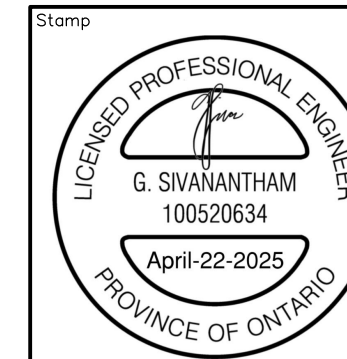
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CONTRACTOR PRIOR TO CONSTRUCTION.

Project	725 WESTNEY ROAD SOUTH TOWN OF AJAX
Drawing	SITE GRADING PLAN

 CROZIER CONSULTING ENGINEERS	211 YONGE STREET SUITE 600 TORONTO, ON M5B 1M4 416-477-3392 T WWW.CFCROZIER.CA		
	Drawn By D.B.	Design By G.S.	Project 2542-6840
Check By M.I.	Check By M.I.	Scale 1: 300	Dwg. C103

NOT FOR CONSTRUCTION



GENERAL NOTES:

1. BOULEVARDS TO BE GRADED, TOP SOILED 150mm DEPTH AND SODDED BY OWNER/CONTRACTOR TO THE TOWN'S AND REGION'S SATISFACTION.
2. ALL EXISTING PAVEMENT, CURBS, SIDEWALKS, DRIVEWAYS AND BOULEVARD AREAS DISTURBED BY THE CONSTRUCTION MUST BE REINSTATED TO THE SATISFACTION OF THE TOWN OF AJAX.
3. A MINIMUM SETBACK OF 1.0m FROM STREET FURNITURE TO PROPOSED DRIVEWAYS AND SIDEWALKS SHALL BE MAINTAINED. ALL EXISTING STREET FURNITURE TO BE RELOCATED BY CONTRACTOR/OWNER TO A SETBACK OF 1.0m. THE COST OF RELOCATION OF ANY UTILITY IS THE RESPONSIBILITY OF THE DEVELOPER/OWNER.
4. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR ALL UTILITY LOCATES AND ANY DAMAGE OR DISTURBANCE DURING CONSTRUCTION.
5. ALL BARRIER FREE ENTRANCES AND BARRIER FREE PATHS OF TRAVEL MUST COMPLY WITH AODA.
6. THE OWNER/CONTRACTOR SHALL SUPPLY ALL FIRE ROUTE AND HANDICAP SIGNS AS SET OUT IN THE TOWN OF AJAX BY-LAWS AND DESIGN CRITERIA. SIDEWALK AND DRIVEWAYS SHALL BE CONSTRUCTED AS PER TOWN OF AJAX DETAIL AS 231 AND AS 342 RESPECTIVELY.

STORM SEWER GENERAL NOTES:

1. PIPE BEDDING AS PER S-200.010 DURHAM REGION STANDARD FOR PVC AND AS-135 TOWN OF AJAX STANDARD.
2. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR ALL UTILITY LOCATES AND ANY DAMAGE OR DISTURBANCE DURING CONSTRUCTION.
3. STORM SEWER PIPES 450mm DIAMETER AND LARGER SHALL BE STEEL REINFORCED CONCRETE PIPE CONSTRUCTION AS CONFORMING TO SPECIFICATION CSA A257.1, A257.3 OR LATEST VERSION AND CLASS AS NOTED.
4. ALL BENCHING AS PER AS-113 TOWNS OF AJAX STANDARD OR AS NOTED.
5. MAINTENANCE HOLES SHALL CONFORM TO OPSD 701.010 (1200mm), OPSD 701.011 (1500mm) AND 701.011.COVERS AND FRAMES SHALL CONFORM TO OPSD 401-010.
6. CATCHBASINS SHALL CONFORM TO OPSD 705.010 (SINGLE) AND 705.020 (DOUBLE). FRAME AND GRATES TO CONFORM TO OPSD 400.010.
7. SUBDRAINS TO BE INSTALLED AT EACH CATCHBASIN AND MAINTENANCE HOLE. SEE DETAIL.
8. ALL STORM CONNECTIONS SHALL CONFORM TO AS-165.
9. ALL SANITARY CONNECTIONS SHALL CONFORM TO REGION OF DURHAM STANDARDS S-100.010 AND S-100.020.

WATERMAINS AND FIREMAINS GENERAL NOTES:

1. ALL WATERMAINS AND WATER SERVICE MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT REGION OF DURHAM STANDARDS AND SPECIFICATIONS.
2. HYDRANT AND VALVE SHALL CONFORM TO S-210.010 DURHAM REGION STANDARD AND PROVIDED WITH STORZ PUMPER CONNECTION.
3. WATERMAIN SHALL BE POLYVINYL CHLORIDE (PVC) CLASS 150 DR-18 PIPE MANUFACTURED TO AWWA C900-89 AND CSA CAN3 B137.3-M1986 WITH GASKETED BELL END C/W #14 AEG SOLID COPPER TRACER WIRE. TRACER WIRE SHALL BE ATTACHED TO EVERY NON-METALIC WATERMAIN, FIREMAIN AND SERVICE CONNECTION AS PER S-435 REGION OF DURHAM STANDARD.
4. ALL WATERMAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH LOCAL MUNICIPAL AND PROVINCIAL GUIDELINES UNLESS OTHERWISE DIRECTED. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC., MUST BE PROVIDED. ALL NEW MAINS AND SERVICES TO BE PRESSURE TESTED TO 200 PSI (1379kPa) FOR AT LEAST 1 (ONE) HOUR. THE CONTRACTOR (INSPECTED BY THE ENGINEER) SHALL SUCCESSFULLY SWAB AND CHLORINATE MAINS AND SERVICES PRIOR TO CONNECTING TO EXTERNAL WATERMAINS. THE SYSTEM TO BE CONSTRUCTED AND TESTED AS PER OPSD 701. NO CONNECTION TO MUNICIPAL WATERMAIN UNTIL A POSITIVE LABORATORY TEST RESULT IS DELIVERED TO THE TOWN OF AJAX AND DURHAM REGION AND A WRITTEN CLEARANCE IS GIVEN BY THE TOWN OF AJAX.
5. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR ALL UTILITY LOCATES AND ANY DAMAGE OR DISTURBANCE DURING CONSTRUCTION.
6. PIPES 300mm DIAMETER AND SMALLER SHALL BE POLYVINYL CHLORIDE PIPE (PVC) CONFORMING TO CAN/CSA B-137.
7. BEDDING AS PER S-200.010 DURHAM REGION STANDARD FOR PVC.

SANITARY SEWER GENERAL NOTES:

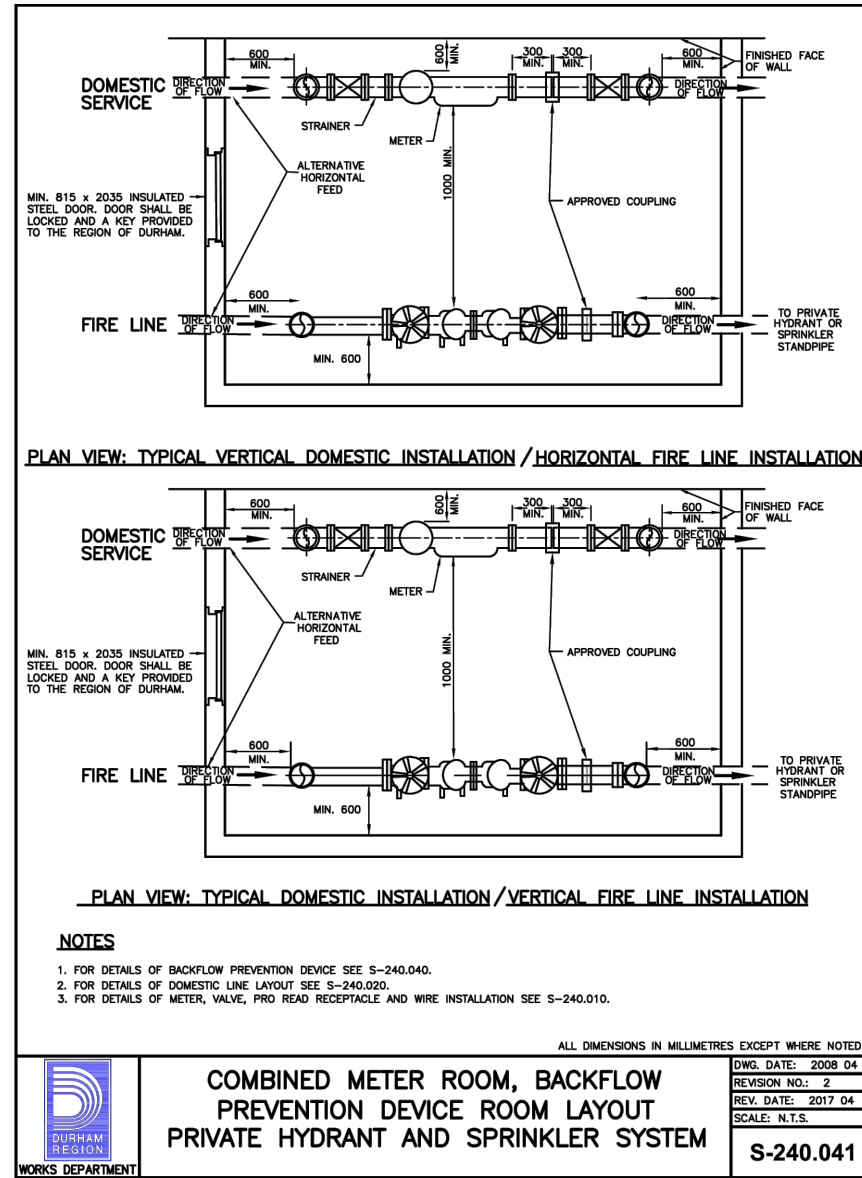
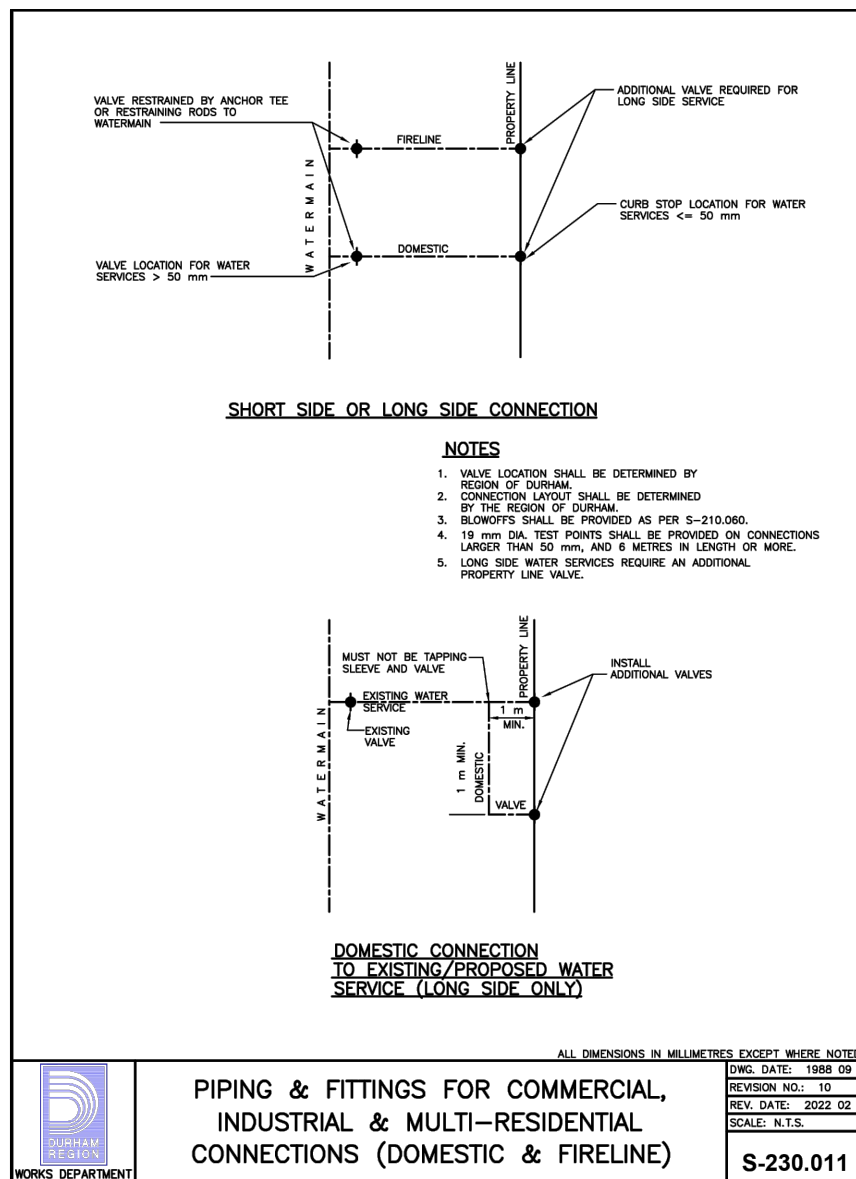
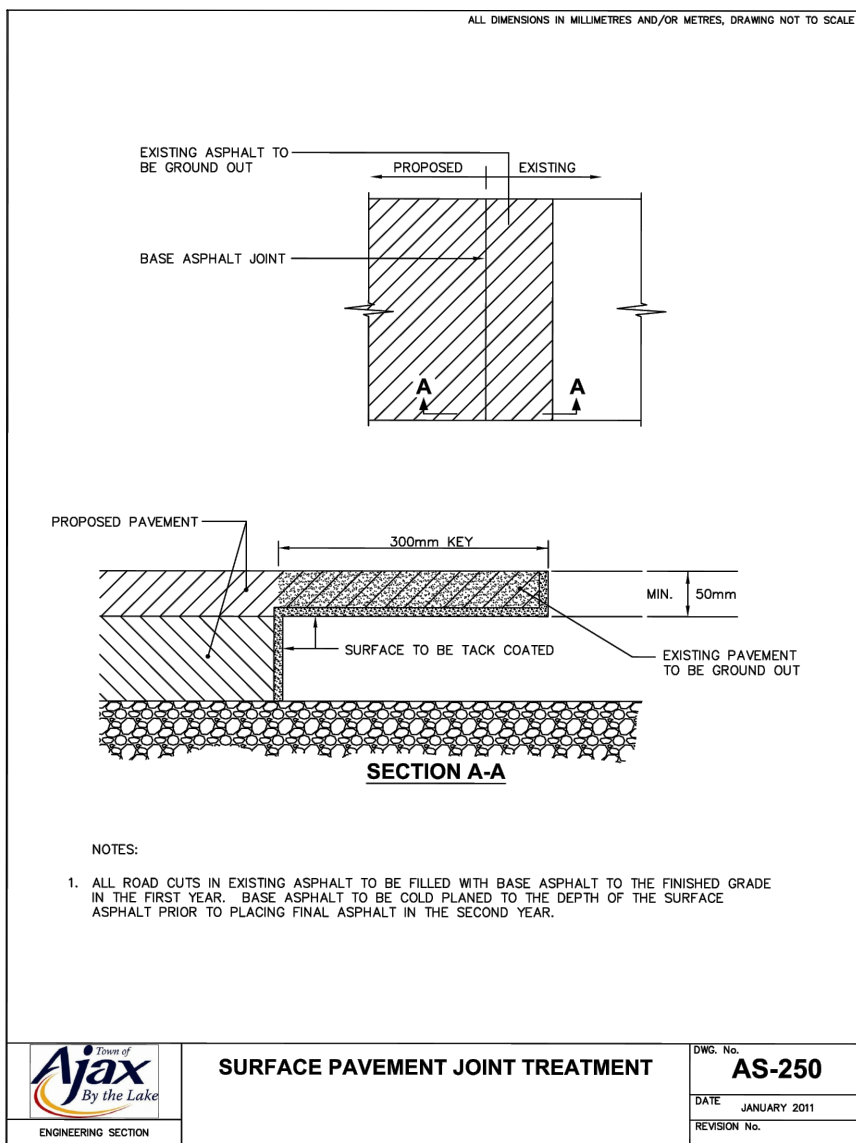
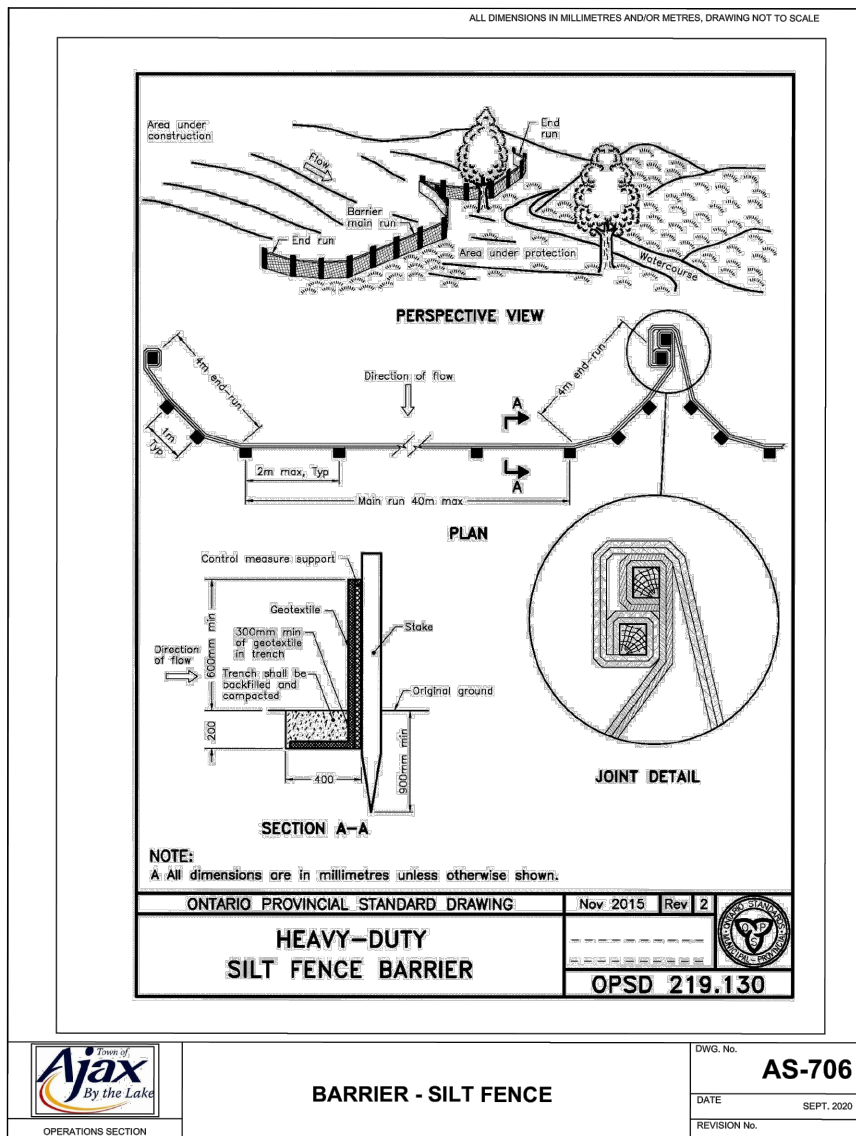
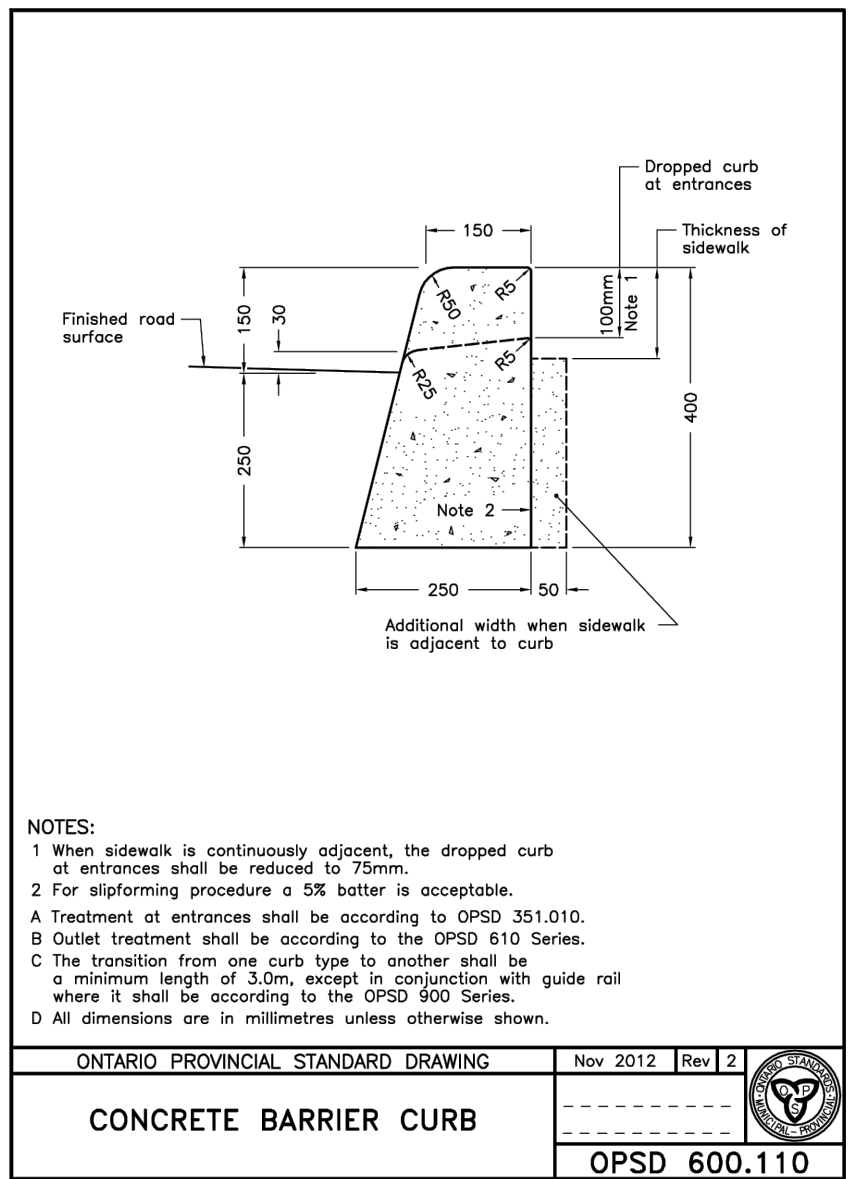
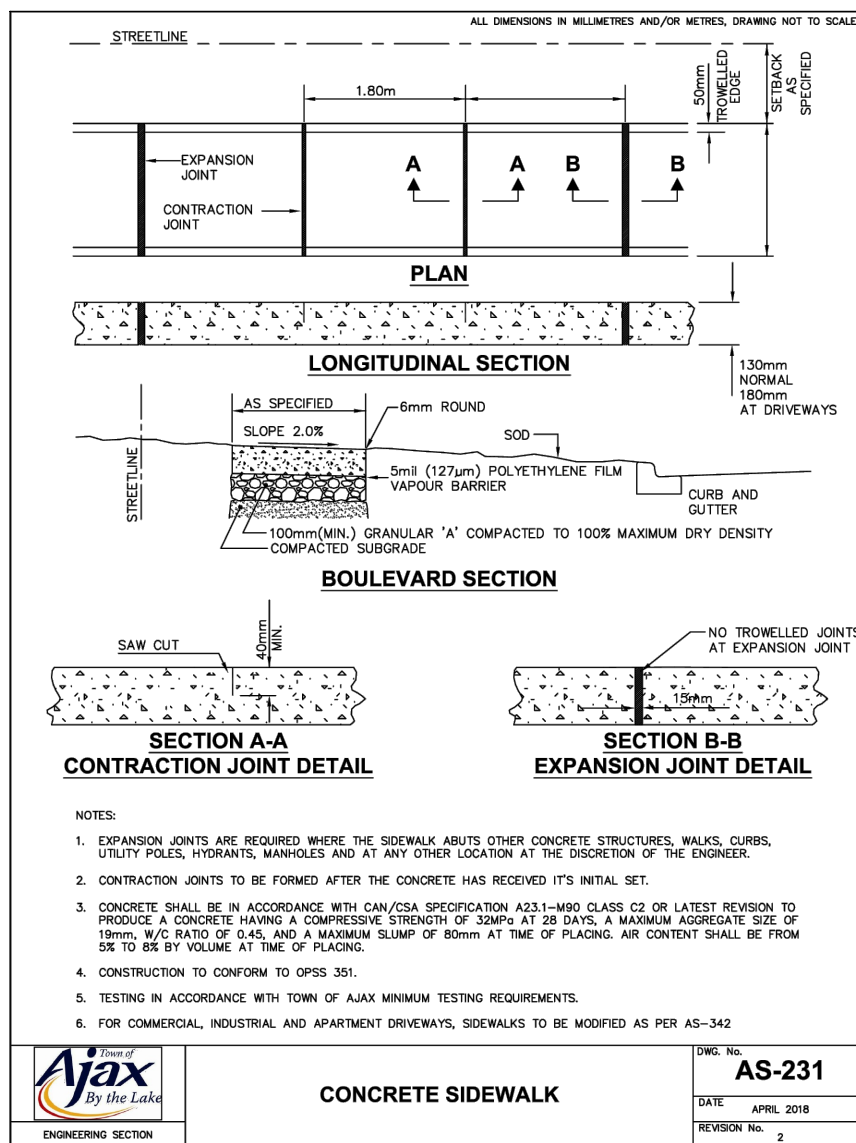
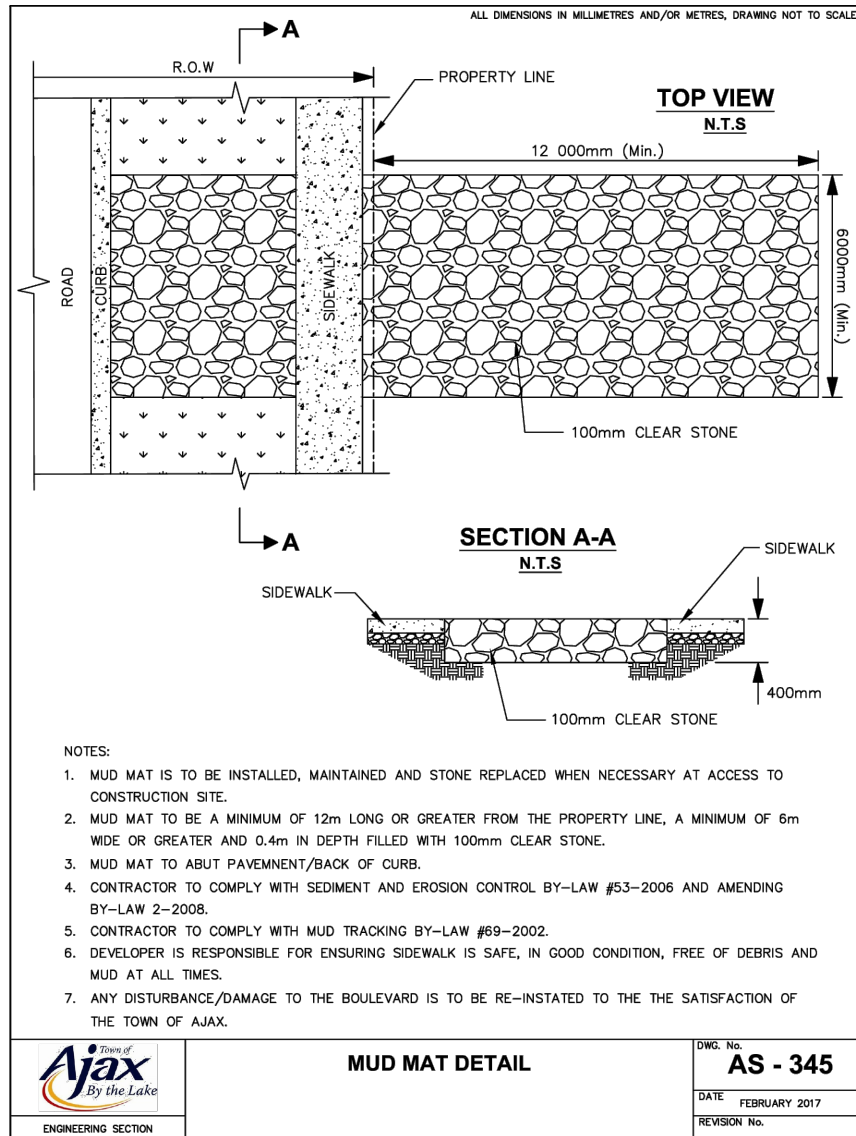
1. ALL SANITARY SEWER MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT REGION OF DURHAM STANDARDS AND SPECIFICATIONS.
2. SANITARY 375mm DIAMETER AND SMALLER SHALL BE POLYVINYL CHLORIDE (PVC) SDR 28 OR 35 (AS REQUIRED) TO CSA B182.2, B182.4 OR LATEST VERSION.
3. PIPE BEDDING AS PER S-200.010 DURHAM REGION STANDARD FOR PVC AND AS-135 TOWN OF AJAX STANDARD.
4. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR ALL UTILITY LOCATES AND ANY DAMAGE OR DISTURBANCE DURING CONSTRUCTION.
5. STORM SEWER PIPES 450mm DIAMETER AND LARGER SHALL BE STEEL REINFORCED CONCRETE PIPE CERTIFIED AS CONFORMING TO SPECIFICATION CSA A257.1, A257.3 OR LATEST VERSION AND CLASS AS NOTED.
6. ALL BENCHING AS PER AS-113 TOWNS OF AJAX STANDARD OR AS NOTED.
7. MAINTENANCE HOLES SHALL CONFORM TO OPSD 701.010 (1200mm), OPSD 701.011 (1500mm) AND 701.011.COVERS AND FRAMES SHALL CONFORM TO OPSD 401-010.
8. CATCHBASINS SHALL CONFORM TO OPSD 705.010 (SINGLE) AND 705.020 (DOUBLE). FRAME AND GRATES TO CONFORM TO OPSD 400.010.
9. SUBDRAINS TO BE INSTALLED AT EACH CATCHBASIN AND MAINTENANCE HOLE. SEE DETAIL.
10. ALL STORM CONNECTIONS SHALL CONFORM TO AS-165.
11. ALL SANITARY CONNECTIONS SHALL CONFORM TO REGION OF DURHAM STANDARDS S-100.010 AND S-100.020.

SITE GRADING NOTES:

1. ALL DISTURBED GRASSES SHALL BE RESTORED TO ITS ORIGINAL CONDITION OR BETTER WITH SOD ON A MINIMUM 150mm TOPSOIL BASE. THE RELOCATION OF TREES AND SHRUBS SHALL BE SUBJECT TO THE APPROVAL BY THE PROJECT LANDSCAPE ARCHITECT ENGINEER.
2. ALL GRANULAR BASE AND SUB-BASE MATERIALS SHALL BE GRADED AND COMPACTED TO 98% STANDARD PROCTOR DENSITY, FREE OF DEPRESSIONS AS PER GEOTECHNICAL REPORT BY THE SOIL ENGINEER.
3. PROVIDE SUBDRAINS, MINIMUM LENGTH OD 3.0m, EXTENDING FROM ALL CATCHBASINS AND CATCHBASIN MANHOLES TO DRAIN THE GRANULAR SUB-BASE LAYER.
4. ALL BARRIER CURB WITHIN THE SITE TO BE CONSTRUCTED AS PER DETAIL, UNLESS OTHERWISE SPECIFIED.
5. TRENCH BACKFILL WITHIN THE RIGHT OF WAY SHALL BE UNSHRINKABLE FILL AND SHALL EXTERO TO THE BASE OF ASPHALT.
6. ALL WORK SHALL BE SUBJECT TO THE CONDITIONS AND REQUIREMENTS OF THE TOWN'S ROAD OCCUPANCY PERMIT.
7. INSPECTION: ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE MUNICIPALITY WHEN REQUIRED BY THE MUNICIPALITY.
8. REFER TO SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
9. STEP JOINT ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT AS PER TOWN OF AJAX STANDARD DETAIL AS-250. ALL JOINT MUST BE SEALED AS PER DETAIL.
10. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER ONE (1) SET OF AS-CONSTRUCTED SITE SERVING, GRADING, AND SITE ELECTRICAL DRAWINGS.

SEDIMENT AND EROSION GENERAL NOTES:

1. CONTRACTOR/OWNER TO COMPLY WITH SEDIMENT AND EROSION CONTROL BY-LAW #38-2021 AS AMENDED.
2. CONTRACTOR/OWNER TO COMPLY WITH MUD TRACKING BY-LAW #69-2002.
3. BEFORE PROCEEDING WITH ANY AREA GRADING THE FOLLOWING MUST BE CONSTRUCTED:
A) SILT FENCE WHERE INDICATED
B) TREE PRESERVATION, INSPECTION IS REQUIRED.
4. SILT CONTROL FENCE SHALL BE INSTALLED AROUND THE PERIMETER OFFSET 0.6m INSIDE THE PROPERTY OF THE SITE AND MAINTAINED UNTIL THE COMPLETION OF THE LANDSCAPING.
5. ACCUMULATED SILT TO BE REMOVED OFF SITE PRIOR TO REMOVAL OF THE SILT CONTROL FENCE.
6. THE SILT FENCE MUST BE INSPECTED WEEKLY AND IMMEDIATELY AFTER RAINFALL EVENTS FOR RIPS OR TEARS, BROKEN STAKES, BLOW OUTS (STRUCTURAL FAILURE) AND ACCUMULATION OF SEDIMENT. THE SILT FENCE MUST BE FIXED AND/OR REPLACED IMMEDIATELY WHEN DAMAGED. SEDIMENT MUST BE REMOVED FROM SILT BANCE WHEN ACCUMULATION REACHES 50% OF THE HEIGHT OF THE FENCE.
7. THE OWNER WILL SEED, MULCH AND MAINTAIN THE ENTIRE SITE IF A BUILDING PERMIT IS NOT ISSUED WITHIN 365 DAYS OF THE SEDIMENT AND EROSION CONTROL PERMIT BEING ISSUED.
8. IF THE SITE REMAINS DORMANT AT ANY TIME FOR MORE THAN 365 DAYS THEN THE OWNER SHALL SEED, MULCH AND MAINTAIN AREAS THAT HAVE BEEN DISTURBED AND ARE OTHERWISE UNFINISHED.
9. UPON COMPLETION OF LANDSCAPING ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED.
10. NO CONSTRUCTION ACTIVITY OR MACHINERY SHALL BE BEYOND THE SILT FENCE.
11. ALL TOPSOIL STOCKPILES SHALL BE SURROUNDED WITH A SEDIMENT CONTROL FENCE.
12. SHOW TREE HOARDING.
13. EROSION & SEDIMENT CONTROL MEASURES MUST BE INSTALLED PRIOR TO THE COMMENCEMENT OF SITE WORKS.
14. EROSION & SEDIMENT CONTROLS MUST BE INSPECTED ON A REGULAR BASIS AND AFTER EVERY RAIN FALL EVENT, AND MUST BE MAINTAINED AND REPAIRED IN A TIMELY MANNER TO PREVENT SEDIMENT FROM LEAVING THE SITE.
15. EXISTING AND PROPOSED CATCHBASINS ARE TO BE PROTECTED WITH "SILTSACK". REFER TO "SILTSACK" DETAIL ON THIS DRAWING.
16. IT IS REQUIRED TO STABILIZE ALL AREAS THAT WILL REMAIN DISTURBED FOR MORE THAN 30 DAYS.
17. MUD MAT, SILT FENCE, AND CATCHBASIN PROTECTION ARE NOT TO BE REMOVED UNTIL COMPLETION OF CONSTRUCTION.
18. SEDIMENT AND EROSION CONTROL MEASURES WILL BE IMPLEMENTED PRIOR TO, AND MAINTAINED DURING THE CONSTRUCTION PHASES, TO PREVENT ENTRY OF SEDIMENT INTO THE WATER.
19. THE EROSION AND SEDIMENT CONTROL STRATEGIES OUTLINED ON THE PLANS ARE NOT STATIC AND MAY NEED TO BE UPGRADED/ AMENDED AS SITE CONDITIONS CHANGE TO PREVENT SEDIMENT RELEASES TO THE NATURAL ENVIRONMENT. THE TRCA ENFORCEMENT OFFICER SHOULD BE IMMEDIATELY CONTACTED SHOULD THE EROSION AND SEDIMENT CONTROL PLANS CHANGE FROM THE APPROVED PLANS.
20. ALL EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE INSPECTED WEEKLY, AFTER EVERY RAINFALL AND SIGNIFICANT SNOW MELT EVENT, AND DAILY DURING PERIODS OF EXTENDED RAIN OR SNOW MELT.
21. ALL DAMAGED EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE REPAIRED AND/OR REPLACED WITHIN 48 HOURS OF THE INSPECTION.
22. ALL ACTIVITIES, INCLUDING MAINTENANCE PROCEDURES, WILL BE CONTROLLED TO PREVENT THE ENTRY OF PETROLEUM PRODUCTS, DEBRIS, RUBBLE, CONCRETE, OR OTHER DELETERIOUS SUBSTANCES INTO THE WATER. VEHICULAR REFUELING AND MAINTENANCE WILL BE CONDUCTED 30 METRES FROM THE WATER.



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SURVEY NOTES:

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REFERENCE No.: 23-25-207-00.

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SITE BENCHMARK:

TOP NUT OF HYDRANT LOCATED ON THE WEST SIDE ON FINLEY AVENUE, APPROXIMATELY 1.4m WEST OF THE EDGE OF CONCRETE SIDEWALK.

ELEVATION = 93.05m

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DRAWING No.: A1.1 (2025/MARCH/19)
PROJECT No.: 00026

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Project

725 WESTNEY ROAD SOUTH
TOWN OF AJAX

Drawing

CONSTRUCTION NOTES AND DETAILS

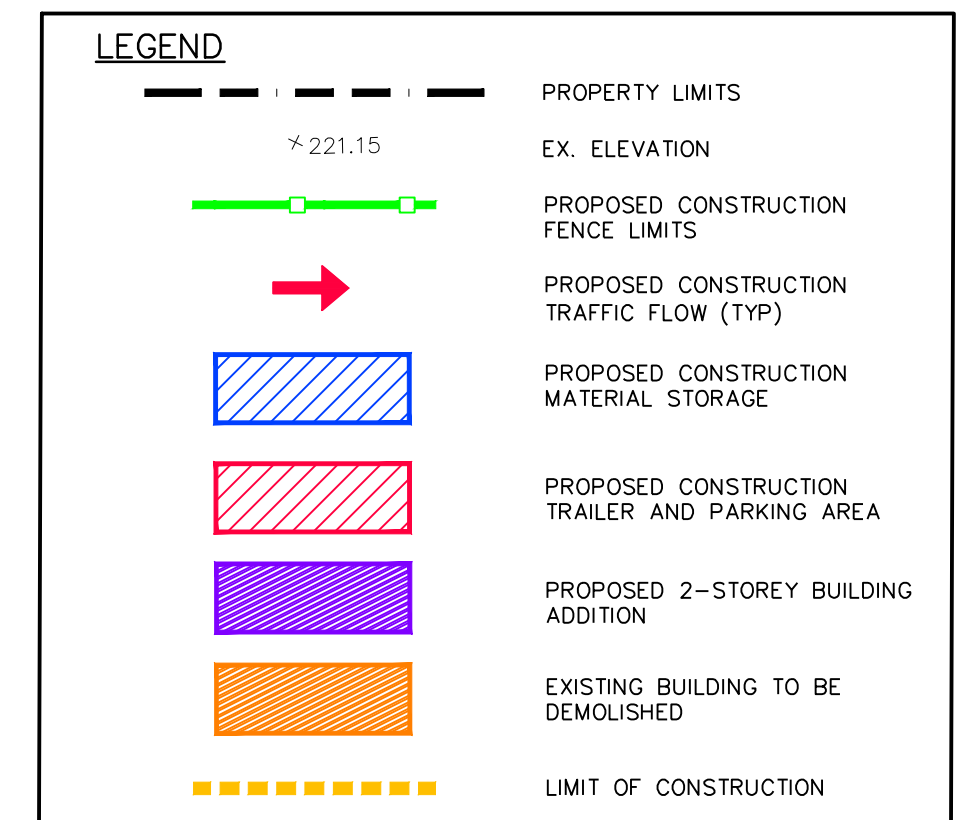
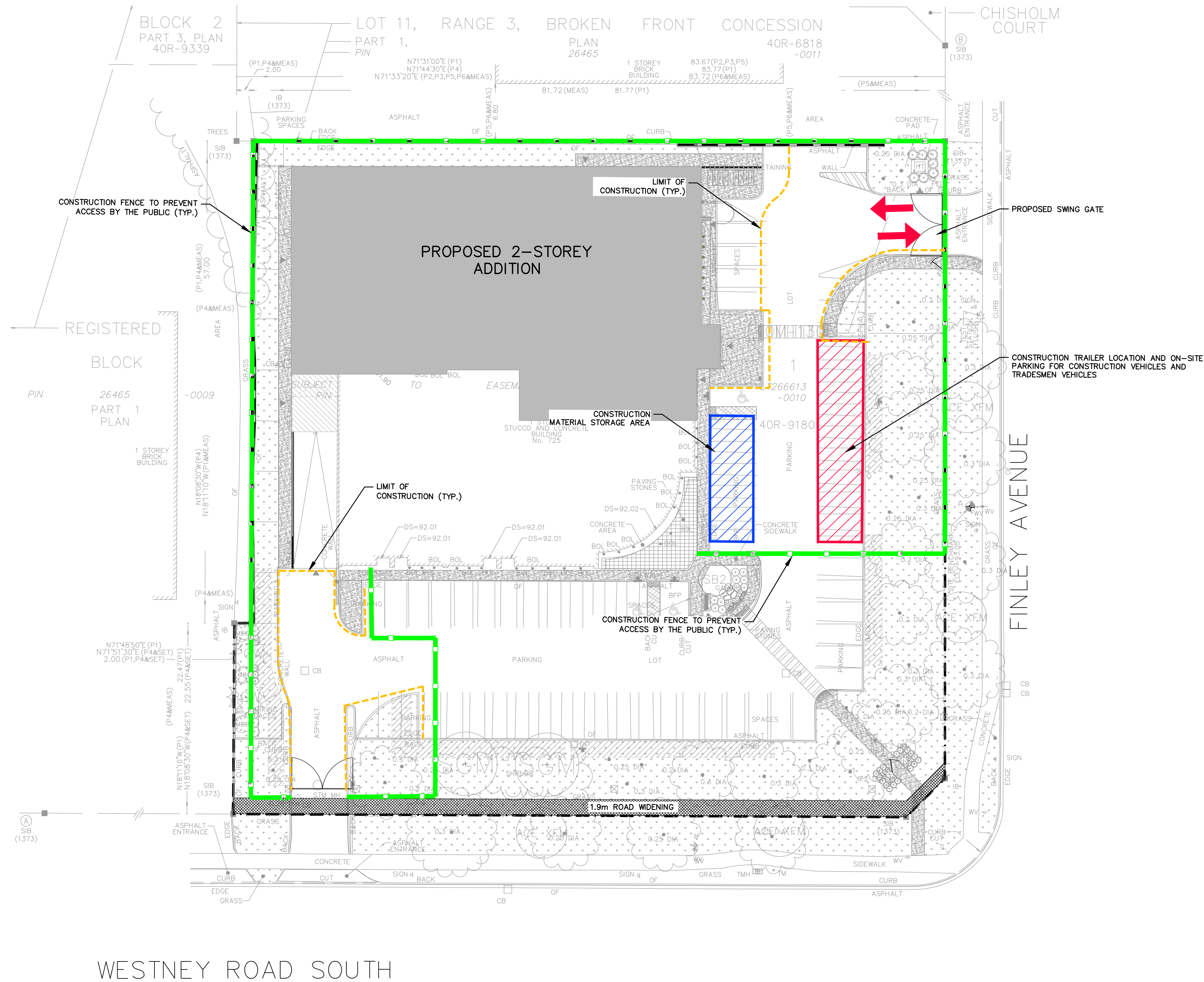
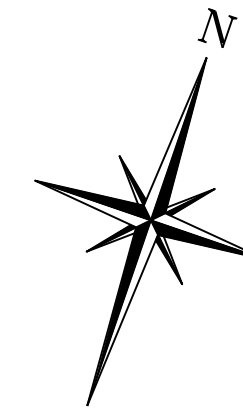
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416-477-3392 T
WWW.CFCROZIER.CA

Drawn By: D.B. Design By: G.S. Project: 2542-6840

Check By: M.I. Check By: M.I. Scale: Dwg: C104

1. CONTRACTOR TO ENSURE THAT ALL CONSTRUCTION ACTIVITY (STAGING, STOCKPILING, VEHICLE PARKING, ETC.) TO BE KEPT WITHIN THE LIMITS OF THE SITE. NO PARKING WILL BE PERMITTED ON THE MUNICIPAL RIGHT-OF-WAY.
2. CONTRACTOR TO ENSURE NO GRADING OR SERVICES WITHIN TREE PROTECTION ZONE.



2	ISSUED FOR FIRST SPA SUBMISSION	2025/APR/22
1	ISSUED FOR SECOND SUBMISSION (OPA/ZBA)	2024/JUN/21
0	ISSUED FOR FIRST SUBMISSION (OPA/ZBA)	2023/DEC/19
No.	ISSUE / REVISION	YYYY/MMM/DD

SURVEY COMPLETED BY J.D.BARNES LIMITED (2023/OCT/13)
REFERENCE No.: 23-25-207-00.

ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO TOWN OF AJAX
BENCHMARK No. 712, HAVING A PUBLISHED ELEVATION OF 85.206m
(CGVD-1928:1978).

TOP NUT OF HYDRANT LOCATED ON THE WEST SIDE ON FINLEY AVENUE,
APPROXIMATELY 1.4m WEST OF THE EDGE OF CONCRETE SIDEWALK.
ELEVATION = 93.05m

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 0.999895.

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY WANG ARCHITECTS INC.
DRAWING No.: A1.1 (2025/MARCH/19)
PROJECT No.: 00026

THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART OF IT WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

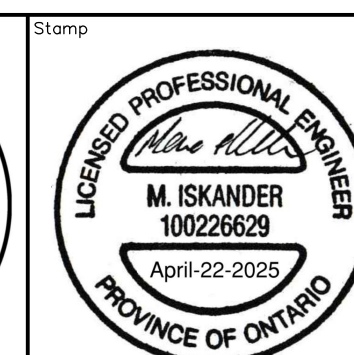
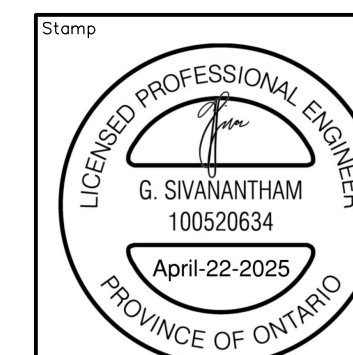
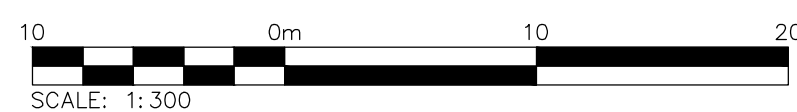
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ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

Project	725 WESTNEY ROAD SOUTH TOWN OF AJAX
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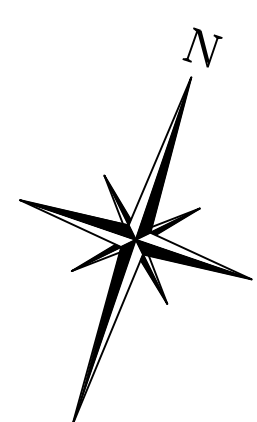
Drawing	
CONSTRUCTION MANAGEMENT PLAN	

NOT FOR CONSTRUCTION



211 YONGE STREET
SUITE 600
TORONTO, ON M5B 1M4
416-477-3392 T
WWW.CFCROZIER.CA

Drawn By	D.B.	Design By	G.S.	Project	2542-6840
Check By	M.I.	Check By	M.I.	Scale	Dwg. C105
				1: 300	



LEGEND

	PROPERTY LIMITS
	CATCHMENTS
\times 221.15	EX. ELEVATION
\times 91.46 BC	EX. BOTTOM OF CURB
\times 91.41 TC	EX. TOP OF CURB
\times 91.41 TOG	EX. TOP OF GRATE
	EX. STORM SEWER
	EX. STORM MANHOLE
	PR. CATCH BASIN MANHOLE
	PR. CATCH BASIN
	PR. DOUBLE CATCH BASIN
	MAJOR CONTOUR LINE
	MINOR CONTOUR LINE
	EXISTING OVERLAND FLOW
	CATCHMENT ID
	RUNOFF COEFFICIENT
	CATCHMENT AREA (ha)

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SITE BENCHMARK:
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SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY WANG ARCHITECTS INC.
DRAWING No.: A1.1 (2025/MARCH/19)
PROJECT No.: 00026

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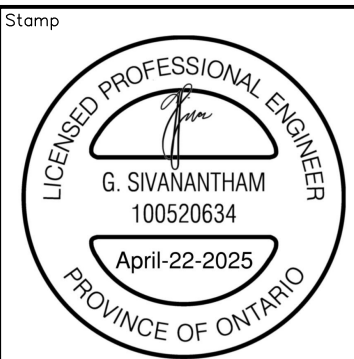
Project

725 WESTNEY ROAD SOUTH
TOWN OF AJAX

Drawing

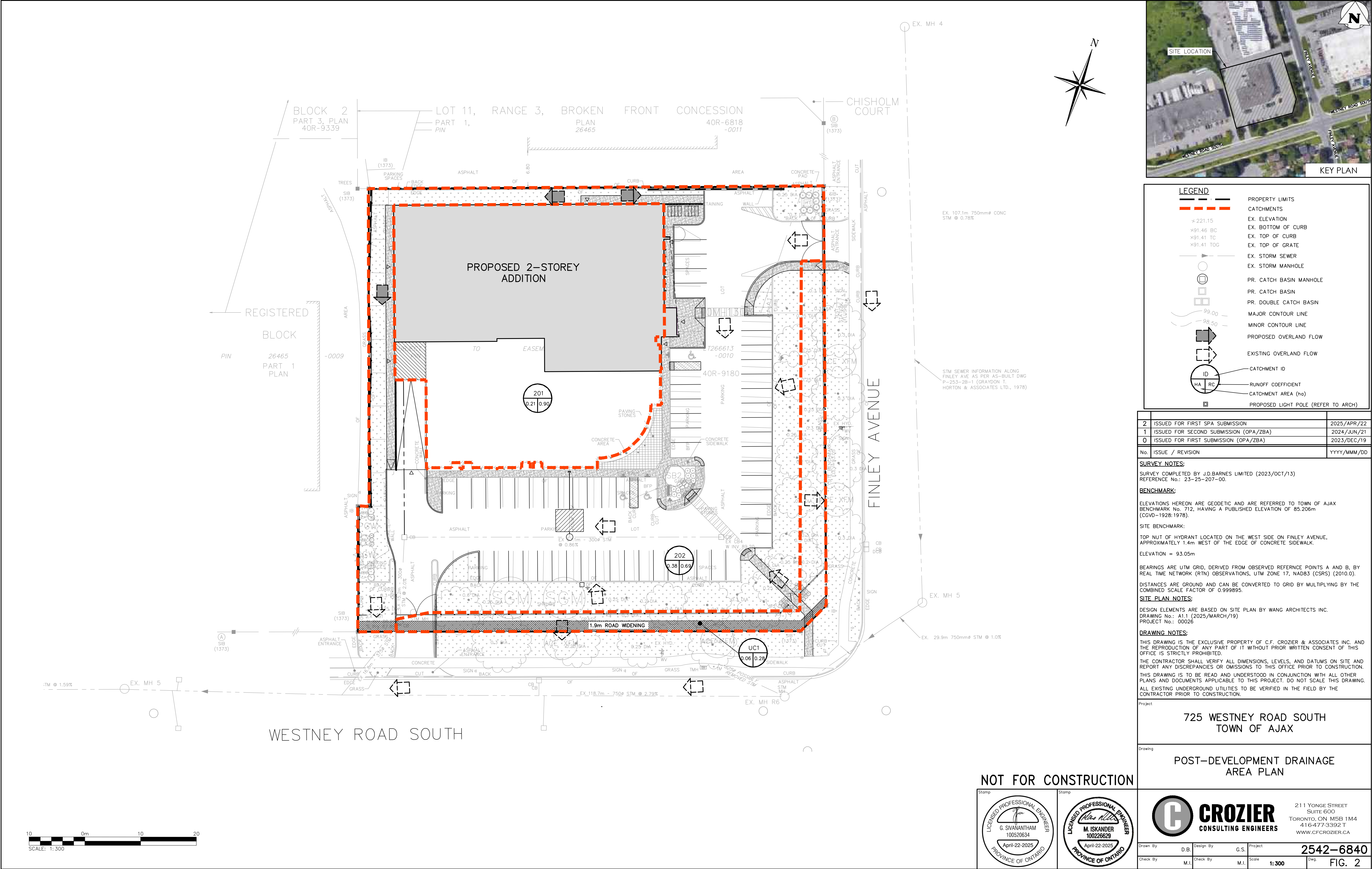
PRE-DEVELOPMENT DRAINAGE
AREA PLAN

NOT FOR CONSTRUCTION



211 YONGE STREET
SUITE 600
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Drawn By	D.B.	Design By	G.S.	Project	2542-6840
Check By	M.I.	Check By	M.I.	Scale	Dwg.
				1:300	FIG 1



LEGEND	
	PROPERTY LIMITS
	CATCHMENTS
	EX. ELEVATION
	EX. BOTTOM OF CURB
	EX. TOP OF CURB
	EX. TOP OF GRATE
	EX. STORM SEWER
	EX. STORM MANHOLE
	PR. CATCH BASIN MANHOLE
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	MAJOR CONTOUR LINE
	MINOR CONTOUR LINE
	PROPOSED OVERLAND FLOW
	EXISTING OVERLAND FLOW
	CATCHMENT ID
	RUNOFF COEFFICIENT
	CATCHMENT AREA (ha)
	PROPOSED LIGHT POLE (REFER TO ARCH)

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Project
725 WESTNEY ROAD SOUTH
TOWN OF AJAX

Drawing
POST-DEVELOPMENT DRAINAGE
AREA PLAN

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				Dwg.	FIG. 2