Robinson
Land Development

1400 Coldrey Avenue
City of Ottawa, ON
Stormwater Management Brief

Prepared For:

Kehillat Beth Israel

Prepared By:

Robinson Land Development

Project No. 24060
Revision 2.0
August 2025

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

TABLE OF CONTENTS CONTINUED

LEGAL NOTIFICATION

This report was prepared by Robinson Land Development for the account of **Kehillat Beth Israel.**

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1.0 INTRODUCTION

Robinson Land Development have been retained by Kehillat Beth Israel to prepare a Stormwater Management Brief in support of the proposed redevelopment of the site located at 1400 Coldrey Avenue in the City of Ottawa. The subject site is bound by Coldrey Avenue to the north, Laperriere Avenue to the south and existing residential properties to the west and east (refer to **Figure 1 – Key Plan** following page 1). This report will detail the proposed stormwater management designs required to redevelop the site in accordance with current City of Ottawa guidelines.

2.0 GUIDELINES, STUDIES AND REPORTS

The designs provided herein have been prepared in keeping with the following documents:

- **Sewer Design Guidelines**, City of Ottawa, Second Edition, October 2012, and subsequent technical bulletins (herein referred to as the OSDG).

- **Stormwater Planning and Design Manual**, Ministry of the Environment, March 2003 (herein referred to as the MECP SWM Manual).

A pre-consultation meeting was held with the City of Ottawa on February 10th, 2025 to discuss requirements for the proposed development. Refer to pre-consultation notes provided under **Appendix A** for more details.

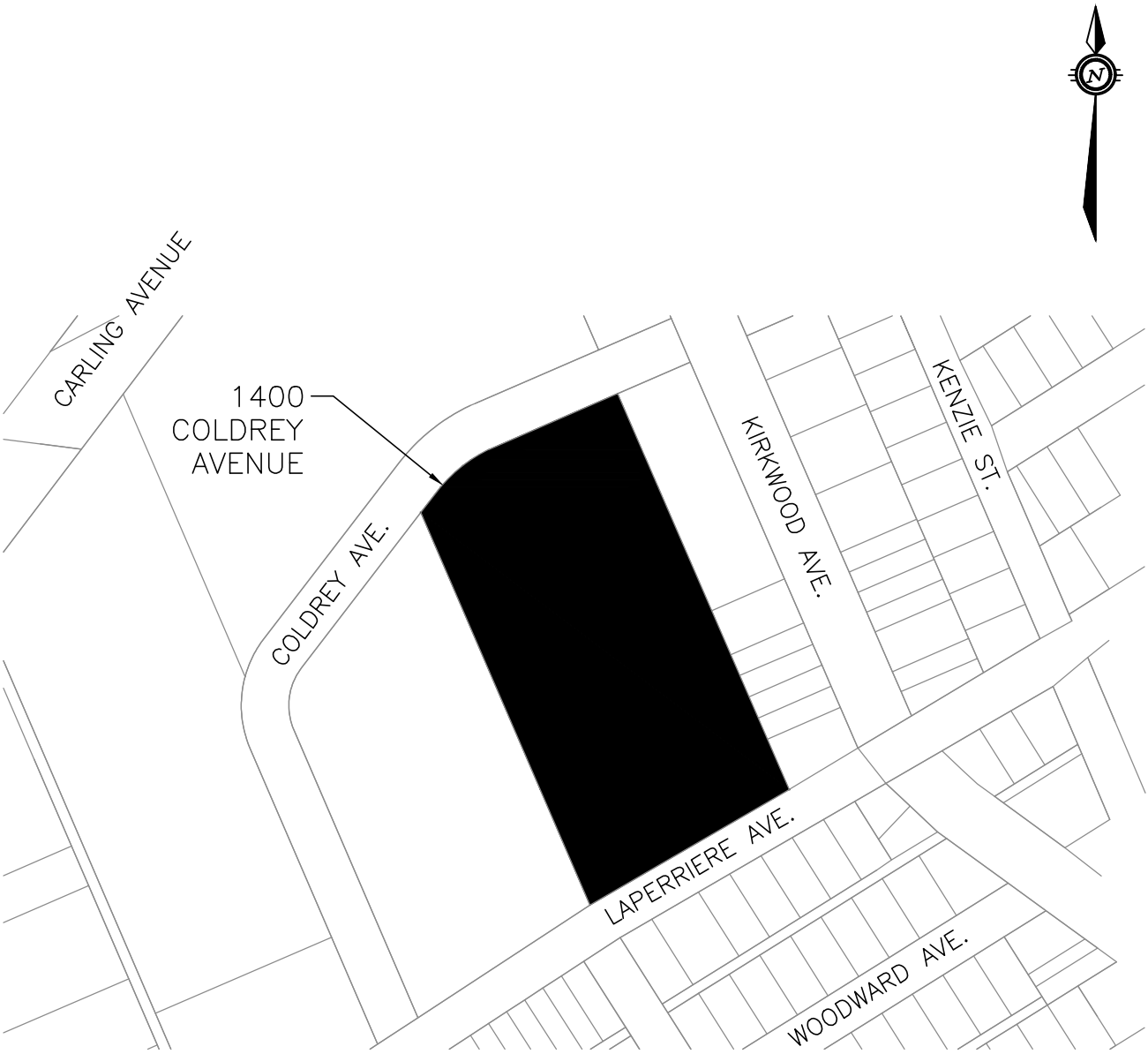
3.0 EXISTING CONDITIONS

The subject site is zoned minor institutional (I1A) and is currently operated as a synagogue. The property is 1.8 hectares in area and is largely developed. The existing building has a footprint of approximately 2860 square metres. Existing asphalt and gravel parking areas are located to the south of the building. The parking areas are accessed via an entrance connection to Laperriere Avenue. An existing asphalt access road runs north-south along the eastern boundary and provides a connection between Coldrey Avenue and Laperriere Avenue. The access road is contained within an easement in favour of the City of Ottawa for existing storm sewer infrastructure which runs along the eastern boundary of the property. The area north of the existing building is primarily landscaped space. Existing municipal infrastructure is available in proximity to the subject site as follows:

Water
- An existing 203mm diameter UCI watermain within the Coldrey Avenue right-of-way.
- An existing 203mm diameter UCI watermain within the Laperriere Avenue right-of-way.

Sanitary
- An existing 225mm diameter concrete sanitary sewer within the Coldrey Avenue right-of-way.
- An existing 225mm diameter concrete sanitary sewer within the Laperriere Avenue right-of-way.

Storm
- Existing 450mm-600mm diameter concrete storm sewers within the Coldrey Avenue right-of-way.
- Parallel 600mm diameter concrete storm sewers converging to a 900mm diameter sewer within the Laperriere Avenue right-of-way.



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scale N.T.S.	1400 COLDREY AVENUE, OTTAWA	project no. 24060
date 09/06/25		
drawn by BLM	KEY PLAN	FIG 1.0

- An existing 1200mm diameter concrete storm sewer and an existing 2100mm diameter concrete storm trunk sewer contained within parts subject to an easement on the subject site.

Refer to the figure below for an aerial view of the subject site under its current development state. Refer also to the Plan of Survey, prepared by AOV, under **Appendix A**.

Figure 2: Existing Conditions

4.0 PROPOSED CONDITIONS

The Owner is proposing to redevelop the subject site to increase parking and provide a more direct connection to the main entrance of the building. The proposed redevelopment works will include:

- Construction of new parking areas and access roads surrounding the existing building.
- Construction of a new entrance connection to Coldrey Avenue on the west side of the site.
- Removal of the existing asphalt/gravel parking areas to the south of the existing building and reinstatement with landscaping.
- Removal of the existing westerly entrance connection to Laperriere Avenue.
- The access road over the existing storm sewer easement will be regraded and resurfaced, however, access will be maintained.

Refer to the Site Plan, prepared by IDEA, under **Appendix B** for more details.

5.0 SANITARY SERVICING

5.1 Existing System

Wastewater flows generated by the existing building are conveyed by +/-125mm diameter concrete sanitary sewers to the existing 225mm diameter concrete sanitary sewer system on Coldrey Avenue. A recent CCTV investigation has shown that the existing private sewers are in poor condition and should be replaced as part of the redevelopment works. Wastewater flows on Coldrey Avenue are conveyed in an easterly direction to the existing system on Kirkwood Avenue.

5.2 Design Criteria

The proposed sanitary sewers for the subject site have been designed using the following design criteria in accordance with the current OSDG:

- Institutional Flow — 28,000 L/ha/day — (ISTB-2018-01)
- Institutional Peaking Factor — 1.5 — (ISTB-2018-01)
- Infiltration Allowance — 0.33 L/s/ha — (ISTB-2018-01)
- Minimum Full Flow Velocity — 0.60 m/s — (OSDG S6.1.2.2)
- Maximum Full Flow Velocity — 3.0 m/s — (OSDG S6.1.2.2)
- Manning's 'n' Value — 0.013 — (OSDG S6.1.8.2)
- Church with Kitchen — 30 L/sanctuary seat/day — (OSDG App. 4-A)
- Maximum Occupancy Load — 430 people

5.3 Sanitary Sewer Design

Using the design criteria listed under **Section 5.2**, the peak sanitary design flow for the subject site has been calculated and summarized in the table below. For comparison, peak design flows have been calculated using both the institutional flow rate per hectare and the daily flow rate for churches (with kitchen facilities) from Appendix 4-A of the OSDG.

Table 5.1: Peak Sanitary Design Flow

Design Criteria	Peak Institutional Flow (L/s)	Infiltration Allowance (L/s)	Total Peak Design Flow (L/s)
Institutional[*1]	0.88	0.59	1.47
Churches with Kitchen[*2]	0.22	0.59	0.82

Notes:
1. Peak flow is based on flow rate of 28,000 L/ha/day
2. Peak flow is based on flow rate of 30 L/seat/day.

As shown in the table above, the peak flow calculated using the institutional flow rate per hectare is more conservative and will therefore be used in the site design. The existing +/-125mm diameter private concrete sanitary sewers are proposed to be replaced with new 150mm diameter PVC SDR28 services. The horizontal alignment of the new sanitary sewers will closely follow the existing alignment which will facilitate the removal and disposal of the existing private system. The vertical alignment will be lowered through the site to avoid a crossing conflict with the proposed storm sewer system. The proposed sanitary sewers will outlet to Coldrey Avenue via a new connection to the existing 225mm concrete sanitary sewer system (at the same location as the existing outlet). The proposed sanitary sewers have been

designed with adequate capacity to convey the peak sanitary design flow and to meet the allowable full flow velocities for self-cleansing in accordance with the current OSDG. Refer to the sanitary sewer design sheets provided under **Appendix C** for more details.

6.0 STORM SERVICING

6.1 Existing System

The existing municipal storm sewer system on Laperriere Avenue is conveyed to the 2100mm diameter storm trunk sewer contained within the easement running along the eastern boundary of the subject site. An existing 1200mm storm sewer runs parallel with the trunk sewer but is higher in elevation. Minor system flows are conveyed north for approximately 200 metres before converging with the minor storm sewer system on Coldrey Avenue. The parallel storm sewers continue to flow in a northerly direction for approximately 150 metres before converging to the single 2100mm storm trunk sewer, south of Carling Avenue. Refer to the as-built storm sewer plan and profile drawings provided by the City of Ottawa under **Appendix A** for more details.

Through pre-consultation, the City has noted that the existing storm sewer system on Coldrey Avenue is experiencing surcharging even during smaller rainfall events. Hydraulic grade line (HGL) elevations have been provided by the City for the 5-year and 25-year storm events. Refer to the HGL profiles under **Appendix A** for more details.

Under current conditions, the subject site has minimal private storm sewers to capture and convey stormwater runoff. Stormwater runoff from the flat portion of the existing building roof is captured by roof drains and conveyed east by an existing +/-250mm diameter storm sewer to the existing 2100mm diameter storm trunk sewer contained within the easement. The existing connection to the trunk sewer has been verified by recent CCTV investigations.

Stormwater runoff from the southern portion of the site is conveyed uncontrolled to an open-ended inlet structure located on the west side of the existing access road. The inlet structure consists of a 600mm x 650mm rectangular opening converging to a +/-250mm diameter concrete storm sewer with an outlet to the existing 2100mm diameter storm trunk sewer contained with the easement. The existing connection to the trunk sewer has been verified by recent CCTV investigations. No other existing minor storm sewer systems are known to be located on the subject site.

6.2 Design Criteria

The proposed storm sewer (minor) system for the subject site has been designed using the following design criteria in accordance with the current OSDG:

- Peak Flow (Q) — 2.78CiA (Rational Method)
- Rainfall Intensity (i) — City of Ottawa IDF Curve Equations
- Runoff Coefficient (C)
  - Pervious Areas — 0.20
  - Impervious Areas — 0.90
  - Gravel Areas — 0.80
  - 100-Year C — C + 25% (Max. 1.0)
- Inlet Time — 10 minutes (OSDG S5.1.4)
- Minimum Full Flow Velocity — 0.80 m/s (OSDG S6.1.2.1)
- Maximum Full Flow Velocity — 3.0 m/s (OSDG S6.1.2.1)
- Minimum Sewer Diameter — 250 mm (OSDG S6.1.1.2)

• Minimum Catch Basin Lead	200 mm	(OSDG S5.6.7)
• Manning's 'n' Value	0.013	(OSDG S6.1.8.1)
• Design Level of Service	2-Year Event	(PIEDTB-2016-01)

6.3 Storm Sewer Design (Minor System)

Stormwater runoff from the subject site will be captured by surface inlets and conveyed to the proposed on-site storm sewer system. Stormwater from the northern portion of the site (denoted as areas STM1-STM4) will be captured and conveyed by new storm sewers to the existing storm sewer system on Coldrey Avenue, immediately upstream of the 2100mm storm trunk sewer (i.e. connection to MHST27626). During the 5-year design event, the HGL at MHST27626 is anticipated to be below the obvert of the existing storm sewers, however, the system becomes surcharged within the existing pipe runs immediately upstream of the connection (refer to HGL profiles under **Appendix A**).

Stormwater runoff from the landscaped areas along the western boundary, eastern boundary, and the northern property frontage (denoted as area FF1) will be conveyed uncontrolled to the existing surface inlets on Coldrey Avenue where it will be captured and conveyed to the existing municipal storm sewer system.

Stormwater runoff from the southern portion of the site (denoted as area STM5) will be captured and conveyed by new storm sewers to the existing 2100mm diameter storm trunk sewer contained within the easement (refer to additional discussion and rational under **Section 6.5**).

Stormwater runoff from the flat portion of the existing building roof (denoted as area R1) will continue to be captured by roof drains and conveyed east by the existing storm sewer to the existing 2100mm diameter storm trunk sewer contained within the easement.

The proposed storm sewers have been designed using the Rational Method to have adequate capacity to convey the unrestricted 2-year peak flow from the subject site. The storm sewers have also been designed with adequate capacity to convey with 100-year restricted peak flow without surcharging of the system. The storm sewers have been designed to meet the allowable full flow velocities for self-cleansing in accordance with the current OSDG. Refer to the runoff coefficient calculations, storm sewer design sheet and the Storm Drainage Area Plan (DWG. 24060-STM1) provided under **Appendix D** for more details. The existing and proposed storm sewer networks are shown on the Servicing Plan (24060-S1) provided under **Appendix B**.

7.0 STORMWATER MANAGEMENT

7.1 Design Criteria

In keeping with current City of Ottawa design guidelines and pre-consultation notes, the following stormwater management design criteria are recommended for the subject site:

- Control post-development peak flows to the 2-year pre-development rate for up to and including the 100-year design event.
- Provide on-site storage (in excess of pre-development flows) for all storm events up to and including the 100-year design event.
- Eliminate surface ponding during the 2-year design event.
- Maximum surface ponding depth of 0.35 m.
- Provide major overland flow routes to the municipal right-of-ways.

- Quality control measures are not required.

The sections below will provide detailed discussions and calculations to demonstrate how the above design criteria can be achieved.

7.2 Pre-Development Flows

Under pre-development conditions, stormwater runoff from the subject site is conveyed by surface sheet flow to the municipal storm sewer systems located adjacent to the site. Runoff from the southern portion of the site (denoted as area PRE1) is conveyed uncontrolled by surface sheet flow in an easterly direction to the open-ended inlet structure located on the west side of the existing access road. The inlet structure consists of a 600mm x 650mm rectangular opening converging to a +/-250mm diameter concrete storm sewer with an outlet to the existing 2100mm diameter storm trunk sewer contained with the easement. The existing connection to the trunk sewer has been verified by recent CCTV investigations.

Runoff from the northwest corner of the site (denoted as area PRE2) is conveyed uncontrolled by surface sheet flow to the Coldrey Avenue right-of-way where it is captured by an existing roadside catch basin and conveyed to the existing 450mm diameter municipal storm sewer on Coldrey Avenue. The existing 450mm diameter storm sewer conveys stormwater in an easterly direction until it converges with the 2100mm diameter storm trunk sewer.

Runoff from the east and northeast portion of the site (denoted as area PRE3) is conveyed uncontrolled by surface sheet flow to the Coldrey Avenue right-of-way where it is captured by an existing roadside catch basin and conveyed to the existing 2100mm diameter storm trunk sewer.

Runoff from a small portion of the site on the west side of the building (denoted as area PRE4) is conveyed uncontrolled by surface sheet flow to an existing catch basin located within the parking lot on the adjacent residential lands to the west. The routing of the adjacent private storm sewer system is unknown but is assumed to outlet to either the existing storm sewer system on Laperriere Avenue or Coldrey Avenue.

Runoff from the flat portion of the existing building roof (denoted as area PRE5) is captured by roof drains and conveyed east by an existing +/-250mm diameter storm sewer to the existing 2100mm diameter storm trunk sewer contained within the easement. The existing connection to the trunk sewer has been verified by recent CCTV investigations.

External runoff from the adjacent access road to the west and a portion of the Laperriere Avenue boulevard (denoted as area EXT-1) is conveyed into the subject site via surface sheet flow under current site conditions. A small berm will be false graded along a portion of the western property boundary to prevent the inflow of external drainage into the subject site. The external drainage will be directed north to the existing catch basin located in the adjacent parking lot to the west (i.e. current outlet for area PRE4). The City of Ottawa have indicated that road modifications for Laperriere Avenue are in the functional design phase and will ensure that stormwater runoff from the municipal right-of-way is not conveyed onto private property.

Pre-development peak flows for the subject site have been calculated using the Rational Method. Due to the short flow lengths of the individual drainage areas, a minimum time of concentration of 10 minutes has been utilized. The calculated peak flows for the 2-year, 5-year, and 100-year design events have been summarized in the table below.

Table 6.1: Pre-Development Peak Flows

Drainage Area ID	Pre-Development Peak Flow (L/s)		
	2-Year	5-Year	100-Year
PRE1	89.3	121.1	259.7
PRE2	12.1	16.4	35.2
PRE3	44.1	59.9	128.2
PRE4	5.4	7.4	15.8
PRE5	39.9	54.1	103.0
Total	**190.9**	**259.0**	**541.9**

Notes:
1. Peak flows calculated using the Rational Method (Q=2.78CiA)
2. Rainfall intensity calculated using City of Ottawa IDF curve equations.
3. Time of concentration = 10 minutes

As demonstrated in the table above, the pre-development peak flow from the subject site ranges from 190.9 L/s during the 2-year design event up to 541.9 L/s during the 100-year design event. Refer to the Pre-Development Drainage Area Plan (DWG. 24060-PRE1) and pre-development flow calculations provided under **Appendix E** for more details.

The overall site has a calculated pre-development runoff coefficient value of 0.50 based on the various surface covers present. Since the pre-development runoff coefficient does not exceed a value of 0.50, the actual existing site runoff coefficients may be used in determining the allowable release rate for the site without the need for over-controlling (*OSDG Section 8.3.7.3*).

7.3 Quantity Control

As recommended by the City during pre-consultation, post-development peak flows must be controlled to the 2-year pre-development rate for all storm events up to and including the 100-year design event. The requested 2-year level of service is aligned with Technical Bulletin PIEDTB-2016-01, however, it should be acknowledged that the receiving municipal storm sewers adjacent to the site would have originally been designed for a greater level of service given that the construction well preceded the 2016 technical bulletin.

Under post-development conditions, the overall site has a calculated post-development runoff coefficient of 0.56 which exceeds the pre-development value of 0.50. The increase in impervious area will result in increased stormwater runoff from the site. In order to control the post-development outflows to pre-development rates, inlet control devices (ICDs) will be implemented within the on-site storm sewer system. The ICDs are proposed to be Tempest HF (or approved equivalent) manufactured with custom flow rates (refer to the Tempest HF Technical Manual under **Appendix E**). Stormwater outflows for the on-site drainage areas for the 2-year through 100-year design events have been summarized in the table below.

Table 6.2: Post-Development Peak Flows

Drainage Area	2-Year Outflow (L/s)	5-Year Outflow (L/s)	100-Year Outflow (L/s)	Flow Control
STM1	21.0	21.9	22.8	ICD
STM2	23.0	24.0	24.8	ICD
STM3	35.0	36.7	37.9	ICD
STM4	20.0	20.5	21.1	ICD
STM5	69.6	74.5	79.8	ICD
R1	39.9	54.1	103.0	Uncontrolled[*4,5]
FF1	8.6	11.6	24.9	Uncontrolled[*5]
Total	**217.0**	**243.4**	**314.2**	
Pre-Development[*3]	**190.9**	**259.0**	**541.9**	

Notes:
1. Flows calculated using the Rational Method (Q=2.78CiA)
2. Rainfall intensity calculated using City of Ottawa IDF curve equations.
3. Refer to **Table 5.1**.
4. Flows from existing flat roof will have some level of control from the existing roof drains, however, since the roof drain details are unknown the drainage area has been assumed to be uncontrolled. There is no change in peak flows from the pre-development condition.
5. Free flow calculations provided under **Appendix E**.
6. ICDs have been sized based on 2-year outflow and head.

As demonstrated in the table above, the 2-year peak flow will be increased by approximately 26.1 L/s, however, the 5-year and 100-year peak flows will be reduced by 15.6 L/s and 227.7 L/s respectively. The increase in peak flows during the 2-year design event can be attributed to the following:

- As per the recommended design criteria, no surface ponding can occur during the 2-year design event. As a result, available surface storage volumes cannot be fully utilized by overcontrolling release rates without resulting in surface ponding during the 2-year event.
- The building is an existing feature and will not be modified as part of the redevelopment, therefore, runoff from the building roof cannot be overcontrolled in post-development to reduce the overall peak flows during the 2-year design event.
- The relatively shallow and surcharged municipal storm sewer system makes underground storage unsuitable for the subject site.

Although there will be an increase in peak flows during the 2-year event, the post-development peak flows will be controlled to less than pre-development rates during the 5-year and 100-year design events. Given that the receiving storm sewer systems were designed for a greater than a 2-year level of service, the reduction in peak flows from the subject site during the 5-year and greater events should adequately mitigate impacts to the downstream systems resulting from the redevelopment of the property. Refer to the ponding and ICD calculations under **Appendix E** for more details.

7.4 Quantity Storage

In order to control stormwater outflows to the rates provided in **Table 6.2**, on-site storage will be required. On-site storage (in excess of the allowable release rates) will be required for all storm events up to and including the 100-year event. In accordance with the current OSDG,

there will be no surface ponding during the 2-year event and the maximum ponding depth will not exceed 0.35 m. Required storage volumes have been calculated using the Modified Rational Method and the allowable release rates provided in **Table 6.2**. Storage volume and ponding depths for the on-site catchment areas during the 100-year design event have been summarized in the table below.

Table 6.3: 100-Year Surface Storage Volumes & Ponding Depths

Drainage Area	100-Year		
	Required Storage Volume (m^3)	Provided Storage Volume[*2,3] (m^3)	Ponding Depth[*1] (m)
STM1	22.4	22.5	0.21
STM2	24.5	27.2	0.23
STM3	34.2	34.8	0.24
STM4	18.4	19.3	0.22
STM5	73.9	75.6	0.32

Notes:
1. Ponding depths are measured from the ponding elevation to the top of grate elevation.
2. Provided storage volumes are calculated using AutoCAD Civil3D by Autodesk.
3. Provided storage volumes only account for surface storage.

As demonstrated in the table above, adequate on-site storage has been provided to detain the 100-year event to the established release rates for the site. Refer to the storage volume tables provided under **Appendix E** for more details. Ponding details are shown on the Ponding Area Plan (24060-PA1) provided under **Appendix B**.

7.5 Stress Test (100-YR + 20%)

As requested by the City, the stress test (100-year + 20%) event must be assessed to ensure that that ponding limits do not encroach onto permanent structures. Flows and required storage volumes for the stress test event are shown on the storage volume tables provided under **Appendix E**. Drainage areas STM1 and STM3 have available surface storage beyond the 100-year event and therefore the stress test ponding limit will coincide with the maximum static ponding elevation (before spilling occurs). Since the 100-year ponding limit for drainage areas STM2 and STM4 already coincide with the maximum static ponding elevation, the stress test ponding limit will also occur at the same ponding elevation. Drainage area STM5 has available surface storage beyond the 100-year event, however, the drainage area does not have a proper major overland flow route (refer to discussion under **Section 7.6**). Although a sufficient spill elevation cannot be provided, the stress test ponding elevation remains below ground surface elevation at the building perimeter. Ponding details for the stress test event have been summarized in the table below.

Table 6.4: Stress Test Ponding

Drainage Area	Stress Test Ponding Elev.[*1] (m)	Ground Surface Elev.[*2] (m)	Freeboard[*3] (m)	Building Opening[*4] (m)	Freeboard[*5] (m)
STM1	75.62	75.75	0.13	75.96	0.34
STM2	75.78[*6]	76.41	0.63	77.25	1.47
STM3	75.90	76.41	0.51	77.25	1.35
STM4	76.75[*6]	77.22	0.47	77.71	0.96
STM5	75.37	75.45	0.08	75.62	0.25

Notes:
1. Maximum ponding elevation corresponds to maximum static elevation before spill occurs.
2. Lowest ground surface elevation at perimeter of building adjacent to ponding area.
3. Freeboard between ground surface elevation at building perimeter and stress test ponding elevation.
4. Elevation of lowest building opening adjacent to ponding area (i.e. door sill).
5. Freeboard between building opening and stress test ponding elevation.
6. Stress test ponding elevation coincides with maximum static ponding elevation.

As shown in the table above, adequate freeboard has been provided between the stress test ponding elevations and the proposed ground surface elevation at the building perimeter.

7.6 Major Storm System

The major storm system for the subject site has been designed to cascade overland flow from the individual catchment areas to the adjacent municipal right-of-way. For drainage areas STM1 to STM4, the major overland flow route will convey stormwater to the Coldrey Avenue right-of-way. A minimum freeboard of 0.30 m has been provided between the spill elevations and any building openings adjacent to the ponding area (refer to **Table 6.4**).

For drainage area STM5 (i.e. southern portion of the site) a major overland route to a municipal right-of-way is not feasible due to the natural topography of the property relative to the existing building which is to remain. The southerly building entrance has a surveyed door sill elevation of 75.62 m. The surrounding elevations are significantly higher and therefore it is not feasible to provide an overland spill elevation below the existing door sill elevation. To mitigate the risk of flooding at the existing building, a freeboard of 0.30 m has been provided between the 100-year ponding elevation (for adjacent drainage area STM5) and the existing door sill elevation. To provide added protection against flooding, a 7070 terminal backwater valve (or approved equivalent) is proposed at the storm sewer inlet to STMMH 203 to prevent surcharging of stormwater from the downstream trunk sewer. Refer to technical data for the backwater valve under **Appendix E**.

8.0 EROSION AND SEDIMENT CONTROL

Prior to construction and until vegetation has been re-established in disturbed areas, erosion and sediment control measures must be implemented to mitigate the impact on receiving watercourses and existing infrastructure. The following erosion and sediment control (ESC) measures are proposed for the subject site:

- Limit the extent of exposed soils at any given time.
- Erosion and sediment control measures shall be maintained until vegetation has been re-established in all disturbed areas. Re-vegetate disturbed areas as soon as possible.

- Stockpile soil away (15 metres or greater) from watercourses, drainage features and top of steep slopes.
- Silt sacks and silt fence barriers are to be installed and maintained where indicated on the erosion and sediment control plans.
- Mud mats are to be installed and maintained at all construction entrances.
- For dry weather periods (active and/or inactive construction phases) inspections of ESC measures shall be undertaken on a weekly basis.
- Inspection of ESC measures shall be undertaken immediately after major storm events (>25mm of rain in 24 hour period), significant snowmelt events (melting of snow at a rate which adversely affects the performance and function of the system), and extreme weather events.
- Visual inspections shall also be undertaken in anticipation of large storm events (or a series of rainfall and/or snowmelt days) that could potentially yield significant runoff volumes.
- Identify and rectify any deficiencies and undertake necessary maintenance measures as soon as possible.
- Inspections and maintenance of temporary ESC measures shall continue until they are no longer required.
- The Contractor shall ensure that records of inspection are taken, including at a minimum:
  - the inspector's name;
  - date of inspection;
  - visual observations;
  - any necessary remedial measures taken to maintain the interim ESC measures.
- Care shall be taken to prevent damage to ESC during construction operations.
- In some cases, barriers may be removed temporarily to accommodate construction operations. The affected barriers shall be reinstated immediately after construction operations are completed.
- ESC should be adjusted during construction to adapt to site features as the site becomes developed.
- ESC shall be cleaned of accumulated sedimentation as required and replaced as necessary.
- During the course of construction, if the Engineer believes that additional prevention methods are required to control erosion and sedimentation, the Contractor shall implement additional measures, as required, to the satisfaction of the Engineer.
- Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification (OPSS) 805.

Refer to the Erosion and Sediment Control Plan (DWG. 24060-ESC1) provided under **Appendix B** for more details.

9.0 CONCLUSIONS

It has been demonstrated that the proposed redevelopment of the property located at 1400 Coldrey Avenue can be accomplished in keeping with current City of Ottawa guidelines and can be designed to meet the stormwater management criteria outlined for the site. Specifically, the site design will include the following key design features:

- Post-development outflows will be controlled to less than pre-development rates for the 5-year and 100-year design events.
- Adequate on-site storage will be provided to detain the 100-year design event in excess of the allowable release rates.

- No surface ponding will occur during the 2-year design event.
- A major overland flow route will be provided to Coldrey Avenue.
- A minimum freeboard of 0.30 m will be provided between 100-year ponding elevations and any adjacent building openings.
- Erosion and sediment control measures will be implemented prior to construction and maintained until vegetation has been re-established in disturbed areas.

Report Prepared By:

Brandon MacKechnie, P.Eng.
Project Engineer

Appendix A

Pre-Consultation Notes

Plan of Survey (prepared by AOV)

As-Built Existing Storm Sewer in Coldrey/Easement Plan and Profile

As-Built Existing Storm Sewer in Easement Plan and Profile

Coldrey Avenue Storm Sewer HGL Profiles

Geotechnical Recommendations (prepared by GeoTerra)

File No.: PC2025-0022

February 13, 2025

Tim Eisner
JFSA Canada
Via email: teisner@jfsa.com

Subject: **Pre-Consultation: Meeting Feedback**
Proposed parking lot relocation Application – 1400 Coldrey Avenue

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on February 10, 2025.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☐	**4** ☒	**5** ☐

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Supporting Information and Material Requirements

The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.

The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Planning Comments:

1. The Official Plan designates the property Neighbourhood in the Inner Urban Transect. Sections 4.1.4, 4.6.5, and 5.2.2 of the Official Plan provide direction for designing parking lots that support the growth of mature trees and screening parking from the public realm. The design of the new parking lot should be based on the least impacts to trees and should accommodate new planting along Coldrey Avenue. The minimum 3 m-wide landscape buffer along the perimeter of the site also provides an opportunity for tree retention and planting.

2. The parking lot will need to comply with City's Zoning By-law. Please note the following performance standards and revise the concept plan accordingly:

    - Minimum drive ailse width of 6.7 metres

    - Minimum 3 metre-wide landscape buffer between the parking lot and lot lines

- Minimum 15% soft landscaping requirement (includes landscape buffer around the perimeter)

- Based on the current number of parking spaces, a minimum of 5 accessible parking spaces are required (2 Type A and 3 Type B). Please refer to Section 3.1 of the Accessibility Design Standards for additional information on the design and layout.

- Bicycle parking spaces are required as per Section 111. The applicable rate is 1 per 1500 m2 of gross floor area.

3. The proposed passenger loading zone should comply with the City's Accessible Design Standards, which includes a 2.4 m x 7.4 m side access aisle. See Section 3.2 of the Accessibility Design Standards for more information.

4. According to City records, a building permit was issued for the synagogue in June 1956. As the use predates the City's Zoning By-law (former municipality), the use is not subject to the current minimum parking rate/requirement for a place of worship.

5. A copy of the building permit and associated plans from 1956 may be available. The property owner can request a copy through the City's. Access to Building Permit Records | City of Ottawa program.

6. An Environmental Site Assessment (ESA) is not required.

7. Please provide additional information on the proposed fence and gate controlled access. Staff will confirm access requirements to the easements on site.

8. Development Review Management approved the request to apply a reduction in application fees. We will apply the "Standard Revision" fee: $14,802.54 (2025 fee)

Urban Design Comments:

9. An Urban Design Brief is not required.

10. Staff recommend maintaining all trees and landscaping along the property lines abutting the residential zones.

11. Staff recommend illustrating the future of the southern portion of the site (e.g., being preserved for use, greenspace, trees etc.)

12. This is an exciting project, and we look forward to helping you achieve its goals with the highest level of design resolution.

If you have any questions, please contact Christopher Moise, Planner II Urban Design, at Christopher.moise@ottawa.ca

Engineering Comments:

13. The Stormwater Management Criteria, for the subject site, is to be based on the following:

a. Application of the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.

b. In separated areas, the pre-development runoff shall be the lower of the existing coefficient or a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).

c. A calculated time of concentration (cannot be less than 10 minutes).

d. Flows to the storm sewer in excess of the 2-year storm release rate, up to and including the 100-year storm event, must be detained on site. There shall be no surface ponding occuring during the 2-year storm event.

e. Storm sewer outlets should not be submerged.

f. The quantity control criteria for this site are to control the 100-year post-development flows to the 2-year pre-development flow rate.

g. Quality control is not required for this development application.

h. The existing storm sewers on Coldrey Avenue are flowing uncontrolled and the sewer is surcharging even during small/more frequent events.

14. Deep Services (Storm)

a. It is recommended that the sites existing storm sewer connection be reused. In the event the post-development flows to this outlet are greater than the pre-development flows, please contact the Project Manager, Tyler Cassidy, with the proposed flows for confirmation.

b. If a new connection to the municipal storm system is required, it is recommended to connect to the 450mm dia. Conc. Sewer on Coldrey Avenue. A new connection to the West Hintonburg Storm Trunk sewer (2100mm dia.) will not be permitted.

c. Connections to trunk sewers and easement sewers are typically not permitted.

d. A monitoring maintenance hole is not required.

e. Sewer connections to be made above the springline of the sewermain as per:

i. Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.

ii. Std Dwg S11 (For rigid main sewers) – lateral must be less that 50% the diameter of the sewermain,

iii. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain,

iv. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.

15. An MECP Environmental Compliance Approval **Municipal/Private Sewage Works** may be required for the proposed development. A Ministry contact has been provided below but please work with City staff on the need (or not) of an application.

    a. Shannon Hamilton-Browne at (613) 521-3450 or Shannon.Hamilton-Browne@ontario.ca

16. Any new private approaches should be designed to meet the criteria outlined in the Private Approach (By-law No. 2003-447).

17. Major overland flow routes should be shown on the plan. Provide the 2-year, 100-year, and maximum static ponding limits on the grading/drainage (or stormwater management) plan.

18. Construction constraints: There is a planned Sidewalk Renewal project on Laperriere Avenue (estimated construction date is 1-2 years). Coordination may be required if there are overlapping construction dates.

If you have any questions, please contact Tyler Cassidy, P.Eng., Project Manager, at tyler.cassidy@ottawa.ca

Transportation Comments:

19. Ensure that the development proposal complies with the Right-of-way protection requirements. Please see Schedule C16 of the Official Plan.

    Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

20. Increase the clear throat length at the proposed eastern access by removing or relocating some parking spaces near the entrance. Clear throat length requirement is a minimum of 15 metres. Ensure this length is provided and dimension it on the plan. The clear throat length is measured from the ends of the driveway curb return radii to the first point of conflict on-site.

21. Sidewalks will be required along the Coldrey and Laperriere frontages, as well as on one side of both proposed accesses.

22. The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb, and boulevard to City standards.

23. Bicycle parking spaces are required as per Section 111 of the Zoning By-law. Bicycle parking spaces should be in safe, secure places near entrances and preferably protected from the weather. Consider providing bicycle parking under the canopy.

24. There is an existing transit stop (#4830) along the Laperriere property frontage. Communications with OC Transpo's Transit Planners are underway, additional information will be provided as soon as it is available.

25. As the proposed site is institutional use and for the public, AODA legislation applies.

    - Please Please consider using the City's Accessibility Design Standards, which provide a summary of AODA requirements.
    - Ensure all crosswalks located internally on the site provide a TWSI at the depressed curb, per requirements of the Integrated Accessibility Standards Regulation under the AODA.
    - Clearly define accessible parking stalls and ensure they meet AODA standards (include an access aisle next to the parking stall and a pedestrian curb ramp at the end of the access aisle, as required).
    - Ensure the design and layout of passenger loading and drop-off zones achieve AODA standards.

26. Preliminary site plan comments:

    - Ensure site accesses meet the City's Private Approach Bylaw and all driveways/aisles meet the requirements outlined in Section 107 of the Zoning By-law.
    - Show all details of the roads abutting the site; include such items as pavement markings, accesses and/or sidewalks.
    - Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).
    - Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)
    - Sidewalk is to be continuous across access as per City Specification 7.1.
    - Parking stalls at the end of dead-end parking aisles require adequate turning around space
    - Grey out any area that will not be impacted by this application.

If you have any questions, please contact Rochelle Fortier-Lesage, Transportation Project Manager, at rochelle.fortier@ottawa.ca

Environmental Planning Comments:

27. There are no natural heritage features, surface water features, or species-at-risk habitat present on or near the site that would trigger the need for an Environmental Impact Statement (EIS). An EIS is not required as part of this submission.

28. The City has policies aimed at reducing the impacts of climate change and the urban heat island effect. Tree preservation and planting form central components of these policies. Please seek to limit tree removals as much as possible. Also consider ways to reduce the impermeable surface area on site.

29. Additional tree plantings, especially in the reclaimed southern portions of the site, are strongly recommended. Please note that the City prefers all plantings be of native and non-invasive species.

If you have any questions, please contact Mark Elliott, Environmental Planner, at mark.elliott@ottawa.ca

Forestry Comments:

30. A Tree Conservation Report and Landscape Plan are submission requirements of this Site Plan Control application.

31. Explore parking configurations that retain as many existing trees as possible. Retention over removal of healthy trees and protecting suitable space for tree planting are priorities under the Official Plan (OP Section 4.8.2, policy 3 a, b).

32. Development must have the least impact to protected healthy trees as feasible (OP Section 4.8.2, policy 3, d). Design around existing trees and leave space for tree planting to compensate for the increase in hard surface on the site. Planning Forestry would not support a reduction in the minimum soft landscaping or landscape buffer requirements.

33. Plant trees and vegetation in the soft landscaped areas (i.e., landscape buffer, along Coldrey Avenue, and islands).

34. As this is a large property, there is an opportunity to contribute to the City's 40% canopy cover target. Provide a robust landscape plan that provides significant canopy contributions.

35. Section 4.1.4 of the Official Plan (policy 11, c, d) states that surface parking lots should be designed to have regular spacing of tree islands that support the growth of mature shade trees and landscaping requirements shall be in addition the landscaping requirements for the right of way around the perimeter of parking lots.

36. Section 4.6.5 of the Official Plan states development shall minimize conflict between vehicles and pedestrians and improve the attractiveness of the public realm including accommodating space for trees on site. It goes on to say that surface parking must be visually screened from the public realm. Incorporate new trees and protect existing trees around the entire perimeter of the parking lot.

37. Trees need to be planted in openings along street frontages (OP 4.1.3, policy 1). If on City property, maintain spacing distances noted below.

38. **Tree Conservation Report requirements:**

The following Tree Conservation Report (TCR) requirements have been adapted from the Schedule E of the Urban Tree Protection Guidelines. For more information, please contact hayley.murray@ottawa.ca

- A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City.
- Any tree 10 cm in diameter or greater and City-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
- The TCR must contain two separate plans/maps:
    i. Plan/Map 1 - show existing conditions with tree cover information.
    ii. Plan/Map 2 - show proposed development with tree cover information.
- The TCR must list all trees on site, as well as off-site trees if the CRZ (critical root zone) extends into the developed area, by species, diameter, and health condition. Please note that averages can be used if there are forested areas.
- Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
- If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained.
- The removal of trees on a property line will require the permission of both property owners.
- All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca.
- The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
- Removal of a City tree is not permitted unless justified. If justified, monetary compensation for the value of the tree must be paid before a tree removal permit is issued.

39. **Landscape Plan (LP) requirements:**

- Landscape Plan Terms of Reference must be adhered to for all tree planting: Click Here.

40. **Additional Elements for Tree Planting in the Right of Way:**

- Please ensure any retained trees are shown on the Landscape Plan.

- Sensitive Marine Clay - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines.
- Soil Volume - Please demonstrate as per the Landscape Plan Terms of Reference that the available soil volumes for new plantings will meet or exceed the minimum soil volumes requested.
- The city requests that consideration be given to planting native species wherever there is a high probability of survival to maturity.
- Efforts shall be made to provide as much future canopy cover as possible at a site level, through tree planting and tree retention. The Landscape Plan shall show/document that the proposed tree planting and retention will contribute to the City's overall canopy cover over time. Please provide a projection of the future canopy cover for the site to 40 years
- Minimum Setbacks
    - Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
    - Maintain 2.5m from curb.
    - Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.
    - Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas.
    - Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

- Tree specifications
    - Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
    - Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.
    - Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and if possible, include watering and warranty as described in the specification.
    - No root barriers, dead-man anchor systems, or planters are permitted.
    - No tree stakes unless necessary (and only one on the prevailing winds side of the tree)

If you have any questions, please contact Hayley Murray, Planning Forester, at hayley.murray@ottawa.ca

Parks and Facilities Planning Comments:

41. The applicant indicated at the pre-consultation meeting that the existing use is a place of worship. On the pre-consultation application form, the land use was described as a religious institution, which is not a defined term in the Zoning By-law or the Parkland Dedication By-law. For the site plan application submission, please refer to the use as a place of worship rather than a religious institution.

42. Subsection 11(2)(c) of Parkland Dedication By-law No. 2022-280 exempts a place of worship, excluding any ancillary uses as defined by the Zoning By-law, from parkland conveyance or cash-in-lieu of parkland conveyance.

43. As the primary use of the property is a place of worship and the proposed development does not involve an addition of any ancillary uses to the building, the proposed development is exempt from parkland conveyance or cash-in-lieu of parkland conveyance under subsection 11(2)(c) of the Parkland Dedication By-law.

If you have any questions, please contact Burl Walker, Parks Planner, at burl.walker@ottawa.ca

Submission Requirements and Fees

The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.

The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Please address all comments detailed in this feedback form to support and an effective and expedited review of the application.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Regards,

Siobhan Kelly
Planner II
Development Review South
Planning, Development and Building Services

Encl. Study and Plan Identification List

c.c. John Oke, Student Planner
Christopher Moise, Planner II Urban Design
Tyler Cassidy, Infrastructure Project Manager
Rochelle Fortier-Lesage, Transportation Project Manager
Mark Elliott, Environmental Planner II
Hayley Murray, Forester
Burl Walker, Parks Planner

PLAN OF SURVEY OF

PART OF LOT I
CONCESSION A RIDEAU FRONT
Geographic Township of Nepean
CITY OF OTTAWA

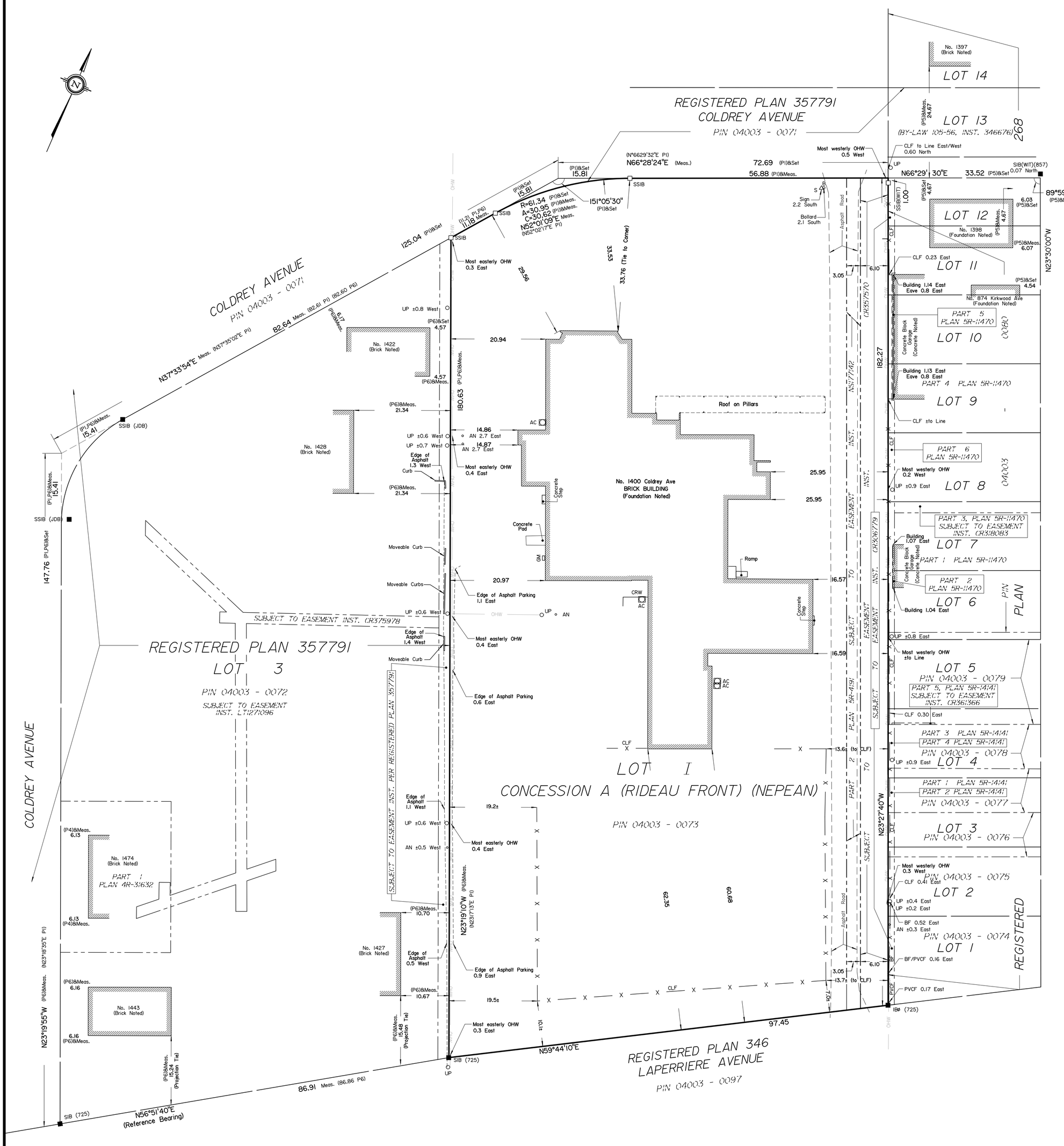
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 500

20 15 10 5 0 10 20 Metres

Metric

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



Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act and the Surveyors Act and the regulations made under them.
2. The survey was completed on the 1st day of May, 2025.

May 9, 2025
Date

A. Handspiker
Ontario Land Surveyor

Notes & Legend

Denotes		
—□—	=	Survey Monument Planted
—■—	=	Survey Monument Found
SIB	=	Standard Iron Bar
SSIB	=	Short Standard Iron Bar
IB	=	Iron Bar
IBØ	=	Round Iron Bar
(WIT)	=	Witness
(AOG)	=	Annis, O'Sullivan, Vollebekk Ltd.
Meas.	=	Measured
(P1)	=	Registered Plan 357791
(P2)	=	Plan 5R-4191
(P3)	=	Plan 5R-14141
(P4)	=	Plan 4R-31632
(P5)	=	(857) Plan December 16, 1987
(P6)	=	(JDB) Plan Sptember 18, 2017
CLF	=	Chain Link Fence
BF	=	Board Fence
PVCF	=	Plastic Fence
UP	=	Utility Pole
AN	=	Anchor
◯ AC	=	Air Conditioner
□ GM	=	Gas Meter
△ S	=	Sign
○ B	=	Bollard
CRW	=	Concrete Retaining Wall
—— OHW ——	=	Overhead Wires
—— X ——	=	Fence
———	=	Property Line

SITE AREA= 1.7967 Hectares

Bearings are grid, are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

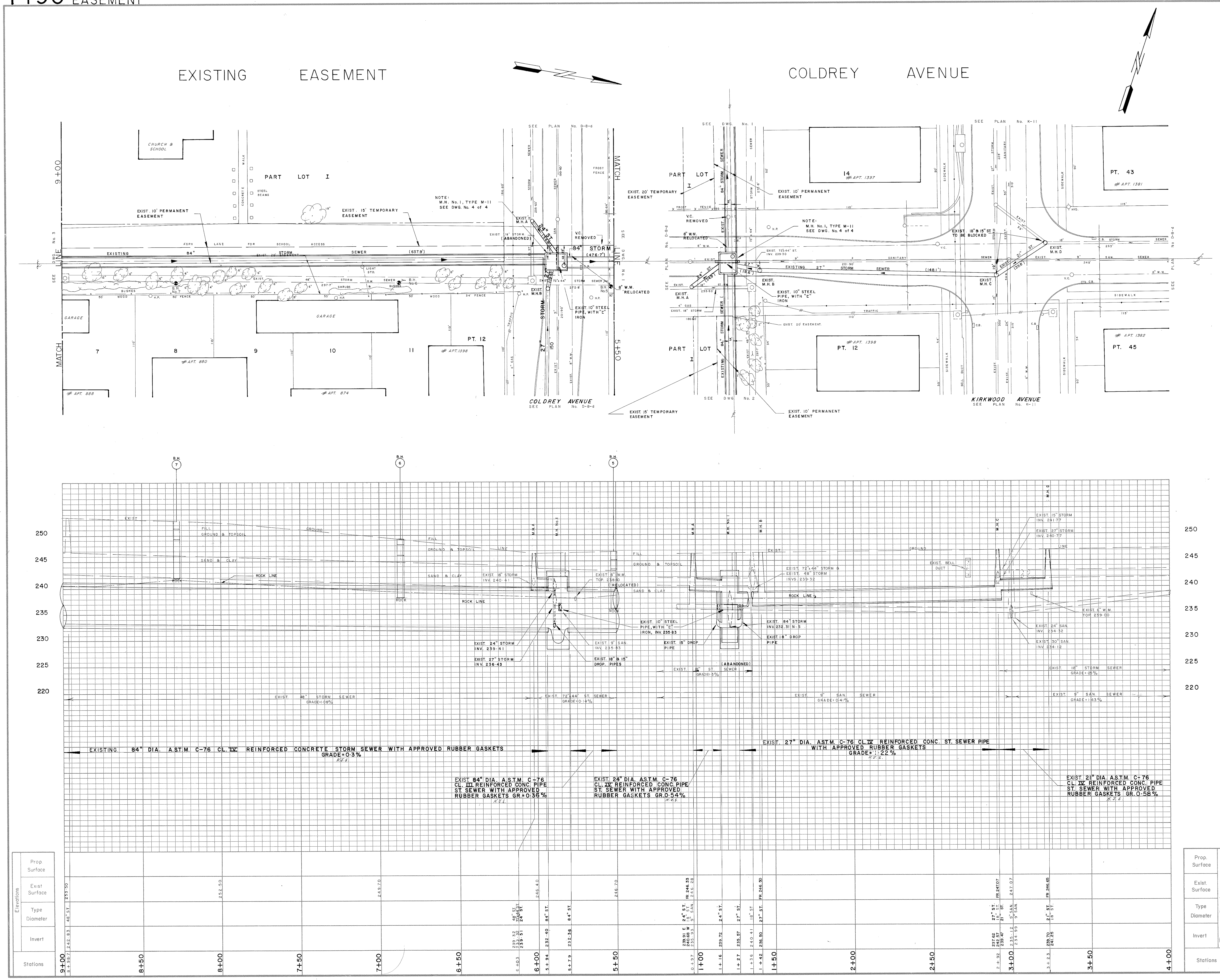
For bearing comparisons, a rotation of 0°22'35" counter-clockwise was applied to bearings on plans P1, P6

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-103885

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 25852-25 DBM PtLt I C A NP D D2 ig



City Of Ottawa
Department Of Physical Environment
Engineering And Surveys Branch

Notes:

· Utilities shown are taken from best available records. Contractor is requested to check with all utility companies before digging.
· Soil information shown is not guaranteed and contractors are advised to collect additional soils information as deemed necessary.
· A minimum of 18 inches vertical clearance to be maintained between sewers and watermains where practical.
· Borehole soil descriptions are not based on sieve analysis but on visual inspection only. Except where otherwise noted.
· Soil information taken from:
· Date of survey:
· Reference bench mark:
· Existing sewers constructed in:
· This plan supercedes (in whole or in part) plan no:
· Actual rock line recorded during construction of existing storm sewer.
· Registered plan no: 5R 4191
Boreholes taken May 6-7, 1958
· All manhole details as per: Central Precast Products Ltd. (or equal) Manufactures 1979 Catalogue

Final Measurements:

Type Of Sewer: 84" STORM	Type Of Sewer:
Work Commenced: OCT. 79	Work Commenced:
Work Completed: JAN. 80	Work Completed:
Contractor: TAGGART	Contractor:
Designed By:	Designed By:
Inspector: JOYCE	Inspector:
Instrumentman: McNAB	Instrumentman:
Field Book: 3933 Date: 15/1/80	Field Book: Date:
Signed By:	Signed By:
Checked By:	Checked By:

Legend:

PROPOSED: MANHOLE & SEWER; STANDARD CATCH BASIN; HEAVY DUTY CATCH BASIN
EXISTING: MANHOLE & SEWER; WATERMAIN; BELL; HYDRO; TRAFFIC; FIRE ALARM; GAS MAIN & VALVE; HYDRANT; WATER VALVE; WATER VALVE CHAMBER; STAND PIPE; FENCE; ROCK
HOUSE or CATCH BASIN CONNECTION TAKEN FROM TV INSPECTION; HOUSE or CATCH BASIN CONNECTION TAKEN FROM RECORDS; STANDARD CATCH BASIN; HEAVY DUTY CATCH BASIN; CATCH BASIN TO BE REMOVED & REPLACED WITH STANDARD C.B.; HEAVY DUTY CATCH BASIN TO BE REMOVED & REPLACED WITH STANDARD C.B.; BORE HOLE; UTILITY POLE (labelled); UTILITY POLE (labelled) WITH LIGHT STANDARD or LIGHT STANDARD; UTILITY POLE & GUY WIRE; TRAFFIC SIGN; STREET SIGN; TRAFFIC LIGHT

Revisions:

No	Date	Description	Drawn By	Appr'd By
1	JAN. 92	ENG. AS-BUILT APPLIED - SEWERS	B.L.R. (T.E.S.) B.G.✓	

Storm Sewer Designed By: J. Cook	Date	Checked By: H.V. Pascoe	Date: 18/7/'79
Sanitary Sewer Designed By	Date	Checked By	Date
Road Grade Designed By	Date	Checked By	Date
Survey Detail By: D. McNab	Date	Checked By: D. McNab	Date: 26/6/79
Drafting By: K.B.L.	Date	Checked By: Kirk Stewart	Date

REGISTERED PROFESSIONAL ENGINEER H. V. PASCOE PROVINCE OF ONTARIO

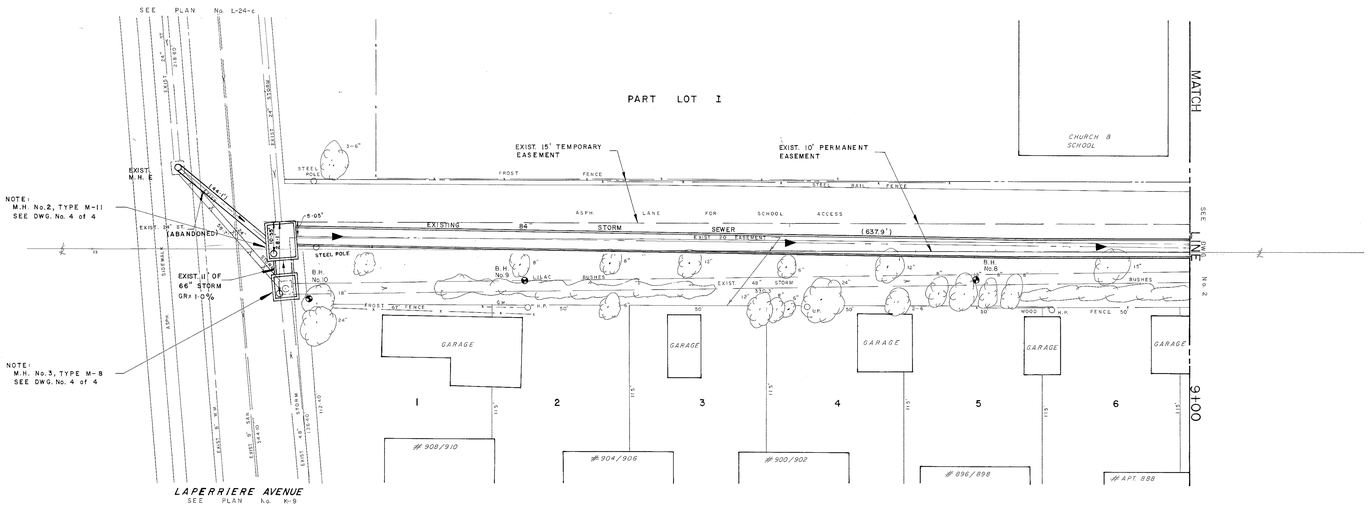
Engineering And Surveys Branch

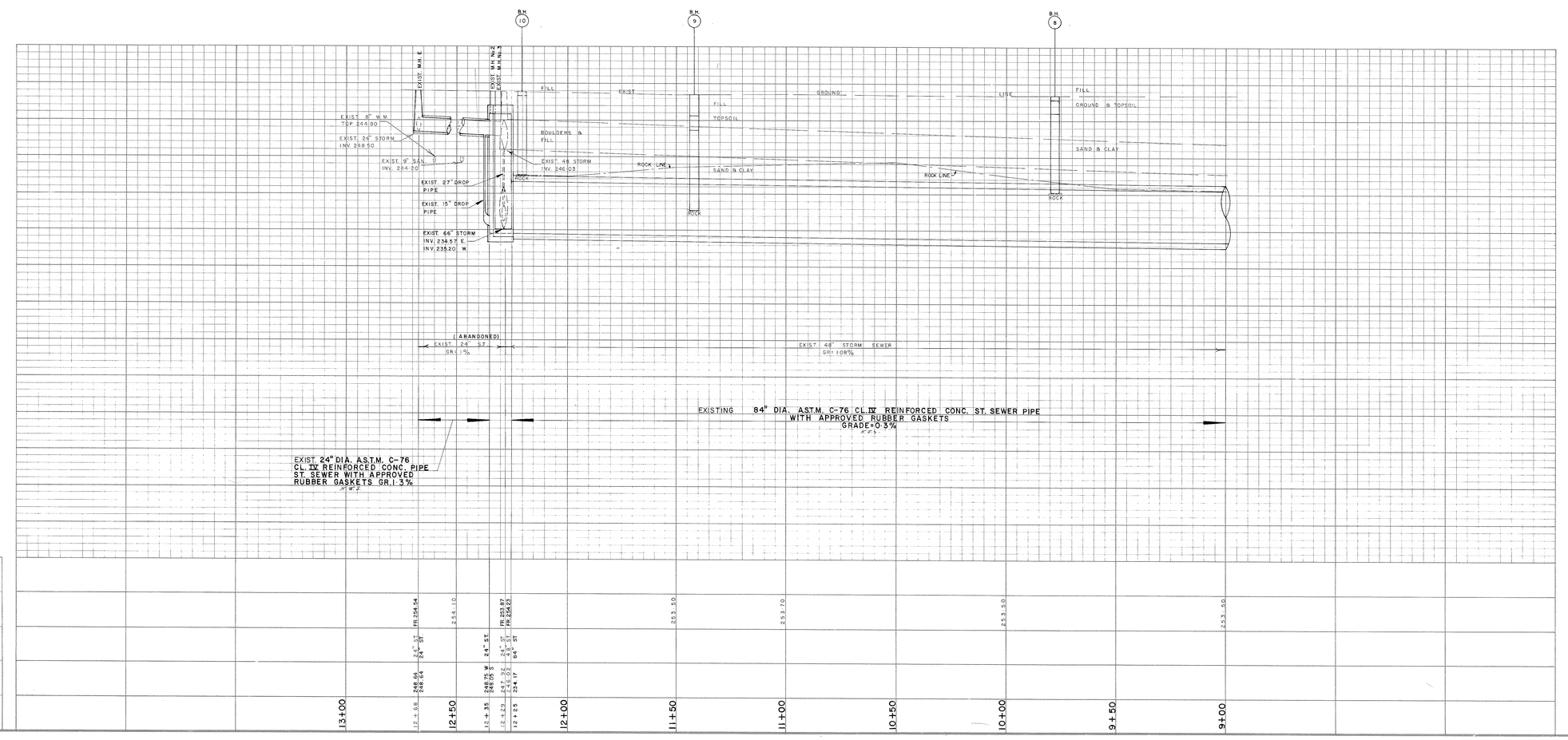
C. Sim P. Eng. Commissioner	D.K. Donaldson P.Eng. Branch Director
Chief Design & Constr. Eng.	Section Head

EXISTING STORM SEWER IN COLDREY AVE. AND IN EXISTING EASEMENT
FROM KIRKWOOD AVE. TO 300' SOUTH OF COLDREY AVE.

Contract No:	Survey Books:	Scales:	Plan No:
79-35	3886	HOR. 1" = 20' VERT. 1" = 6'	1490 Sheet 2 of 4

EXISTING EASEMENT





City Of Ottawa
Department Of Physical Environment
Engineering And Surveys Branch

Notes:

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- Soil information shown is not guaranteed and contractors are advised to collect additional soils information as deemed necessary.
- A minimum of 18 inches vertical clearance to be maintained between sewers and watermains where practical.
- Borehole soil descriptions are not based on sieve analysis but on visual inspection only. Except where otherwise noted.
- Soil information taken from:
- Date of survey
- Reference bench mark
- Existing sewers constructed in
- This plan supercedes (in whole or in part) plan no.
- Actual rock line recorded during construction of existing storm sewer
- Registered plan no. SR 419
- Boreholes taken May 6-7, 1958
- All manhole details as per: Central Precast Products Ltd. (or equal) Manufactures 1979 Catalogue

Final Measurements:

Type Of Sewer: 84" STORM	Type Of Sewer
Work Commenced: OCT. 79	Work Commenced
Work Completed: JAN. 80	Work Completed
Contractor: TAGGART	Contractor
Designed By	Designed By
Inspector: JOYCE	Inspector
Instrumentman: McNAB	Instrumentman
Field Book: 3933 Date: 15/1/80	Field Book Date
Signed By	Signed By
Checked By	Checked By

Legend:

PROPOSED:

EXISTING:

Revisions:

No	Date	Description	Drawn By	Appr'd By
1	JAN. '82	ENG AS BUILT APPLIED - SEWERS	B.L.P.(TES)	B.G.

Sanitary Sewer Designed By: Date: Checked By: H. V. Pascoe 18/7/79
Road Grade Designed By: Date: Checked By: Date
Survey Detail By: D.R.W.M. Date: Checked By: Date
Drafting By: D.R.W.M. K. B.L. Date: 26/6/79 Checked By: Rob Stewart

H. V. PASCOE
REGISTERED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

Engineering And Surveys Branch

C. Sim P.Eng. Construction
D.K. Donaldson P.Eng. Branch Director
Section Head: D. St. Louis

EXISTING STORM SEWER
EXISTING EASEMENT
FROM CARLING AVE. TO LAPERRIERE AVE.

Contract No.	Survey Books	Scales	Plan No.
79-35	3886	HOR. 1"=20' VERT. 1"=6'	1490
			Sheet 3 of 4

Menu Print Select Edit Zoom Undo Copy Extent Tile Properties Scenario Favorites

HGL

Conduit STM27763
Flow = 0.13 m³/s

Conduit STM27762
Flow = 0.123 m³/s

Conduit STM27761
Flow = 0.148 m³/s

Conduit STM48898
Flow = 0.292 m³/s

Conduit STM27760
Flow = 0.315 m³/s

Conduit STM27759
Flow = 0.315 m³/s

Conduit STM27758
Flow = 0.315 m³/s

77
76.5
76
75.5
75
74.5
74
73.5
73
72.5
72
71.5
71
70.5

0 20 40 60 80 100 120 140 160 180 200 220 240 260

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11/14/2018 01:06AM

Storage MHST27621
CWSEL = 76.11 m
11/14/2018 01:07AM

Storage MHST27622
CWSEL = 76 m
11/14/2018 01:08AM

Storage MHST27623
CWSEL = 75.82 m
11/14/2018 01:10AM

Storage MHST27624
CWSEL = 75.34626 m
11/14/2018 01:11AM

Storage MHST27625
CWSEL = 74.60624 m
11/14/2018 01:12AM

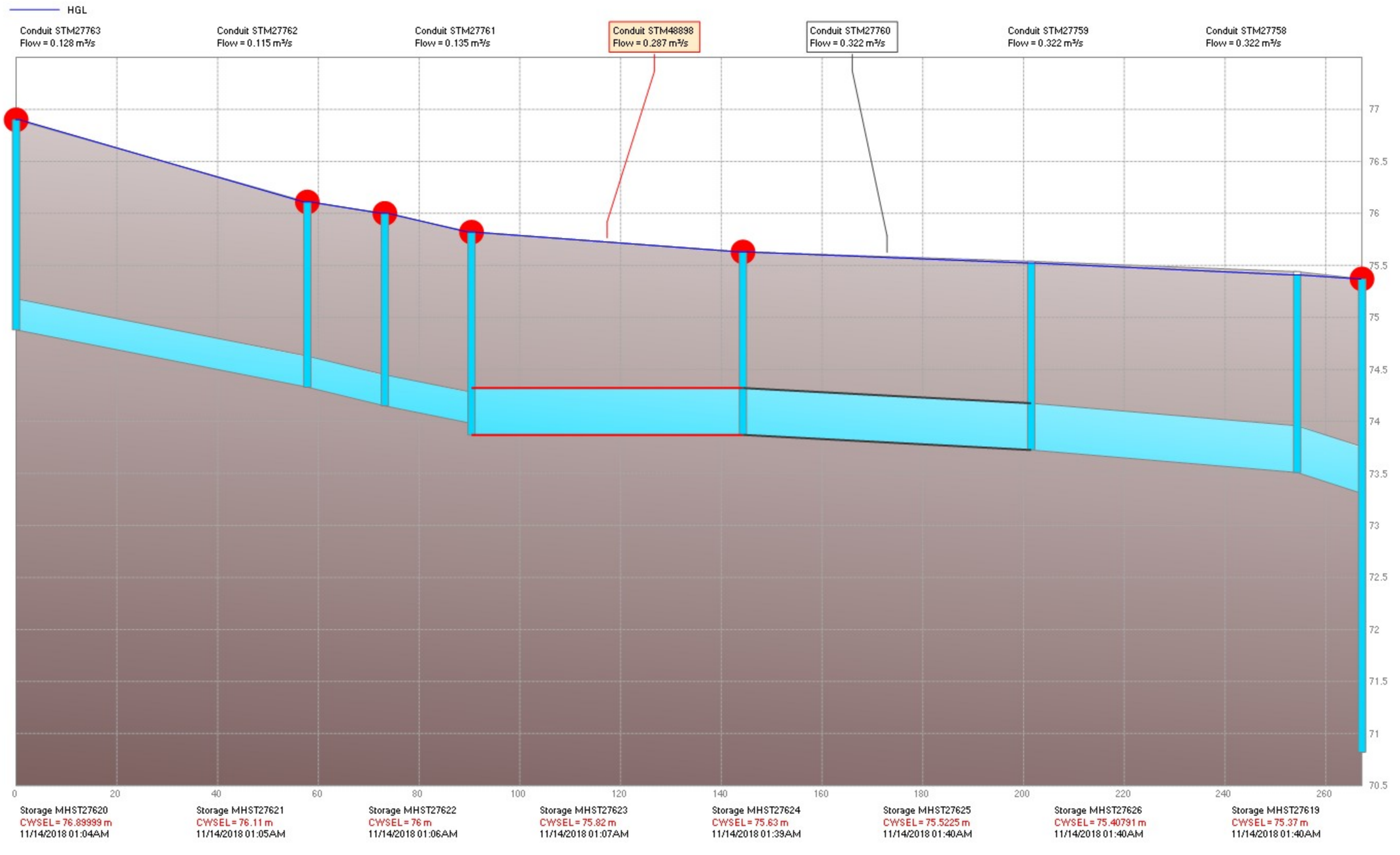
Storage MHST27626
CWSEL = 73.91097 m
11/14/2018 01:12AM

Storage MHST27619
CWSEL = 72.43231 m
11/14/2018 01:20AM

al 2D -- FRP_Ottawa Center_25yr_v6

Map | Table | Graph | Profile | Details | Status | Documentation | Scripts

Menu | Print | Select | Edit | Zoom | Undo | Copy | Extent | Tile | Properties | Scenario | Favorites



Geotechnical Recommendations for the Proposed Parking Lot Construction at 1400 Coldrey Ave, Ottawa

Addressed to:

David Meikle & Marcel Mondoux

DBM CONTRACTING (Ottawa) Inc.

March 2025

1. Project Overview

The purpose of this geotechnical investigation is to provide recommendations for the construction of a new parking lot at 1400 Coldrey Ave, Ottawa. The site investigation included five test pits (TP1 to TP5) to determine the subsurface soil conditions and assess their suitability for supporting the proposed pavement structure.

2. Subsurface Conditions

The test pits revealed the following soil profile:

- **0 to 0.05 m: Topsoil**
- **0.05 to 1.5 – 1.8m: Glacial Till (sandy clay with trace of gravel)**

The topsoil layer consists of organic-rich material, which is generally unsuitable for supporting pavement structures due to its compressibility and potential for settlement. This layer should be completely stripped and removed prior to construction to ensure a stable subgrade.

Note that the test pits were conducted under winter conditions.

No water was encountered during the test pits.

The underlying till is a compact and dense sandy clay material that provides a competent bearing stratum. Till is known for its relatively low permeability, which helps in reducing water infiltration and frost heave potential. Given its good bearing capacity, the till layer is suitable for supporting the proposed parking lot pavement structure. However, depending on moisture conditions at the time of construction, localized areas of the till may require additional compaction or drying measures to enhance stability. Any disturbance to the till subgrade should be minimized to preserve its natural strength.

3. Site Preparation and Excavation

- Strip and remove all organic topsoil and any soft or unsuitable materials to expose the underlying till.
- If pockets of loose or weak material are encountered, they should be excavated and replaced with compacted granular fill.
- Maintain proper drainage to prevent water accumulation during excavation.

4. Subgrade Preparation and Compaction

- The exposed till subgrade should be compacted using a heavy roller to achieve a **minimum 98% Standard Proctor Maximum Dry Density (SPMDD)**.
- Any disturbed areas should be recompacted to the required density before placement of granular materials.

- If high moisture content is observed in the till, drying techniques such as aeration or the addition of granular material should be considered.

5. Pavement Design Recommendations

Based on the existing soil conditions, the following pavement structure is recommended:

- **Asphalt Pavement:** 50 mm HL3 asphalt surface course
- **Granular Base:** 150 mm of Granular A
- **Granular Subbase:** 300 mm of Granular B Type II
- All granular materials should be compacted to a **minimum of 98% SPMDD**.

Heavy-Duty Pavement Structure (Fire Lane and High-Traffic Areas):

- **Asphalt Pavement:** 40 mm HL3 asphalt surface course over 50 mm HL8 binder course
- **Granular Base:** 150 mm of Granular A
- **Granular Subbase:** 450 mm of Granular B Type II
- All granular materials should be compacted to a **minimum of 98% SPMDD**

Note that existing asphalt could potentially be reused; however, its suitability for reuse must be confirmed during the construction phase by the contractor or site engineer. The responsibility for verification and acceptance of existing pavement materials lies with the construction team.

6. Drainage Considerations

- A subdrain system may be installed to manage groundwater and prevent water buildup beneath the pavement structure.
- Ensure proper surface drainage with a minimum slope of 2% to prevent ponding and water infiltration into the subgrade.

7. Frost Protection

- The till is expected to provide good frost resistance, but to mitigate frost-related issues, ensure that the granular subbase extends below the frost penetration depth.
- Proper drainage will also help reduce the potential for frost heave.

8. Construction Monitoring and Quality Control

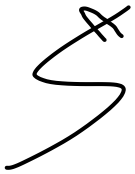
- Regular compaction testing should be conducted on the subgrade, granular base, and asphalt layers to ensure compliance with design specifications.

- The pavement structure should be installed in suitable weather conditions to avoid issues related to compaction and material performance.

9. Conclusion

The subsurface investigation indicates that the site is suitable for the proposed parking lot construction. The glacial till (sandy clay with trace of gravel) provides a good bearing material. Proper site preparation, drainage control, and adherence to the recommended pavement structure will ensure long-term performance of the parking lot.

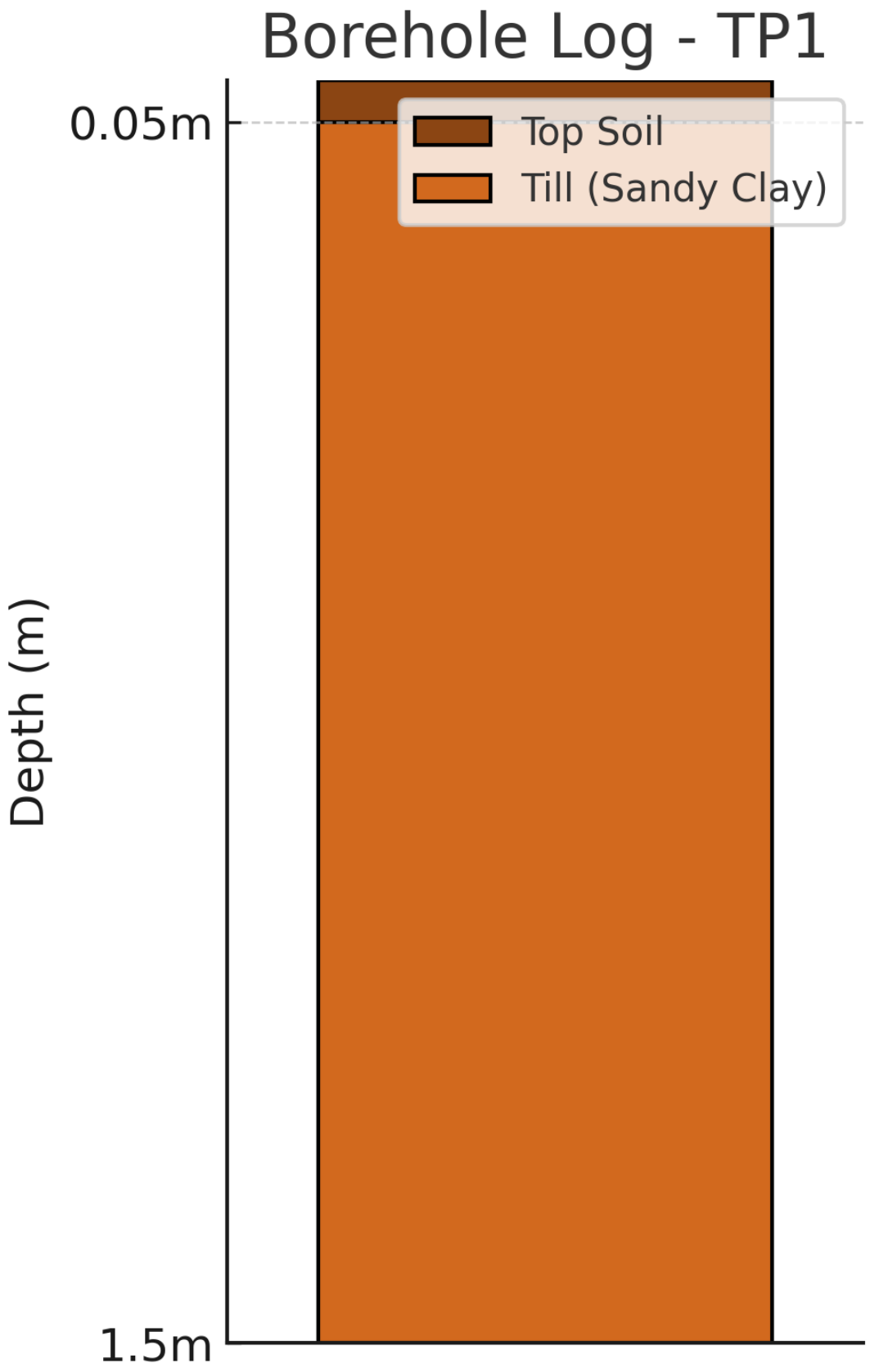
Approved by:

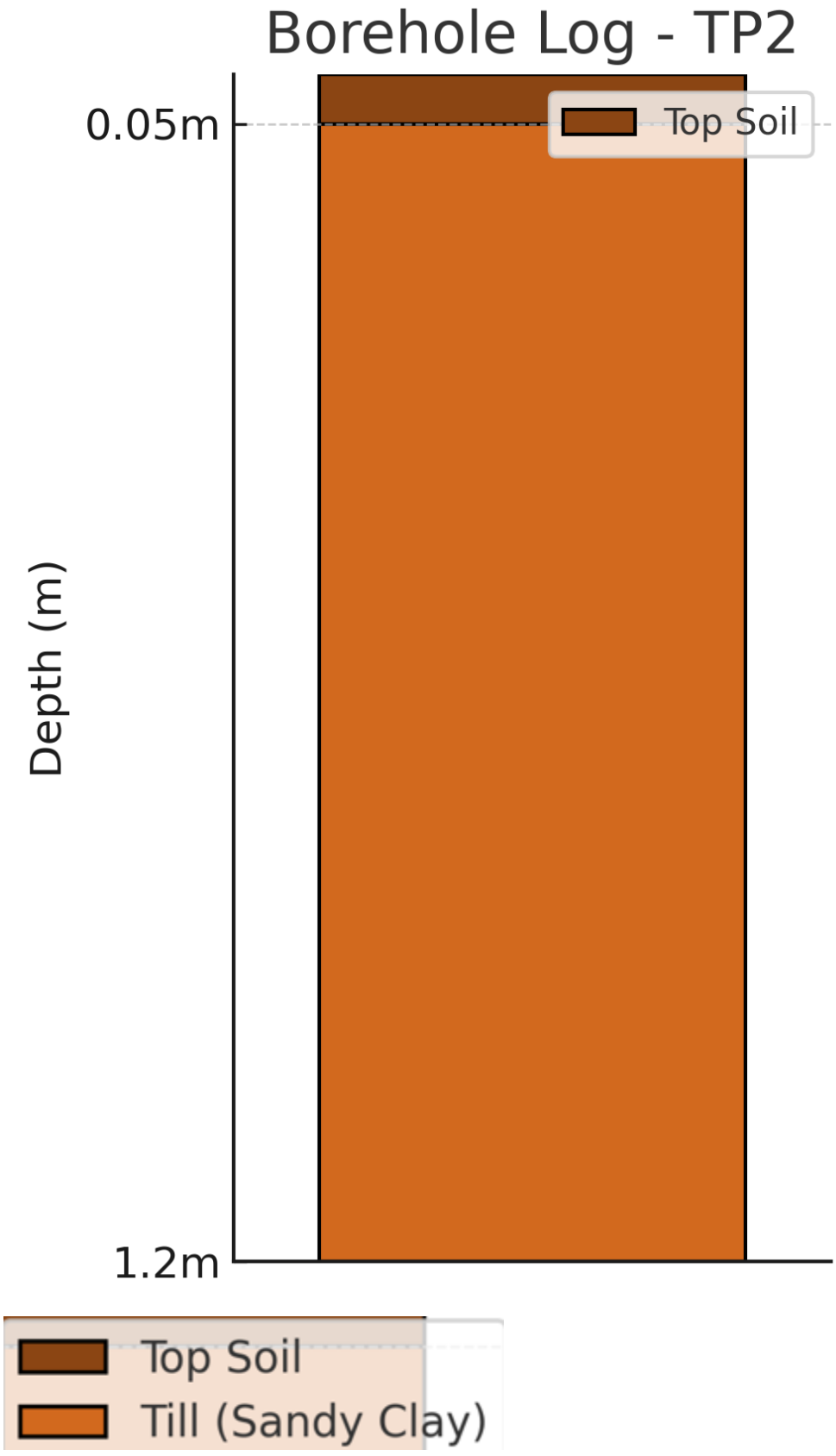


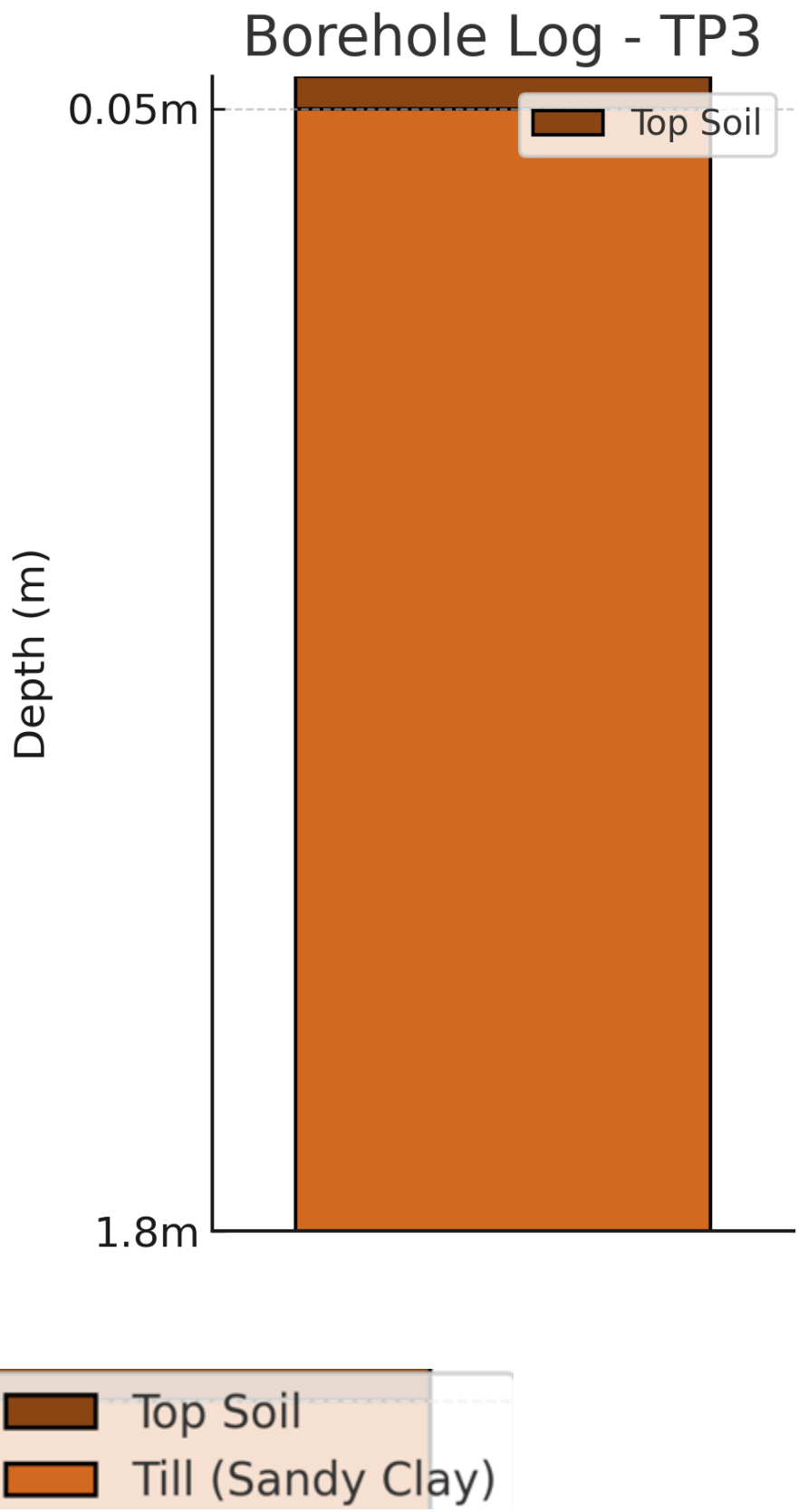
Ahmed Lamrani, P.Eng

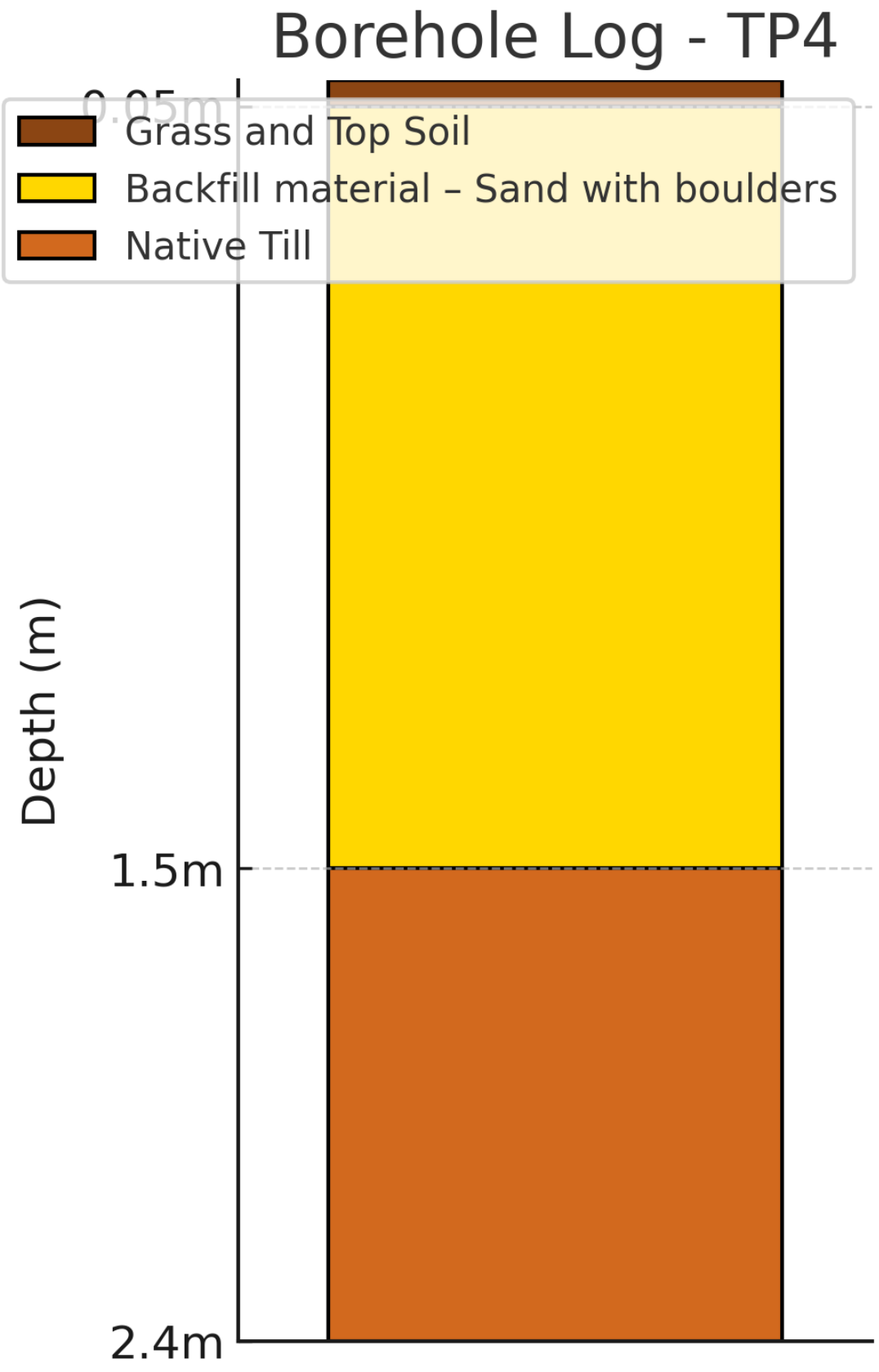
Appendix – Figure

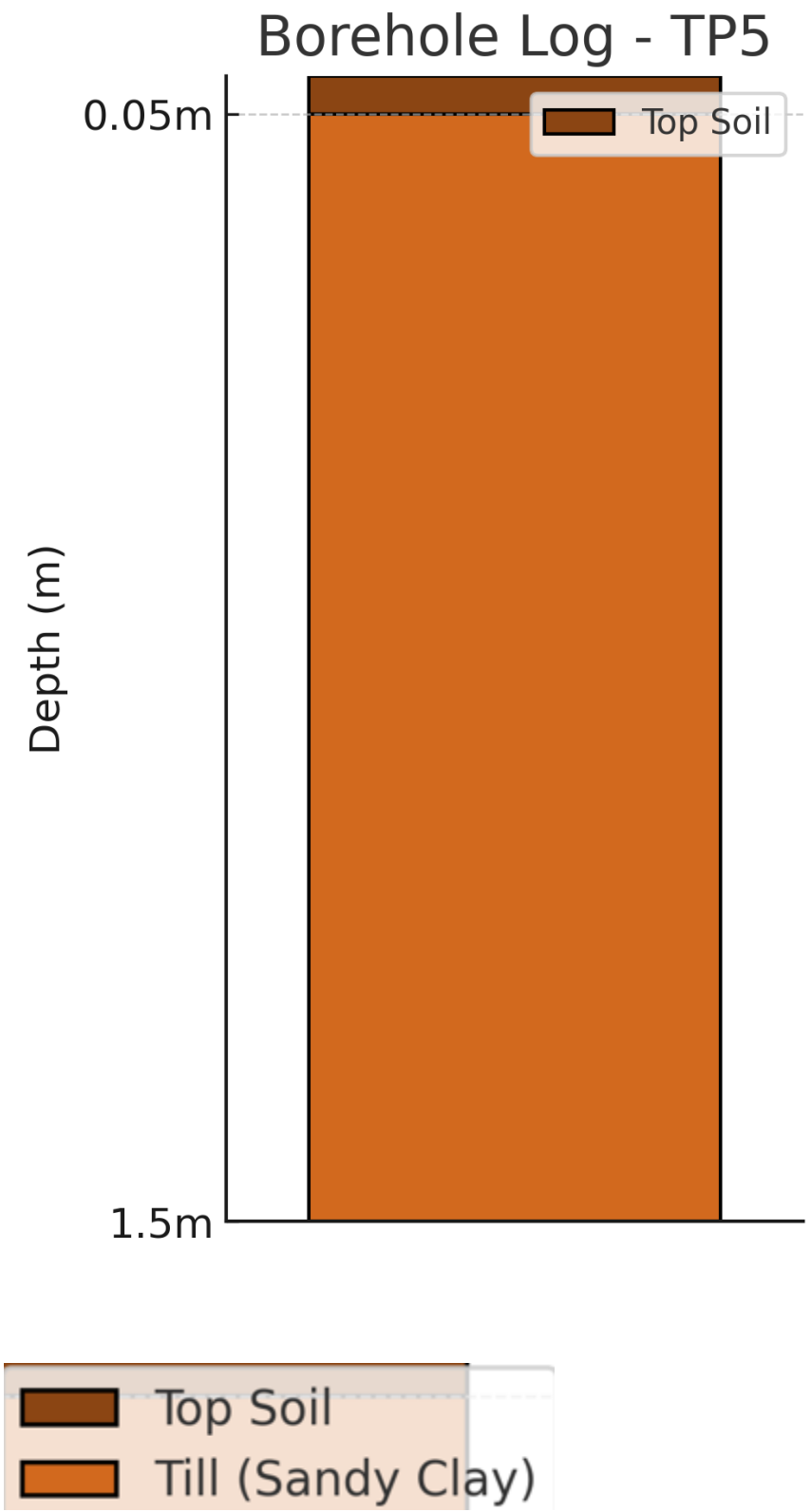
Figure 1: Test pits Location at at 1400 Coldrey Ave, Ottawa


Borehole Log - TP1
0.05m
1.5m
Depth (m)
Top Soil
Till (Sandy Clay)


Borehole Log - TP2
0.05m
Top Soil
Depth (m)
1.2m
Top Soil
Till (Sandy Clay)


Borehole Log - TP3
0.05m
Top Soil
Depth (m)
1.8m
Top Soil
Till (Sandy Clay)


Borehole Log - TP4
0.05m
Grass and Top Soil
Backfill material – Sand with boulders
Native Till
Depth (m)
1.5m
2.4m


Borehole Log - TP5
0.05m
Top Soil
Depth (m)
1.5m
Top Soil
Till (Sandy Clay)

Geotechnical Borehole Logs – Field notes

TP 1

Depth (m)	Material
0 - 0.05	Grass and Top Soil
0.05 - 1.5	Till – sandy clay

TP 2

Depth (m)	Material
0 - 0.05	Grass and Top Soil
0.05 - 1.2	Till – sandy clay

TP 3

Depth (m)	Material
0 - 0.05	Grass and Top Soil
0.05 - 1.5	Till – sandy clay

TP 4

Depth (m)	Material
0 - 0.05	Grass and Top Soil
0.05 - 1.5	Backfill material – Sand with boulders
1.5 – 2.4	Till – sandy clay

TP 5

Depth (m)	Material
0 - 0.05	Grass and Top Soil
0.05 - 1.5	Till - sandy clay

Appendix – Test Pit Report

Test pit Report

Project Name :	**Preliminary Geotechnical Investigatiom**
Test pit:	**TP1**
Client :	**DBM CONSULTING**
Localisation:	**1400 Coldrey Ave, Ottawa, ON K1Z 7P9**
Contractor :	**ASL**
Equipment	**Excavator** Depth: 1.80m
Opening (m):	**2 x 2**
Field Representative :	**Ahmed Lamrani**

Depth (m)	Depth-ft	ELEVATION (m)	STRATIGRAPHY DESCRIPTION	Symbol		VOC (ppm)
		0	Niveau			
		0.00	Top Soil			0
		-0.05				
		0.05	Glacial Till: sandy clay			0
1		-1.00				
		1.00				
	5	-1.50				
		1.50	End of Test Pit			
2		-2.00				
		2.00				
		-2.50				
		2.50				
3	10	-3.00				
		3.00				
4						
	15					
5						

Verified by Ahmed Lamrani, P.Eng

Test pit Report

Project Name :	**Preliminary Geotechnical Investigatiom**
Test pit:	**TP2**
Client :	**DBM CONSULTING**
Localisation:	**1400 Coldrey Ave, Ottawa, ON K1Z 7P9**
Contractor :	**ASL**
Equipment	**Excavator** Depth: 1.20m
Opening (m):	**2 x 2**
Field Representative :	**Ahmed Lamrani**

STRATIGRAPHY

Depth (m)	Depth-ft	ELEVATION (m)	DESCRIPTION	Symbol		VOC (ppm)
		0	Niveau			
		0.00	Top Soil			0
		-0.05				
		0.05	Glacial Till: sandy clay			0
1		-1.00				
		1.00				
	5	-1.20				
		1.20	End of Test Pit			
2		-2.00				
		2.00				
		-2.50				
		2.50				
3	10	-3.00				
		3.00				
4						
	15					
5						

Verified by Ahmed Lamrani, P.Eng

Test pit Report

Project Name :	**Preliminary Geotechnical Investigatiom**
Test pit:	**TP3**
Client :	**DBM CONSULTING**
Localisation:	**1400 Coldrey Ave, Ottawa, ON K1Z 7P9**
Contractor :	**ASL**
Equipment	**Excavator** Depth: 1.80m
Opening (m):	**2 x 2**
Field Representative :	**Ahmed Lamrani**

STRATIGRAPHY

Depth (m)	Depth-ft	ELEVATION (m)	DESCRIPTION	Symbol		VOC (ppm)
		0	Niveau			
		0.00	Top Soil			0
		-0.05				
		0.05	Glacial Till: sandy clay			0
1		-1.00				
		1.00				
	5	-1.80				
		1.80	End of Test Pit			
2		-2.00				
		2.00				
		-2.50				
		2.50				
3	10	-3.00				
		3.00				
4						
	15					
5						

Verified by Ahmed Lamrani, P.Eng

Test pit Report

Project Name :	**Preliminary Geotechnical Investigatiom**
Test pit:	**TP4**
Client :	**DBM CONSULTING**
Localisation:	**1400 Coldrey Ave, Ottawa, ON K1Z 7P9**
Contractor :	**ASL**
Equipment	**Excavator** Depth: 2.40m
Opening (m):	**2 x 2**
Field Representative :	**Ahmed Lamrani**

STRATIGRAPHY

Depth (m)	Depth-ft	ELEVATION (m)	DESCRIPTION	Symbol		VOC (ppm)
		0	Niveau			
		0.00	Top Soil			0
		-0.05				
		0.05				0
1		-1.00	Glacial Till: sandy clay with trace of gravel and boulders			
		1.00				
	5	-1.50				
		1.50				
2		-2.00	Glacial Till			
		2.00				
		-2.40				
		2.40	End of Test Pit			
3	10	-3.00				
		3.00				
4						
	15					
5						

Verified by Ahmed Lamrani, P.Eng

Test pit Report

Project Name :	**Preliminary Geotechnical Investigatiom**
Test pit:	**TP5**
Client :	**DBM CONSULTING**
Localisation:	**1400 Coldrey Ave, Ottawa, ON K1Z 7P9**
Contractor :	**ASL**
Equipment	**Excavator** Depth: 1.50m
Opening (m):	**2 x 2**
Field Representative :	**Ahmed Lamrani**

STRATIGRAPHY

Depth (m)	Depth-ft	ELEVATION (m)	DESCRIPTION	Symbol		VOC (ppm)
		0	Niveau			
		0.00	Top Soil			0
		-0.05				
		0.05	Glacial Till: sandy clay			0
1		-1.00				
		1.00				
	5	-1.50				
		1.50	End of Test Pit			
2		-2.00				
		2.00				
		-2.50				
		2.50				
3	10	-3.00				
		3.00				
4						
	15					
5						

Verified by Ahmed Lamrani, P.Eng

Appendix B

Site Plan (prepared by IDEA)

Servicing Plan (DWG. 24060-S1)

Grading Plan (DWG. 24060-GR1)

Ponding Area Plan
(DWG. 24060-PA1)

Erosion and Sediment Control Plan
(DWG. 24060-ESC1)

Notes & Details (DWG. 24060-N1)

Existing Conditions and Removals Plan
(DWG. 24060-R1)

GENERAL NOTES

NOTE-A :
- ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS, INCLUDING OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS. ANY DISCREPANCIES BETWEEN DRAWINGS WILL BE REPORTED TO THE PROJECT LEAD IMMEDIATELY FOR CLARIFICATION PRIOR TO COMMENCING ANY CONSTRUCTION.

NOTE-B :
- ALL GENERAL SITE INFORMATION AND CONDITIONS HAVE BEEN COMPILED FROM EXISTING PLANS AND SURVEYS.

NOTE-C :
- CONTRACTOR IS RESPONSIBLE TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL ERRORS AND / OR OMISSIONS TO THE ARCHITECT.

NOTE-D :
- REFER TO LANDSCAPE PLAN FOR ALL EXTERIOR LANDSCAPING.

NOTE-E :
- DO NOT SCALE DRAWINGS.

NOTE-F :
- ALL CONTRACTORS MUST COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS.

SURVEY INFO

TOPOGRAPHIC SURVEY OF :
1400 COLDREY AVENUE,
OTTAWA ON K1Z 7P9

0m 3m 6m 12m 24m

PROJECT INFORMATION

SITE SUMMARY

ADDRESS	1400 COLDREY AVENUE
SITE AREA	17385.98 m²
GROSS FLOOR AREA	3510.00 m²
ASSEMBLY AREA	1950.00 m²

ZONING SUMMARY	REQUIRED	PROPOSED
LOT AREA	0.00 m²	17385.98 m²
LOT WIDTH	0.00 m	97.53 m
MIN LANDSCAPED AREA	2607.89 m²	4041.00 m²

VEHICULAR PARKING	REQUIRED	PROPOSED
MIN PARKING SPACES	98	129
MIN ACCESSIBLE PRKG SPACES	5	5

BICYCLE PARKING	REQUIRED	PROPOSED
MIN PARKING SPACES	3	5

BUILDING SUMMARY	GFA - CITY
GROUND FLOOR	2560.00 m²
BASEMENT	950.00 m²

LEGEND

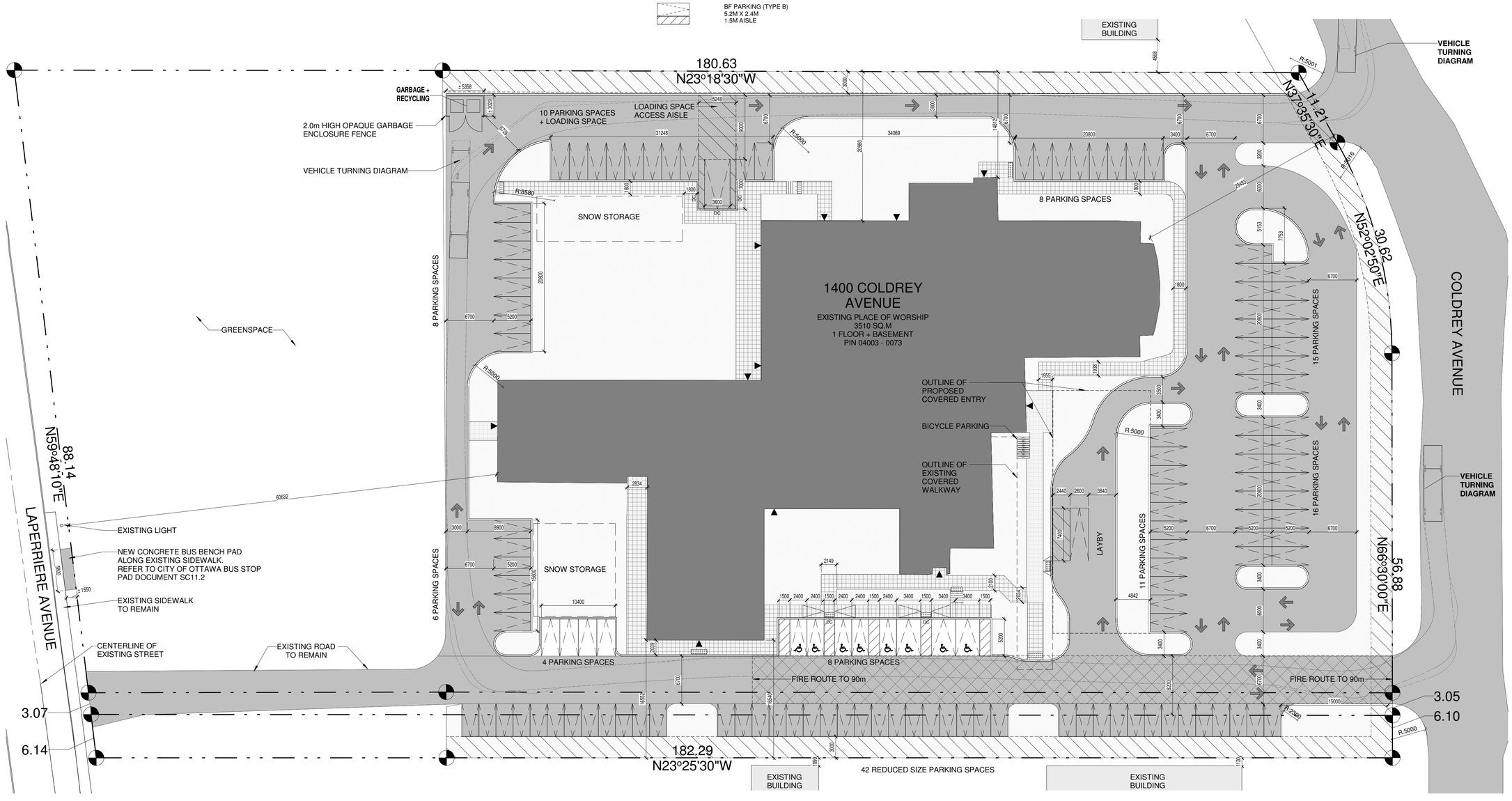
SURFACES
- LANDSCAPING
- SIDEWALK - CONCRETE - NEW
- SIDEWALK - CONCRETE - EXISTING
- ASPHALT PAVING
- EXISTING BUILDING TO REMAIN
- FIRE ROUTE
- TACTILE WALKING SURFACE INDICATOR (610mm DEEP MINIMUM)

LINES
- PROPERTY LINE
- EXISTING FENCE
- NEW FENCE
- OVERHEAD WIRES

SYMBOLS

- DIRECTIONAL ARROWS
- BUILDING ACCESS
- UTILITY POLE
- FIRE HYDRANT
- CATCH BASIN / MANHOLE
- DEPRESSED CURB
- XX.XXm EXISTING GRADE ELEVATION
- XX.XXm PROPOSED GRADE ELEVATION
- LOT CORNERS

PARKING
- BIKE PARKING H: HORIZONTAL 0.6M x 1.8M
- CAR PARKING (REGULAR) 5.2M X 2.6M
- CAR PARKING (REDUCED) 4.6M X 2.4M
- BF PARKING (TYPE A) 5.2M X 3.4M 1.5M AISLE
- BF PARKING (TYPE B) 5.2M X 2.4M 1.5M AISLE



1 / A101 SITE PLAN
1 : 300

2025-08-21 9:41:22 AM

IDEA
INTEGRATED DESIGN
ENGINEERING + ARCHITECTURE
595 BYRON AVE., OTTAWA, ONT. K1A 4C4
T 613.728.0008 E info@integrateddesign.ca

SEAL
ONTARIO ASSOCIATION OF ARCHITECTS
DINO DI SANO
LICENCE
7209

GENERAL NOTES
DO NOT SCALE DRAWINGS.
CONTRACTOR TO VERIFY ALL DIMENSIONS & CONDITIONS AND REPORT ANY DISCREPENCIES.

PROJECT NORTH | TRUE NORTH

No.	DATE	DESCRIPTION
A	2025-08-21	SITE PLAN R2.1

REVISIONS

PROJECT
1400 COLDREY AVENUE

COORDINATION
1400 COLDREY AVENUE,
Ottawa, ON K1Z 7P9

IDEA # 25519
CLIENT #

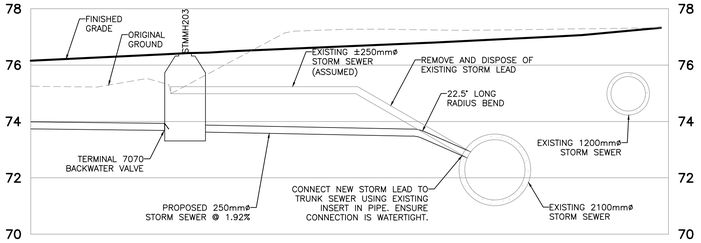
SHEET NAME
SITE PLAN

DATE	SCALE
2025-08-21	AS NOTED.
CHECKED BY: D.DI SANO	DRAWN BY: M.ALLEN

SHEET No.
A101

PLAN NUMBER: 19336
A1 (841x594)
CITY FILE NUMBER: D07-12-25-0083

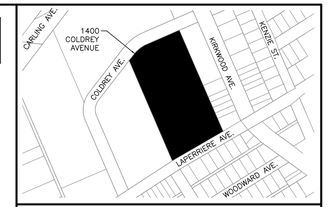
NOT FOR CONSTRUCTION



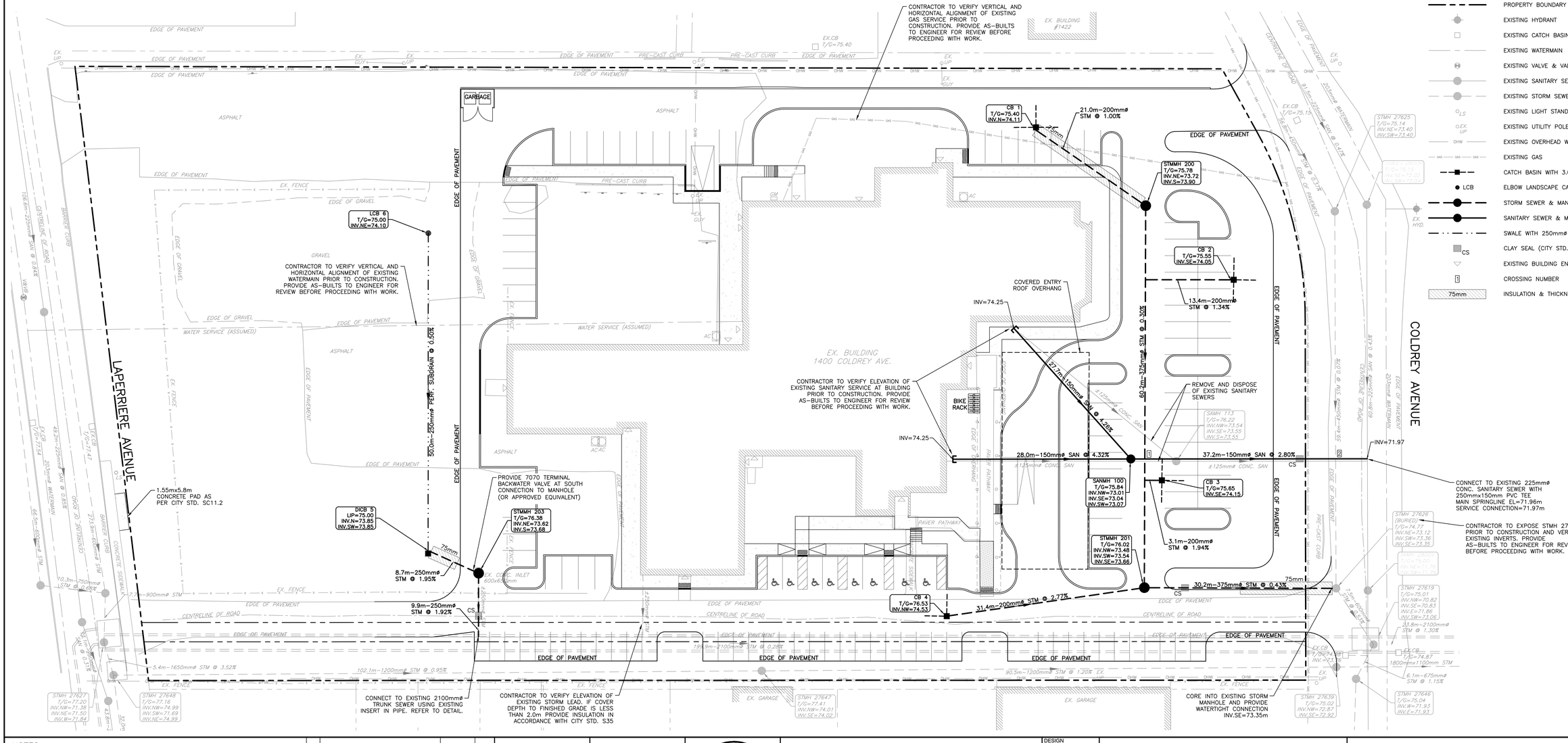
STORM SEWER CONNECTION DETAIL
N.T.S.

INLET CONTROL DEVICE (ICD) TABLE				
STRUCTURE	2-YR HEAD (m)	2-YR OUTFLOW (L/s)	ORIFICE DIAMETER (mm)	ORIFICE TYPE
CB 1	1.19	21.0	95	CUSTOM TEMPEST HF, CIRCULAR, SLIDE
CB 2	1.40	23.0	96	CUSTOM TEMPEST HF, CIRCULAR, SLIDE
CB 3	1.40	35.0	117	CUSTOM TEMPEST HF, CIRCULAR, SLIDE
CB 4	1.90	20.0	83	CUSTOM TEMPEST HF, CIRCULAR, SLIDE
DICB 5	1.02	69.6	180	CUSTOM TEMPEST HF, CIRCULAR, SLIDE

CROSSING TABLE			
CROSSING No.	SERVICE	INVERT/OBVERT	SEPARATION (m)
1	STORM	73.60	0.50
	SANITARY	73.10	
2	*EX STORM*	73.29	1.03
	SANITARY	72.26	



KEY PLAN



LEGEND

- PROPERTY BOUNDARY
- EXISTING HYDRANT
- EXISTING CATCH BASIN
- EXISTING WATERMAIN
- EXISTING VALVE & VALVE BOX
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING STORM SEWER & MANHOLE
- EXISTING LIGHT STANDARD
- EXISTING UTILITY POLE
- EXISTING OVERHEAD WIRES
- EXISTING GAS
- CATCH BASIN WITH 3.0m-150mmø SUBDRAIN STUBS
- LCB — ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- STORM SEWER & MANHOLE
- SANITARY SEWER & MANHOLE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- CS — CLAY SEAL (CITY STD. S8)
- EXISTING BUILDING ENTRANCE
- 1 — CROSSING NUMBER
- 75mm — INSULATION & THICKNESS (AS PER CITY STD. S35)

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROPERTY BOUNDARIES ARE DERIVED FROM PLAN OF SURVEY OF PART OF LOT I CONCESSION A RIDEAU FRONT, GEOGRAPHIC TOWNSHIP OF NEPEAN, CITY OF OTTAWA, SURVEYED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. BEARINGS ARE GRID, ARE REFERRED TO THE CENTRAL MERIDIAN OF MTM ZONE 9, NAD-83 (ORIGINAL).

NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER COMMENTS	21/08/25	BLM
1	ISSUED FOR REVIEW	09/06/25	BLM

SCALE
0 3m 6m 12m
HORIZONTAL 1:300

LICENSED PROFESSIONAL ENGINEER
B. L. MACKECHNIE
100199554
21 Aug '25
PROVINCE OF ONTARIO

Robinson Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	CC
DRAWN	BLM
CHECKED	CC
APPROVED	BLM

KEHILLAT BETH ISRAEL

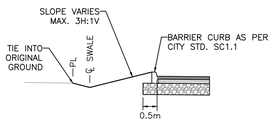
1400 COLDREY AVENUE
CITY OF OTTAWA

SERVICING PLAN

PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-S1

FILE No. D07-12-25-0083

PLAN No. 19336



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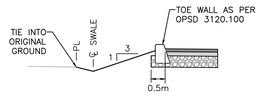

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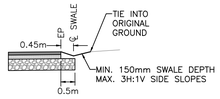

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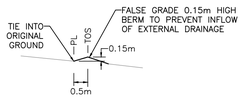

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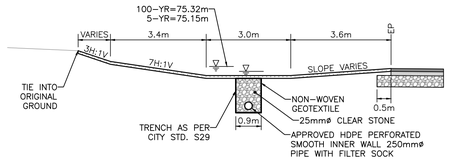

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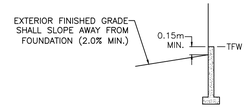
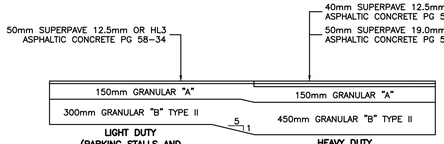
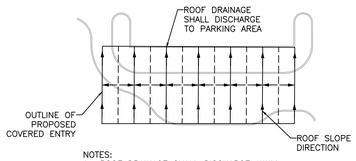


FOUNDATION WALL GRADING DETAIL
N.T.S.



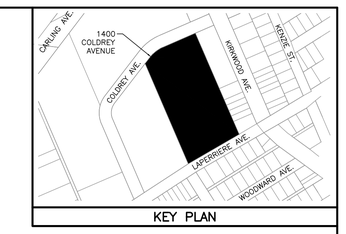
NOTE: REFER TO GEOTECHNICAL RECOMMENDATIONS PREPARED BY GEOTERRA.

PAVEMENT STRUCTURE DETAIL
N.T.S.

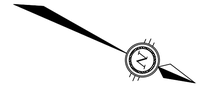


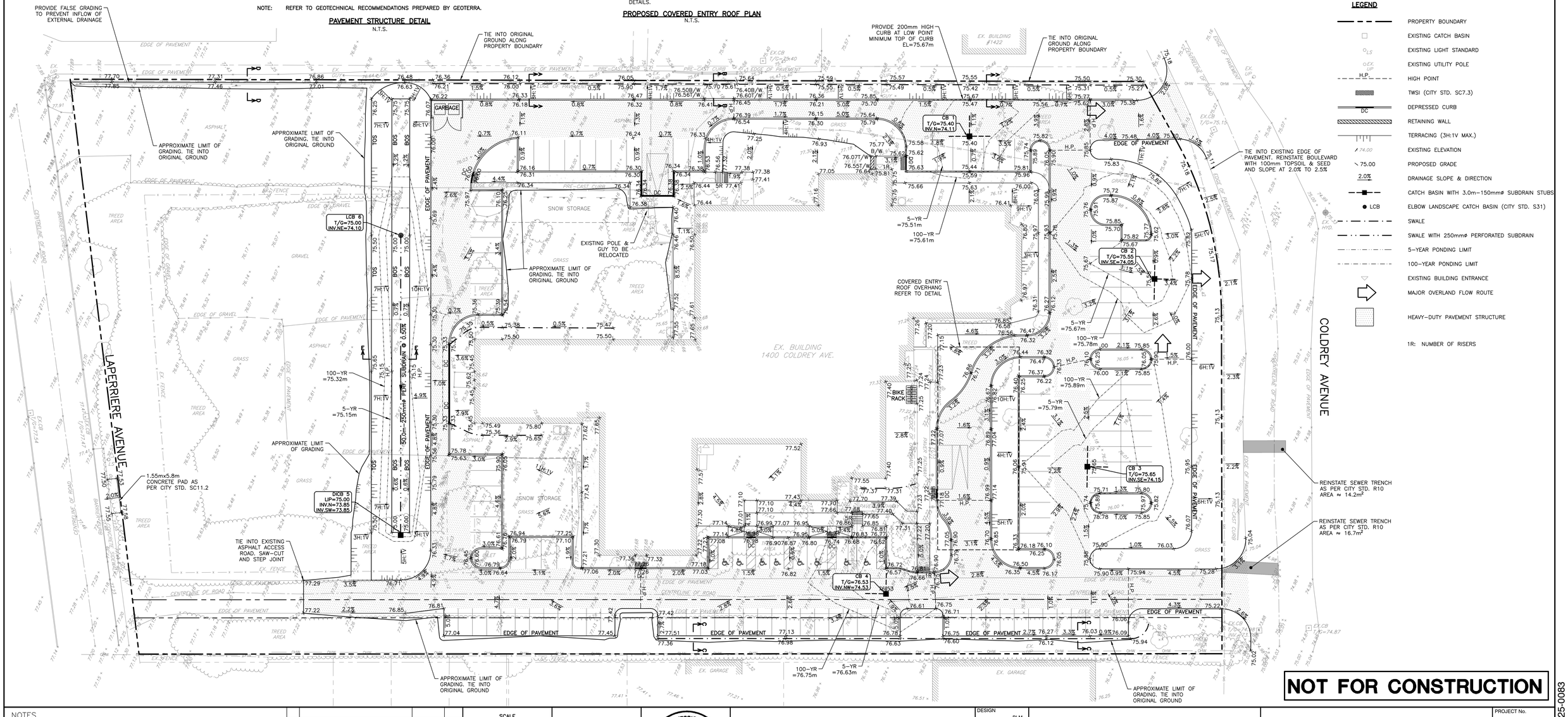
NOTES:
1. ROOF DRAINAGE SHALL DISCHARGE AWAY FROM BUILDING.
2. REFER TO ARCHITECTURAL PLANS FOR DETAILS.

PROPOSED COVERED ENTRY ROOF PLAN
N.T.S.



KEY PLAN





LEGEND

- PROPERTY BOUNDARY
- EXISTING CATCH BASIN
- EXISTING LIGHT STANDARD
- EXISTING UTILITY POLE
- HIGH POINT
- TWSI (CITY STD. SC7.3)
- DEPRESSED CURB
- RETAINING WALL
- TERRACING (3H:1V MAX.)
- EXISTING ELEVATION
- PROPOSED GRADE
- DRAINAGE SLOPE & DIRECTION
- CATCH BASIN WITH 3.0m–150mmø SUBDRAIN STUBS
- ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- SWALE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- 5–YEAR PONDING LIMIT
- 100–YEAR PONDING LIMIT
- EXISTING BUILDING ENTRANCE
- MAJOR OVERLAND FLOW ROUTE
- HEAVY–DUTY PAVEMENT STRUCTURE
- 1R: NUMBER OF RISERS

NOT FOR CONSTRUCTION

NOTES

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NO.	REVISION DESCRIPTION	DATE	BY
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SCALE
0 3m 6m 12m
HORIZONTAL 1:300

LICENSED PROFESSIONAL ENGINEER B.L. MACKECHNIE 100199554 21 Aug '25 PROVINCE OF ONTARIO

Robinson Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

DESIGN	BLM
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DRAWN	BLM
CHECKED	CC
APPROVED	BLM

KEHILLAT BETH ISRAEL

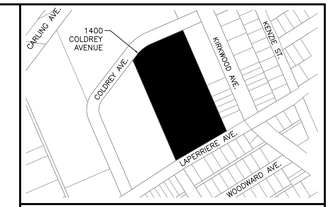
1400 COLDREY AVENUE
CITY OF OTTAWA

GRADING PLAN

PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-GR1

FILE No. D07-12-25-0083

PLAN No. 19336



KEY PLAN

LEGEND

- PROPERTY BOUNDARY
- EXISTING CATCH BASIN
- CATCH BASIN WITH 3.0m–150mmø SUBDRAIN STUBS
- LCB — ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- SWALE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- 5–YEAR PONDING LIMIT
- 100–YEAR PONDING LIMIT
- 100–YEAR + 20% PONDING LIMIT
- MAXIMUM STATIC PONDING LIMIT
- EXISTING BUILDING ENTRANCE

PA–1	PONDING AREA ID
El_5	5–YEAR PONDING ELEVATION
d_5	5–YEAR PONDING DEPTH
El_{100}	100–YEAR PONDING ELEVATION
d_{100}	100–YEAR PONDING DEPTH
El_{100+20}	100–YEAR + 20% PONDING ELEVATION
El_{MAX}	MAXIMUM STATIC PONDING ELEVATION
V_{MAX}	MAXIMUM AVAILABLE SURFACE STORAGE

NOTE: NO SURFACE PONDING OCCURS DURING THE 2–YEAR DESIGN EVENT.

PA–1
El_5=75.51m
d_5=0.11m
El_{100}=75.61m
d_{100}=0.21m
El_{100+20}=75.62m
El_{MAX}=75.62m
V_{MAX}=24.9m³

PA–2
El_5=75.67m
d_5=0.12m
El_{100}=75.78m
d_{100}=0.23m
El_{100+20}=75.78m
El_{MAX}=75.78m
V_{MAX}=27.2m³

PA–3
El_5=75.79m
d_5=0.14m
El_{100}=75.89m
d_{100}=0.24m
El_{100+20}=75.90m
El_{MAX}=75.90m
V_{MAX}=39.3m³

PA–4
El_5=75.63m
d_5=0.10m
El_{100}=76.75m
d_{100}=0.22m
El_{100+20}=76.75m
El_{MAX}=76.75m
V_{MAX}=19.3m³

PA–5
El_5=75.15m
d_5=0.15m
El_{100}=75.32m
d_{100}=0.32m
El_{100+20}=75.37m
El_{MAX}=75.44m
V_{MAX}=146.5m³

CB 1
T/G=75.40
INV.N=74.11

CB 2
T/G=75.55
INV.SE=74.05

CB 3
T/G=75.65
INV.SE=74.15

CB 4
T/G=76.53
INV.NW=74.53

LCB 6
T/G=75.00
INV.NE=74.10

DICB 5
LIP=75.00
INV.N=73.85
INV.SW=73.85

EX.CB T/G=75.40
EX.CB T/G=75.15
EX.CB T/G=74.87
EX.CB T/G=77.54
EX.CB T/G=77.47
EX.CB INV.=73.76

EX. BUILDING 1400 COLDREY AVE.
EX. BUILDING #1422
EX. GARAGE
EX. CONC. INLET 600x600mm
GARBAGE
COVERED ENTRY ROOF OVERHANG
BIKE RACK
PAVER PATHWAY
ACAC
AC
DC
TOS
BOS
EDGE OF PAVEMENT
EDGE OF GRAVEL
ASPHALT
GRAVEL
CONCRETE SIDEWALK
CENTRELINE OF ROAD
LAPERRIERE AVENUE
COLDREY AVENUE
500mm–250mmø PERF. SUBDRAIN @ 0.50%

NOT FOR CONSTRUCTION

NOTES

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KEHILLAT BETH ISRAEL

1400 COLDREY AVENUE
CITY OF OTTAWA

PONDING AREA PLAN

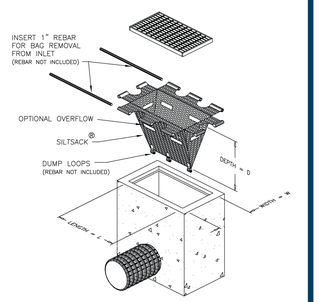
PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-PA1

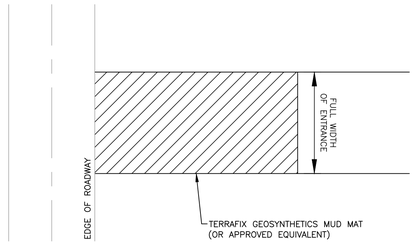
FILE No. D07-12-25-0083

PLAN No. 19336

NOT FOR CONSTRUCTION

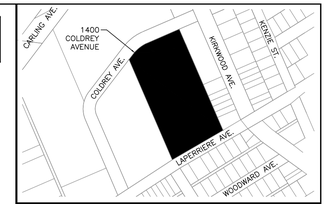
Typical Siltsack® Construction - Type B



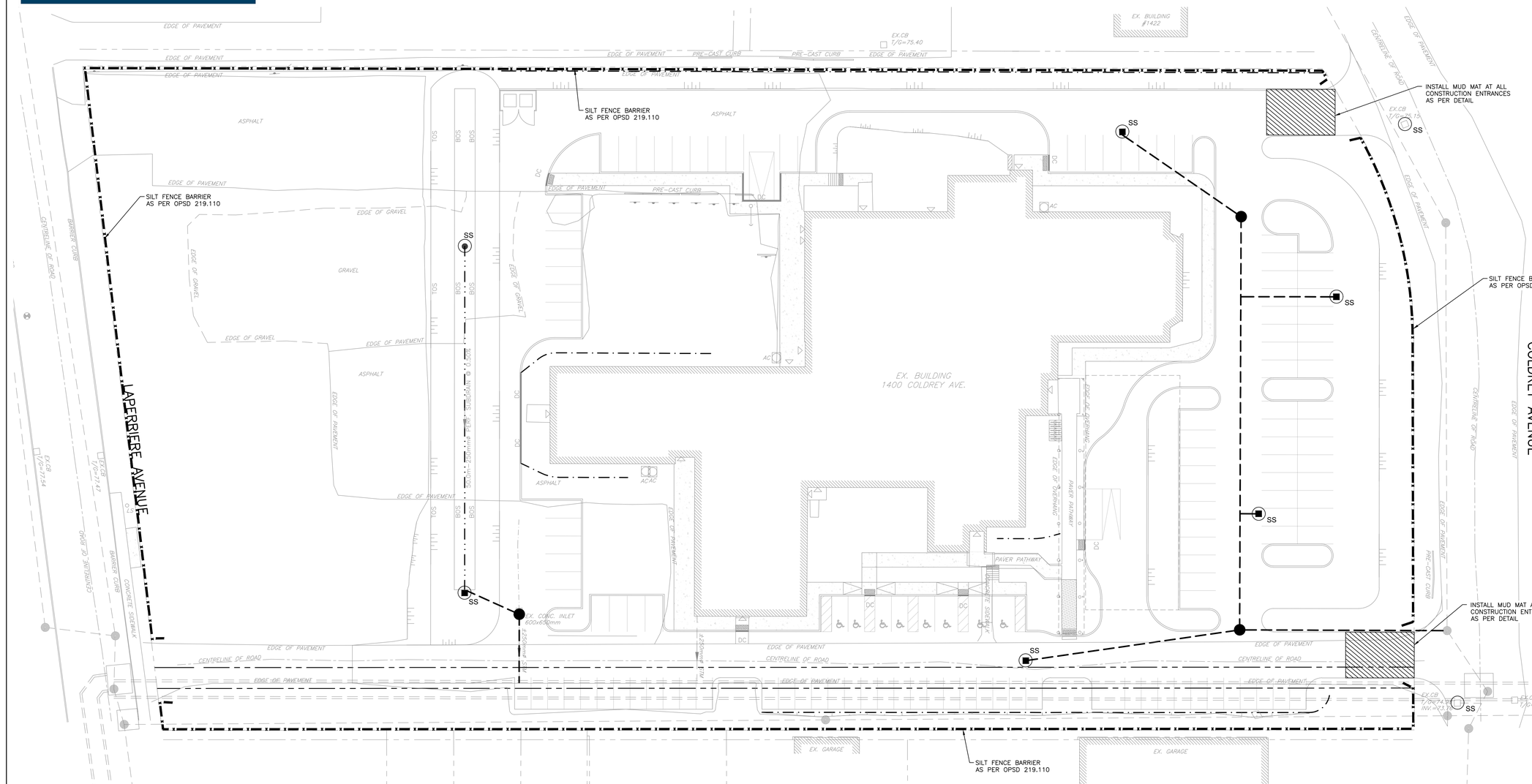


NOTES:
1. SEDIMENT SHALL BE CLEANED FROM ROADWAYS AS REQUIRED.

MUD MAT DETAIL
N.T.S.



KEY PLAN



LEGEND

- PROPERTY BOUNDARY
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- CATCH BASIN
- LCB — ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- STORM SEWER & MANHOLE
- SWALE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- SILT FENCE
- SS — SILT SACK (OR APPROVED EQUIVALENT)
- MUD MAT

NOTES:

1. THE CONTRACTOR SHALL IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE ULTIMATE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
2. LIMIT THE EXTENT OF EXPOSED SOILS AT ANY GIVEN TIME.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL VEGETATION HAS BEEN RE-ESTABLISHED IN ALL DISTURBED AREAS. RE-VEGETATE DISTURBED AREAS AS SOON AS POSSIBLE.
4. CONTRACTOR SHALL MINIMIZE THE AMOUNT OF STOCKPILED MATERIAL. ALL STOCKPILE SOIL SHALL BE AWAY (15 METRES OR GREATER) FROM WATERCOURSES, DRAINAGE FEATURES AND TOP OF STEEP SLOPES. THE DOWNSTREAM SIDE OF ALL STOCKPILES SHALL BE PROTECTED WITH SILT FENCE. FIBRE ROLLS OR EQUIVALENT MEASURES PRIOR TO A RAINFALL EVENT.
5. SILT SACKS ARE TO BE PLACED UNDERNEATH THE FRAME AND COVER OF ALL PROPOSED AND EXISTING CATCH BASIN AND OPEN COVER STORM MANHOLES UNTIL CONSTRUCTION IS COMPLETED.
6. LIGHT DUTY SILT FENCE BARRIERS SHALL BE INSTALLED AS PER OPSD 219.110 WHERE INDICATED AND MAINTAINED AS REQUIRED.
7. DURING ACTIVE CONSTRUCTION PERIODS, VISUAL INSPECTIONS SHALL BE UNDERTAKEN ON A WEEKLY BASIS AND AFTER MAJOR STORM EVENTS (>25mm RAIN IN 24 HOUR PERIOD) ON SEDIMENT CONTROL BARRIERS AND ANY DAMAGE REPAIRED IMMEDIATELY.
8. EROSION AND SEDIMENT CONTROL BARRIERS SHALL ALSO BE ASSESSED (AND REPAIRED AS REQUIRED) FOLLOWING SIGNIFICANT SNOWMELT EVENTS.
9. VISUAL INSPECTIONS SHALL ALSO BE UNDERTAKEN IN ANTICIPATION OF LARGE STORM EVENTS (OR A SERIES OF RAINFALL AND/OR SNOWMELT DAYS) THAT COULD POTENTIALLY YIELD SIGNIFICANT RUNOFF VOLUMES.
10. CARE SHALL BE TAKEN TO PREVENT DAMAGE TO EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION OPERATIONS.
11. IN SOME CASES, BARRIERS MAY BE REMOVED TEMPORARILY TO ACCOMMODATE THE CONSTRUCTION OPERATIONS. THE AFFECTED BARRIERS SHALL BE REINSTATED IMMEDIATELY AFTER CONSTRUCTION OPERATIONS ARE COMPLETED.
12. SEDIMENT CONTROL DEVICES SHALL BE CLEANED OF ACCUMULATED SEDIMENTATION AS REQUIRED AND REPLACED AS NECESSARY.
13. DURING THE COURSE OF CONSTRUCTION, IF THE ENGINEER BELIEVES THAT ADDITIONAL PREVENTION METHODS ARE REQUIRED TO CONTROL EROSION AND SEDIMENTATION, THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES, AS REQUIRED, TO THE SATISFACTION OF THE ENGINEER.
14. CONSTRUCTION AND MAINTENANCE REQUIREMENTS FOR EROSION AND SEDIMENT CONTROLS ARE TO COMPLY WITH OPSS 805.
15. MUD MATS SHALL BE INSTALLED AT ALL CONSTRUCTION ENTRANCES.
16. INSPECTION AND MAINTENANCE OF TEMPORARY ESC MEASURES SHALL CONTINUE UNTIL THEY ARE NO LONGER REQUIRED.
17. THE CONTRACTOR SHALL ENSURE THAT RECORDS OF INSPECTION ARE TAKEN, INCLUDING INSPECTOR'S NAME, DATE OF INSPECTION, VISUAL OBSERVATIONS, AND ANY NECESSARY REMEDIAL MEASURES TAKEN TO MAINTAIN INTERIM ESC MEASURES.

NOTES

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LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
21 Aug '25
PROVINCE OF ONTARIO

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350 Palladium Drive
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KEHILLAT BETH ISRAEL

1400 COLDREY AVENUE
CITY OF OTTAWA

EROSION AND SEDIMENT CONTROL PLAN

PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-ESC1

GENERAL NOTES:

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISIONS OF THE STANDARDS AND SPECIFICATIONS OF THE CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), AS AMENDED BY THE CITY OF OTTAWA.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS AND ELEVATIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
4. DESIGN ELEVATIONS GIVEN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY ROBINSON LAND DEVELOPMENT.
5. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
6. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.
7. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE "OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS". THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE CONSTRUCTOR AS DEFINED IN THE ACT.
8. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE M.T.O. MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST AMENDMENT).
9. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
10. THE SUPPORT OF ALL UTILITIES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
11. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH, AS SPECIFIED BY OPSD, IS EXCEEDED.
12. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH THE CITY OF OTTAWA PRIOR TO AND TREE CUTTING.
13. REFER TO GEOTECHNICAL INVESTIGATION PREPARED BY GEOTERRA, DATED MARCH 2025.
14. THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL PROVIDE FOR DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS AND TRENCHING AS WELL AS RELEASE OF ANY PUMPED GROUNDWATER IN A CONTROLLED AND APPROVED MANNER.
15. DO NOT CONSTRUCT USING DRAWINGS THAT ARE NOT MARKED "ISSUED FOR CONSTRUCTION".
16. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.
17. CLAY SEALS SHALL BE INSTALLED WITHIN SEWER TRENCHES IN ACCORDANCE WITH CITY STANDARD S8.
18. MOVEMENT OF MATERIAL ON AND/OR OFF SITE SHALL BE IN ACCORDANCE WITH ONTARIO EXCESS SOIL REGULATION O.REG. 406/19.
19. THE CONTRACTOR SHALL COMPLETE A CCTV INSPECTION OF ALL NEW SANITARY AND STORM SEWERS PRIOR TO PLACEMENT OF TOP LIFT ASPHALT. A COPY OF THE VIDEO INSPECTION SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
20. THE CONTRACTOR SHALL COMPLETE CCTV INSPECTION OF EXISTING MUNICIPAL SEWERS IMMEDIATELY UPSTREAM AND DOWNSTREAM OF ANY PROPOSED CONNECTIONS, INCLUDING SEWER STUBS. THE CCTV INSPECTION IS REQUIRED PRE AND POST CONSTRUCTION.

STORM SEWERS:

1. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.2 (LATEST AMENDMENT). ALL NON-REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.1 (LATEST AMENDMENT). PIPE SHALL BE JOINTED WITH STD. RUBBER GASKETS AS PER CSA A257.3 (LATEST AMENDMENT).
2. ALL STORM SEWER TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
3. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
4. PIPE MATERIAL FOR ALL STORM SEWERS 375mm IN DIAMETER AND SMALLER SHALL BE PVC SDR 35.
5. STORM MANHOLE FRAME AND COVERS SHALL BE AS PER CITY OF OTTAWA STD. S24.1.
6. CATCH BASIN MANHOLE FRAME AND COVERS SHALL BE AS PER CITY OF OTTAWA STD. S28.1.
7. STORM SEWER MANHOLES SERVING SEWERS LESS THAN 900mm SHALL BE CONSTRUCTED WITH A 300mm SUMP. FOR STORM SEWERS 900mm AND OVER USE BENCHING IN ACCORDANCE WITH OPSD 701.021.
8. THE STORM SEWER CLASSES HAVE BEEN DESIGNED BASED ON BEDDING CONDITIONS SPECIFIED ABOVE. WHERE THE SPECIFIED TRENCH WIDTH IS EXCEEDED, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADDITIONAL BEDDING, A DIFFERENT TYPE OF BEDDING OR A HIGHER PIPE STRENGTH AT HIS OWN EXPENSE AND SHALL ALSO BE RESPONSIBLE FOR EXTRA TEMPORARY AND/OR PERMANENT REPAIRS MADE NECESSARY BY THE WIDENED TRENCH.
9. ALL STORM MANHOLES SHALL BE 1200mm DIAMETER AS PER OPSD 701.010 UNLESS OTHERWISE NOTED.
10. ALL CATCH BASINS SHALL BE 600mm X 600mm AS PER OPSD 705.010 UNLESS OTHERWISE NOTED.

SANITARY SEWERS:

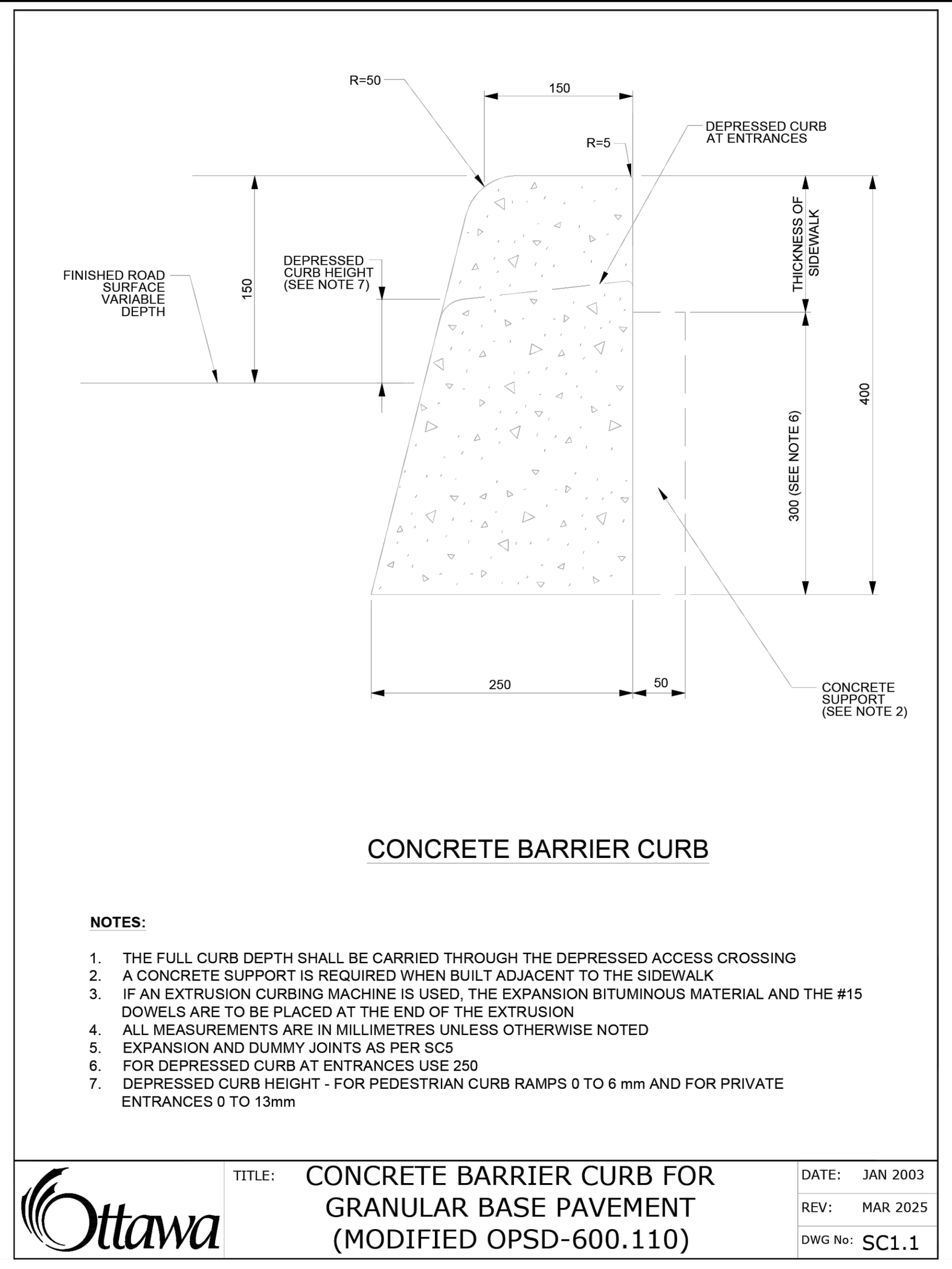
1. ALL SANITARY SEWERS 200mm IN DIAMETER AND LARGER SHALL BE PVC SDR 35, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS.
2. ALL SANITARY SERVICES 150mm IN DIAMETER AND SMALLER SHALL BE PVC SDR 28, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS.
3. SANITARY SEWER TRENCH AND BEDDING SHALL BE AS PER CITY OF OTTAWA STD. S6 AND S7, CLASS 'B' BEDDING UNLESS OTHERWISE NOTED.
4. ALL SANITARY SERVICES ARE TO BE EQUIPPED WITH APPROVED BACKWATER VALVES.
5. SANITARY MANHOLE FRAME AND COVERS SHALL BE WATERTIGHT AS PER CITY OF OTTAWA STD. S24.
6. SANITARY SEWER MANHOLES SHALL BE BENCHED AS PER OPSD 701.021.
7. SANITARY PRE-CAST MANHOLE SHALL BE CONSTRUCTED WITH A HIGHER PERCENTAGE OF SILICA FUME IN THE CONCRETE TO MAKE IT MORE DENSE AND LESS SUSCEPTIBLE TO CORROSION OR PINHOLE LEAKS.
8. FOR SANITARY MANHOLES, DEPENDING ON THE ELEVATION OF THE GROUNDWATER TABLE, AND BASED ON THE RECOMMENDATION OF THE PROJECT GEOTECHNICAL CONSULTANT, CRETEX SEALS, OR A SIMILAR PRODUCT, SHALL BE INSTALLED IN THE PRE-CAST MANHOLE SECTION TO JUST BELOW THE MANHOLE FRAME TO PREVENT INFILTRATION.
9. CONTRACTOR SHALL PERFORM LEAKAGE TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR SANITARY SEWERS IN ACCORDANCE WITH OPSS 410 AND OPSS 407. CONTRACTOR SHALL PERFORM VIDEO INSPECTION OF ALL STORM AND SANITARY SEWERS. A COPY OF THE VIDEO AND INSPECTION REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

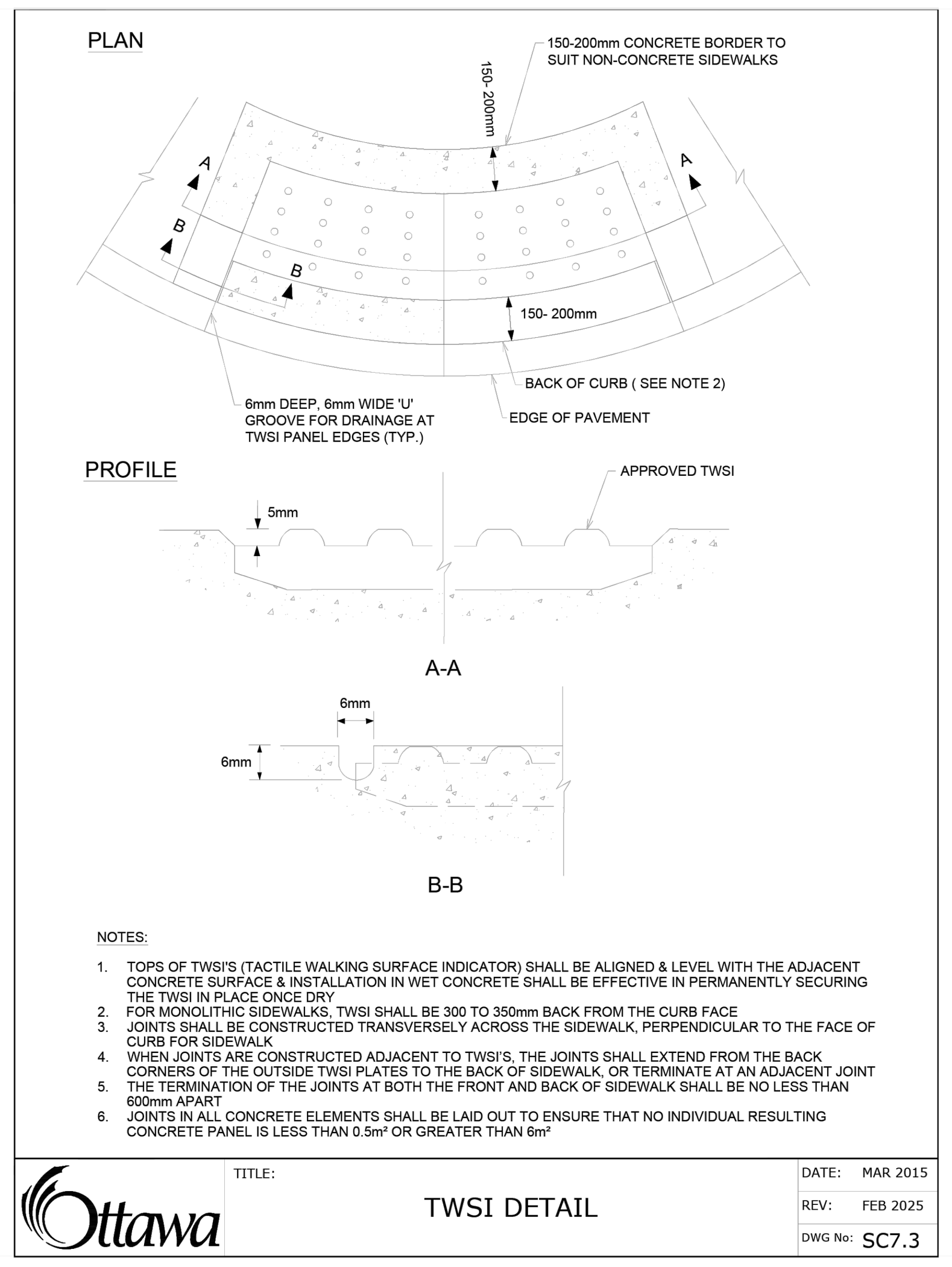
WATER SUPPLY:

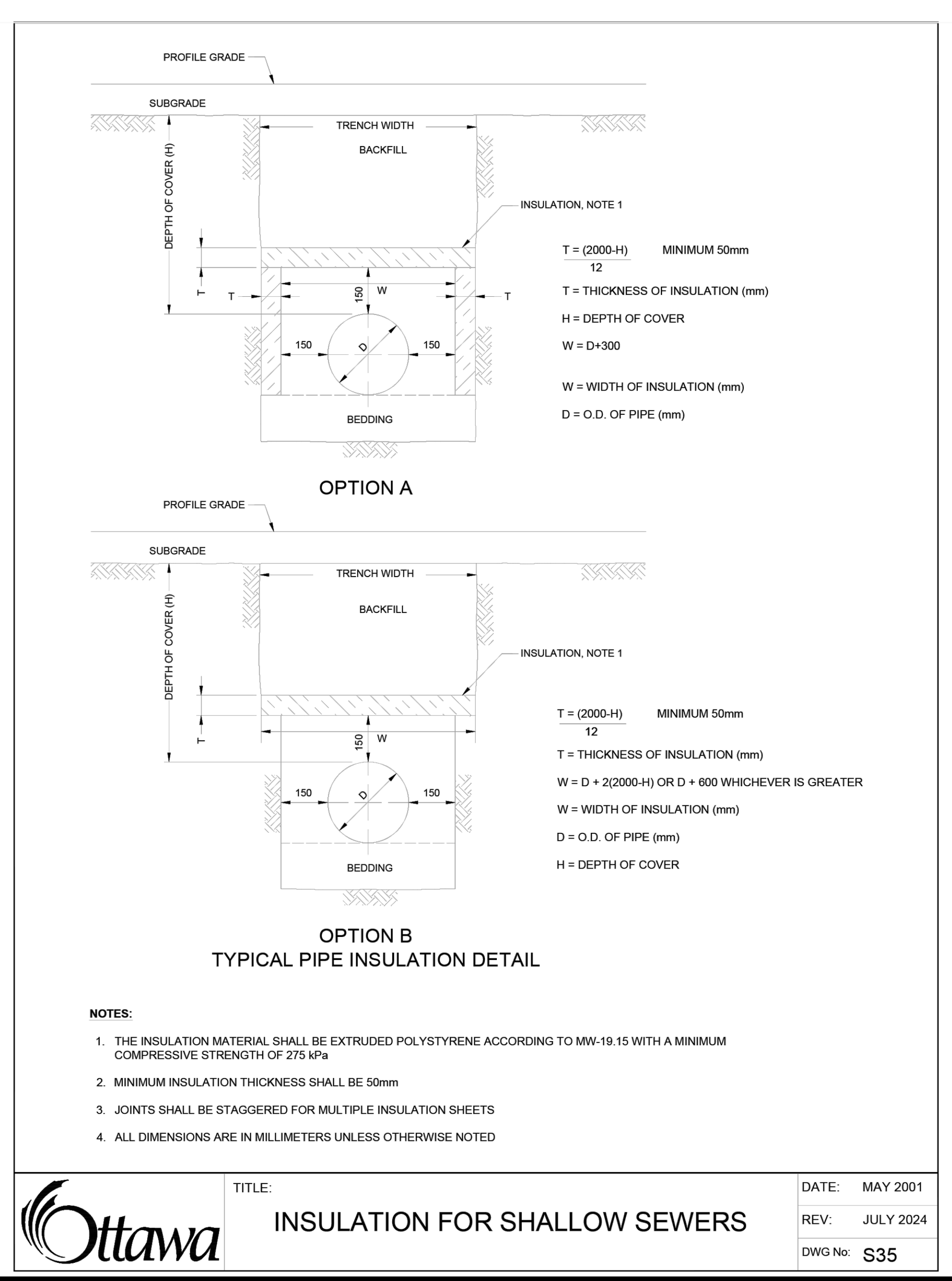
1. ALL PVC WATERMAINS SHALL BE EQUAL TO AWWA C-900 CLASS 150, SDR 18, OR APPROVED EQUAL.
2. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17, UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
3. ALL PVC WATERMAINS SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWU OR RWU TRACER WIRE IN ACCORDANCE WITH CITY OF OTTAWA STD. W36.
4. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS AS PER CITY OF OTTAWA STD. W40 AND W42.
5. CONTRACTOR TO SUPPLY HYDRANT EXTENSION TO ADJUST THE LENGTH OF HYDRANT BARREL IF REQUIRED.
6. FIRE HYDRANTS SHALL BE INSTALLED AS PER CITY OF OTTAWA STD. W19, AND LOCATED AS PER CITY STD. W18.
7. VALVE IN BOXES SHALL BE INSTALLED AS PER CITY OF OTTAWA STD. W24.
8. WATERMAIN IN FILL AREAS TO BE INSTALLED WITH RESTRAINED JOINTS AS PER CITY OF OTTAWA STD. W25.5 AND W25.6.
9. THRUST BLOCKING OF WATERMAIN TO BE INSTALLED AS PER CITY OF OTTAWA STD. W25.3 AND W25.4.
10. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS AND BLOW-OFFS AND NOZZLES REQUIRED FOR TESTING AND DISINFECTION OF THE WATERMAIN.
11. INSULATION FOR WATERMAIN CROSSING OVER AND BELOW SEWER SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. W25.2 AND W25, RESPECTIVELY, WHERE WATERMAIN COVER IS LESS THAN 2.4m.
12. AS PER CITY GUIDELINE, THE MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER / UTILITY IS 0.25m FOR CROSSING OVER THE SEWER, AS PER CITY STD. W25.2. FOR CROSSING UNDER SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING. THE LENGTH OF WATER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER AS PER CITY STD. W25.
13. CONNECTION TO EXISTING WATERMAIN TO BE PERFORMED BY CITY FORCES. CONTRACTOR TO PROVIDE LABOUR, EQUIPMENT AND MATERIAL REQUIRED FOR EXCAVATION, BEDDING AND REINSTATEMENT.
14. SWABBING, DISINFECTION, AND HYDROSTATIC TESTING TO BE CONDUCTED AS PER CITY OF OTTAWA STANDARDS IN THE PRESENCE OF A CITY INSPECTOR AND/OR CONSULTANT.

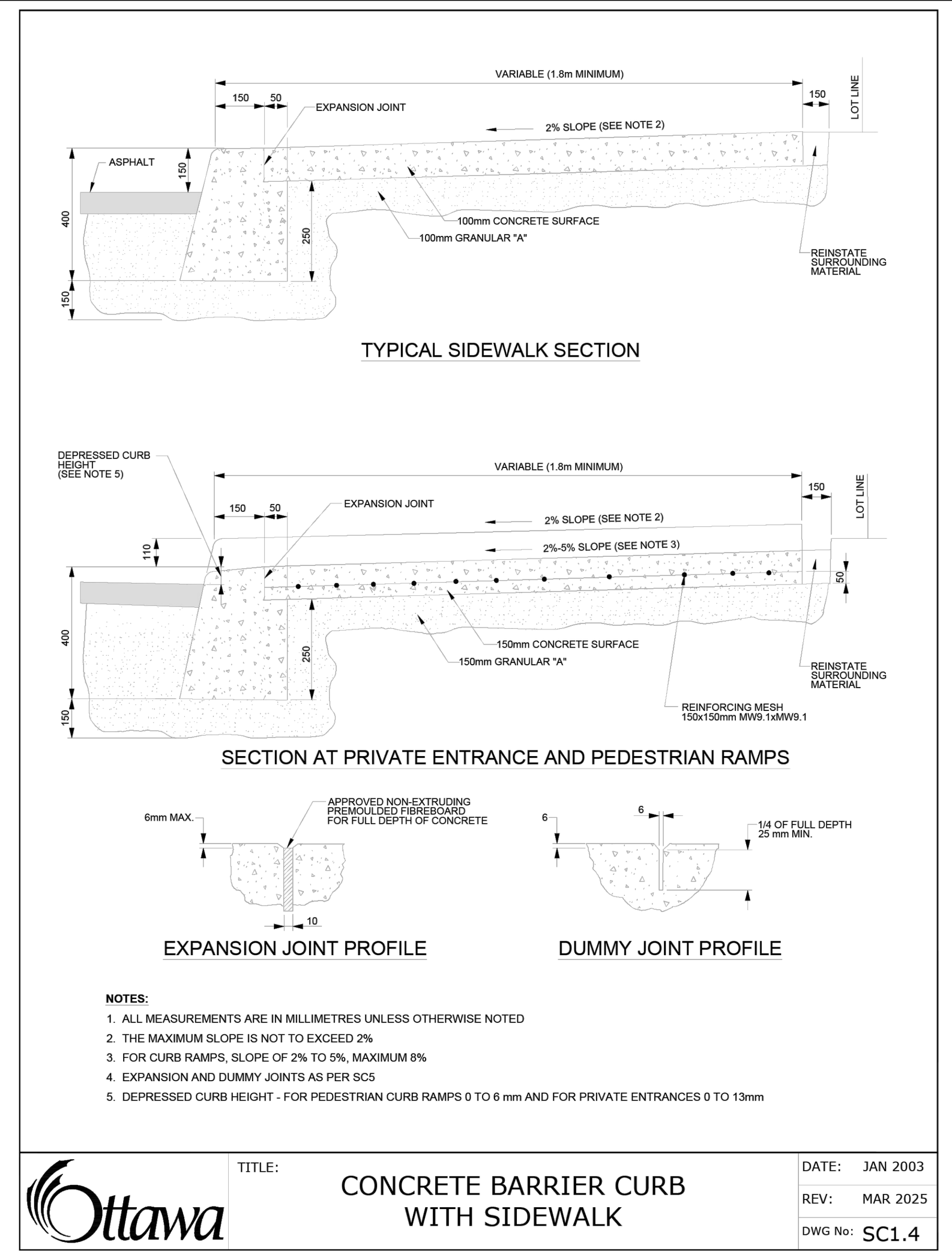
ROADWORK SPECIFICATIONS:

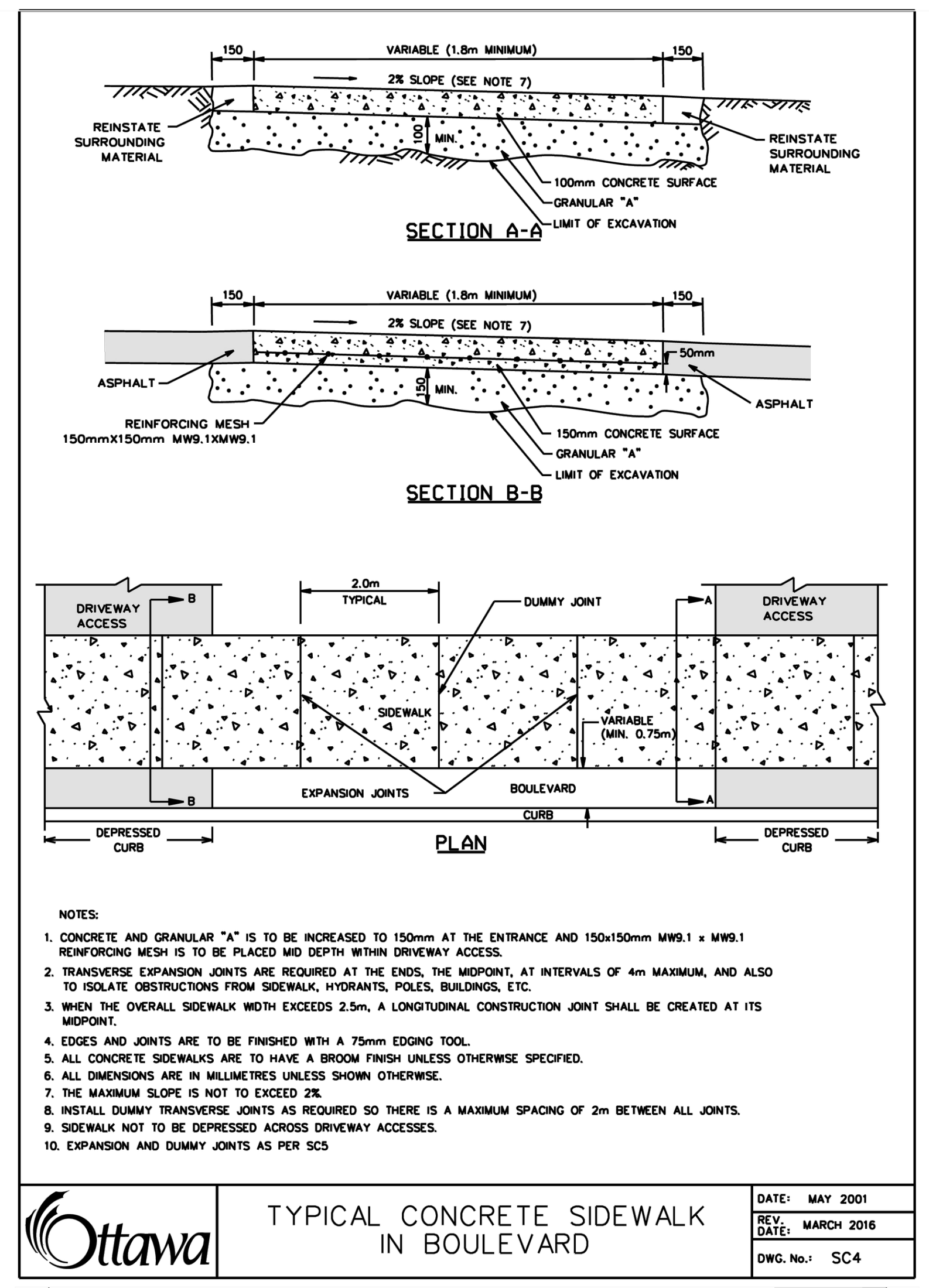
1. CONCRETE CURB SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.1 (BARRIER CURB). PROVISION SHALL BE MADE FOR CURB DEPRESSIONS AT SIDEWALKS AND DRIVEWAYS.
2. ALL BARRIER CURB TO BE 150mm ABOVE FINISHED ASPHALT GRADE UNLESS OTHERWISE NOTED.
3. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.4.
4. TWSIs SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF OTTAWA STD. SC7.3.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. R10.
6. GRANULAR "A" SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES WITHIN PAVEMENT AREA.
7. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
8. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS & NECESSARY REPAIRS HAVE BEEN CARRIED OUT TO THE SATISFACTION OF THE ENGINEER.
9. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300mm LIFTS.
10. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW-CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW ASPHALT.
11. PAVEMENT DESIGN AS PER GEOTECHNICAL RECOMMENDATIONS.

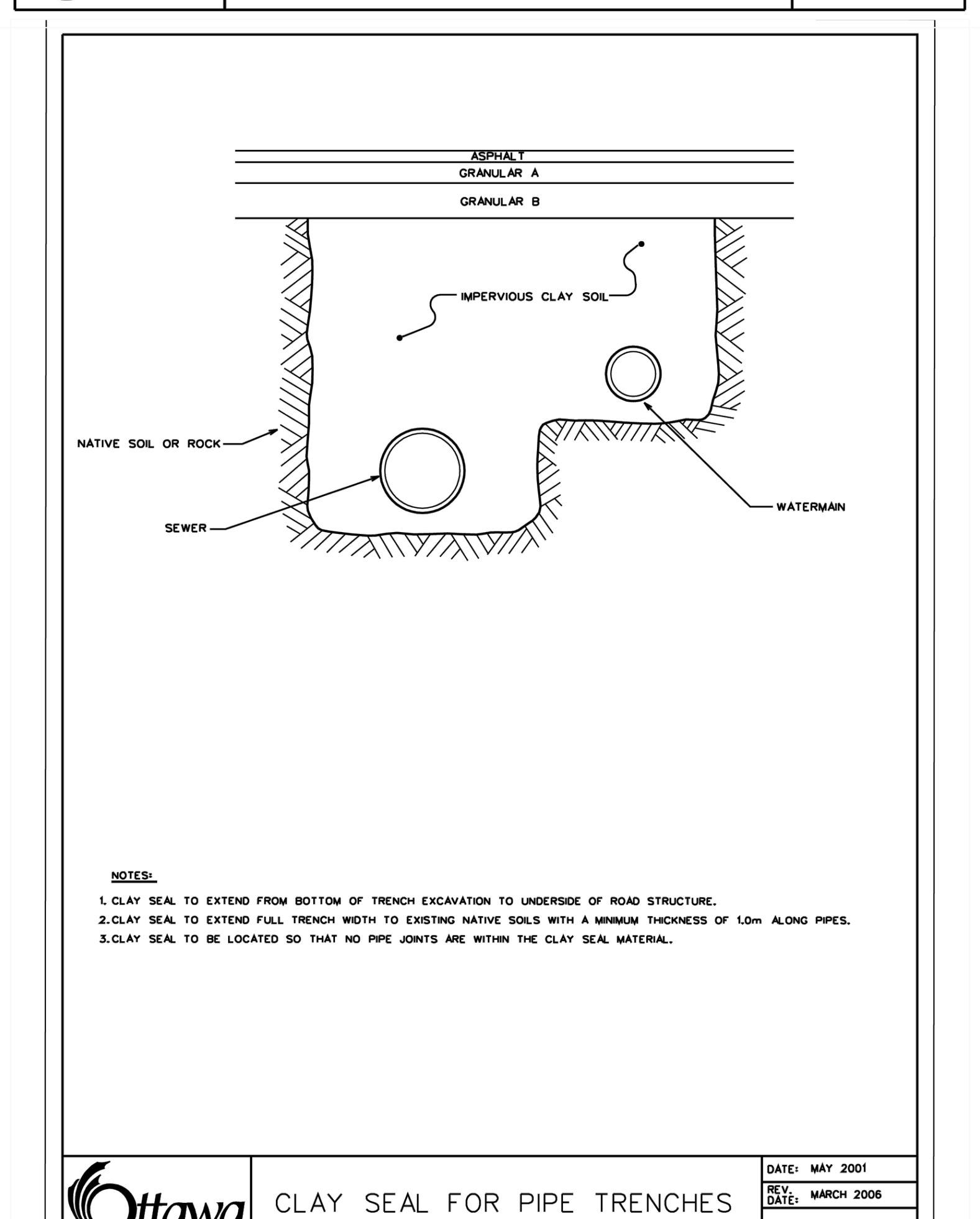


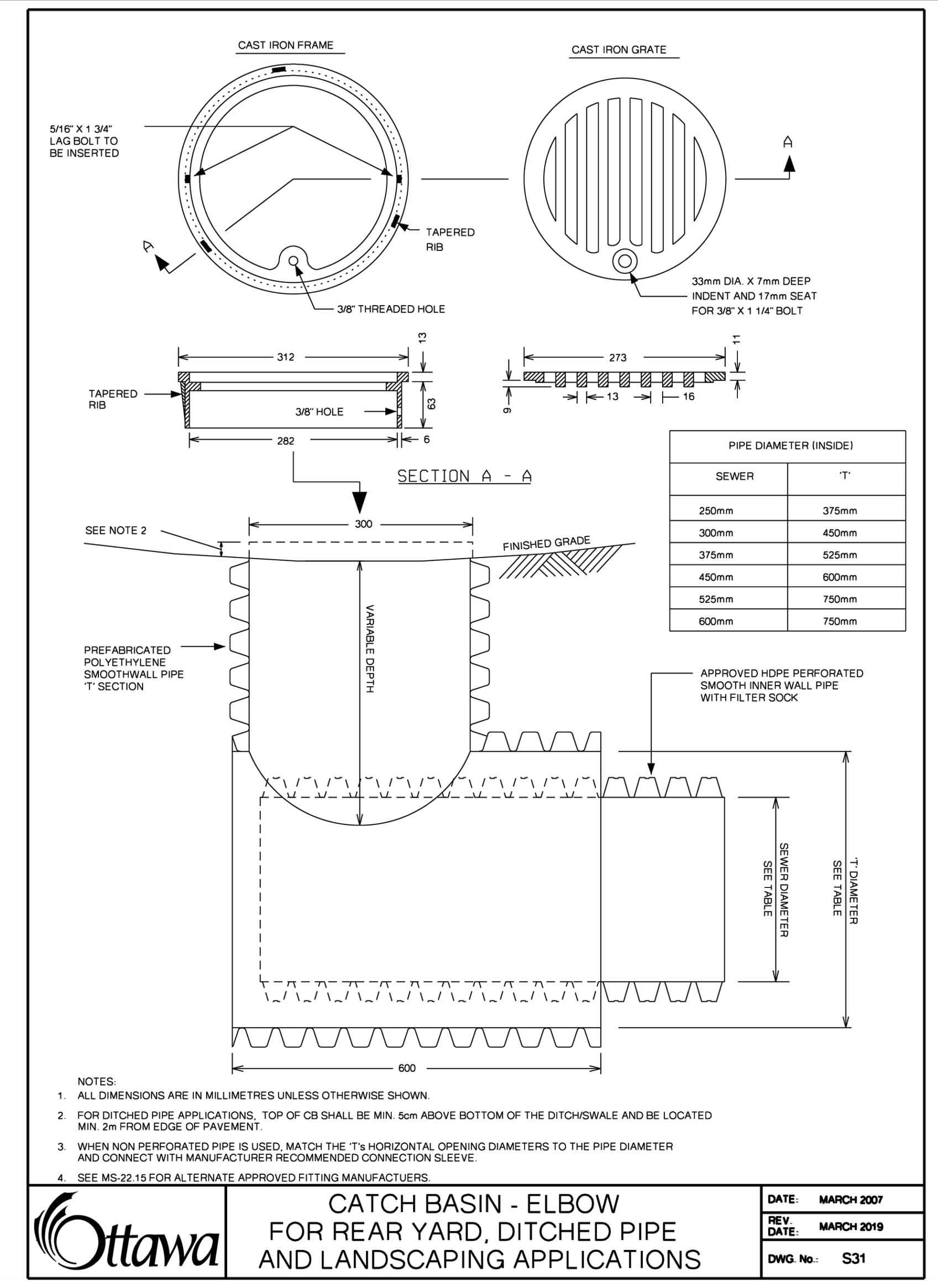


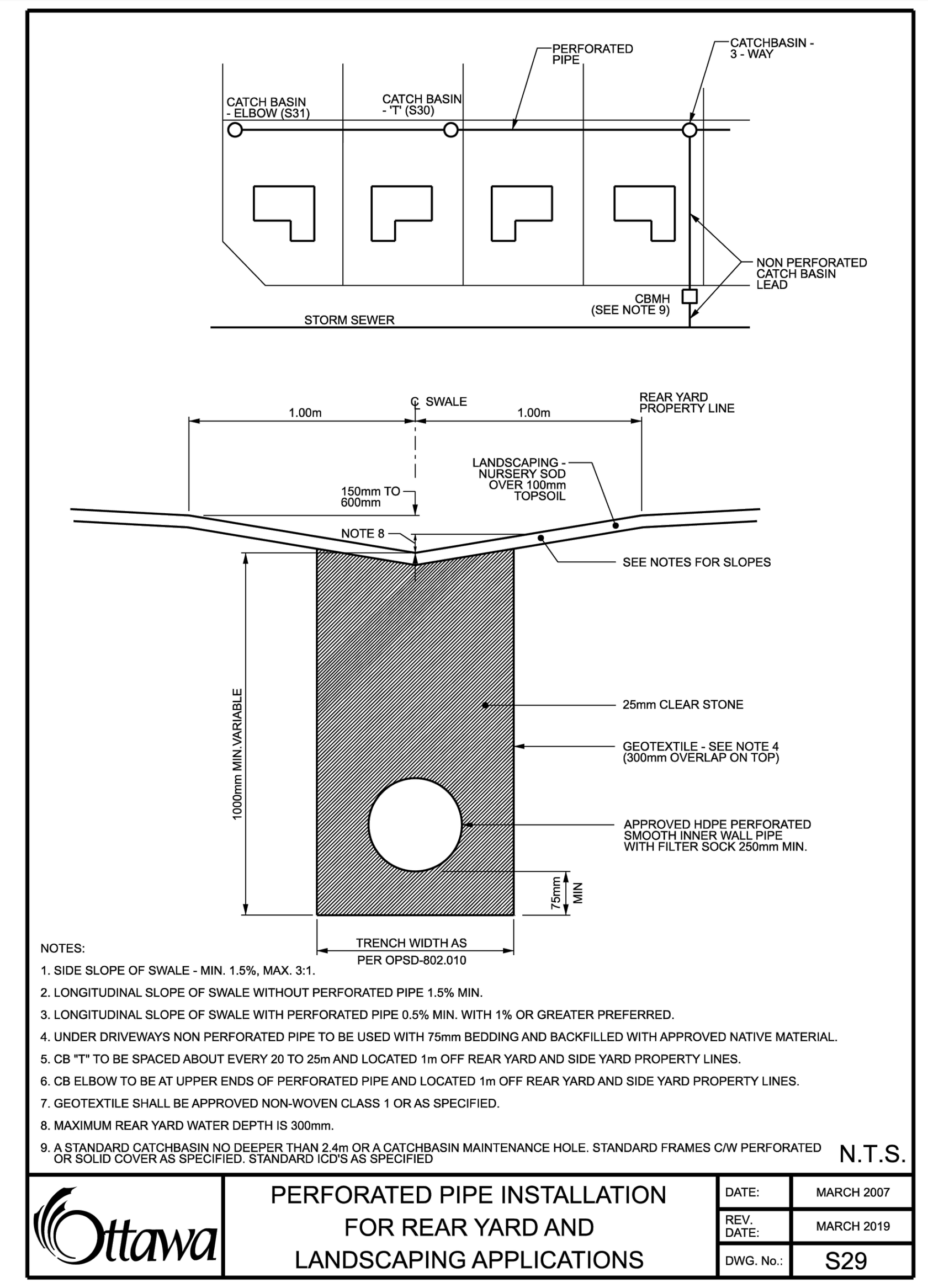


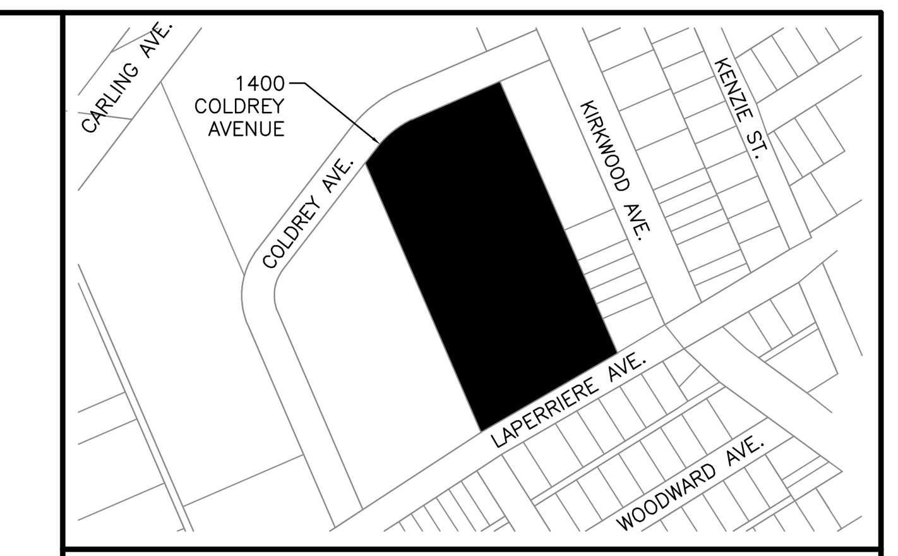












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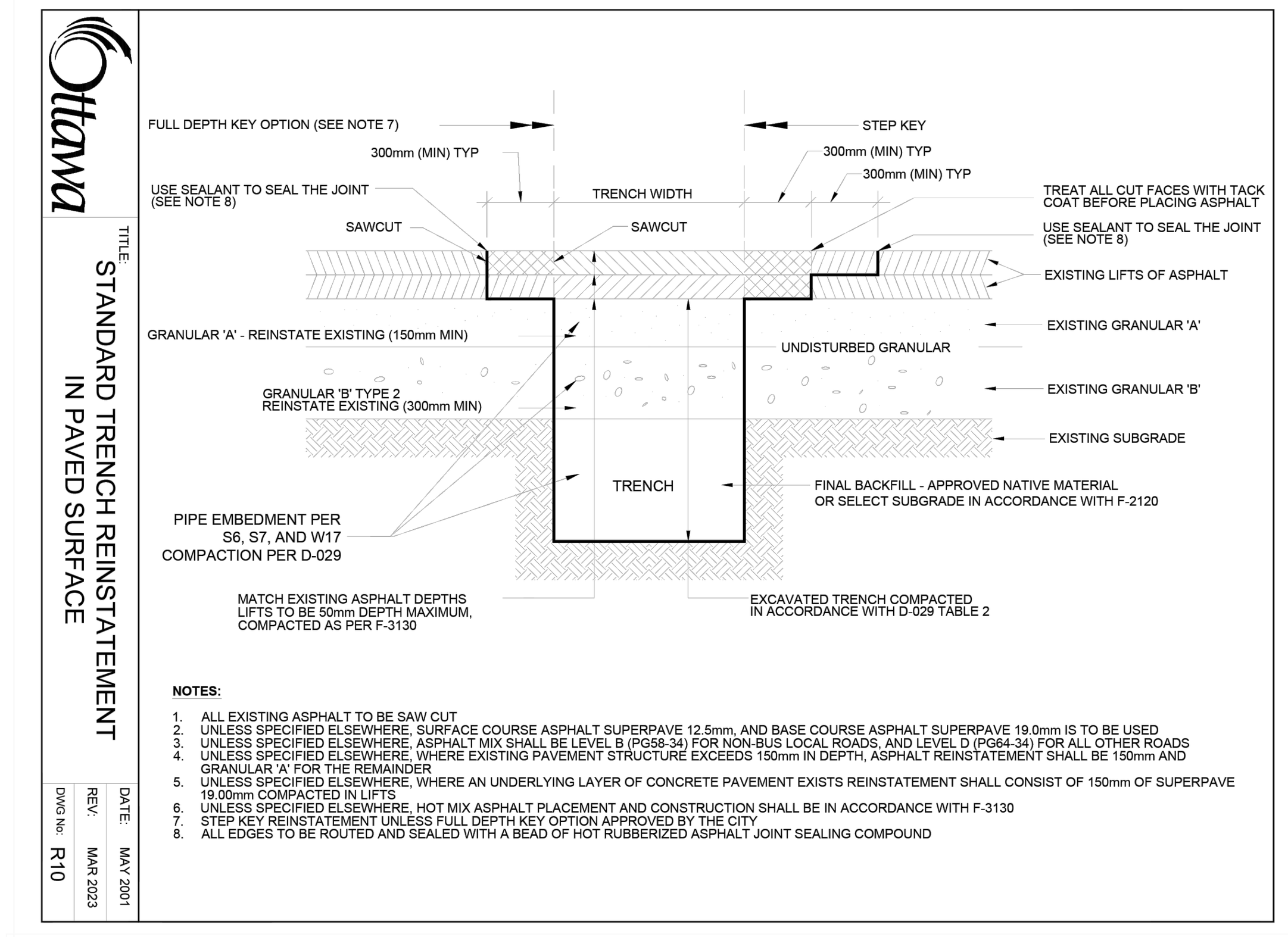
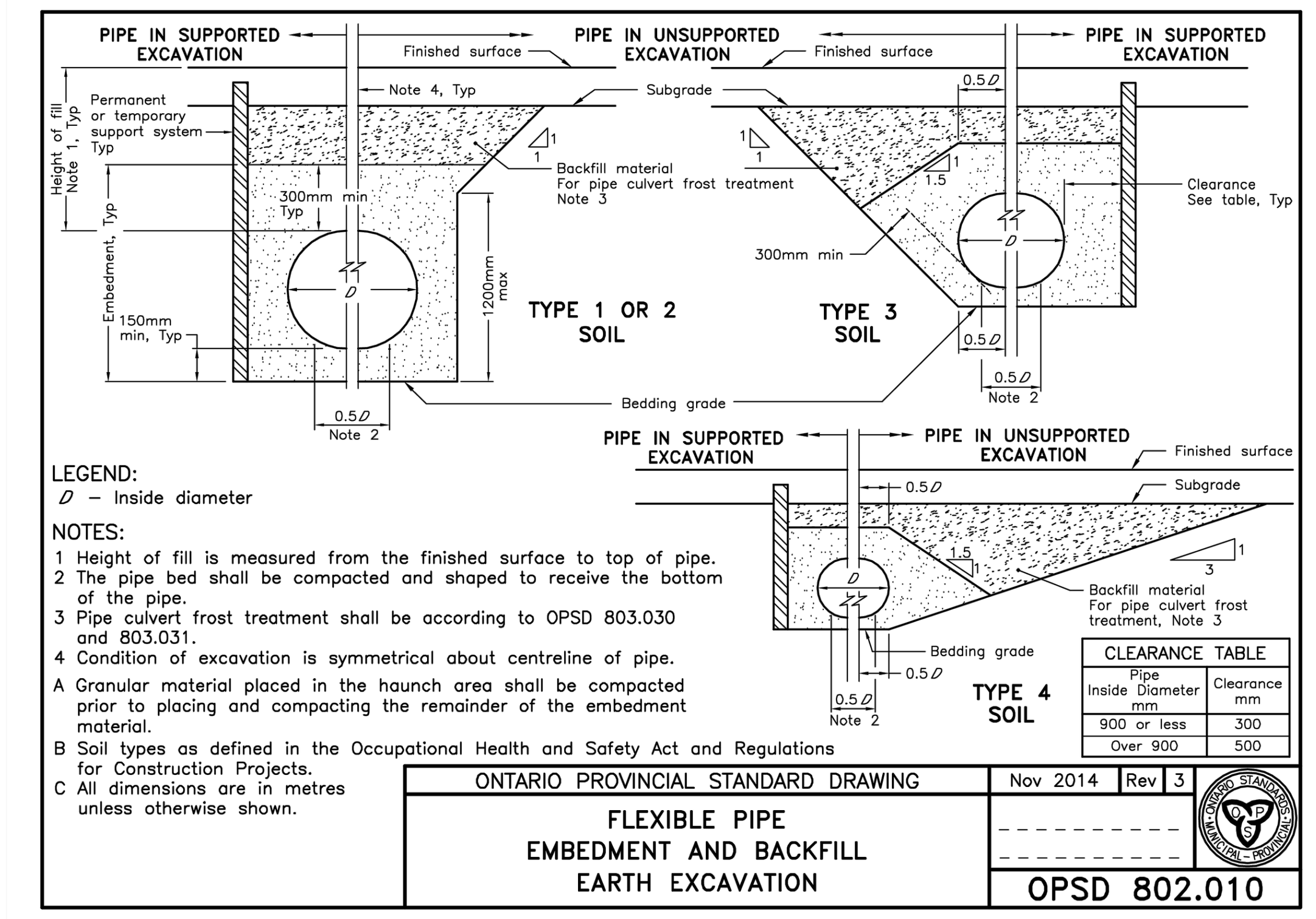
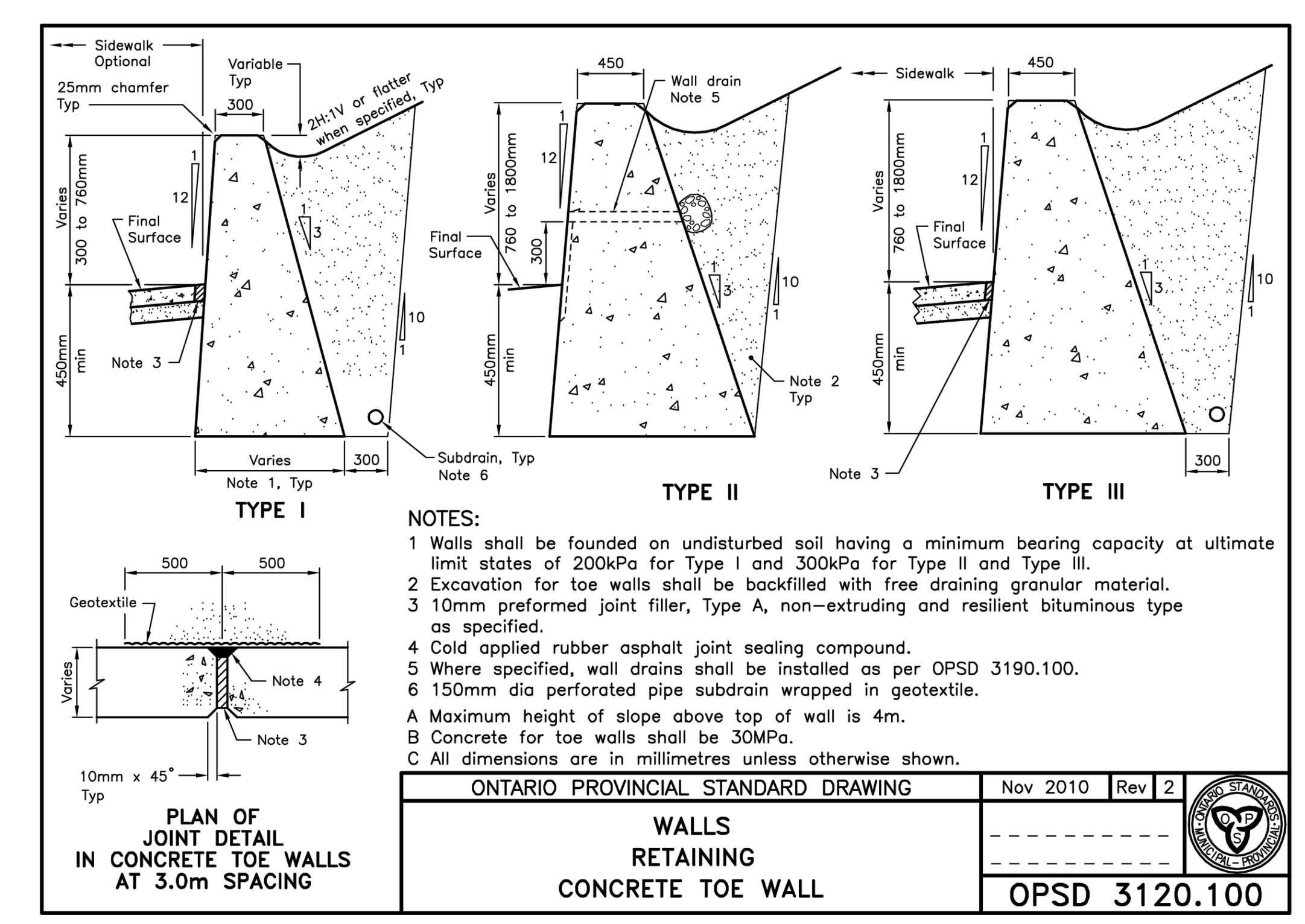






NOT FOR CONSTRUCTION

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROPERTY BOUNDARIES ARE DERIVED FROM PLAN OF SURVEY OF PART OF LOT I CONCESSION A RIDEAU FRONT, GEOGRAPHIC TOWNSHIP OF NEPEAN, CITY OF OTTAWA, SURVEYED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. BEARINGS ARE GRID, ARE REFERRED TO THE CENTRAL MERIDIAN OF MTM ZONE 9, NAD-83 (ORIGINAL).

NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER COMMENTS	21/08/25	BLM
1	ISSUED FOR REVIEW	09/06/25	BLM

SCALE

LICENSED PROFESSIONAL ENGINEER B. L. MACKECHNIE 100199554 21 Aug '25 PROVINCE OF ONTARIO

Robinson Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	CC
DRAWN	BLM
CHECKED	CC
APPROVED	BLM

KEHILLAT BETH ISRAEL

1400 COLDREY AVENUE
CITY OF OTTAWA

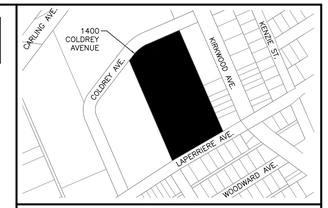
NOTES & DETAILS

PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-N1

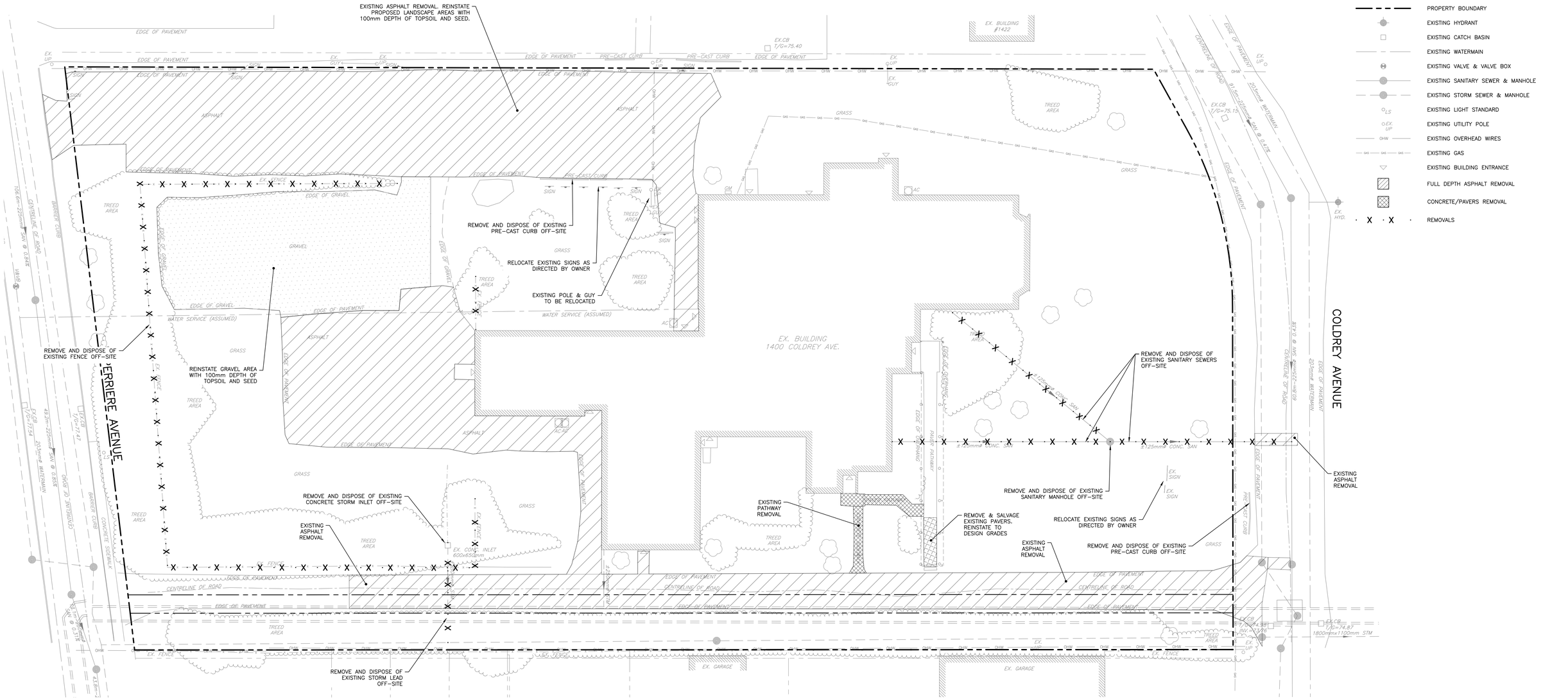
FILE No. D07-12-25-0083

PLAN No. 19336

NOT FOR CONSTRUCTION



KEY PLAN



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NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER COMMENTS	21/08/25	BLM
1	ISSUED FOR REVIEW	09/06/25	BLM

SCALE
0 3m 6m 12m
HORIZONTAL 1:300

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
21 Aug '25
PROVINCE OF ONTARIO

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350 Palladium Drive
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DESIGN	BLM
CHECKED	CC
DRAWN	BLM
CHECKED	CC
APPROVED	BLM

KEHILLAT BETH ISRAEL

1400 COLDREY AVENUE
CITY OF OTTAWA

EXISTING CONDITIONS AND REMOVALS PLAN

PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-R1

FILE No. D07-12-25-0083

PLAN No. 19336

Appendix C

Sanitary Sewer Design Sheet
(Institutional Flow Rate)

Sanitary Sewer Design Sheet
(Flow Rate per Seat)

OSDG Appendix 4-A

SANITARY SEWER DESIGN SHEET
1400 COLDREY AVENUE, CITY OF OTTAWA

Robinson Land Development

LOCATION			UNIT COUNT			RESIDENTIAL AREA AND POPULATION						INSTITUTIONAL				INFILTRATION			PEAK DESIGN FLOW (L/s)	PIPE						
						INDIVIDUAL		CUMULATIVE		PEAK FACTOR	PEAK POP. FLOW (L/s)	AREA (ha)	ACCU. AREA (ha)	PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)	ACCU. AREA (ha)	EXTRAN. FLOW (L/s)		LENGTH (m)	DIAMETER (mm)	SLOPE (%)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	EXCESS CAPACITY (L/s)	PERCENT FULL
STREET	FROM MH	TO MH	SINGLE-FAMILY	TOWNHOUSE	APARTMENTS	POP.	AREA (ha)	POP.	AREA (ha)																	
TO COLDREY AVENUE SANITARY SEWER																										
PRIVATE	BLDG	100				0.0	0.00	0.0	0.00	3.80	0.00	0.90	0.90	1.50	0.44	0.90	0.90	0.30	0.73	28.0	150.00	4.32	31.69	1.79	30.95	2.32
PRIVATE	BLDG	100				0.0	0.00	0.0	0.00	3.80	0.00	0.90	1.80	1.50	0.88	0.90	1.80	0.59	1.47	27.7	150.00	4.26	31.46	1.78	30.00	4.67
PRIVATE	100	EX MAIN				0.0	0.00	0.0	0.00	3.80	0.00	0.00	1.80	1.50	0.88	0.00	1.80	0.59	1.47	37.2	150.00	2.80	25.51	1.44	24.04	5.76

DESIGN PARAMETERS

			Per Unit Populations:	
Average Daily Flow =	280	L/person/day	Single Family	3.4 persons/unit
Institutional Flow =	**28,000**	**L/ha/day**	Semi-detached	2.7 persons/unit
Industrial Flow =			Duplex	2.3 persons/unit
Maximum Residential Peak Factor =	4.0		Townhouse	2.7 persons/unit
Harmon - Correction Factor (K) =	0.8		Apartments:	
Institutional Peak Factor =	**1.5**		Bachelor	1.4 persons/unit
Extraneous Flow =	**0.33**	**L/s/ha**	1 Bedroom	1.4 persons/unit
Minimum Velocity =	0.6	m/s	2 Bedroom	2.1 persons/unit
Maximum Velocity =	3.0	m/s	3 Bedroom	3.1 persons/unit
			Average Apt.	1.8 persons/unit

SANITARY SEWER DESIGN SHEET
1400 COLDREY AVENUE, CITY OF OTTAWA

Robinson Land Development

LOCATION			UNIT COUNT			RESIDENTIAL AREA AND POPULATION						INSTITUTIONAL				INFILTRATION			PEAK DESIGN FLOW (L/s)	PIPE						
						INDIVIDUAL		CUMULATIVE		PEAK FACTOR	PEAK POP. FLOW (L/s)	No. OF SANCTUARY SEATS	ACCU. No. OF SEATS	PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)	ACCU. AREA (ha)	EXTRAN. FLOW (L/s)		LENGTH (m)	DIAMETER (mm)	SLOPE (%)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	EXCESS CAPACITY (L/s)	PERCENT FULL
STREET	FROM MH	TO MH	SINGLE-FAMILY	TOWNHOUSE	APARTMENTS	POP.	AREA (ha)	POP.	AREA (ha)																	
TO COLDREY AVENUE SANITARY SEWER																										
PRIVATE	BLDG	100				0.0	0.00	0.0	0.00	3.80	0.00	215	215	1.50	0.11	0.90	0.90	0.30	0.41	28.0	150.00	4.32	31.69	1.79	31.28	1.29
PRIVATE	BLDG	100				0.0	0.00	0.0	0.00	3.80	0.00	215	430	1.50	0.22	0.90	1.80	0.59	0.82	27.7	150.00	4.26	31.46	1.78	30.65	2.60
PRIVATE	100	EX MAIN				0.0	0.00	0.0	0.00	3.80	0.00	0	430	1.50	0.22	0.00	1.80	0.59	0.82	37.2	150.00	2.80	25.51	1.44	24.69	3.21

DESIGN PARAMETERS

			Per Unit Populations:	
Average Daily Flow =	280	L/person/day	Single Family	3.4 persons/unit
Institutional Flow =	28,000	L/ha/day	Semi-detached	2.7 persons/unit
Industrial Flow =			Duplex	2.3 persons/unit
Maximum Residential Peak Factor =	4.0		Townhouse	2.7 persons/unit
Harmon - Correction Factor (K) =	0.8		Apartments:	
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Minimum Velocity =	0.6	m/s	2 Bedroom	2.1 persons/unit
Maximum Velocity =	3.0	m/s	3 Bedroom	3.1 persons/unit
			Average Apt.	1.8 persons/unit

Churches with Kitchen Facilities 30 L/seat/day (OSDG Appendix 4-A)

APPENDIX 4-A

DAILY SEWAGE FLOW FOR VARIOUS TYPES OF ESTABLISHMENTS

APPENDIX 4-A DAILY SEWAGE FLOW FOR VARIOUS ESTABLISHMENTS

From The MOE Guidelines (* indicates adapted for Ottawa)

ITEM	UNIT OF MEASURE	DAILY VOLUME IN LITRES
AIRPORTS		
- Not including food	per passenger	20
- Catering	per meal served	12
- Employees	per person	40
ASSEMBLY HALLS		
- Where no kitchen or meals provided	per person	8
- With varying facilities provided (range)	per person	8-36
BAR OR COCKTAIL LOUNGE		
- Separate establishment Minimum food service	per seat	125
- Part of a hotel or motel	per seat	70
- Customer	per customer	8
- Staff	per employee	50
BEAUTY SALON	per station	650
	per person	130
BOWLING ALLEYS		
- With no bar or restaurant	per alley	400
- With bar and/or restaurant	per alley	800
CAMPS		
- Day camps – no meals	per person	50
- Day & night camps	per person	150
- Primitive camps	per person	40
- Summer Camps with showers, Toilets, handwashing & cooking	per person	150
- as above without flush toilet	per person	75
- Construction camps – Flush toilet	per person	200
- No Flush toilet	per person	125
- Migrant workers camp – central Bathroom	per person	125
- Youth camps	per person	200
- Resort camps – limited pumping	per person	200
- Resort comps – non resident staff	per person	50
- Luxury camps	per person	400
CAMPGROUNDS, TENT AND TRAILER PARKS		
Site with water and sewer connection For recreational vehicles (e.g. trailer And motor homes)-TRL Sites		
• Sewer connected to sewage system (SS) At nearby comfort station (CS)	per site	375(475)-425(525)

ITEM	UNIT OF MEASURE	DAILY VOLUME IN LITRES
• Sewer connected to a SS other than the one at SC		
- sewage generated at the CS	per site	275-375
- sewage to connected SS when CS is available	per site	100(200)-60(150)
- sewage to connected SS when no CS available	per site	125(425)
Sites with no sewer connections. Water supplied by a connection or From a nearby faucet		
• sewage generated at a nearby CS	per site	275-425
• sewage to vehicle tanks (TRL sites)	per site	60(150)-100(400)
• Grey water to nearby Class 2 SS	per site	15-25
For more details on designs flows and related assumptions see Section 14-2-16 and Appendix 14.2.1. Figures in brackets are for tank design.		
(CAR) WASH		
- Hand wash	per car	200
- Truck wash	per truck	400
CHURCHES		
- With kitchen facilities	per sanctuary seat	30
- No kitchen facilities	per sanctuary seat	15
- Kitchen wastes – paper service	per meal	5
- Kitchen wastes – normal service	per meal	15
COUNTRY CLUBS		
- Residents	per person	375
- Non residents – no meals	per person	100
- Showers during use	per fixture	1800
- Water closets	per fixture	550
- Wash basins	per fixture	350
- Urinals – hand flush	per fixture	350
- Showers	per person	20
- Day staff	per person	150
DANCE HALLS		
- Hall – washrooms only-per day in use	per m^2	15
- Dance hall restaurant	per seat	125
- Dance hall bar	per seat	20
- Dance hall plus restaurant plus bar	per patron	150

APPENDIX 4-A DAILY SEWAGE FLOW FOR VARIOUS ESTABLISHMENTS

ITEM	UNIT OF MEASURE	DAILY VOLUME IN LITRES
DOG KENNELS	per closure	75
DINING HALLS – see restaurants		
DWELLINGS		
- Single family houses, apartments Condominiums, cottages, etc.	per person	350
- Each dwelling unit of -	1 bedroom	275
- Each dwelling unit of -	2 bedrooms	1100
- Each dwelling unit of -	3 bedrooms	1600
- Each dwelling unit of -	4 bedrooms	2000
- Add for each bedroom over 4	per bedroom	300
- Boarding or Rooming houses	per person	200
- Boarding or Rooming houses without meals or laundry	per person	150
- Non resident staff	per person	40
- Luxury homes – 4 bedrooms	per residence	3000
- Luxury homes – 5 bedrooms	per residence	3500
- Luxury homes – add for each bedroom over 5		500
EMPLOYEES – VARIOUS LOCATIONS		
- Factory or plant workers per day or per shift – includes showers but no industrial	per person	125
- Factory or plant workers as above but no showers	per person	75
- Various buildings and places of Employment – e.g. store employees, Office workers – depends on facilities	per person	75 *
- Medical Office buildings, dental Offices and medical clinics		
- Doctors, nurses & medical staff	per person	275
- Office staff	per person	75
- Patients	per person	25
HOTELS – See Motels		

APPENDIX 4-A DAILY SEWAGE FLOW FOR VARIOUS ESTABLISHMENTS

ITEM	UNIT OF MEASURE	DAILY VOLUME IN LITRES
INSTITUTIONS		
- Hospitals – including laundry	per bed	1400 *
- Hospitals - excluding laundry	per bed	550
- Nursing homes & rest homes	per bed	450
- Other institutional residences	per person	400
LAUNDRY		
- Household type automatic washer Each use	per fill, wash and rinse	20
- Household type automatic washer Each use	as above plus permanent press	170
- Laundromat	per customer or per wash	170
- Laundromat per day	per machine	2000
- Auto washers in apartment bldgs	per machine	1200
MOTELS AND HOTELS		
Residential portion:		
- With full housekeeping facilities	per person	225
- With bath or toilet only (private)	per person	180
- With central bath only		150
No residential portions:		
- With dining room, add	per seat	125
- With bar or cocktail lounge, add	per seat	70
- Non resident staff, add	per person	40
MOBILE HOME PARKS		
- Mobile home – single bedroom	per unit	750
- Mobile home – 2 bedrooms	per unit	1000
- Mobile home – 3 bedrooms	per unit	1200
PARKS, BEACHES, PICNIC GROUNDS, PUBLIC SWIMMING POOLS**		
- Picnic and fairgrounds with Bathhouses showers and toilets	per person	50
- Picnic and fairgrounds Flush toilets only	per person	20
- Swimming pools & beaches with Bathrooms, showers and toilets	per person	40

******* ***Varies with facilities provided. Based on parks and picnic grounds of about 75 people per acre***

APPENDIX 4-A DAILY SEWAGE FLOW FOR VARIOUS ESTABLISHMENTS

ITEM	UNIT OF MEASURE	DAILY VOLUME IN LITRES
RESTAURANTS AND DINING ROOMS		
- Ordinary (not 24 hour) restaurant	per seat	125
- 24 hour restaurant	per seat	200
- 24 hour intercity freeway restaurant	per seat	375
- 24 hour intercity freeway restaurant with showers		400
- Auto dishwasher and/or waste disposer		
- ordinary restaurant	per seat	12
- 24 hour restaurant	per seat	24
- Kitchen and toilet wastes only	per seat	115
- Kitchen and toilet wastes	per patron	35 *
- Banquet rooms – each banquet	per seat	30
- Drive-in restaurants	per seat	125
- Drive-in - all paper service	per car space	60
- Drive-in - all paper service	per inside seat	60
- Taverns, bars and cocktail lounges With minimum food service	per seat	125
- Night club restaurant	per seat	175
SCHOOLS		
- Day school with cafeteria, gym And showers	per person	90
- Day school with cafeteria or Gym and showers	per person	60
- Day school without cafeteria or Gym and showers	per person	30
- Boarding schools	per resident	275
- Boarding schools non resident staff	per person	50
SERVICE STATIONS		
- Car servicing (one service bay)	per car	40
- Catch basins in garage floors for Floor cleaning	per basin	375
SHOPPING CENTRES		
- Retail stores – washrooms only	per square metre of store area	5
- Retail stores area – parking area	per parking space	6
- Retail store area – employees	per person	40
- Retail store area – toilet rooms	per toilet room	2000

ITEM	UNIT OF MEASURE	DAILY VOLUME IN LITRES
THEATRES		
- Drive-in theatres – no food service	per car space	20
- Drive-in theatres with food service	per car space	40
- Auditoriums or theatres – no food	per seat	20
- Movie theatre	per seat	15

MISCELLANEOUS WATER USE ESTIMATES

FOR SEWAGE FLOW COMPUTATIONS

DETAILS	UNITS	ESTIMATED WATER SUPPLY NEEDS PER UNITS (LITRES)
1. Showers		
(a) Golf clubs	per person	40
(b) Public parks, etc.	per fixture per hour of use	575
2. Water Closets – Public parks, etc.	per fixture per hour of use	150
3. Wash basins	per fixture per day	375
4. Urinals (hand flush) Public parks, etc.	per fixture per hour Of use	375
5. Whirlpools type baths depends on make and model.		
- Types discharging after Each use	per use	130-680
- Re-circulating type	per filling (or discharge)	1300 and up

Appendix D

Runoff Coefficient Calculations

Storm Sewer Design Sheet

Storm Drainage Area Plan
(DWG. 24060-STM1)

Overall Runoff Coefficient Calculations

Drainage Area ID	Impervious Area (ha)	Pervious Area (ha)	Gravel Area (ha)	Total Area (ha)	C	C (100 YR)	Percent Impervious (%)
PRE	0.69	1.02	0.09	1.80	0.50	0.62	43.3
POST	0.91	0.88	0.00	1.80	0.56	0.70	50.9

Sub-Drainage Area Runoff Coefficient Calculations

Drainage Area ID	Impervious Area (ha)	Pervious Area (ha)	Gravel Area (ha)	Total Area (ha)	C	C (100 YR)	Percent Impervious (%)
R1	0.21	0.00	0.00	0.21	0.90	1.00	100.0
STM1	0.10	0.04	0.00	0.14	0.69	0.86	70.0
STM2	0.11	0.03	0.00	0.14	0.73	0.92	76.4
STM3	0.18	0.01	0.00	0.19	0.85	1.00	92.3
STM4	0.09	0.03	0.00	0.12	0.70	0.88	72.0
STM5	0.22	0.64	0.00	0.86	0.38	0.47	25.4
FF1	0.02	0.11	0.00	0.13	0.30	0.37	14.2
PRE1	0.30	0.40	0.09	0.78	0.53	0.67	49.5
PRE2	0.03	0.15	0.00	0.18	0.32	0.40	17.5
PRE3	0.13	0.44	0.00	0.58	0.36	0.45	22.7
PRE4	0.02	0.03	0.00	0.05	0.48	0.60	39.6
PRE5	0.21	0.00	0.00	0.21	0.90	1.00	100.0
EXT-1	0.05	0.06	0.00	0.11	0.53	0.66	46.6

Runoff Coefficients:

C impervious = 0.90

C pervious = 0.20

C gravel = 0.80

C_{100} = C * 1.25 (Max. 1.0)

STORM SEWER DESIGN SHEET
1400 COLDREY AVENUE, CITY OF OTTAWA

LOCATION			AREA (ha)	C	C (100 YR)	2 YR		100 YR		TIME OF CONC. (min)	2 YR RAINFALL INTENSITY (mm/hr)	2 YR PEAK FLOW (L/s)	100 YR RAINFALL INTENSITY (mm/hr)	100 YR PEAK FLOW (L/s)	RESTRICTED FLOW (L/s)	CUMULATIVE RESTRICTED FLOW (L/s)	PROPOSED SEWER							
DRAINAGE AREA	FROM MH	TO MH				INDIV. 2.78AC	ACCUM. 2.78AC	INDIV. 2.78AC	ACCUM. 2.78AC								PIPE DIA. (mm)	GRADE (%)	LENGTH (m)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW (min)	2 YR PERCENT FULL	100 YR PERCENT FULL WITH RESTRICTED CONTROLS
TO EXISTING 2100mm TRUNK SEWER																								
STM5	DICB 5	203	0.86	0.38	0.47	0.91	0.91	1.13	1.13	10.00	76.81	69.62	178.56	202.31	79.8	79.8	251.46	1.95	8.7	84.43	1.70	0.09	82%	94%
	203	*EX MAIN*	0.00	0.00	0.00	0.00	0.91	0.00	1.13	10.09	76.48	69.32	177.78	201.43		79.8	251.46	1.92	9.9	83.77	1.69	0.10	83%	95%
TO EXISTING COLDREY STORM SEWER																								
STM1	CB 1	200	0.14	0.69	0.86	0.27	0.27	0.33	0.33	10.00	76.81	20.50	178.56	59.58	22.8	22.8	201.16	1.00	21.0	33.34	1.05	0.33	61%	68%
STM2	CB 2	MAIN	0.14	0.73	0.92	0.29	0.29	0.36	0.36	10.00	76.81	22.40	178.56	65.10	24.8	24.8	201.16	1.34	13.4	38.60	1.21	0.18	58%	64%
STM3	CB 3	MAIN	0.19	0.85	1.00	0.45	0.45	0.53	0.53	10.00	76.81	34.51	178.56	94.85	37.9	37.9	201.16	1.94	3.1	46.44	1.46	0.04	74%	82%
	200	201	0.00	0.00	0.00	0.00	1.01	0.00	1.23	10.33	75.55	76.15	175.57	215.84		85.5	366.42	0.30	60.2	90.38	0.86	1.17	84%	95%
STM4	CB 4	201	0.12	0.70	0.88	0.23	0.23	0.29	0.29	10.00	76.81	17.82	178.56	51.79	21.1	21.1	201.16	2.77	31.4	55.49	1.75	0.30	32%	38%
	201	*27626*	0.00	0.00	0.00	0.00	1.24	0.00	1.52	11.50	71.47	88.63	165.89	252.06		106.6	366.42	0.43	30.2	108.20	1.03	0.49	82%	99%

Design Parameters

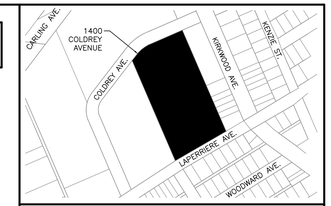
Notes:

1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Peak flows calculated using the Rational Method.
   Q = 2.78CIA, where:
   Q = Peak Flow (L/s)
   A = Drainage Area (ha)
   I = Rainfall Intensity (mm/hr)
   C = Runoff Coefficient
3. Manning's roughness coefficient = 0.013
4. Full flow velocity: MIN 0.8 m/s; MAX 3.0 m/s (City of Ottawa Sewer Design Guidelines, v.2012)

IDF curve equations (Intensity in mm/hr)

100 year Intensity = $1735.688 / (\text{Time in min} + 6.014)^{0.820}$
50 year Intensity = $1569.580 / (\text{Time in min} + 6.014)^{0.820}$
25 year Intensity = $1402.884 / (\text{Time in min} + 6.018)^{0.819}$
10 year Intensity = $1174.184 / (\text{Time in min} + 6.014)^{0.816}$
5 year Intensity = $998.071 / (\text{Time in min} + 6.053)^{0.814}$
2 year Intensity = $732.951 / (\text{Time in min} + 6.199)^{0.810}$

NOT FOR CONSTRUCTION



KEY PLAN

LEGEND

- PROPERTY BOUNDARY
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- STORM SEWER & MANHOLE
- CATCH BASIN
- LCB — ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- SWALE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- STORM DRAINAGE AREA BOUNDARY

RUNOFF COEFFICIENT
0.65 0.15 STM1 ← AREA (ha)
DRAINAGE AREA ID

LAPERRIERE AVENUE
COLDREY AVENUE
EX. BUILDING #1427
EX. BUILDING #1428
EX. BUILDING #1422
EX. BUILDING 1400 COLDREY AVE.
EX. GARAGE
GARBAGE
ASPHALT
GRAVEL
EX. FENCE
EX. HYD.
EX. CONC. INLET 600x600mm
EX.CB T/G=75.40
EX.CB T/G=75.15
EX.CB T/G=74.87
EX.CB T/G=77.54
EX.CB T/G=77.41
EX.CB INV.=73.
EDGE OF PAVEMENT
EDGE OF GRAVEL
PRE-CAST CURB
CENTRELINE OF ROAD
CONCRETE SIDEWALK
BARRIER CURB
GEYBELINE OF ROAD
TOS
BOS
DC
AC
BIKE RACK
PAVER PATHWAY
STRIPED CROSSWALK
0.38 0.86 STM5
0.69 0.14 STM1
0.90 0.21 R1
0.70 0.12 STM4
0.73 0.14 STM2
0.85 0.19 STM3
0.30 0.13 FF1
LCB 6 T/G=75.00 INV.NE=74.10
DICB 5 LIP=75.00 INV.N=73.85 INV.SW=73.85
STMH 203 T/G=76.38 INV.NE=73.62 INV.S=73.68
CB 1 T/G=75.40 INV.N=74.11
21.0m–200mmø STM @ 1.00%
STMH 200 T/G=75.78 INV.NE=73.72 INV.S=73.90
CB 2 T/G=75.55 INV.SE=74.05
13.4m–200mmø STM @ 1.34%
60.2m–375mmø STM @ 0.30%
CB 3 T/G=75.65 INV.SE=74.15
3.1m–200mmø STM @ 1.94%
STMH 201 T/G=76.02 INV.NW=73.48 INV.SW=73.54 INV.SE=73.66
30.2m–375mmø STM @ 0.43%
CB 4 T/G=76.53 INV.NW=74.53
31.4m–200mmø STM @ 2.77%
50.0m–250mmø PERF. SUBDRAIN @ 0.50%
8.7m–250mmø STM @ 1.95%
9.9m–250mmø STM @ 1.92%
10.3m–750mmø STM @ 0.25%
7.7m–900mmø STM
5.4m–1650mmø STM @ 3.52%
102.1m–1200mmø STM @ 0.95%
199.9m–2100mmø STM @ 0.24%
90.5m–1200mmø STM @ 1.20%
66.5m–600mmø STM
73.9m–600mmø STM
STMH 27626 (BURIED) T/G=74.77 INV.NE=73.12 INV.SW=73.36 INV.SE=73.35
STMH 27619 T/G=75.01 INV.NW=70.82 INV.SE=70.83 INV.E=71.86 INV.SW=73.06
33.8m–2100mmø STM @ 1.30%
6.1m–675mmø STM @ 1.15%
STMH 27627 T/G=77.20 INV.NW=71.38 INV.NE=71.50 INV.W=71.84
STMH 27648 T/G=77.16 INV.NW=74.99 INV.SW=71.69 INV.NE=74.99
STMH 27647 T/G=77.41 INV.NW=74.01 INV.SE=74.02
STMH 27639 T/G=75.02 INV.NW=72.87 INV.SE=72.92
STMH 27648 T/G=75.04 INV.W=71.93 INV.E=71.93
STMH 27625 T/G=75.14 INV.NE=73.40 INV.SW=73.40

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROPERTY BOUNDARIES ARE DERIVED FROM PLAN OF SURVEY OF PART OF LOT I CONCESSION A RIDEAU FRONT, GEOGRAPHIC TOWNSHIP OF NEPEAN, CITY OF OTTAWA, SURVEYED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. BEARINGS ARE GRID, ARE REFERRED TO THE CENTRAL MERIDIAN OF MTM ZONE 9, NAD–83 (ORIGINAL).

NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER COMMENTS	21/08/25	BLM
1	ISSUED FOR REVIEW	09/06/25	BLM

SCALE
0 3m 6m 12m
HORIZONTAL 1:300

LICENSED PROFESSIONAL ENGINEER
B. L. MACKECHNIE
100199554
21 Aug '25
PROVINCE OF ONTARIO

Robinson Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	CC
DRAWN	BLM
CHECKED	CC
APPROVED	BLM

KEHILLAT BETH ISRAEL

1400 COLDREY AVENUE
CITY OF OTTAWA

STORM DRAINAGE AREA PLAN

PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-STM1

FILE No. D07-12-25-0083

PLAN No. 19336

Appendix E

Pre-Development Drainage Area Plan
(DWG. 24060-PRE1)

Pre-Development Flow Calculations

Storage Volume Tables

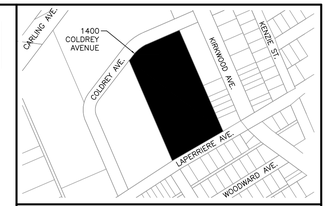
Free Flow Calculations

Ponding and ICD Calculations

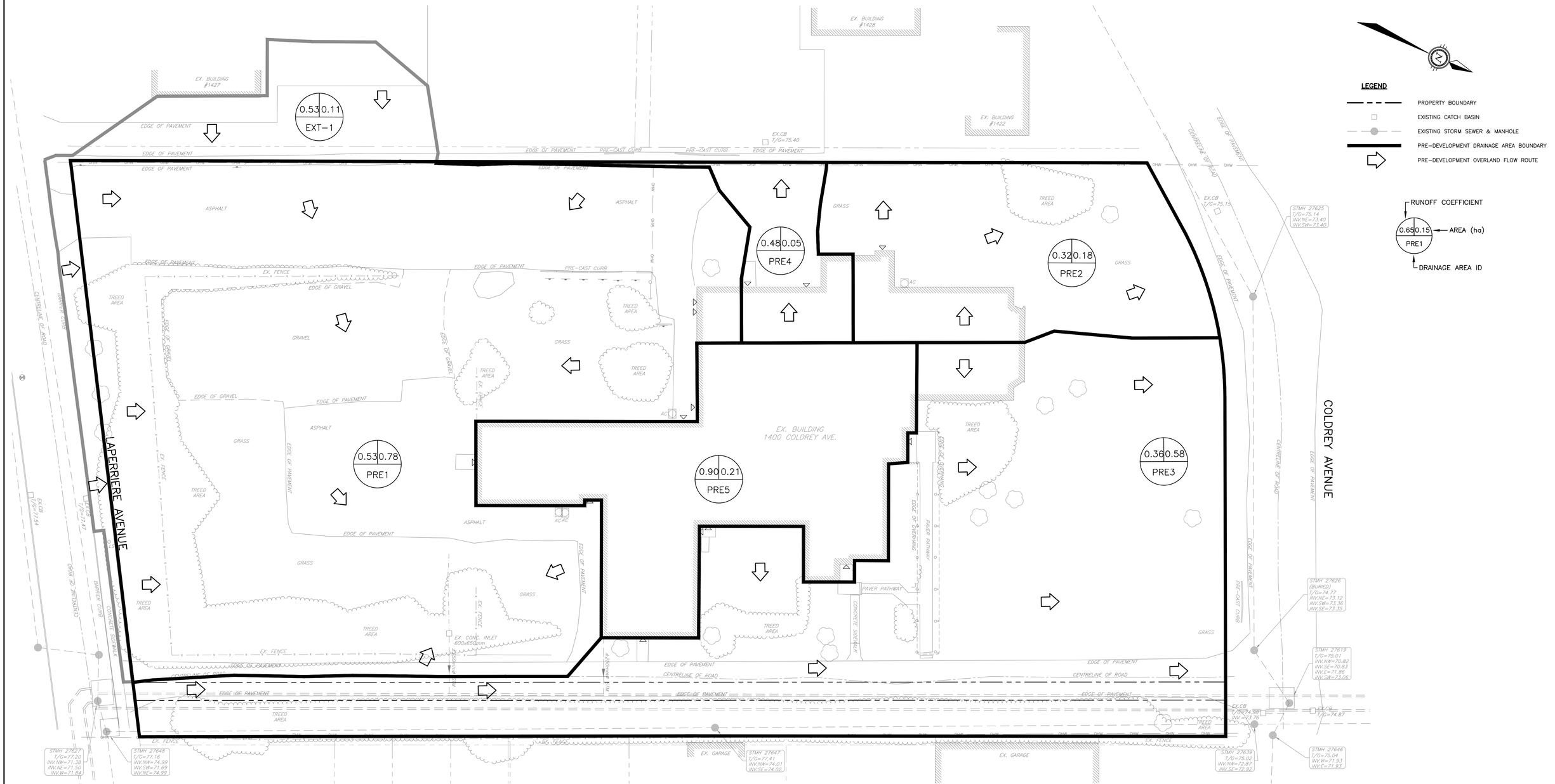
Tempest ICD Technical Manual

Backwater Valve Technical Data

NOT FOR CONSTRUCTION



KEY PLAN



LEGEND

- PROPERTY BOUNDARY
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- PRE-DEVELOPMENT DRAINAGE AREA BOUNDARY
- PRE-DEVELOPMENT OVERLAND FLOW ROUTE

RUNOFF COEFFICIENT
0.65 0.15 ← AREA (ha)
PRE1
DRAINAGE AREA ID

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

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NO.	REVISION DESCRIPTION	DATE	BY
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SCALE
0 3m 6m 12m
HORIZONTAL 1:300

LICENSED PROFESSIONAL ENGINEER
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DESIGN	BLM
CHECKED	CC
DRAWN	BLM
CHECKED	CC
APPROVED	BLM

KEHILLAT BETH ISRAEL

1400 COLDREY AVENUE
CITY OF OTTAWA

PRE-DEVELOPMENT DRAINAGE AREA PLAN

PROJECT No.	24060
SURVEY	RCI
DATED	AUGUST 2025
DWG. No:	24060-PRE1

FILE No. D07-12-25-0083

PLAN No. 19336

Pre-Development Peak Flow Calculations

Drainage Area ID	Area, A (ha)	Runoff Coefficient, C	100 YR Runoff Coefficient,	Time of Concentration, Tc (min.)	Rainfall Intensity, i (mm/hr)			Peak Design Flow, Q (L/s)		
					2 YR	5 YR	100 YR	2 YR	5 YR	100 YR
PRE1	0.78	0.53	0.67	10.0	76.81	104.19	178.56	89.4	121.2	259.7
PRE2	0.18	0.32	0.40	10.0	76.81	104.19	178.56	12.1	16.4	35.2
PRE3	0.58	0.36	0.45	10.0	76.81	104.19	178.56	44.1	59.9	128.2
PRE4	0.05	0.48	0.60	10.0	76.81	104.19	178.56	5.4	7.4	15.8
PRE5	0.21	0.90	1.00	10.0	76.81	104.19	178.56	39.9	54.1	103.0
TOTAL	**1.80**	**0.50**	**0.62**					**190.9**	**259.0**	**541.9**

Notes:

1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Peak flows calculated using the Rational Method. (Q=2.78CiA)
3. T_C = 10 minutes (minimum)
4. C (100 YR) = C + 25% (Max. 1.0)

IDF curve equations (Intensity in mm/hr)

$$\text{100 year Intensity} = 1735.688 / (\text{Time in min} + 6.014)^{0.820}$$
$$\text{50 year Intensity} = 1569.580 / (\text{Time in min} + 6.014)^{0.820}$$
$$\text{25 year Intensity} = 1402.884 / (\text{Time in min} + 6.018)^{0.819}$$
$$\text{10 year Intensity} = 1174.184 / (\text{Time in min} + 6.014)^{0.816}$$
$$\text{5 year Intensity} = 998.071 / (\text{Time in min} + 6.053)^{0.814}$$
$$\text{2 year Intensity} = 732.951 / (\text{Time in min} + 6.199)^{0.810}$$

Storage Volume Calculations - Area STM1 (CB 1)

Area ID =	STM1	2-Year Release Rate (L/s) =	21.0
Area (ha) =	0.14	5-Year Release Rate (L/s) =	21.9
C =	0.69	100-Year Release Rate (L/s) =	22.8
C (100 YR) =	0.86	100-Year + 20% Release Rate (L/s) =	22.9
		Available Surface Storage (m^3) =	24.9

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	20.5	21.0	-0.5	-0.3
	15	61.8	16.5	21.0	-4.5	-4.1
	20	52.0	13.9	21.0	-7.1	-8.5
	25	45.2	12.1	21.0	-8.9	-13.4
	30	40.0	10.7	21.0	-10.3	-18.6
	35	36.1	9.6	21.0	-11.4	-23.9
5 Year	**10**	**104.2**	**27.8**	**21.9**	**5.9**	**3.5**
	15	83.6	22.3	21.9	0.4	0.3
	20	70.3	18.8	21.9	-3.2	-3.8
	25	60.9	16.3	21.9	-5.7	-8.5
	30	53.9	14.4	21.9	-7.6	-13.6
	35	48.5	13.0	21.9	-9.0	-18.9
100 Year	10	178.6	59.6	22.8	36.8	22.1
	15	**142.9**	**47.7**	**22.8**	**24.9**	**22.4**
	20	120.0	40.0	22.8	17.2	20.7
	25	103.8	34.6	22.8	11.9	17.8
	30	91.9	30.7	22.8	7.9	14.2
	35	82.6	27.6	22.8	4.8	10.0
100 Year + 20%	10	214.3	71.5	22.9	48.6	29.2
	15	**171.5**	**57.2**	**22.9**	**34.4**	**30.9**
	20	143.9	48.0	22.9	25.2	30.2
	25	124.6	41.6	22.9	18.7	28.1
	30	110.2	36.8	22.9	13.9	25.1
	35	99.1	33.1	22.9	10.2	21.4

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Storage Volume Calculations - Area STM2 (CB 2)

Area ID =	STM2	2-Year Release Rate (L/s) =	23.0
Area (ha) =	0.14	5-Year Release Rate (L/s) =	24.0
C =	0.73	100-Year Release Rate (L/s) =	24.8
C (100 YR) =	0.92	100-Year + 20% Release Rate (L/s) =	24.8
		Available Surface Storage (m^3) =	27.2

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	22.4	23.0	-0.6	-0.4
	15	61.8	18.0	23.0	-5.0	-4.5
	20	52.0	15.2	23.0	-7.8	-9.4
	25	45.2	13.2	23.0	-9.8	-14.7
	30	40.0	11.7	23.0	-11.3	-20.4
	35	36.1	10.5	23.0	-12.5	-26.2
5 Year	**10**	**104.2**	**30.4**	**24.0**	**6.4**	**3.9**
	15	83.6	24.4	24.0	0.4	0.4
	20	70.3	20.5	24.0	-3.5	-4.2
	25	60.9	17.8	24.0	-6.2	-9.3
	30	53.9	15.7	24.0	-8.2	-14.8
	35	48.5	14.2	24.0	-9.8	-20.6
100 Year	10	178.6	65.1	24.8	40.3	24.2
	15	**142.9**	**52.1**	**24.8**	**27.3**	**24.5**
	20	120.0	43.7	24.8	18.9	22.7
	25	103.8	37.9	24.8	13.0	19.6
	30	91.9	33.5	24.8	8.7	15.6
	35	82.6	30.1	24.8	5.3	11.1
100 Year + 20%	10	214.3	78.1	24.8	53.3	32.0
	15	**171.5**	**62.5**	**24.8**	**37.7**	**33.9**
	20	143.9	52.5	24.8	27.7	33.2
	25	124.6	45.4	24.8	20.6	30.9
	30	110.2	40.2	24.8	15.4	27.7
	35	99.1	36.1	24.8	11.3	23.7

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Storage Volume Calculations - Area STM3 (CB 3)

Area ID =	STM3	2-Year Release Rate (L/s) =	35.0
Area (ha) =	0.19	5-Year Release Rate (L/s) =	36.7
C =	0.85	100-Year Release Rate (L/s) =	37.9
C (100 YR) =	1.00	100-Year + 20% Release Rate (L/s) =	38.0
		Available Surface Storage (m^3) =	39.3

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	34.5	35.0	-0.5	-0.3
	15	61.8	27.8	35.0	-7.2	-6.5
	20	52.0	23.4	35.0	-11.6	-13.9
	25	45.2	20.3	35.0	-14.7	-22.1
	30	40.0	18.0	35.0	-17.0	-30.6
	35	36.1	16.2	35.0	-18.8	-39.5
5 Year	**10**	**104.2**	**46.8**	**36.7**	**10.1**	**6.1**
	15	83.6	37.5	36.7	0.8	0.8
	20	70.3	31.6	36.7	-5.1	-6.2
	25	60.9	27.4	36.7	-9.3	-14.0
	30	53.9	24.2	36.7	-12.5	-22.5
	35	48.5	21.8	36.7	-14.9	-31.3
100 Year	10	178.6	94.9	37.9	57.0	34.2
	15	**142.9**	**75.9**	**37.9**	**38.0**	**34.2**
	20	120.0	63.7	37.9	25.8	31.0
	25	103.8	55.2	37.9	17.3	25.9
	30	91.9	48.8	37.9	10.9	19.7
	35	82.6	43.9	37.9	6.0	12.6
100 Year + 20%	10	214.3	113.8	38.0	75.8	45.5
	15	**171.5**	**91.1**	**38.0**	**53.1**	**47.8**
	20	143.9	76.5	38.0	38.5	46.2
	25	124.6	66.2	38.0	28.2	42.3
	30	110.2	58.6	38.0	20.6	37.0
	35	99.1	52.6	38.0	14.6	30.7

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

Storage Volume Calculations - Area STM4 (CB 4)

Area ID =	STM4	2-Year Release Rate (L/s) =	20.0
Area (ha) =	0.12	5-Year Release Rate (L/s) =	20.5
C =	0.70	100-Year Release Rate (L/s) =	21.1
C (100 YR) =	0.88	100-Year + 20% Release Rate (L/s) =	21.1
		Available Surface Storage (m^3) =	19.3

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	17.8	20.0	-2.2	-1.3
	15	61.8	14.3	20.0	-5.7	-5.1
	20	52.0	12.1	20.0	-7.9	-9.5
	25	45.2	10.5	20.0	-9.5	-14.3
	30	40.0	9.3	20.0	-10.7	-19.3
	35	36.1	8.4	20.0	-11.6	-24.4
5 Year	**10**	**104.2**	**24.2**	**20.5**	**3.7**	**2.2**
	15	83.6	19.4	20.5	-1.1	-1.0
	20	70.3	16.3	20.5	-4.2	-5.1
	25	60.9	14.1	20.5	-6.4	-9.6
	30	53.9	12.5	20.5	-8.0	-14.4
	35	48.5	11.3	20.5	-9.3	-19.4
100 Year	**10**	**178.6**	**51.8**	**21.1**	**30.7**	**18.4**
	15	142.9	41.4	21.1	20.3	18.3
	20	120.0	34.8	21.1	13.7	16.4
	25	103.8	30.1	21.1	9.0	13.5
	30	91.9	26.6	21.1	5.5	9.9
	35	82.6	24.0	21.1	2.8	5.9
100 Year + 20%	10	214.3	62.2	21.1	41.0	24.6
	15	**171.5**	**49.7**	**21.1**	**28.6**	**25.7**
	20	143.9	41.8	21.1	20.6	24.7
	25	124.6	36.1	21.1	15.0	22.5
	30	110.2	32.0	21.1	10.8	19.5
	35	99.1	28.7	21.1	7.6	16.0

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

Storage Volume Calculations - Area STM5 (DICB 5)

Area ID =	STM5	2-Year Release Rate (L/s) =	69.6
Area (ha) =	0.86	5-Year Release Rate (L/s) =	74.5
C =	0.38	100-Year Release Rate (L/s) =	79.8
C (100 YR) =	0.47	100-Year + 20% Release Rate (L/s) =	81.2
		Available Surface Storage (m^3) =	146.5

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	69.6	69.6	0.0	0.0
	15	61.8	56.0	69.6	-13.6	-12.3
	20	52.0	47.2	69.6	-22.5	-26.9
	25	45.2	40.9	69.6	-28.7	-43.0
	30	40.0	36.3	69.6	-33.3	-60.0
	35	36.1	32.7	69.6	-36.9	-77.6
5 Year	**10**	**104.2**	**94.4**	**74.5**	**19.9**	**11.9**
	15	83.6	75.7	74.5	1.2	1.1
	20	70.3	63.7	74.5	-10.9	-13.0
	25	60.9	55.2	74.5	-19.3	-29.0
	30	53.9	48.9	74.5	-25.7	-46.2
	35	48.5	44.0	74.5	-30.6	-64.2
100 Year	10	178.6	202.3	79.8	122.6	73.5
	15	**142.9**	**161.9**	**79.8**	**82.1**	**73.9**
	20	120.0	135.9	79.8	56.2	67.4
	25	103.8	117.7	79.8	37.9	56.9
	30	91.9	104.1	79.8	24.3	43.8
	35	82.6	93.6	79.8	13.8	29.0
100 Year + 20%	10	214.3	242.8	81.2	161.5	96.9
	15	**171.5**	**194.3**	**81.2**	**113.1**	**101.8**
	20	143.9	163.1	81.2	81.9	98.2
	25	124.6	141.2	81.2	60.0	90.0
	30	110.2	124.9	81.2	43.7	78.6
	35	99.1	112.3	81.2	31.1	65.2

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

Free Flow Calculations - Area FF1 (to Coldrey Avenue)

Area ID = FF1
Area (ha) = 0.13
C = 0.30
C (100 YR) = 0.37

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)
2 Year	**10**	**76.8**	**8.6**
	15	61.8	6.9
	20	52.0	5.8
	25	45.2	5.0
	30	40.0	4.5
	35	36.1	4.0
5 Year	**10**	**104.2**	**11.6**
	15	83.6	9.3
	20	70.3	7.8
	25	60.9	6.8
	30	53.9	6.0
	35	48.5	5.4
100 Year	**10**	**178.6**	**24.9**
	15	142.9	19.9
	20	120.0	16.7
	25	103.8	14.5
	30	91.9	12.8
	35	82.6	11.5

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Free Flow Calculations - Area R1 (to Easement Storm Sewer)

Area ID = R1
Area (ha) = 0.21
C = 0.90
C (100 YR) = 1.00

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)
2 Year	**10**	**76.8**	**39.9**
	15	61.8	32.1
	20	52.0	27.0
	25	45.2	23.4
	30	40.0	20.8
	35	36.1	18.7
5 Year	**10**	**104.2**	**54.1**
	15	83.6	43.4
	20	70.3	36.5
	25	60.9	31.6
	30	53.9	28.0
	35	48.5	25.2
100 Year	**10**	**178.6**	**103.0**
	15	142.9	82.4
	20	120.0	69.2
	25	103.8	59.9
	30	91.9	53.0
	35	82.6	47.6

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Ponding and Inlet Control Device Calculations

Structure	Drainage Area	Outlet Pipe Inv. Elev. (m)	Outlet Pipe Diam. (m)	C/L Orifice Elev. (m)	T/G Elev. (m)	2-YR Ponding Depth (m)	2-YR Ponding Elev. (m)	2-YR Head (m)	5-YR Ponding Depth (m)	5-YR Ponding Elev. (m)	5-YR Head (m)	100-YR Ponding Depth (m)	100-YR Ponding Elev. (m)	100-YR Head (m)	100-YR + 20% Ponding Depth (m)	100-YR + 20% Ponding Elev. (m)	100-YR + 20% Head (m)	2-YR Outflow (L/s)	5-YR Outflow (L/s)	100-YR Outflow (L/s)	100-YR + 20% Outflow (L/s)	Orifice Area (m^2)	Orifice Diameter (mm)	Orifice Type
CB 1	STM1	74.11	0.201	74.21	75.40	0.00	75.40	1.19	0.11	75.51	1.30	0.21	75.61	1.40	0.22	75.62	1.41	21.0	21.9	22.8	22.9	0.007	95	Custom Tempest HF, circular, slide
CB 2	STM2	74.05	0.201	74.15	75.55	0.00	75.55	1.40	0.12	75.67	1.52	0.23	75.78	1.63	0.23	75.78	1.63	23.0	24.0	24.8	24.8	0.007	96	Custom Tempest HF, circular, slide
CB 3	STM3	74.15	0.201	74.25	75.65	0.00	75.65	1.40	0.14	75.79	1.54	0.24	75.89	1.64	0.25	75.90	1.65	35.0	36.7	37.9	38.0	0.011	118	Custom Tempest HF, circular, slide
CB 4	STM4	74.53	0.201	74.63	76.53	0.00	76.53	1.90	0.10	76.63	2.00	0.22	76.75	2.12	0.22	76.75	2.12	20.0	20.5	21.1	21.1	0.005	83	Custom Tempest HF, circular, slide
DICB 5	STM5	73.85	0.251	73.98	75.00	0.00	75.00	1.02	0.15	75.15	1.17	0.32	75.32	1.34	0.37	75.37	1.39	69.6	74.5	79.8	81.2	0.025	180	Custom Tempest HF, circular, slide

Notes:
1. Ponding depths are measured from the ponding elevation to the T/G elevation.
2. Heads are measured from the ponding elevation to the centreline of orifice elevation.
3. Orifice Area = (Q/1000) / 0.61(2*9.81*H_{100})^0.5 (OSDG Section 8.3.8.1)
4. Orifice areas are calculated using 2-year head and outflow values.

Volume III: TEMPEST INLET CONTROL DEVICES

Municipal Technical Manual Series

SECOND EDITION

LMF (Low to Medium Flow) ICD

HF (High Flow) ICD

MHF (Medium to High Flow) ICD

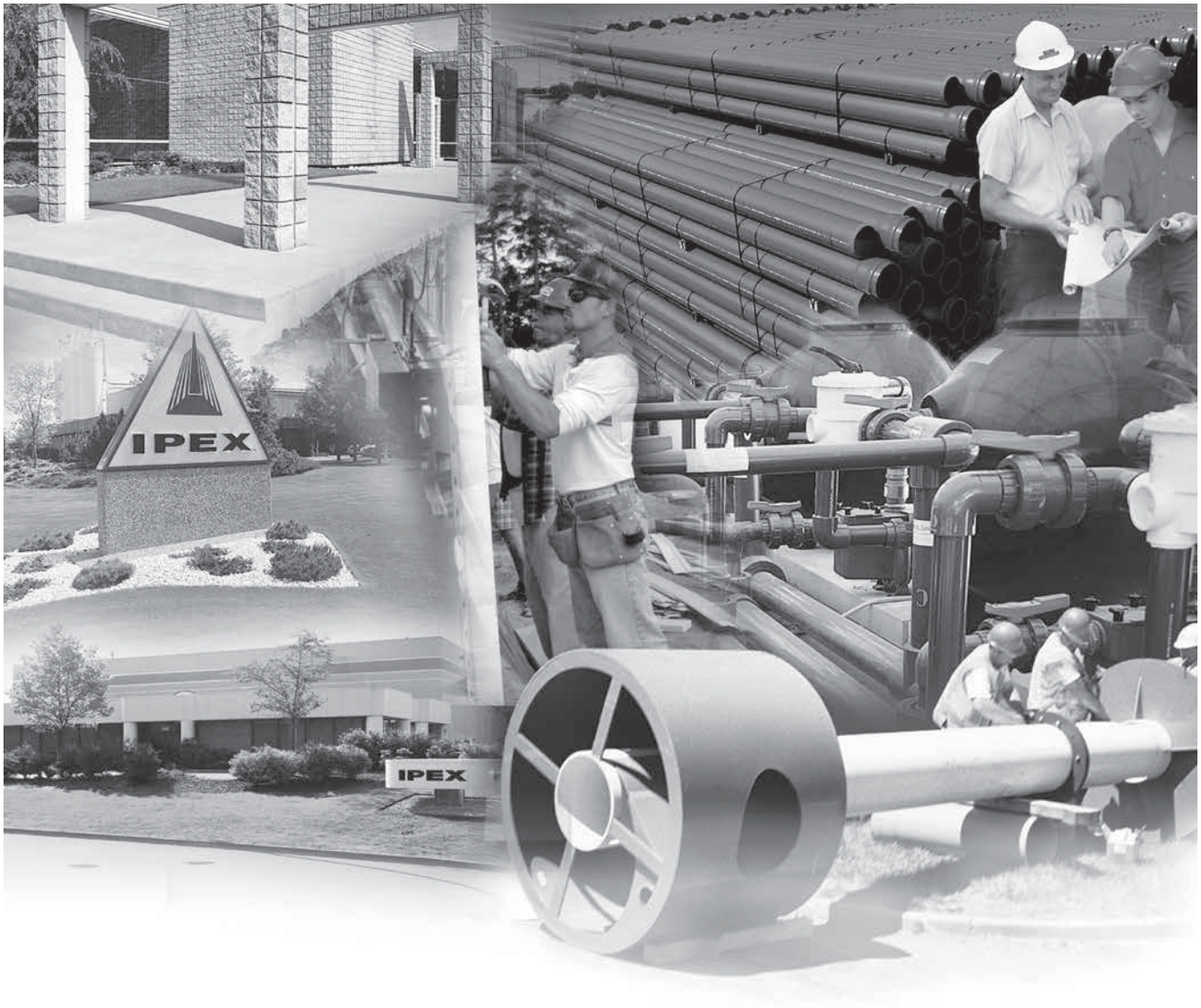
IPEX
by aliaxis

IPEX Tempest™ Inlet Control Devices

Municipal Technical Manual Series

Vol. I, 2nd Edition

For information contact: IPEX, Marketing,
1425 North Service Road East, Oakville, Ontario, Canada, L6H 1A7



ABOUT IPEX

At IPEX, we have been manufacturing non-metallic pipe and fittings since 1951. We formulate our own compounds and maintain strict quality control during production. Our products are made available for customers thanks to a network of regional stocking locations throughout North America. We offer a wide variety of systems including complete lines of piping, fittings, valves and custom-fabricated items.

More importantly, we are committed to meeting our customers' needs. As a leader in the plastic piping industry, IPEX continually develops new products, modernizes manufacturing facilities and acquires innovative process technology. In addition, our staff take pride in their work, making available to customers their extensive thermoplastic knowledge and field experience. IPEX personnel are committed to improving the safety, reliability and performance of thermoplastic materials. We are involved in several standards committees and are members of and/or comply with the organizations listed on this page.

For specific details about any IPEX product, contact our customer service department.

CONTENTS

PRODUCT INFORMATION: TEMPEST LOW, MEDIUM FLOW (LMF) ICD

Purpose

To control the amount of storm water runoff entering a sewer system by allowing a specified flow volume out of a catch basin or manhole at a specified head. This approach conserves pipe capacity so that catch basins downstream do not become uncontrollably surcharged, which can lead to basement floods, flash floods and combined sewer overflows.

Product Description

Our LMF ICD is designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter and larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 14 preset flow curves, the LMF ICD has the ability to provide flow rates: 2lps – 17lps (31gpm – 270gpm)

Product Function

The LMF ICD vortex flow action allows the LMF ICD to provide a narrower flow curve using a larger orifice than a conventional orifice plate ICD, making it less likely to clog. When comparing flows at the same head level, the LMF ICD has the ability to restrict more flow than a conventional ICD during a rain event, preserving greater sewer capacity.

Product Construction

Constructed from durable PVC, the LMF ICD is light weight 8.9 Kg (19.7 lbs).

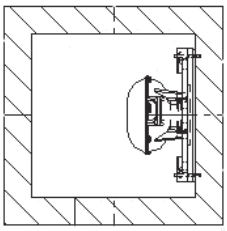
Product Applications

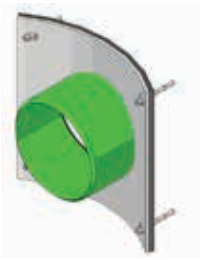
Will accommodate both square and round applications:

Square Application

Round Application

Universal Mounting Plate





+

Spigot CB Wall Plate

=

Universal Mounting Plate Hub Adapter

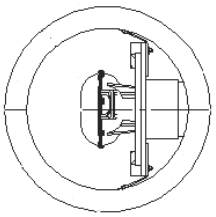


Chart 1: LMF 14 Preset Flow Curves

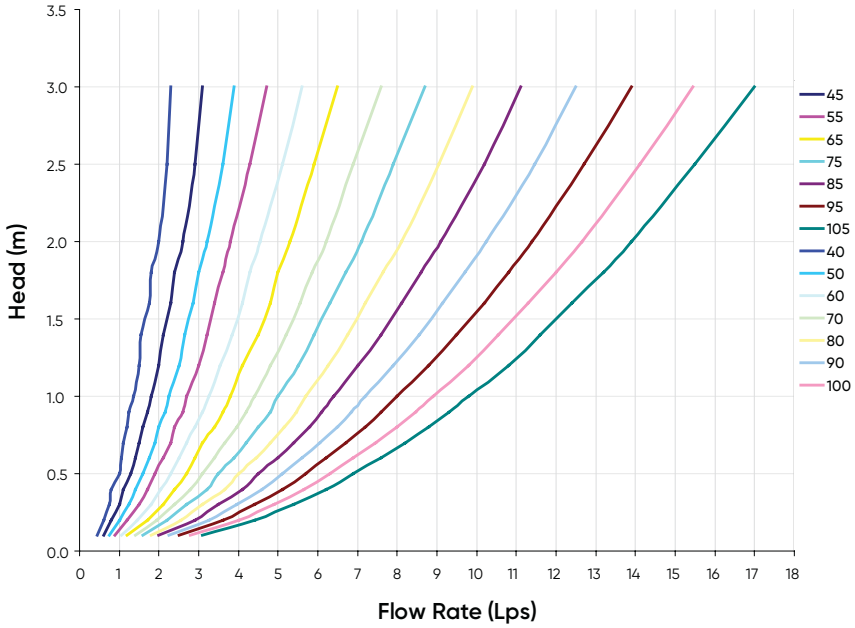
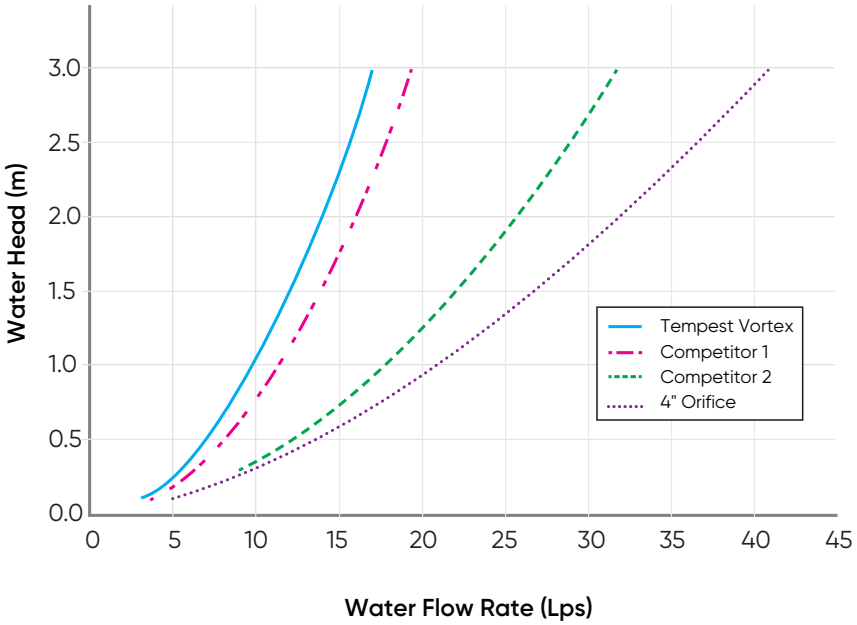


Chart 2: LMF Flow vs. ICD Alternatives



PRODUCT INSTALLATION

Instructions to assemble a TEMPEST LMF ICD into a Square Catch Basin:

STEPS:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers, (4) nuts, universal mounting plate, ICD device.
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a minimum of 1-1/2" depth up to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the universal mounting plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From the ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the universal mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- Call your IPEX representative for more information or if you have any questions about our products.

Instructions to assemble a TEMPEST LMF ICD into a Round Catch Basin:

STEPS:

1. Materials and tooling verification.
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers and (4) nuts, spigot CB wall plate, universal mounting plate hub adapter, ICD device.
2. Use the spigot catch basin wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a depth between 1-1/2" to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the CB spigot wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the spigot wall plate and the catch basin wall.
6. Apply solvent cement on the hub of the universal mounting plate, hub adapter and the spigot of the CB wall plate, then slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the universal mounting plate hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut back the pipe flush to the catch basin wall.
- The solvent cement which is used in this installation is to be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at ipexna.com.
- Call your IPEX representative for more information or if you have any questions about our products.

NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook will be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above must not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices will consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

PRODUCT INFORMATION: TEMPEST HF & MHF ICD

Product Description

Our HF, HF Sump and MHF ICD's are designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter or larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 5 preset flow curves, these ICDs have the ability to provide constant flow rates: 9lps (143 gpm) and greater

Product Function

TEMPEST HF (High Flow): designed to manage moderate to higher flows 15 L/s (240 gpm) or greater and prevent the propagation of odour and floatables. With this device, the cross-sectional area of the device is larger than the orifice diameter and has been designed to limit head losses. The HF ICD can also be ordered without flow control when only odour and floatable control is required.

TEMPEST HF (High Flow) Sump: The height of a sewer outlet pipe in a catch basin is not always conveniently located. At times it may be located very close to the catch basin floor, not providing enough sump for one of the other TEMPEST ICDs with universal back plate to be installed. In these applications, the HF Sump is offered. The HF Sump offers the same features and benefits as the HF ICD; however, is designed to raise the outlet in a square or round catch basin structure. When installed, the HF sump is fixed in place and not easily removed. Any required service to the device is performed through a clean-out located in the top of the device which can be often accessed from ground level.

TEMPEST MHF (Medium to High Flow): The MHF plate or plug is designed to control flow rates 9 L/s (143 gpm) or greater. It is not designed to prevent the propagation of odour and floatables.

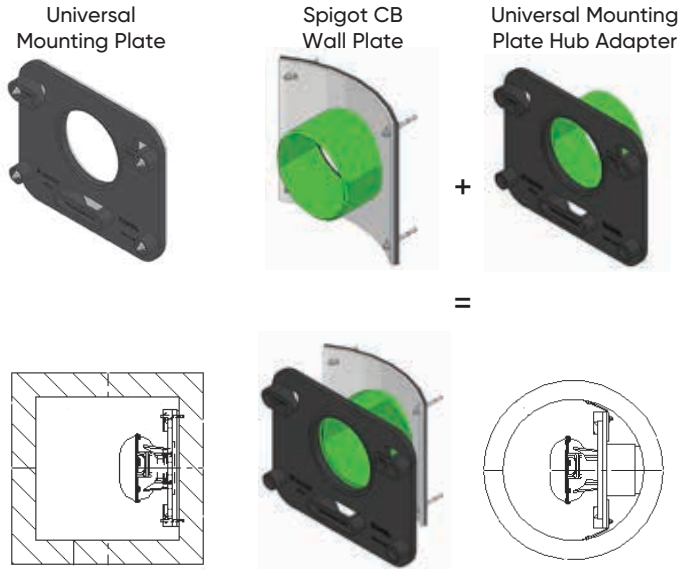
Product Construction

The HF, HF Sump and MHF ICDs are built to be light weight at a maximum weight of 6.8 Kg (14.6 lbs).

Product Applications

The HF and MHF ICD's are available to accommodate both square and round applications:

Square Application **Round Application**



The HF Sump is available to accommodate low to no sump applications in both square and round catch basins:

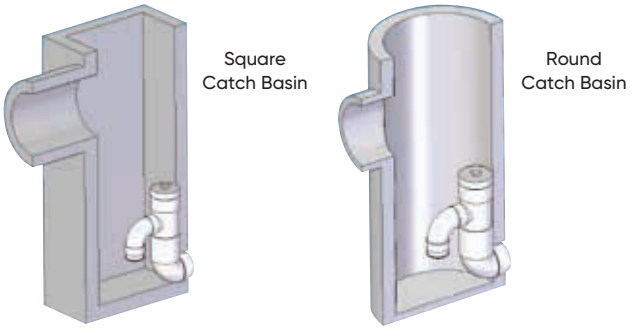
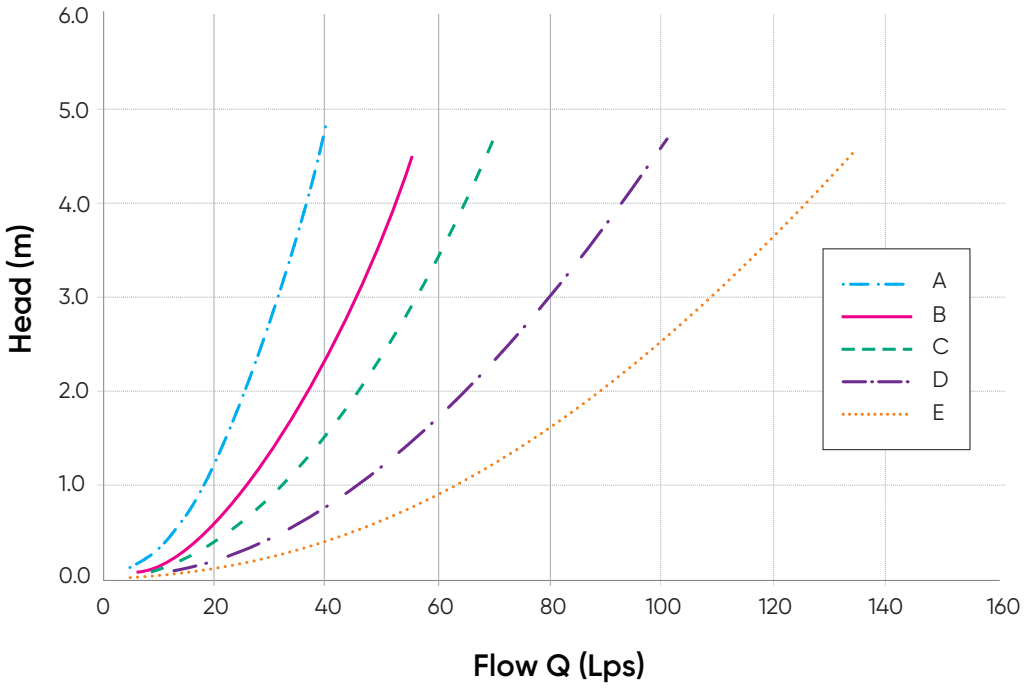


Chart 3: HF & MHF Preset Flow Curves



PRODUCT INSTALLATION

Instructions to assemble a TEMPEST HF or MHF ICD into a Square Catch Basin:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers, (4) nuts, universal mounting plate, ICD device
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a minimum of 1-1/2" depth up to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the universal wall mounting plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From the ground above using a reach bar, lower the device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the universal wall mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- Call your IPEX representative for more information or if you have any questions about our products.

Instructions to assemble a TEMPEST HF or MHF ICD into a Round Catch Basin:

STEPS:

1. Materials and tooling verification.
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers and (4) nuts, spigot CB wall plate, universal mounting plate hub adapter, ICD device.
2. Use the round catch basin spigot adaptor to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a depth between 1-1/2" to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the spigot CB wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the spigot CB wall plate and the catch basin wall.
6. Put solvent cement on the hub of the universal mounting plate, hub adapter and the spigot of the CB wall plate, then slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the wall mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- The solvent cement which is used in this installation is to be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at www.ipexinc.com.
- Call your IPEX representative for more information or if you have any questions about our products.

NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

Instructions to assemble a TEMPEST HF Sump into a Square or Round Catch Basin:

STEPS:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, mastic tape and metal strapping
   - Material: (2) concrete anchor 3/8 x 3-1/2, (2) washers, (2) nuts, HF Sump pieces (2).
2. Apply solvent cement to the spigot end of the top half of the sump. Apply solvent cement to the hub of the bottom half of the sump. Insert the spigot of the top half of the sump into the hub of the bottom half of the sump.
3. Install the 8" spigot of the device into the outlet pipe. Use the mastic tape to seal the device spigot into the outlet pipe. You should use a level to be sure that the fitting is standing at the vertical.
4. Use an impact drill with a 3/8" concrete bit to make a series of 2 holes along each side of the body throat. The depth of the hole should be between 1-1/2" to 2-1/2". Clean the concrete dust from the 2 holes.
5. Install the anchors (2) in the holes by using a hammer. Put the nuts on the top of the anchors to protect the threads when you hit the anchors. Remove the nuts from the ends of the anchors.
6. Cut the metal strapping to length and connect each end of the strapping to the anchors. Screw the nuts in place with a maximum torque of 40 N.m (30 lbf-ft). The device should be completely flush with the catch basin wall.

⚠ WARNING

- **Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.**
- **The solvent cement which is used in this installation is to be approved for PVC.**
- **The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at www.ipexinc.com.**
- **Call your IPEX representative for more information or if you have any questions about our products.**

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control where specified. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook shall be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above shall not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices shall consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

NOTES

SALES AND CUSTOMER SERVICE

IPEX Inc.
Toll Free: (866) 473-9462
ipexna.com

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Electrical systems
- Telecommunications and utility piping systems
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- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems

Products manufactured by IPEX Inc.
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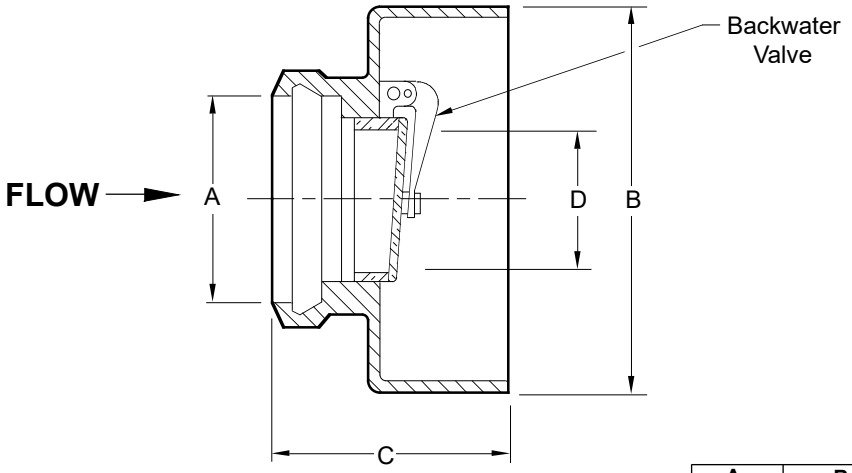
LOCATION

BACKWATER VALVE

TERMINAL VALVES



☐ Fig. 7070C..... HUB TYPE

	A SIZE	B DIA	C	D
	02 (50)	6 1/4 (160)	5 1/4 (135)	1 3/4 (44)
	03 (80)	8 (205)	5 1/2 (140)	2 3/4 (70)
	04 (100)	9 (230)	5 3/4 (145)	3 3/4 (95)
	05 (125)	11 1/2 (290)	6 (150)	4 1/2 (115)
	06 (150)	11 1/2 (290)	6 (150)	5 3/4 (145)
	08 (200)	13 1/2 (345)	6 3/4 (170)	8 (205)
✔	10 (250)	15 3/4 (400)	7 3/4 (195)	10 (255)
	12 (300)	17 1/2 (445)	8 3/4 (220)	12 (305)
	16 (400)	26 1/4 (665)	16 1/2 (420)	18 (455)
	18 (450)	26 1/4 (665)	16 (405)	18 (455)

NOTE: B.W.V. flapper set at factory to hang in closed position. Pin can be moved to permit flapper to hang open 1/4" (6) to permit air circulation.

NOTE: 2-4" size furnished with Delrin Backed Neoprene flapper. All other sizes furnished with bronze flapper.

NOTE: These valves offer protection against backwater surges. Backflow is prevented when valve is not obstructed by debris or sludge. Use for gravity flow only, not for pressurized applications.

REGULARLY FURNISHED:
Duco Cast Iron Body with Backwater Valve.

Conforms to ASME A112.14.1

OPTIONAL MATERIALS:
☐ Galvanized Cast Iron -G

NOTE: Dimensions shown in parentheses are in millimeters.

REV.	DATE	DESCRIPTION	BY	CKD. BY
H	10-22-24	Added Boxes to Table	HS	CL
G	4-10-24	Added ASME Note	HS	CB
F	7-20-23	Removed Function	HS	CL
E	12-5-16	Added Note	TBW	BW

WEIGHT POUNDS | VOLUME CUBIC FEET | FIGURE NUMBER 7070

H | DRAWING NUMBER S7070 | SIZE A | SCALE: NONE | DATE: 5-5-83 | APPROVED BY: SJM | CHECKED BY: DT | DRAWN BY: BS | FIGURE NUMBER 7070

BACKWATER VALVES TECHNICAL DATA AND PIT STYLE BACKWATER VALVES

SMITH®
CUSTOMER DRIVEN

PROTECTION AGAINST BACKWATER SURGES

•EXCESSIVE RAINFALL •TIDEWATER CONDITIONS •INADEQUATE CAPACITY

NOTE: These conditions can cause damaging backflow flooding into basements and low areas, as well as damaging merchandise and equipment backflow can even undermine the building construction. Another important threat is the health hazard created by contaminated waste water. Avoid the inconveniences – install SMITH Backwater Valves which offer protection against backwater surges. Backflow is prevented when valve is not obstructed by debris or sludge. Use for gravity flow only, not for pressurized applications.

Extension To Finished Floor Level - Where it is necessary to extend the valve access cover to finished floor level, the Smith 7022 should be specified. The extension is made by using soil pipe cut to the desired length.

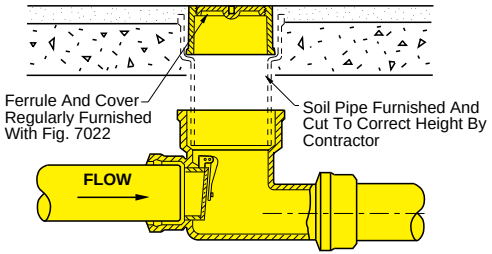


Fig. 7022

Installation At Sewer Line Terminals - The Fig. 7070 terminal valve provides backwater protection at the terminal where storm or sanitary sewers discharge into catch basins, manholes or drainage lagoons.

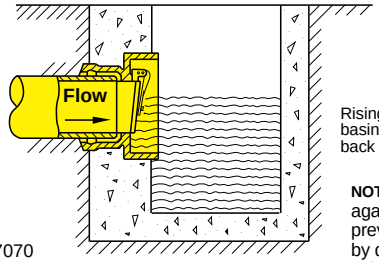


Fig. 7070

NOTE: These valves offer protection against backwater surges. Backflow is prevented when valve is not obstructed by debris or sludge. Use for gravity flow only, not for pressurized applications.

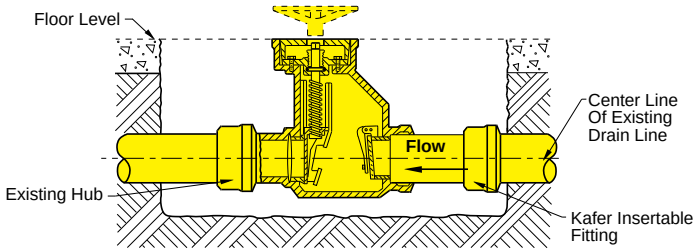
IN-LINE MANUAL SHUT-OFF GATE VALVE

Fig. 7150 Series

Fig. 7150 In-line Manual Shut-Off Backwater Valve may be installed in new or existing sewer lines. Smith Engineers, realizing that most installations are made in existing lines where line pitch is already established, have designed an "In-Line" type manual shut-off valve. There is no drop in elevation from inlet to outlet, permitting the valve to be inserted in an existing line without significantly disturbing the pitch. The "In-Line" feature is particularly useful where existing sewer line pitch is at a minimum.

NOTE: During periods when manual shut-off valve is closed, use of building plumbing fixtures and drains must be avoided.

Cut made long enough to expose hub on outlet side, and with enough space on inlet side for insertable fitting.



INSTALLATION IN EXISTING SEWER LINE